

## ภาคผนวก

ภาคผนวกที่	1	เอกสารผลการพิจารณารายงานการเปลี่ยนแปลงรายละเอียดโครงการ ในรายงานการประเมินผลกระทบสิ่งแวดล้อม
ภาคผนวกที่	2	ผลการติดตามตรวจสอบผลกระทบสิ่งแวดล้อม
ภาคผนวกที่	3	เอกสารขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน
ภาคผนวกที่	4	ใบรับรองความสามารถห้องปฏิบัติการ
ภาคผนวกที่	5	สรุปเอกสารการสอบเทียบอุปกรณ์เครื่องมือ
ภาคผนวกที่	6	เอกสาร Detection Limit ของรายการทดสอบ
ภาคผนวกที่	7	รายชื่อโรงงานทั้งหมดในนิคมอุตสาหกรรมเกตเวย์ ซิตี้
ภาคผนวกที่	8	โรงงานที่มีการปล่อยมลสารออกทางปล่องระบาย
ภาคผนวกที่	9	ผลการตรวจสอบสุขภาพพนักงานของโรงงานภายในนิคมอุตสาหกรรมเกตเวย์ ซิตี้
ภาคผนวกที่	10	สรุปปริมาณน้ำเสีย และปริมาณการผลิตน้ำประปา ประจำเดือนกรกฎาคม-ธันวาคม 2568
ภาคผนวกที่	11	ตัวอย่างหนังสือแจ้งเตือน และรายชื่อโรงงานที่มีระบบบำบัดน้ำเสีย โดยใช้กระบวนการทางเคมี
ภาคผนวกที่	12	Layout พื้นที่สีเขียวของนิคมอุตสาหกรรม
ภาคผนวกที่	13	สรุปปริมาณขยะที่พักอาศัย / พาณิชยกรรม ประจำเดือนกรกฎาคม-ธันวาคม 2568
ภาคผนวกที่	14	สรุปปริมาณขยะมูลฝอยทั่วไป โรงงานภายในนิคมอุตสาหกรรมเกตเวย์ ซิตี้
ภาคผนวกที่	15	ใบกำกับการณ์ขนส่งของเสียอันตราย (Uniform Hazardous Waste Manifest)
ภาคผนวกที่	16	รายงานสถิติอุบัติเหตุของนิคมอุตสาหกรรมเกตเวย์ ซิตี้
ภาคผนวกที่	17	รายงานสถิติอุบัติเหตุของโรงงานภายในนิคมอุตสาหกรรมเกตเวย์ ซิตี้
ภาคผนวกที่	18	แผนฉุกเฉินของโรงงานภายในนิคมอุตสาหกรรมเกตเวย์ ซิตี้/ ภาพการซ้อมดับเพลิงของโรงงานภายในนิคมอุตสาหกรรมเกตเวย์ ซิตี้
ภาคผนวกที่	19	ผลการตรวจวัดปริมาณสารเคมี (VOCs) และสภาพแวดล้อมในการทำงาน ของโรงงานต่าง ๆ ภายในโครงการ
ภาคผนวกที่	20	สถิติผู้ป่วยโรคระบบทางเดินหายใจ ประจำเดือนกรกฎาคม-ธันวาคม 2568
ภาคผนวกที่	21	หนังสือชี้แจงและตอบข้อซักถามประเด็นต่าง ๆ ตามหนังสือเลขที่ ทส 1007.5/13140 ลงวันที่ 18 สิงหาคม 2565
ภาคผนวกที่	22	หนังสือชี้แจงและตอบข้อซักถามประเด็นต่าง ๆ ตามหนังสือเลขที่ ทส 1007.5/4790 ลงวันที่ 23 กุมภาพันธ์ 2566

### ภาคผนวก (ต่อ)

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| ภาคผนวกที่ | 23 | แผนการตรวจสอบและบำรุงรักษาเตาเผาขยะ และระบบบำบัดน้ำเสียประจำปี 2568  |
| ภาคผนวกที่ | 24 | จดหมายนำส่งรายงานผลการปฏิบัติตามมาตรการป้องกัน และแก้ไขผลกระทบสิ่งแวดล้อม และมาตรการติดตามตรวจสอบผลกระทบสิ่งแวดล้อม ประจำเดือนมกราคม-มิถุนายน 2568 |

ภาคผนวกที่ 1

เอกสารผลการพิจารณารายงานการเปลี่ยนแปลงรายละเอียดโครงการ  
ในรายงานการประเมินผลกระทบสิ่งแวดล้อม

ที่ อก 5103.3.1/0141



การนิคมอุตสาหกรรมแห่งประเทศไทย  
618 ถนนนิคมมักกะสัน แขวงมักกะสัน  
เขตราชเทวี กรุงเทพฯ 10400

18 มกราคม 2567

เรื่อง ขอแจ้งผลการพิจารณารายงานการเปลี่ยนแปลงรายละเอียดโครงการในรายงานการประเมินผลกระทบ  
สิ่งแวดล้อม โครงการนิคมอุตสาหกรรมเกตเวย์ ซิตี้ (ครั้งที่ 1) ของบริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)

เรียน กรรมการผู้จัดการบริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)

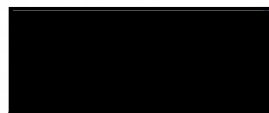
อ้างถึง หนังสือบริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน) ที่ MDX-01/2024 ลงวันที่ 9 มกราคม 2567

ตามหนังสือที่อ้างถึง บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน) ได้ส่งมอบรายงานการเปลี่ยนแปลง  
รายละเอียดโครงการในรายงานการประเมินผลกระทบสิ่งแวดล้อม โครงการนิคมอุตสาหกรรมเกตเวย์ ซิตี้  
(ครั้งที่ 1) ตั้งอยู่ที่ตำบลหัวสำโรง อำเภอแปลงยาว จังหวัดฉะเชิงเทรา ซึ่งจัดทำรายงานฯ โดยบริษัท วิชั่น  
อี คอนซัลแทนท์ จำกัด ทั้งนี้ การนิคมอุตสาหกรรมแห่งประเทศไทย (กนอ.) โดยคณะกรรมการพิจารณา  
รายงานผลกระทบสิ่งแวดล้อมเบื้องต้นและพิจารณาการเปลี่ยนแปลงรายละเอียดโครงการในรายงาน  
การประเมินผลกระทบสิ่งแวดล้อม ได้มีมติในการประชุมฯ ครั้งที่ 12/2566 เมื่อวันที่ 16 พฤศจิกายน 2566  
เห็นชอบในรายงานดังกล่าว ความละเอียดแจ้งแล้วนั้น

กนอ. ขอให้บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน) ยึดถือและปฏิบัติตามมาตรการป้องกันและแก้ไข  
ผลกระทบสิ่งแวดล้อมและมาตรการติดตามตรวจสอบผลกระทบสิ่งแวดล้อมที่เสนอไว้ในรายงานฯ อย่างเคร่งครัด

จึงเรียนมาเพื่อโปรดทราบและพิจารณาดำเนินการต่อไป

ขอแสดงความนับถือ



(นางนิภา รุกขมธุร์)

รองผู้ว่าการ (ยุทธศาสตร์) รักษาการในตำแหน่ง

รองผู้ว่าการ (พัฒนาที่ยั่งยืน) ปฏิบัติงานแทน

ผู้ว่าการการนิคมอุตสาหกรรมแห่งประเทศไทย

ฝ่ายสิ่งแวดล้อม ความปลอดภัย และอาชีวอนามัย

กองสิ่งแวดล้อม

โทรศัพท์ 0 2253 0561 ต่อ 3326 โทรสาร 0 2650 0466

ไปรษณีย์อิเล็กทรอนิกส์ env.ieat@gmail.com

มาตรการป้องกันและแก้ไขผลกระทบสิ่งแวดล้อม  
และมาตรการติดตามตรวจสอบผลกระทบสิ่งแวดล้อม  
(ภายหลังการเปลี่ยนแปลงรายละเอียดโครงการในรายงานการประเมินผลกระทบ  
สิ่งแวดล้อม โครงการนิคมอุตสาหกรรมเกตเวย์ ซิตี้ (ครั้งที่ 1))  
ตั้งอยู่เลขที่ 215 หมู่ที่ 7 ตำบลหัวสำโรง อำเภอแปลงยาว จังหวัดฉะเชิงเทรา  
ของบริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน) ต้องยึดถือปฏิบัติอย่างเคร่งครัด



ลงชื่อ..... (นายพิษณุพงศ์ ณ บางช้าง) กรรมการผู้จัดการ บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)	บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน) MDX PUBLIC COMPANY LIMITED มกราคม 2567	ลงชื่อ..... (นางสาวจันทรา เกิดมี) ผู้อำนวยการสิ่งแวดล้อม บริษัท วิชั่น อี คอนซัลแทนท์ จำกัด	Vision E. บริษัท วิชั่น อี คอนซัลแทนท์ จำกัด หน้า 1/10
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ตารางที่ 1

มาตรการป้องกันและแก้ไขผลกระทบสิ่งแวดล้อม (ระยะดำเนินการ)

รายงานการเปลี่ยนแปลงรายละเอียดโครงการในรายงานการวิเคราะห์ผลกระทบสิ่งแวดล้อม โครงการนิคมอุตสาหกรรมเกตเวย์ ซิตี้ (ครั้งที่ 1) ของบริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)

องค์ประกอบด้านสิ่งแวดล้อม	มาตรการป้องกันและแก้ไขผลกระทบสิ่งแวดล้อม	สถานที่ดำเนินการ	ระยะเวลา	ผู้รับผิดชอบ
1. มาตรการทั่วไป	1) ปฏิบัติตามมาตรการป้องกันและแก้ไขผลกระทบสิ่งแวดล้อม และมาตรการติดตามตรวจสอบผลกระทบสิ่งแวดล้อม ที่เสนอในรายงานการเปลี่ยนแปลงรายละเอียดโครงการในรายงานการประเมินผลกระทบสิ่งแวดล้อม โครงการนิคมอุตสาหกรรมเกตเวย์ ซิตี้ (ครั้งที่ 1) บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน) ตั้งอยู่ที่ตำบลหัวสำโรง อำเภอบางพลี จังหวัดฉะเชิงเทรา	- พื้นที่โครงการ	- ตลอดช่วงดำเนินการ	- บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)
	2) ในกรณีที่ผลการติดตามตรวจสอบผลกระทบสิ่งแวดล้อมมีแนวโน้มสูงขึ้นจากค่าที่ตรวจวัดได้ในช่วงดำเนินการปกติ หรือมีแนวโน้มเข้าใกล้ค่าควบคุมหรือค่ามาตรฐาน ให้โครงการตรวจสอบหาสาเหตุและเฝ้าระวัง เพื่อเตรียมความพร้อมในการแก้ไขปัญหาที่อาจเกิดขึ้น ทั้งนี้ ให้สรุปรายละเอียดดังกล่าวไว้ในรายงานผลการปฏิบัติตามมาตรการป้องกันและแก้ไขผลกระทบสิ่งแวดล้อม และมาตรการติดตามตรวจสอบผลกระทบสิ่งแวดล้อมให้ครบถ้วน	- พื้นที่โครงการ	- ตลอดช่วงดำเนินการ	- บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)
	3) ในกรณีที่ผลตรวจวัดมลพิษจากแหล่งกำเนิดของโครงการมีค่าเกินค่าควบคุมที่กำหนดไว้ให้โครงการทำการตรวจสอบหาสาเหตุ ทำการแก้ไข และทำการตรวจวัดซ้ำเพื่อยืนยันประสิทธิภาพในการแก้ไข พร้อมทั้งกำหนดมาตรการเพื่อป้องกันการเกิดปัญหาในลักษณะดังกล่าวให้ครบถ้วน	- พื้นที่โครงการ	- ตลอดช่วงดำเนินการ	- บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)
	4) เมื่อผลการติดตามตรวจสอบได้แสดงให้เห็นถึงปัญหาสิ่งแวดล้อม บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน) ต้องดำเนินการปรับปรุงแก้ไขปัญหานั้นโดยเร็ว และต้องปฏิบัติตามมาตรการป้องกันและแก้ไขผลกระทบสิ่งแวดล้อม และมาตรการติดตามตรวจสอบผลกระทบสิ่งแวดล้อมโดยเคร่งครัด เพื่อประโยชน์ในการพิจารณาความเหมาะสมของการกำหนดระยะเวลาในการติดตามตรวจสอบต่อไป	- พื้นที่โครงการ	- ตลอดช่วงดำเนินการ	- บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)
	5) หากเกิดเหตุการณ์ใด ๆ ก็ตามที่อาจก่อให้เกิดผลกระทบต่อคุณภาพสิ่งแวดล้อม บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน) ต้องแจ้งการนิคมอุตสาหกรรมแห่งประเทศไทย สำนักงานทรัพยากรธรรมชาติและสิ่งแวดล้อมจังหวัดฉะเชิงเทรา และสำนักงานนโยบายและแผนทรัพยากรธรรมชาติและสิ่งแวดล้อมทราบโดยเร็ว เพื่อหน่วยงานดังกล่าวจะได้ให้ความร่วมมือในการแก้ไขปัญหา	- พื้นที่โครงการ	- ตลอดช่วงดำเนินการ	- บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)

ลงชื่อ..... (นายพิษณุพงศ์ ณ บางช้าง) กรรมการผู้จัดการ บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)	บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)  มกราคม 2567	ลงชื่อ..... (นางสาวจันทรา เกิดมี) ผู้อำนวยการสิ่งแวดล้อม บริษัท วิชั่น อี คอนซิลแทนท์ จำกัด	 บริษัท วิชั่น อี คอนซิลแทนท์ จำกัด	หน้า 2/10
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ตารางที่ 1 (ต่อ-1)

องค์ประกอบด้านสิ่งแวดล้อม	มาตรการป้องกันและแก้ไขผลกระทบสิ่งแวดล้อม	สถานที่ดำเนินการ	ระยะเวลา	ผู้รับผิดชอบ
1. มาตรการทั่วไป (ต่อ)	6) บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน) ต้องว่าจ้างหน่วยงานกลาง (Third Party) เพื่อดำเนินการตรวจสอบผลการปฏิบัติตามมาตรการป้องกันและแก้ไขผลกระทบสิ่งแวดล้อมของโครงการ และเสนอรายงานผลการปฏิบัติตามมาตรการป้องกันและแก้ไขผลกระทบสิ่งแวดล้อม และมาตรการติดตามตรวจสอบผลกระทบสิ่งแวดล้อม ส่งให้การนิคมอุตสาหกรรมแห่งประเทศไทย สำนักงานทรัพยากรธรรมชาติและสิ่งแวดล้อม จังหวัดฉะเชิงเทรา และสำนักงานนโยบายและแผนทรัพยากรธรรมชาติและสิ่งแวดล้อม ทั้งนี้ การจัดทำรายงานผลการปฏิบัติตามมาตรการฯ การเสนอรายงานฯ และความถี่ในการส่งรายงานผลการปฏิบัติตามมาตรการให้เป็นไปตามหลักเกณฑ์ วิธีการที่กำหนดตามประกาศกระทรวงทรัพยากรธรรมชาติและสิ่งแวดล้อม เรื่อง หลักเกณฑ์และวิธีการจัดทำรายงานผลการปฏิบัติตามมาตรการที่กำหนดไว้ในรายงานการประเมินผลกระทบสิ่งแวดล้อมซึ่งผู้ดำเนินการ หรือผู้ขออนุญาตจะต้องจัดทำเมื่อได้รับอนุญาตให้ดำเนินโครงการหรือกิจการแล้ว พ.ศ. 2561 และกฎหมายที่เกี่ยวข้อง	- พื้นที่โครงการ	- ตลอดช่วงดำเนินการ	- บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)
	7) กำกับดูแลผู้ประกอบการผลิตไฟฟ้าจากพลังงานแสงอาทิตย์ให้ปฏิบัติตามมาตรการป้องกันและแก้ไขผลกระทบสิ่งแวดล้อม และมาตรการติดตามตรวจสอบผลกระทบสิ่งแวดล้อมในระยะต่าง ๆ ตามที่กำหนดในระเบียบคณะกรรมการกำกับกิจการพลังงาน ว่าด้วยหลักเกณฑ์การจัดทำรายงานประมวลหลักการปฏิบัติ และรายงานผลการปฏิบัติตามประมวลหลักการปฏิบัติ สำหรับการประกอบกิจการผลิตไฟฟ้า พ.ศ. 2565 และ/หรือกฎหมายที่เกี่ยวข้อง	- พื้นที่โครงการ	- ตลอดช่วงดำเนินการ	- บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)
2. ปัญหามลภาวะทางอากาศจากกิจกรรมอุตสาหกรรม	1) การนิคมอุตสาหกรรม (กนอ.) ต้องควบคุมการปล่อยมลสาร (ฝุ่น, SO <sub>2</sub> , NO <sub>2</sub> ) จากปล่องโรงงานอุตสาหกรรม โดยใช้ผลการศึกษาความสัมพันธ์ระหว่างปริมาณมลสารที่ปล่อยได้ต่อหน่วยพื้นที่ความสูงของปล่องโรงงาน	- พื้นที่โครงการ	- ตลอดช่วงดำเนินการ	- บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)
	2) โรงงานอุตสาหกรรมที่ตั้งในนิคมฯ ต้องทำการศึกษาผลกระทบสิ่งแวดล้อมตามประกาศของ วล. โรงงานอุตสาหกรรมเหล่านั้นต้องทำรายงานการศึกษาผลกระทบสิ่งแวดล้อมให้ วล. พิจารณา	- พื้นที่โครงการ	- ตลอดช่วงดำเนินการ	- บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)
3. เสียงจากเครื่องจักรกล	1) จัดอุปกรณ์ป้องกันเสียง เช่น ปลั๊กอุดหู	- พื้นที่โครงการ	- ตลอดช่วงดำเนินการ	- บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)
	2) กรณีโรงงานที่มีเสียงดัง 90 dB(A) คนงานควรได้รับการตรวจสอบประสิทธิภาพการรับฟัง ปีละ 1 ครั้ง	- พื้นที่โครงการ	- ตลอดช่วงดำเนินการ	- บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)
	3) เครื่องจักรที่ก่อให้เกิดเสียงดัง ควรจัดไว้ในห้องที่มีวัสดุป้องกันเสียง	- พื้นที่โครงการ	- ตลอดช่วงดำเนินการ	- บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)

<p>ลงชื่อ.....</p> <p>(นายพิชญพงศ์ ณ บางช้าง)</p> <p>กรรมการผู้จัดการ</p> <p>บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)</p>	<p>บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)</p> <p>มกราคม 2567</p> <p><b>MDX</b></p> <p>PUBLIC COMPANY LIMITED</p>	<p>ลงชื่อ.....</p> <p>(นางสาวจันทรา เกิดมี)</p> <p>ผู้อำนวยการสิ่งแวดล้อม</p> <p>บริษัท วิชั่น อี คอนซัลแทนท์ จำกัด</p>	<p>Vision E.</p> <p>บริษัท วิชั่น อี คอนซัลแทนท์ จำกัด</p>	<p>หน้า 3/10</p>
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ตารางที่ 1 (ต่อ-2)

องค์ประกอบด้านสิ่งแวดล้อม	มาตรการป้องกันและแก้ไขผลกระทบสิ่งแวดล้อม	สถานที่ดำเนินการ	ระยะเวลา	ผู้รับผิดชอบ
4. คุณภาพน้ำผิวดิน	1) จัดเจ้าหน้าที่คอยดำเนินการและบำรุงรักษาระบบบำบัดน้ำเสีย	- พื้นที่โครงการ	- ตลอดช่วงดำเนินการ	- บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)
	2) ควบคุมคุณภาพน้ำทิ้งให้เป็นไปตามมาตรฐานของกระทรวงอุตสาหกรรม	- พื้นที่โครงการ	- ตลอดช่วงดำเนินการ	- บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)
	3) น้ำเสียจากอุตสาหกรรมที่มีสารพิษต้องทำการบำบัดเบื้องต้น ลดสารที่เจือปนอยู่ เจ้าของโรงงานต้องบำบัดน้ำเสียเบื้องต้นให้มีคุณภาพตรงตามมาตรฐานของ กนอ.	- พื้นที่โครงการ	- ตลอดช่วงดำเนินการ	- บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)
	4) สารละลายจากกากมูลฝอยให้ผ่านระบบบำบัดน้ำเสียส่วนกลาง	- พื้นที่โครงการ	- ตลอดช่วงดำเนินการ	- บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)
	5) โรงงานในนิคมอุตสาหกรรมต้องมีมาตรการที่เหมาะสมและรัดกุมที่ควบคุมการรั่วไหลและหกหล่นของสารเคมีระหว่างการขนส่งและเก็บกัก	- พื้นที่โครงการ	- ตลอดช่วงดำเนินการ	- บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)
	6) การหมุนเวียนน้ำทิ้งที่ผ่านการบำบัดไปใช้ เช่น การรดน้ำต้นไม้ และสนามหญ้า ให้ส่งผ่านทางท่อ และด้วย Sprinkle ในพื้นที่สันทนาการ ซึ่งมีพื้นที่ 300 ไร่ หากจะนำน้ำทิ้งที่เหลือก่อนลงคลองวังด้วน ควร มีปริมาณประมาณ 6,220 ลูกบาศก์เมตร โดยมีค่า BOD 125 กิโลกรัม/วัน และคุณภาพน้ำทิ้งให้เป็นไปตามมาตรฐานของกระทรวงอุตสาหกรรม	- พื้นที่โครงการ	- ตลอดช่วงดำเนินการ	- บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)
	7) แผงเซลล์แสงอาทิตย์ที่ติดตั้งภายในบ่อเก็บน้ำดิบของโครงการ จะใช้น้ำดิบภายในบ่อเก็บน้ำดิบของโครงการล้างทำความสะอาดเท่านั้น และห้ามมิให้ใช้สารเคมีหรือสารชะล้างในการล้างทำความสะอาดก่อนปล่อยน้ำล้างลงสู่อบ่เก็บน้ำดิบของโครงการต่อไป	- พื้นที่โครงการ	- ตลอดช่วงดำเนินการ	- บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)
5. การปนเปื้อนของน้ำทิ้งจากบ่อเกรอะไปสู่แหล่งน้ำใต้ดิน	1) จัดระบบน้ำทิ้งจากการขับถ่ายของมนุษย์ไปเข้าระบบบำบัดส่วนกลาง	- พื้นที่โครงการ	- ตลอดช่วงดำเนินการ	- บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)
6. ผลกระทบต่อระบบนิเวศน์บนบกในพื้นที่โครงการ	1) จัดพื้นที่สีเขียว ปลูกไม้ดอกและพืชยืนต้น เพื่อสร้างสภาพที่อยู่อาศัยตามธรรมชาติให้สัตว์ในพื้นที่ เช่น สัตว์เลื้อยคลาน นกและพวกกระรอกเข้ามาอยู่อาศัย พืชที่ควรปลูก ได้แก่ กระถินณรงค์, กระถินยักษ์ และชมพูพันธุ์ทิพย์	- พื้นที่โครงการ	- ตลอดช่วงดำเนินการ	- บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)
7. ผลกระทบต่อสิ่งมีชีวิตในน้ำผิวดิน	1) มาตรการเดียวกับคุณภาพน้ำผิวดิน	- พื้นที่โครงการ	- ตลอดช่วงดำเนินการ	- บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)

<p>ลงชื่อ.....</p> <p>(นายพิชญพงศ์ ณ บางช้าง)</p> <p>กรรมการผู้จัดการ</p> <p>บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)</p>	<p>บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)</p> <p><b>MDX</b></p> <p>PUBLIC COMPANY LIMITED</p> <p>มกราคม 2567</p>	<p>ลงชื่อ.....</p> <p>(นางสาวจันทรา เกิดมี)</p> <p>ผู้อำนวยการสิ่งแวดล้อม</p> <p>บริษัท วิชั่น อี คอนซัลแทนท์ จำกัด</p>	<p><b>Vision E.</b></p> <p>บริษัท วิชั่น อี คอนซัลแทนท์ จำกัด</p>	<p>หน้า 4/10</p>
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ตารางที่ 1 (ต่อ-3)

องค์ประกอบด้านสิ่งแวดล้อม	มาตรการป้องกันและแก้ไขผลกระทบสิ่งแวดล้อม	สถานที่ดำเนินการ	ระยะเวลา	ผู้รับผิดชอบ
8. ผลกระทบต่อปริมาณน้ำใช้และการกำจัดขยะ	1) ทางนิคมอุตสาหกรรมได้เสนอจำนวนคนอยู่ในพื้นที่อาศัย / พานิชยกรรม มีจำนวน 3,000 คน (จำนวนต่ำสุด) และจำนวนมากที่สุด 17,125 คน ซึ่งค่าจำนวนคนมากที่สุดนั้น จะต้องการระบบกำจัดมูลฝอย 13.7 วัน/ตัน และผลิตน้ำใช้ 4,282 ลูกบาศก์เมตร/วัน ทั้งน้ำใช้และปริมาณมูลฝอยที่ต้องกำจัดนั้นทางโครงการบริการได้เพียงพอ	- พื้นที่โครงการ	- ตลอดช่วงดำเนินการ	- บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)
	2) ของเสียที่เป็นอันตรายจะต้องถูกบำบัดเพื่อลดอันตรายลงก่อน และจัดหาลังเก็บเพื่อส่งไปกำจัดที่ศูนย์กำจัดกากอุตสาหกรรมของกระทรวงอุตสาหกรรม หรือศูนย์กำจัดกากอุตสาหกรรมอื่น ๆ ที่ทางราชการรับรองและเจ้าของโรงงานจะต้องแจ้งให้ทางกระทรวงอุตสาหกรรม และการนิคมอุตสาหกรรมทราบด้วย	- พื้นที่โครงการ	- ตลอดช่วงดำเนินการ	- บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)
	3) กากของเสียที่เกิดขึ้นจากการติดตั้งระบบผลิตไฟฟ้าจากพลังงานแสงอาทิตย์ต้องจัดเก็บไว้ในพื้นที่อาคารจัดเก็บกากของเสียที่มีหลังคาปิดคลุม ก่อนนำส่งหน่วยงานรับกำจัดที่ได้รับอนุญาตจากกรมโรงงานอุตสาหกรรมมารับไปกำจัดด้วยวิธีที่ถูกต้องต่อไป	- พื้นที่โครงการ	- ตลอดช่วงดำเนินการ	- บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)
9. ผลกระทบทางด้านเศรษฐกิจและสังคม	1) เพื่อลดปัญหาการบุกรุกที่ดิน ที่พักอาศัย และโครงสร้างพื้นฐานต้องมีการจัดเตรียมไว้	- พื้นที่โครงการ	- ตลอดช่วงดำเนินการ	- บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)
	2) การจ้างแรงงานท้องถิ่นและลดปัญหาด้านที่อยู่อาศัย	- พื้นที่โครงการ	- ตลอดช่วงดำเนินการ	- บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)
10. การเพิ่มขึ้นของอุบัติเหตุการจราจร	1) จัดหาสัญญาณเตือนและบุคลากรควบคุมการจราจร	- พื้นที่โครงการ	- ตลอดช่วงดำเนินการ	- บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)
	2) ติดตั้งสัญญาณจราจร	- พื้นที่โครงการ	- ตลอดช่วงดำเนินการ	- บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)
11. อุบัติเหตุและโรคร้ายที่เกิดขึ้นกับคนงานทั้งด้านอาชีวอนามัยและความปลอดภัย	1) จัดหาอุปกรณ์รักษาความปลอดภัยส่วนบุคคล	- พื้นที่โครงการ	- ตลอดช่วงดำเนินการ	- บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)
	2) จัดเครื่องมือปฐมพยาบาลและรถพยาบาล	- พื้นที่โครงการ	- ตลอดช่วงดำเนินการ	- บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)
	3) ให้มีระดับเพลิงและอุปกรณ์ดับเพลิง	- พื้นที่โครงการ	- ตลอดช่วงดำเนินการ	- บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)

<p>ลงชื่อ.....</p> <p>(นายพิชญพงศ์ ณ บางช้าง)</p> <p>กรรมการผู้จัดการ</p> <p>บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)</p>	<p>บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)</p> <p><b>MDX</b></p> <p>PUBLIC COMPANY LIMITED</p> <p>มกราคม 2567</p>	<p>ลงชื่อ.....</p> <p>(นางสาวจันทรา เกติมิ)</p> <p>ผู้อำนวยการสิ่งแวดล้อม</p> <p>บริษัท วิชั่น อี คอนซัลแทนท์ จำกัด</p>	<p><b>Vision E.</b></p> <p>บริษัท วิชั่น อี คอนซัลแทนท์ จำกัด</p>	<p>หน้า 5/10</p>
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ตารางที่ 1 (ต่อ-4)

องค์ประกอบด้านสิ่งแวดล้อม	มาตรการป้องกันและแก้ไขผลกระทบสิ่งแวดล้อม	สถานที่ดำเนินการ	ระยะเวลา	ผู้รับผิดชอบ
	4) กนอ. และเจ้าหน้าที่โรงงานควรจัดให้มีเจ้าหน้าที่ด้านชีวอนามัยและความปลอดภัย (จป.) ทั้งในนิคมอุตสาหกรรม และโรงงาน	- พื้นที่โครงการ	- ตลอดช่วงดำเนินการ	- บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)
	5) พื้นที่ว่างโดยรอบโครงการ ควรจัดให้เป็นเขตลดผลกระทบ (Buffer Zone) โดยการปลูกไม้ดอก และไม้ยืนต้น เขตนี้ควรมีความกว้าง 5 เมตร	- พื้นที่โครงการ	- ตลอดช่วงดำเนินการ	- บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)
12. การก่อสร้างโรงงานอุตสาหกรรมในพื้นที่โครงการ	1) โรงงานทุกโรงงานต้องกรอรายละเอียด เกี่ยวกับข้อมูลของโรงงานลงในแบบฟอร์ม	- พื้นที่โครงการ	- ตลอดช่วงดำเนินการ	- บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)



<p>ลงชื่อ.....</p> <p>(นายพิษณุพงศ์ ณ บางช้าง)</p> <p>กรรมการผู้จัดการ</p> <p>บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)</p>	<p>บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)</p> <p>MDX</p> <p>PUBLIC COMPANY LIMITED</p> <p>มกราคม 2567</p>	<p>ลงชื่อ.....</p> <p>(นางสาวจันทรา เกิดมี)</p> <p>ผู้อำนวยการสิ่งแวดล้อม</p> <p>บริษัท วิชั่น อี คอนซัลแทนท์ จำกัด</p>	<p>VISION E</p> <p>บริษัท วิชั่น อี คอนซัลแทนท์ จำกัด</p>	<p>หน้า 6/10</p>
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ตารางที่ 2

มาตรการติดตามตรวจสอบผลกระทบสิ่งแวดล้อมของโครงการฯ



รายงานการเปลี่ยนแปลงรายละเอียดโครงการในรายงานการวิเคราะห์ผลกระทบสิ่งแวดล้อม โครงการนิคมอุตสาหกรรมเกตเวย์ ซิตี้ (ครั้งที่ 1) ของบริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)

องค์ประกอบ ด้านสิ่งแวดล้อม	ดัชนีที่ใช้ติดตามตรวจสอบ	วิธีวิเคราะห์/ตรวจวัด	สถานที่ติดตามตรวจสอบ	ความถี่	ผู้รับผิดชอบ
1. คุณภาพอากาศ					
- คุณภาพอากาศ ปลายปล่องเตาเผา ขยะ	- ผุ่นละอองรวม (TPS) เฉลี่ย 24 ชั่วโมง - ก๊าซซัลเฟอร์ไดออกไซด์ (SO <sub>2</sub> ) เฉลี่ย 1 ชั่วโมง และ 24 ชั่วโมง	- Isokinetic, Gravimetric - Absorption, Barium Thorin Titrimetric	- ปล่องเตาเผาขยะ	- 2 ครั้ง/ปี ช่วงเดียวกับการ ตรวจวัดคุณภาพอากาศ ในบรรยากาศ	- บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)
- คุณภาพอากาศใน บรรยากาศ	- ผุ่นละอองรวม (TPS) เฉลี่ย 24 ชั่วโมง - ก๊าซซัลเฟอร์ไดออกไซด์ (SO <sub>2</sub> ) เฉลี่ย 1 ชั่วโมง และ 24 ชั่วโมง - ก๊าซไนโตรเจนไดออกไซด์ (NO <sub>2</sub> ) เฉลี่ย 1 ชั่วโมง - ทิศทางและความเร็วลม	- Gravimetric Method - UV – Fluorescence  - Chemiluminescence - WS/WD Equipment	จำนวน 4 สถานี ได้แก่ - บ้านไผ่ล้อม - บ้านเนินไร่ - บ้านแปลงยาวบน - บ้านแปลงไม้แดง	- 2 ครั้ง/ปี ในเดือน ม.ค., ก.ค. ครั้งละ 3 วัน • ฤดูมรสุม ตะวันออกเฉียงเหนือ • ฤดูมรสุมตะวันตกเฉียงใต้	- บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)
2. ระดับเสียง					
- ระดับเสียง โดยทั่วไป	- ระดับเสียงในบรรยากาศ เฉลี่ย 24 ชั่วโมง (Leq 24 hr) - ระดับเสียงเฉลี่ยกลางวัน-กลางคืน (Ldn)	- Integrated Sound Level Meter	จำนวน 2 สถานี ได้แก่ - สถานีดาวเทียม - บริเวณเตาเผาขยะ	- 2 ครั้ง/ปี ช่วงเดียวกับการ ตรวจวัดคุณภาพอากาศใน บรรยากาศ	- บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)

ลงชื่อ..... (นายพิษณุพงศ์ ณ บางช้าง) กรรมการผู้จัดการ บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)	 มกราคม 2567	ลงชื่อ..... (นางสาวจันทรา เกิดมี) ผู้อำนวยการสิ่งแวดล้อม บริษัท วิชั่น อี คอนซัลแทนท์ จำกัด	 บริษัท วิชั่น อี คอนซัลแทนท์ จำกัด	หน้า 7/10
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ตารางที่ 2 (ต่อ-1)

องค์ประกอบ ด้านสิ่งแวดล้อม	ดัชนีที่ใช้ติดตามตรวจสอบ	วิธีวิเคราะห์/ตรวจวัด	สถานีติดตามตรวจสอบ	ความถี่	ผู้รับผิดชอบ
3. คุณภาพน้ำ - คุณภาพน้ำเสียและน้ำทิ้ง	<ul style="list-style-type: none"> <li>- ความเป็นกรด-ด่าง (pH)</li> <li>- ของแข็งแขวนลอย (SS)</li> <li>- น้ำมันและไขมัน (Oil and Grease)</li> <li>- ฟีนอล (Phenol)</li> <li>- บีโอดี (BOD<sub>5</sub>)</li> <li>- ซีโอดี (COD)</li> <li>- ตะกั่ว (Pb)</li> <li>- สารหนู (As)</li> <li>-ปรอท (Hg)</li> <li>- อัตราการไหลของของเหลว (Flow Rate)</li> <li>- โคลิฟอร์มแบคทีเรีย (Coliform Bacteria)</li> <li>- ครีซอล (Cresols)</li> </ul>	<ul style="list-style-type: none"> <li>- Standard Method for The Examination of Water and Wastewater ของ APHA, AWWA and WEF 23<sup>rd</sup> Edition, 2017</li> </ul>	จำนวน 2 สถานี ได้แก่ - Influent - Effluent	- 1 ครั้ง/เดือน	- บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)
- คุณภาพน้ำผิวดิน	<ul style="list-style-type: none"> <li>- ความเป็นกรด-ด่าง (pH)</li> <li>- ของแข็งแขวนลอย (SS)</li> <li>- อุณหภูมิ (Temperature)</li> <li>- น้ำมันและไขมัน (Oil and Grease)</li> <li>- บีโอดี (BOD<sub>5</sub>)</li> <li>- ตะกั่ว (Pb)</li> <li>- สารหนู (As)</li> <li>- ปรอท (Hg)</li> <li>- ออกซิเจนละลายน้ำ (DO)</li> <li>- ฟีคัลโคลิฟอร์มแบคทีเรีย (Fecal Coliform Bacteria)</li> </ul>	<ul style="list-style-type: none"> <li>- Standard Method for The Examination of Water and Wastewater ของ APHA, AWWA and WEF 23<sup>rd</sup> Edition, 2017</li> </ul>	จำนวน 3 สถานี ได้แก่ - บริเวณต้นน้ำของพื้นที่โครงการ 200 เมตร - บริเวณจุดระบายน้ำทิ้ง (จุดบรรจบท้ายอ่างเก็บน้ำ) - บริเวณฝายคลองวังด้วน	- 3 ครั้ง/ปี	- บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)

ลงชื่อ..... (นายพิษณุพงศ์ ณ บางช้าง) กรรมการผู้จัดการ บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)	 มกราคม 2567	ลงชื่อ..... (นางสาวจันทรา เกติมี) ผู้อำนวยการสิ่งแวดล้อม บริษัท วิชั่น อี คอนซิลแทนท์ จำกัด	 บริษัท วิชั่น อี คอนซิลแทนท์ จำกัด	หน้า 8/10
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ตารางที่ 2 (ต่อ-2)

องค์ประกอบ ด้านสิ่งแวดล้อม	ดัชนีที่ใช้ติดตามตรวจสอบ	วิธีวิเคราะห์/ตรวจวัด	สถานที่ติดตามตรวจสอบ	ความถี่	ผู้รับผิดชอบ
- คุณภาพน้ำผิวดิน (ต่อ)	- ไนเตรต ( $\text{NO}_3^-$ ) - ปริมาณแอมโมเนียทั้งหมด ( $\text{NH}_3$ )	- Standard Method for The Examination of Water and Wastewater ของ APHA, AWWA and WEF 23 <sup>rd</sup> Edition, 2017			
- คุณภาพน้ำใต้ดิน	- ความเป็นกรด-ด่าง (pH) - ของแข็งละลายน้ำ (TDS) - ของแข็งแขวนลอย (SS) - เหล็ก (Fe) - โคลิฟอร์มแบคทีเรีย (Coliform Bacteria) - ความขุ่น (Turbidity) - ความเป็นด่าง (Total Alkalinity) - คลอไรด์ (Chloride)	- Standard Method for The Examination of Water and Wastewater ของ APHA, AWWA and WEF 23 <sup>rd</sup> Edition, 2017	- บริเวณบ้านเนินไร่	- 2 ครั้ง/ปี	- บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)
- คุณภาพน้ำบริเวณ บ่อส่งเหตุการณ์	- ความเป็นกรด-ด่าง (pH) - ของแข็งละลายน้ำ (TDS) - ของแข็งแขวนลอย (SS) - คลอไรด์ (Chloride) - เหล็ก (Fe) - ความเป็นด่าง (Alkalinity) - ความขุ่น (Turbidity) - แบคทีเรียทั้งหมด (Total Bacteria)	- Standard Method for The Examination of Water and Wastewater ของ APHA, AWWA and WEF 23 <sup>rd</sup> Edition, 2017	- Monitoring Well	- 2 ครั้ง/ปี	- บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)

ลงชื่อ..... (นายพิษณุพงศ์ ณ บางช้าง) กรรมการผู้จัดการ บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)	บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)  มกราคม 2567	ลงชื่อ..... (นางสาวจันทรา เกติมี) ผู้อำนวยการสิ่งแวดล้อม บริษัท วิชั่น อี คอนซิลแทนท์ จำกัด	 บริษัท วิชั่น อี คอนซิลแทนท์ จำกัด	หน้า 9/10
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ตารางที่ 2 (ต่อ-3)

องค์ประกอบ ด้านสิ่งแวดล้อม	ดัชนีที่ใช้ติดตามตรวจสอบ	วิธีวิเคราะห์/ตรวจวัด	สถานที่ติดตามตรวจสอบ	ความถี่	ผู้รับผิดชอบ
4. โลหะหนักในตะกอนดิน	- สารหนู (As) - โครเมียมเฮกซะวาเลนต์ (Cr <sup>6+</sup> ) - ตะกั่ว (Pb) - นิกเกิล (Ni)	- Standard Method for The Examination of Water and Wastewater ของ APHA, AWWA and WEF 23 <sup>rd</sup> Edition, 2017	จำนวน 2 สถานี ได้แก่ - ฝายหนองมะขาม - คลองวังด้วน	- 1 ครั้ง/ปี	- บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)
5. สุขภาพอนามัย	- บันทึกอุบัติเหตุ และโรคร้ายที่เกิดขึ้นในโรงงานอุตสาหกรรม	- บันทึกสถิติการเกิดอุบัติเหตุทุกครั้ง และสถิติการเจ็บป่วย	- บริเวณนิคมอุตสาหกรรม	- ตลอดระยะเวลาดำเนินโครงการ	- บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)
	- รวบรวมข้อมูลสถิติเกี่ยวกับโรค โดยเฉพาะโรคระบบทางเดินหายใจจากหน่วยงานสาธารณสุขภายในพื้นที่อำเภอแปลงยาว	- บันทึกข้อมูลสถิติเกี่ยวกับโรค โดยเฉพาะโรคระบบทางเดินหายใจจากหน่วยงานสาธารณสุขภายในพื้นที่อำเภอแปลงยาว	- หน่วยงานสาธารณสุขในอำเภอแปลงยาว	- ตลอดระยะเวลาดำเนินโครงการ	- บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)

ลงชื่อ..... (นายพิชญพงศ์ ณ บางช้าง) กรรมการผู้จัดการ บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)		ลงชื่อ..... (นางสาวจันทรา เกิดมี) ผู้อำนวยการสิ่งแวดล้อม บริษัท วิชั่น อี คอนซัลแทนท์ จำกัด	 บริษัท วิชั่น อี คอนซัลแทนท์ จำกัด	หน้า 10/10
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ภาคผนวกที่ 2

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ผลการติดตามตรวจสอบผลกระทบสิ่งแวดล้อม

Request No. LA68-0754

Report No. 6808-0023

## TEST REPORT

CUSTOMER : MDX Public Co.,Ltd.

ADDRESS : Gateway City Industrial Estate T. Huasomrong, Plangyao District, Chachoengsao 24190

SAMPLE SOURCE : MDX Public Co.,Ltd.

SAMPLE POINT : ปล่องเตาเผาขยะ

SAMPLING DATE : 24/07/2025

SAMPLE NO. : 03635-03636

RECEIVED DATE : 25/07/2025

SAMPLING TIME : 09:15-10:00

TESTED DATE : 25-31/07/2025

REPORTED DATE : 05/08/2025

STACK DESCRIPTION<sup>@</sup>

Height : 21.00 m

Diameter : 0.70 m

Temperature : 130.00 °C

Air Velocity : 8.74 m/s

Flow rate<sup>2</sup> : 2.30 m<sup>3</sup>/s

Moisture Content : 6.30 %

Type Of Process : Combustion

Type Of Fuel : LPG

Operation Capacity : 360 Kg/hr.

Oxygen Content : 17.65 %

Barometric Pressure : 751.00 mmHg

Atmospheric Temperature : 31.00 °C

PARAMETER	TEST METHOD	TIME	RESULT <sup>2</sup>		STD <sup>1</sup>	UNIT
			17.65 % O <sub>2</sub>	7 % O <sub>2</sub>		
Total Suspended Particulate (TSP)	Isokinetic, Gravimetric (U.S. EPA Method 5)	09:15-10:00	13.3	56.9	400	mg/m <sup>3</sup>
Sulfur Dioxide (SO <sub>2</sub> )	Absorption, Barium-Thorin Titrimetric (U.S. EPA Method 6)	09:15-09:45	<1.3	<5.6	78.5	mg/m <sup>3</sup>
			<0.5	<2.1	30	ppm

## REMARK:

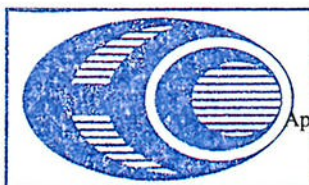
- <sup>1</sup> Notification of The Ministry of Natural Resources and Environment B.E. 2553 (2010)
- <sup>2</sup> Standard Condition (Temperature 25°C, Pressure 760 mmHg) and Dry Basis
- <sup>@</sup> These Data Outside The Scope of The Registration of The Department of Industrial Works.
- Sampling By Mr. Nitchaphon Tonglor (ว-003-ค-0032)

Examined By.....

(Miss Apiradee Chuen-arom)

(ว-003-ค-0007)

05/08/2025



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By.....

(Mr. Thongchai Boonsak)

(ว-003-ค-0012)

05/08/2025

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Request No. ATR6808001

Report No. 6808-0001 - 6808-0003

## TEST REPORT

CUSTOMER : MDX Public Co.,Ltd.  
ADDRESS : Gateway City Industrial Estate T. Huasomrong, Plangyao District, Chachoengsao 24190  
SAMPLE SOURCE : MDX Public Co.,Ltd.  
SAMPLE NAME : บ้านไผ่ล้อม  
RECEIVED DATE : 01/08/2025 SAMPLE NO. : A68080001 - A68080003  
TESTED DATE : 01/08/2025-02/08/2025 REPORTED DATE : 06/08/2025

PARAMETER*	TEST METHOD	SAMPLING DATE	RESULT	STD <sup>1/</sup>	UNIT
Total Suspended Particulate (TSP)	Gravimetric Method	23-24/07/2025	0.034	0.33	mg/m <sup>3</sup>
		24-25/07/2025	0.053	0.33	mg/m <sup>3</sup>
		25-26/07/2025	0.053	0.33	mg/m <sup>3</sup>

## REMARK:

<sup>1/</sup> Notification of The National Environmental Board Volume 24 B.E.2547 (2004) Standard for 24-hr Average.

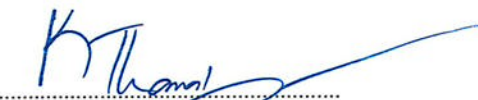
\* Parameter Outside The Scope of The Registration of The Department of Industrial Works.

(Sampling By Mr. Suphakorn Noppompitak)



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By



(Miss Thanatporn Klinsoon)

06/08/2025

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Request No. ATR6808001

Report No. 6808-0007 - 6808-0009

## TEST REPORT

CUSTOMER : MDX Public Co.,Ltd.  
ADDRESS : Gateway City Industrial Estate T. Huasomrong, Plangyao District, Chachoengsao 24190  
SAMPLE SOURCE : MDX Public Co.,Ltd.  
SAMPLE NAME : บำเนินไร  
RECEIVED DATE : 01/08/2025 SAMPLE NO. : A68080007 - A68080009  
TESTED DATE : 01/08/2025-02/08/2025 REPORTED DATE : 06/08/2025

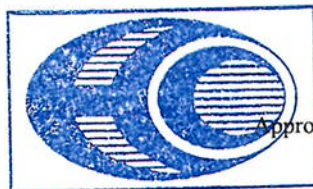
PARAMETER*	TEST METHOD	SAMPLING DATE	RESULT	STD <sup>/1</sup>	UNIT
Total Suspended Particulate (TSP)	Gravimetric Method	23-24/07/2025	0.039	0.33	mg/m <sup>3</sup>
		24-25/07/2025	0.054	0.33	mg/m <sup>3</sup>
		25-26/07/2025	0.055	0.33	mg/m <sup>3</sup>

## REMARK:

<sup>/1</sup> Notification of The National Environmental Board Volume 24 B.E.2547 (2004) Standard for 24-hr Average.

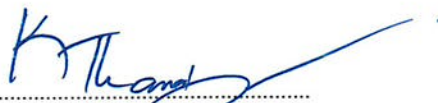
\* Parameter Outside The Scope of The Registration of The Department of Industrial Works.

(Sampling By Mr. Suphakorn Noppornpitak)



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By



(Miss Thanatporn Klinsopon)

06/08/2025

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Request No. ATR6808001

Report No. 6808-0010 - 6808-0012

## TEST REPORT

CUSTOMER : MDX Public Co.,Ltd.  
ADDRESS : Gateway City Industrial Estate T. Huasomrong, Plangyao District, Chachoengsao 24190  
SAMPLE SOURCE : MDX Public Co.,Ltd.  
SAMPLE NAME : บ้านแปลงขาวบน  
RECEIVED DATE : 01/08/2025 SAMPLE NO. : A68080010 - A68080012  
TESTED DATE : 01/08/2025-02/08/2025 REPORTED DATE : 06/08/2025

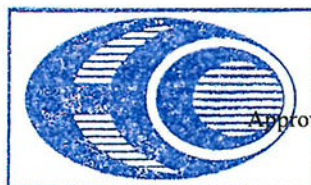
PARAMETER*	TEST METHOD	SAMPLING DATE	RESULT	STD <sup>/1</sup>	UNIT
Total Suspended Particulate (TSP)	Gravimetric Method	23-24/07/2025	0.035	0.33	mg/m <sup>3</sup>
		24-25/07/2025	0.045	0.33	mg/m <sup>3</sup>
		25-26/07/2025	0.046	0.33	mg/m <sup>3</sup>

## REMARK:

<sup>/1</sup> Notification of The National Environmental Board Volume 24 B.E.2547 (2004) Standard for 24-hr Average.

\* Parameter Outside The Scope of The Registration of The Department of Industrial Works.

(Sampling By Mr. Suphakorn Noppornpitak)



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By



(Miss Thanatporn Klinsoyon)

06/08/2025

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Request No. ATR6808001

Report No. 6808-0004 - 6808-0006

## TEST REPORT

CUSTOMER : MDX Public Co.,Ltd.  
ADDRESS : Gateway City Industrial Estate T. Huasomrong, Plangyao District, Chachoengsao 24190  
SAMPLE SOURCE : MDX Public Co.,Ltd.  
SAMPLE NAME : บ้านแปลงไม้แดง  
RECEIVED DATE : 01/08/2025 SAMPLE NO. : A68080004 - A68080006  
TESTED DATE : 01/08/2025-02/08/2025 REPORTED DATE : 06/08/2025

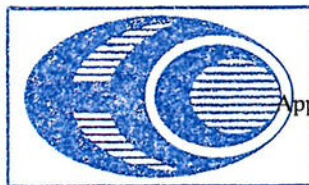
PARAMETER*	TEST METHOD	SAMPLING DATE	RESULT	STD <sup>/1</sup>	UNIT
Total Suspended Particulate (TSP)	Gravimetric Method	23-24/07/2025	0.043	0.33	mg/m <sup>3</sup>
		24-25/07/2025	0.062	0.33	mg/m <sup>3</sup>
		25-26/07/2025	0.066	0.33	mg/m <sup>3</sup>

## REMARK:

<sup>/1</sup> Notification of The National Environmental Board Volume 24 B.E.2547 (2004) Standard for 24-hr Average.

\* Parameter Outside The Scope of The Registration of The Department of Industrial Works.

(Sampling By Mr. Suphakorn Noppornpitak)



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By .....

(Miss Thanatporn Klinsopon)

06/08/2025

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Request No. LA68-R0803

Report No. R6808-0004 - R6808-0006

## TEST REPORT

CUSTOMER : MDX Public Co., Ltd.  
ADDRESS : Gateway City Industrial Estate T. Huasomrong, Plangyao District, Chachoengsao 24190  
SAMPLE SOURCE : MDX Public Co., Ltd.  
SAMPLE POINT : บ้านไผ่ล้อม  
PARAMETER\* : Sulfur Dioxide  
DETERMINATION METHOD : UV-Fluorescence  
INSTRUMENT : API Model M100E S/N 3137

SAMPLE NO. : 26063-26065  
SAMPLING DATE : 23-26/07/2025  
RECEIVED DATE : 26/07/2025  
REPORTED DATE : 02/08/2025

TIME / DATE	23-24/07/2025	24-25/07/2025	25-26/07/2025	UNIT
10:00 - 11:00 <sup>1/3</sup>	0.004	0.005	0.004	ppm
11:00 - 12:00	0.004	0.004	0.004	ppm
12:00 - 13:00	0.004	0.004	0.004	ppm
13:00 - 14:00	0.004	0.004	0.004	ppm
14:00 - 15:00	0.004	0.004	0.004	ppm
15:00 - 16:00	0.004	0.004	0.004	ppm
16:00 - 17:00	0.004	0.004	0.004	ppm
17:00 - 18:00	0.004	0.004	0.004	ppm
18:00 - 19:00	0.004	0.004	0.004	ppm
19:00 - 20:00	0.004	0.004	0.004	ppm
20:00 - 21:00	0.004	0.004	0.004	ppm
21:00 - 22:00	0.004	0.004	0.004	ppm
22:00 - 23:00	0.004	0.004	0.004	ppm
23:00 - 00:00	0.004	0.004	0.004	ppm
00:00 - 01:00	0.004	0.004	0.004	ppm
01:00 - 02:00	0.004	0.004	0.004	ppm
02:00 - 03:00	0.004	0.004	0.004	ppm
03:00 - 04:00	0.004	0.004	0.004	ppm
04:00 - 05:00	0.004	0.004	0.004	ppm
05:00 - 06:00	0.004	0.004	0.004	ppm
06:00 - 07:00	0.004	0.004	0.004	ppm
07:00 - 08:00	0.004	0.004	0.004	ppm
08:00 - 09:00	0.004	0.004	0.004	ppm
09:00 - 10:00	0.004	0.004	0.004	ppm
Maximum 1 hr.	0.004	0.005	0.004	ppm
Average 24 hr.	0.004	0.004	0.004	ppm
Standard (1 hr.) <sup>1/1</sup>	0.30	0.30	0.30	ppm
Standard (Average 24 hr.) <sup>1/2</sup>	0.12	0.12	0.12	ppm

REMARK : <sup>1/1</sup> Notification of The National Environmental Board Volume 12 B.E. 2538 (1995) and Volume 21 B.E. 2544 (2001)<sup>1/2</sup> Notification of The National Environmental Board Volume 24 B.E. 2547 (2004)<sup>1/3</sup> Start Time\* Parameter Outside The Scope of The Regulation of The Department of Industrial Works  
(Measurement By Mr. Suphakorn Nopphatpach)

Approved By.....

(MS. THANATPORN KLINSOPON)

02/08/2025

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

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Request No. LA68-R0803

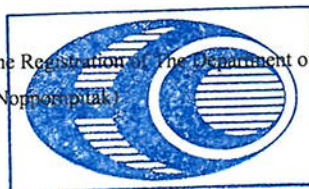
Report No. R6808-0022 - R6808-0024

## TEST REPORT

CUSTOMER : MDX Public Co., Ltd.  
ADDRESS : Gateway City Industrial Estate T. Huasomrong, Plangyao District, Chachoengsao 24190  
SAMPLE SOURCE : MDX Public Co., Ltd.  
SAMPLE POINT : บ้านเนินไร่  
PARAMETER\* : Sulfur Dioxide  
DETERMINATION METHOD : UV-Fluorescence  
INSTRUMENT : API Model T100 S/N 6458

SAMPLE NO. : 26081-26083  
SAMPLING DATE : 23-26/07/2025  
RECEIVED DATE : 26/07/2025  
REPORTED DATE : 02/08/2025

TIME / DATE	23-24/07/2025	24-25/07/2025	25-26/07/2025	UNIT
11:00 - 12:00 <sup>/3</sup>	0.004	0.004	0.004	ppm
12:00 - 13:00	0.003	0.004	0.004	ppm
13:00 - 14:00	0.004	0.003	0.003	ppm
14:00 - 15:00	0.004	0.004	0.004	ppm
15:00 - 16:00	0.003	0.004	0.004	ppm
16:00 - 17:00	0.003	0.004	0.004	ppm
17:00 - 18:00	0.003	0.004	0.004	ppm
18:00 - 19:00	0.003	0.004	0.004	ppm
19:00 - 20:00	0.003	0.004	0.004	ppm
20:00 - 21:00	0.004	0.004	0.004	ppm
21:00 - 22:00	0.003	0.004	0.004	ppm
22:00 - 23:00	0.003	0.004	0.004	ppm
23:00 - 00:00	0.003	0.004	0.004	ppm
00:00 - 01:00	0.003	0.004	0.004	ppm
01:00 - 02:00	0.003	0.004	0.004	ppm
02:00 - 03:00	0.004	0.004	0.004	ppm
03:00 - 04:00	0.004	0.004	0.004	ppm
04:00 - 05:00	0.004	0.004	0.004	ppm
05:00 - 06:00	0.003	0.003	0.004	ppm
06:00 - 07:00	0.004	0.004	0.004	ppm
07:00 - 08:00	0.003	0.004	0.004	ppm
08:00 - 09:00	0.003	0.004	0.004	ppm
09:00 - 10:00	0.004	0.004	0.004	ppm
10:00 - 11:00	0.004	0.004	0.004	ppm
Maximum 1 hr.	0.004	0.004	0.004	ppm
Average 24 hr.	0.003	0.004	0.004	ppm
Standard (1 hr.) <sup>/1</sup>	0.30	0.30	0.30	ppm
Standard (Average 24 hr.) <sup>/2</sup>	0.12	0.12	0.12	ppm

REMARK : <sup>/1</sup> Notification of The National Environmental Board Volume 12 B.E. 2538 (1995) and Volume 21 B.E. 2544 (2001)<sup>/2</sup> Notification of The National Environmental Board Volume 24 B.E. 2547 (2004)<sup>/3</sup> Start Time\* Parameter Outside The Scope of The Registration of The Department of Industrial Works  
(Measurement By Mr. Suphakorn Nopporitpak)Approved By.....  
(MS. THANATPORN KLINSOPON)

02/08/2025

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด  
REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
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Request No. LA68-R0803

Report No. R6808-0016 - R6808-0018

## TEST REPORT

CUSTOMER : MDX Public Co., Ltd.  
ADDRESS : Gateway City Industrial Estate T. Huasomrong, Plangyao District, Chachoengsao 24190  
SAMPLE SOURCE : MDX Public Co., Ltd.  
SAMPLE POINT : บ้านแปลงยาวบน  
PARAMETER\* : Sulfur Dioxide  
DETERMINATION METHOD : UV-Fluorescence  
INSTRUMENT : API Model T100 S/N 1607

SAMPLE NO. : 26075-26077  
SAMPLING DATE : 23-26/07/2025  
RECEIVED DATE : 26/07/2025  
REPORTED DATE : 02/08/2025

TIME / DATE	23-24/07/2025	24-25/07/2025	25-26/07/2025	UNIT
11:00 - 12:00 <sup>3</sup>	0.003	0.002	0.003	ppm
12:00 - 13:00	0.003	0.003	0.003	ppm
13:00 - 14:00	0.003	0.002	0.003	ppm
14:00 - 15:00	0.003	0.003	0.003	ppm
15:00 - 16:00	0.003	0.002	0.003	ppm
16:00 - 17:00	0.003	0.002	0.003	ppm
17:00 - 18:00	0.003	0.002	0.003	ppm
18:00 - 19:00	0.003	0.003	0.003	ppm
19:00 - 20:00	0.003	0.002	0.002	ppm
20:00 - 21:00	0.003	0.003	0.002	ppm
21:00 - 22:00	0.003	0.002	0.002	ppm
22:00 - 23:00	0.003	0.002	0.002	ppm
23:00 - 00:00	0.002	0.003	0.002	ppm
00:00 - 01:00	0.002	0.003	0.002	ppm
01:00 - 02:00	0.002	0.003	0.003	ppm
02:00 - 03:00	0.003	0.002	0.002	ppm
03:00 - 04:00	0.003	0.002	0.003	ppm
04:00 - 05:00	0.003	0.003	0.003	ppm
05:00 - 06:00	0.003	0.002	0.003	ppm
06:00 - 07:00	0.002	0.002	0.003	ppm
07:00 - 08:00	0.002	0.003	0.003	ppm
08:00 - 09:00	0.002	0.002	0.003	ppm
09:00 - 10:00	0.002	0.003	0.003	ppm
10:00 - 11:00	0.002	0.002	0.003	ppm
Maximum 1 hr.	0.003	0.003	0.003	ppm
Average 24 hr.	0.003	0.002	0.003	ppm
Standard (1 hr.) <sup>1</sup>	0.30	0.30	0.30	ppm
Standard (Average 24 hr.) <sup>2</sup>	0.12	0.12	0.12	ppm

REMARK : <sup>1</sup> Notification of The National Environmental Board Volume 12 B.E. 2538 (1995) and Volume 21 B.E. 2544 (2001)<sup>2</sup> Notification of The National Environmental Board Volume 24 B.E. 2547 (2004)<sup>3</sup> Start Time\* Parameter Outside The Scope of The Registration of The Department of Industrial Works  
(Measurement By Mr. Suphakorn Noppornitak)

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
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Approved By.....

(MS. THANATPORN KLINSOPON)

02/08/2025

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Request No. LA68-R0803

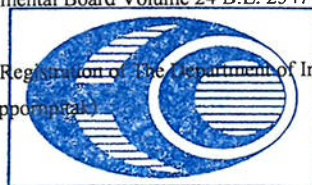
Report No. R6808-0010 - R6808-0012

## TEST REPORT

CUSTOMER : MDX Public Co., Ltd.  
ADDRESS : Gateway City Industrial Estate T. Huasomrong, Plangyao District, Chachoengsao 24190  
SAMPLE SOURCE : MDX Public Co., Ltd.  
SAMPLE POINT : บ้านแปลงไม้แดง  
PARAMETER\* : Sulfur Dioxide  
DETERMINATION METHOD : UV-Fluorescence  
INSTRUMENT : API Model M100E S/N 3138

SAMPLE NO. : 26069-26071  
SAMPLING DATE : 23-26/07/2025  
RECEIVED DATE : 26/07/2025  
REPORTED DATE : 02/08/2025

TIME / DATE	23-24/07/2025	24-25/07/2025	25-26/07/2025	UNIT
10:00 - 11:00 <sup>3</sup>	0.004	0.004	0.005	ppm
11:00 - 12:00	0.004	0.004	0.004	ppm
12:00 - 13:00	0.004	0.004	0.004	ppm
13:00 - 14:00	0.004	0.004	0.004	ppm
14:00 - 15:00	0.004	0.004	0.004	ppm
15:00 - 16:00	0.004	0.004	0.004	ppm
16:00 - 17:00	0.004	0.004	0.004	ppm
17:00 - 18:00	0.004	0.004	0.004	ppm
18:00 - 19:00	0.005	0.004	0.004	ppm
19:00 - 20:00	0.005	0.004	0.004	ppm
20:00 - 21:00	0.005	0.004	0.005	ppm
21:00 - 22:00	0.005	0.005	0.005	ppm
22:00 - 23:00	0.005	0.005	0.005	ppm
23:00 - 00:00	0.005	0.005	0.005	ppm
00:00 - 01:00	0.005	0.004	0.005	ppm
01:00 - 02:00	0.005	0.004	0.005	ppm
02:00 - 03:00	0.005	0.005	0.004	ppm
03:00 - 04:00	0.005	0.005	0.005	ppm
04:00 - 05:00	0.005	0.005	0.005	ppm
05:00 - 06:00	0.005	0.005	0.005	ppm
06:00 - 07:00	0.005	0.005	0.005	ppm
07:00 - 08:00	0.005	0.005	0.005	ppm
08:00 - 09:00	0.004	0.005	0.005	ppm
09:00 - 10:00	0.005	0.005	0.005	ppm
Maximum 1 hr.	0.005	0.005	0.005	ppm
Average 24 hr.	0.004	0.004	0.004	ppm
Standard (1 hr.) <sup>1</sup>	0.30	0.30	0.30	ppm
Standard (Average 24 hr.) <sup>2</sup>	0.12	0.12	0.12	ppm

REMARK : <sup>1</sup> Notification of The National Environmental Board Volume 12 B.E. 2538 (1995) and Volume 21 B.E. 2544 (2001)<sup>2</sup> Notification of The National Environmental Board Volume 24 B.E. 2547 (2004)<sup>3</sup> Start Time\* Parameter Outside The Scope of The Regulation of The Department of Industrial Works  
(Measurement By Mr. Suphakorn Noppornrat)

Approved By.....

(MS. THANATPORN KLINSOPON)

02/08/2025

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

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Request No. LA68-R0803

Report No. R6808-0007 - R6808-0009

## TEST REPORT

CUSTOMER : MDX Public Co., Ltd.  
ADDRESS : Gateway City Industrial Estate T. Huasomrong, Plangyao District, Chachoengsao 24190  
SAMPLE SOURCE : MDX Public Co., Ltd.  
SAMPLE POINT : บ้านไผ่ล้อม  
PARAMETER\* : Nitrogen Dioxide  
DETERMINATION METHOD : Chemiluminescence  
INSTRUMENT : API Model T200 S/N 7874

SAMPLE NO. : 26066-26068  
SAMPLING DATE : 23-26/07/2025  
RECEIVED DATE : 26/07/2025  
REPORTED DATE : 02/08/2025

TIME / DATE	23-24/07/2025	24-25/07/2025	25-26/07/2025	UNIT
10:00 - 11:00 <sup>/2</sup>	0.004	0.002	0.003	ppm
11:00 - 12:00	0.004	0.004	0.005	ppm
12:00 - 13:00	0.003	0.008	0.010	ppm
13:00 - 14:00	0.003	0.004	0.003	ppm
14:00 - 15:00	0.003	0.003	0.002	ppm
15:00 - 16:00	0.003	0.003	0.002	ppm
16:00 - 17:00	0.003	0.003	0.002	ppm
17:00 - 18:00	0.004	0.003	0.003	ppm
18:00 - 19:00	0.003	0.004	0.005	ppm
19:00 - 20:00	0.005	0.005	0.007	ppm
20:00 - 21:00	0.006	0.007	0.008	ppm
21:00 - 22:00	0.005	0.009	0.010	ppm
22:00 - 23:00	0.005	0.006	0.006	ppm
23:00 - 00:00	0.004	0.005	0.004	ppm
00:00 - 01:00	0.003	0.005	0.004	ppm
01:00 - 02:00	0.004	0.004	0.005	ppm
02:00 - 03:00	0.004	0.004	0.005	ppm
03:00 - 04:00	0.003	0.004	0.004	ppm
04:00 - 05:00	0.002	0.003	0.004	ppm
05:00 - 06:00	0.002	0.003	0.004	ppm
06:00 - 07:00	0.002	0.003	0.003	ppm
07:00 - 08:00	0.004	0.003	0.003	ppm
08:00 - 09:00	0.003	0.002	0.003	ppm
09:00 - 10:00	0.003	0.002	0.002	ppm
Maximum 1 hr.	0.006	0.009	0.010	ppm
Average 24 hr.	0.004	0.004	0.004	ppm
Standard (1 hr.) <sup>/1</sup>	0.17	0.17	0.17	ppm

REMARK : <sup>/1</sup> Notification of The National Environmental Board Volume 33 B.E. 2552 (2009)<sup>/2</sup> Start Time\* Parameter Outside The Scope of The Registration of The Department of Industrial Works  
(Measurement By Mr. Suphakorn Noppornphak)

Approved By.....

(MS. THANATPORN KLINSOPON)

02/08/2025

บริษัท อีสเทิร์นไทยคอนซัลติง 1992 จำกัด  
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Request No. LA68-R0803

Report No. R6808-0025 - R6808-0027

## TEST REPORT

CUSTOMER : MDX Public Co., Ltd.  
 ADDRESS : Gateway City Industrial Estate T. Huasomrong, Plangyao District, Chachoengsao 24190  
 SAMPLE SOURCE : MDX Public Co., Ltd.  
 SAMPLE POINT : บ้านเนินไร่  
 PARAMETER\* : Nitrogen Dioxide  
 DETERMINATION METHOD : Chemiluminescence  
 INSTRUMENT : API Model T200 S/N 7875

SAMPLE NO. : 26084-26086  
 SAMPLING DATE : 23-26/07/2025  
 RECEIVED DATE : 26/07/2025  
 REPORTED DATE : 02/08/2025

TIME / DATE	23-24/07/2025	24-25/07/2025	25-26/07/2025	UNIT
11:00 - 12:00 <sup>/2</sup>	0.002	0.002	0.002	ppm
12:00 - 13:00	0.002	0.002	0.003	ppm
13:00 - 14:00	0.002	0.002	0.003	ppm
14:00 - 15:00	0.002	0.002	0.002	ppm
15:00 - 16:00	0.002	0.001	0.003	ppm
16:00 - 17:00	0.002	0.002	0.002	ppm
17:00 - 18:00	0.003	0.002	0.002	ppm
18:00 - 19:00	0.004	0.002	0.003	ppm
19:00 - 20:00	0.006	0.002	0.003	ppm
20:00 - 21:00	0.005	0.002	0.002	ppm
21:00 - 22:00	0.002	0.002	0.003	ppm
22:00 - 23:00	0.002	0.002	0.003	ppm
23:00 - 00:00	0.002	0.003	0.002	ppm
00:00 - 01:00	0.002	0.002	0.003	ppm
01:00 - 02:00	0.003	0.002	0.003	ppm
02:00 - 03:00	0.002	0.002	0.003	ppm
03:00 - 04:00	0.002	0.002	0.002	ppm
04:00 - 05:00	0.003	0.003	0.002	ppm
05:00 - 06:00	0.003	0.002	0.002	ppm
06:00 - 07:00	0.002	0.002	0.001	ppm
07:00 - 08:00	0.002	0.002	0.001	ppm
08:00 - 09:00	0.002	0.002	0.002	ppm
09:00 - 10:00	0.002	0.002	0.002	ppm
10:00 - 11:00	0.002	0.002	0.002	ppm
Maximum 1 hr.	0.006	0.003	0.003	ppm
Average 24 hr.	0.003	0.002	0.002	ppm
Standard (1 hr.) <sup>/1</sup>	0.17	0.17	0.17	ppm

REMARK : <sup>/1</sup> Notification of The National Environmental Board Volume 33 B.E. 2552 (2009)<sup>/2</sup> Start Time\* Parameter Outside The Scope of The Registration of The Department of Industrial Works  
(Measurement By Mr. Suphakorn Noppornpitak)

Approved By.....

(MS. THANATPORN KLINSOPON)

02/08/2025

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

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Request No. LA68-R0803

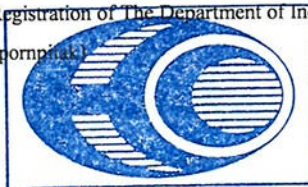
Report No. R6808-0019 - R6808-0021

## TEST REPORT

CUSTOMER : MDX Public Co., Ltd.  
 ADDRESS : Gateway City Industrial Estate T. Huasomrong, Plangyao District, Chachoengsao 24190  
 SAMPLE SOURCE : MDX Public Co., Ltd.  
 SAMPLE POINT : บ้านแปลงยาวบน  
 PARAMETER\* : Nitrogen Dioxide  
 DETERMINATION METHOD : Chemiluminescence  
 INSTRUMENT : API Model T200 S/N 7355

SAMPLE NO. : 26078-26080  
 SAMPLING DATE : 23-26/07/2025  
 RECEIVED DATE : 26/07/2025  
 REPORTED DATE : 02/08/2025

TIME / DATE	23-24/07/2025	24-25/07/2025	25-26/07/2025	UNIT
11:00 - 12:00 <sup>/2</sup>	0.002	0.002	0.002	ppm
12:00 - 13:00	0.002	0.002	0.002	ppm
13:00 - 14:00	0.003	0.002	0.002	ppm
14:00 - 15:00	0.002	0.002	0.002	ppm
15:00 - 16:00	0.002	0.002	0.002	ppm
16:00 - 17:00	0.002	0.002	0.002	ppm
17:00 - 18:00	0.002	0.002	0.002	ppm
18:00 - 19:00	0.002	0.002	0.001	ppm
19:00 - 20:00	0.002	0.002	0.002	ppm
20:00 - 21:00	0.002	0.002	0.002	ppm
21:00 - 22:00	0.002	0.002	0.002	ppm
22:00 - 23:00	0.002	0.002	0.002	ppm
23:00 - 00:00	0.002	0.002	0.002	ppm
00:00 - 01:00	0.002	0.002	0.002	ppm
01:00 - 02:00	0.002	0.002	0.002	ppm
02:00 - 03:00	0.002	0.002	0.002	ppm
03:00 - 04:00	0.002	0.002	0.002	ppm
04:00 - 05:00	0.002	0.002	0.002	ppm
05:00 - 06:00	0.002	0.002	0.002	ppm
06:00 - 07:00	0.002	0.002	0.002	ppm
07:00 - 08:00	0.002	0.002	0.002	ppm
08:00 - 09:00	0.002	0.002	0.001	ppm
09:00 - 10:00	0.002	0.002	0.002	ppm
10:00 - 11:00	0.002	0.002	0.002	ppm
Maximum 1 hr.	0.003	0.002	0.002	ppm
Average 24 hr.	0.002	0.002	0.002	ppm
Standard (1 hr.) <sup>/1</sup>	0.17	0.17	0.17	ppm

REMARK : <sup>/1</sup> Notification of The National Environmental Board Volume 33 B.E. 2552 (2009)<sup>/2</sup> Start Time\* Parameter Outside The Scope of The Registration of The Department of Industrial Works  
(Measurement By Mr. Suphakorn Noppornpitak)

Approved By.....

(MS. THANATPORN KLINSOPON)

02/08/2025

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

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Request No. LA68-R0803

Report No. R6808-0013 - R6808-0015

## TEST REPORT

CUSTOMER : MDX Public Co., Ltd.  
 ADDRESS : Gateway City Industrial Estate T. Huasomrong, Plangyao District, Chachoengsao 24190  
 SAMPLE SOURCE : MDX Public Co., Ltd.  
 SAMPLE POINT : บ้านแปลงไม้แดง  
 PARAMETER\* : Nitrogen Dioxide  
 DETERMINATION METHOD : Chemiluminescence  
 INSTRUMENT : API Model T200 S/N 6756

SAMPLE NO. : 26072-26074  
 SAMPLING DATE : 23-26/07/2025  
 RECEIVED DATE : 26/07/2025  
 REPORTED DATE : 02/08/2025

TIME / DATE	23-24/07/2025	24-25/07/2025	25-26/07/2025	UNIT
10:00 - 11:00 <sup>/2</sup>	0.003	0.003	0.005	ppm
11:00 - 12:00	0.003	0.003	0.004	ppm
12:00 - 13:00	0.003	0.002	0.004	ppm
13:00 - 14:00	0.003	0.002	0.002	ppm
14:00 - 15:00	0.003	0.003	0.002	ppm
15:00 - 16:00	0.002	0.003	0.002	ppm
16:00 - 17:00	0.002	0.003	0.003	ppm
17:00 - 18:00	0.003	0.003	0.003	ppm
18:00 - 19:00	0.004	0.005	0.005	ppm
19:00 - 20:00	0.004	0.005	0.005	ppm
20:00 - 21:00	0.005	0.005	0.006	ppm
21:00 - 22:00	0.004	0.008	0.009	ppm
22:00 - 23:00	0.004	0.006	0.008	ppm
23:00 - 00:00	0.003	0.005	0.008	ppm
00:00 - 01:00	0.004	0.005	0.007	ppm
01:00 - 02:00	0.004	0.005	0.006	ppm
02:00 - 03:00	0.003	0.004	0.005	ppm
03:00 - 04:00	0.004	0.004	0.005	ppm
04:00 - 05:00	0.003	0.005	0.006	ppm
05:00 - 06:00	0.002	0.005	0.007	ppm
06:00 - 07:00	0.003	0.005	0.007	ppm
07:00 - 08:00	0.004	0.004	0.006	ppm
08:00 - 09:00	0.003	0.005	0.006	ppm
09:00 - 10:00	0.004	0.004	0.005	ppm
Maximum 1 hr.	0.005	0.008	0.009	ppm
Average 24 hr.	0.003	0.004	0.005	ppm
Standard (1 hr.) <sup>/1</sup>	0.17	0.17	0.17	ppm

REMARK : <sup>/1</sup> Notification of The National Environmental Board Volume 33 B.E. 2552 (2009)<sup>/2</sup> Start Time\* Parameter Outside The Scope of The Registration of The Department of Industrial Works  
(Measurement By Mr. Suphakorn Noppornphax)

Approved By.....

(MS. THANATPORN KLINSOPON)

02/08/2025

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด  
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## Wind Speed &amp; Wind Direction

Request No. LA68-R0803

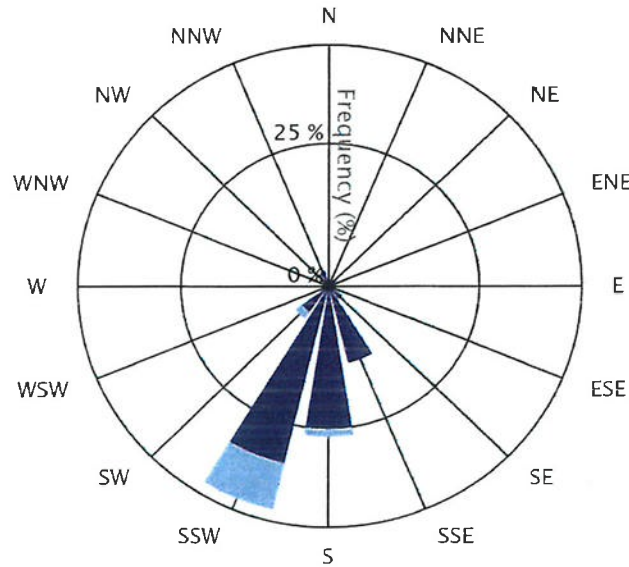
MDX Public Co., Ltd.

Sample No. 26093

Sampling Source : บ้านไผ่ล้อม

Sampling Date : July 23-26, 2025

Calm 5.6 %



0.4-1.9
  2.0-3.9
  4.0-5.9
  6.0-7.9
  8.0-9.9
  > 9.9 (m/s)

WD/WS	Percentage of Occurrence of Wind Direct Grouped in Various Wind Speed						Total
	0.4-1.9 m/s	2.0-3.9 m/s	4.0-5.9 m/s	6.0-7.9 m/s	8.0-9.9 m/s	> 9.9 m/s	
N	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNE	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NE	1.4	0.0	0.0	0.0	0.0	0.0	1.4
ENE	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ESE	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SE	2.8	0.0	0.0	0.0	0.0	0.0	2.8
SSE	13.9	0.0	0.0	0.0	0.0	0.0	13.9
S	25.0	1.4	0.0	0.0	0.0	0.0	26.4
SSW	31.9	8.3	0.0	0.0	0.0	0.0	40.2
SW	5.6	1.4	0.0	0.0	0.0	0.0	7.0
WSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NW	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNW	2.8	0.0	0.0	0.0	0.0	0.0	2.8
Total	83.3	11.1	0.0	0.0	0.0	0.0	

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## Wind Speed &amp; Wind Direction

Request No. LA68-R0803

MDX Public Co., Ltd.

Sample No. 26093

Sampling Source : บ้านไผ่ล้อม

Sampling Date : July 23-26, 2025

Time	July 23-24, 2025		July 24-25, 2025		July 25-26, 2025	
	Wind Speed (m/s)	Wind Direction	Wind Speed (m/s)	Wind Direction	Wind Speed (m/s)	Wind Direction
10:00-11:00	2.2	SSW	2.2	S	1.8	SSW
11:00-12:00	1.8	SSW	2.7	SSW	1.3	SSW
12:00-13:00	2.2	SW	2.2	SSW	1.3	SW
13:00-14:00	2.2	SSW	0.9	SSW	1.3	SSW
14:00-15:00	2.2	SSW	0.9	SSW	1.3	SW
15:00-16:00	2.2	SSW	1.3	SSW	1.8	SSW
16:00-17:00	1.8	SW	1.3	SSW	1.3	SSW
17:00-18:00	1.3	SW	1.3	SSW	1.3	SSW
18:00-19:00	1.8	SSW	0.9	SSW	0.9	SSW
19:00-20:00	0.4	SSW	0.9	SSW	0.9	SSW
20:00-21:00	0.4	S	0.4	SSW	0.4	SSW
21:00-22:00	0.9	S	0.4	SSW	0.9	S
22:00-23:00	0.9	S	1.3	S	0.9	SSE
23:00-00:00	0.9	S	0.4	SSE	1.3	SSE
00:00-01:00	0.9	S	0.4	SSE	0.9	SSE
01:00-02:00	0.9	SSE	0.4	S	0.9	SSE
02:00-03:00	0.9	S	0.4	S	0.4	S
03:00-04:00	0.4	SSW	0.4	S	0.4	S
04:00-05:00	0.4	NE	0.4	SSE	0.4	S
05:00-06:00	0.4	NNW	0.4	SSE	0.4	S
06:00-07:00	0.4	NNW	0.0	-	0.0	-
07:00-08:00	0.0	-	0.4	SE	0.0	-
08:00-09:00	0.9	SE	0.9	S	0.9	SSE
09:00-10:00	1.3	S	1.3	S	1.8	SSW

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## Wind Speed &amp; Wind Direction

Request No. LA68-R0803

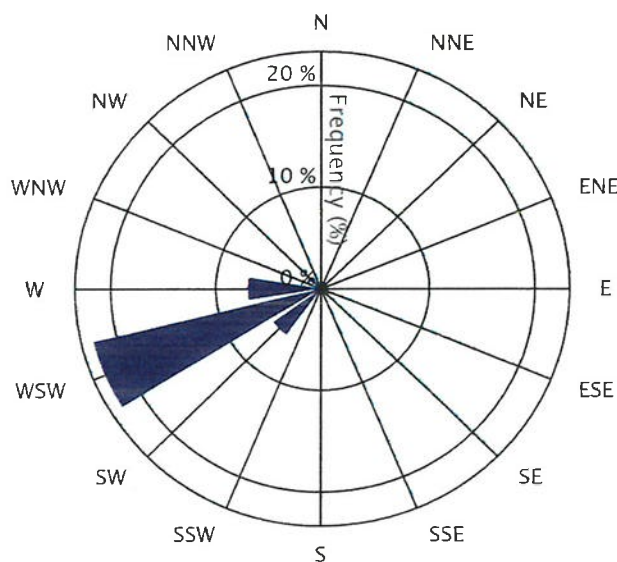
MDX Public Co., Ltd.

Sample No. 26096

Sampling Source : บ้านเนินไไร่

Sampling Date : July 23-26, 2025

Calm 63.9 %



0.4-1.9    2.0-3.9    4.0-5.9    6.0-7.9    8.0-9.9    &gt; 9.9 (m/s)

WD/WS	Percentage of Occurrence of Wind Direct Grouped in Various Wind Speed						Total
	0.4-1.9 m/s	2.0-3.9 m/s	4.0-5.9 m/s	6.0-7.9 m/s	8.0-9.9 m/s	> 9.9 m/s	
N	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNE	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NE	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENE	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ESE	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SE	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSE	0.0	0.0	0.0	0.0	0.0	0.0	0.0
S	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SW	5.6	0.0	0.0	0.0	0.0	0.0	5.6
WSW	22.2	0.0	0.0	0.0	0.0	0.0	22.2
W	6.9	0.0	0.0	0.0	0.0	0.0	6.9
WNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NW	1.4	0.0	0.0	0.0	0.0	0.0	1.4
NNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	36.1	0.0	0.0	0.0	0.0	0.0	

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## Wind Speed &amp; Wind Direction

Request No. LA68-R0803

MDX Public Co., Ltd.

Sample No. 26096

Sampling Source : บ้านเนินไไร่

Sampling Date : July 23-26, 2025

Time	July 23-24, 2025		July 24-25, 2025		July 25-26, 2025	
	Wind Speed (m/s)	Wind Direction	Wind Speed (m/s)	Wind Direction	Wind Speed (m/s)	Wind Direction
10:00-11:00	0.4	W	0.4	W	0.9	WSW
11:00-12:00	0.4	W	0.4	W	0.9	WSW
12:00-13:00	0.4	WSW	0.4	SW	0.4	WSW
13:00-14:00	0.4	WSW	0.4	SW	0.9	WSW
14:00-15:00	0.4	SW	0.4	WSW	0.4	WSW
15:00-16:00	0.4	WSW	0.4	WSW	0.4	WSW
16:00-17:00	0.4	WSW	0.4	WSW	0.0	-
17:00-18:00	0.0	-	0.0	-	0.0	-
18:00-19:00	0.0	-	0.0	-	0.0	-
19:00-20:00	0.0	-	0.0	-	0.0	-
20:00-21:00	0.0	-	0.0	-	0.0	-
21:00-22:00	0.0	-	0.0	-	0.0	-
22:00-23:00	0.0	-	0.0	-	0.0	-
23:00-00:00	0.0	-	0.0	-	0.0	-
00:00-01:00	0.0	-	0.0	-	0.0	-
01:00-02:00	0.0	-	0.0	-	0.0	-
02:00-03:00	0.0	-	0.0	-	0.0	-
03:00-04:00	0.0	-	0.0	-	0.0	-
04:00-05:00	0.0	-	0.0	-	0.0	-
05:00-06:00	0.0	-	0.0	-	0.0	-
06:00-07:00	0.0	-	0.0	-	0.0	-
07:00-08:00	0.0	-	0.0	-	0.0	-
08:00-09:00	0.4	NW	0.4	WSW	0.4	WSW
09:00-10:00	0.4	W	0.9	WSW	0.4	SW

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## Wind Speed &amp; Wind Direction

Request No. LA68-R0803

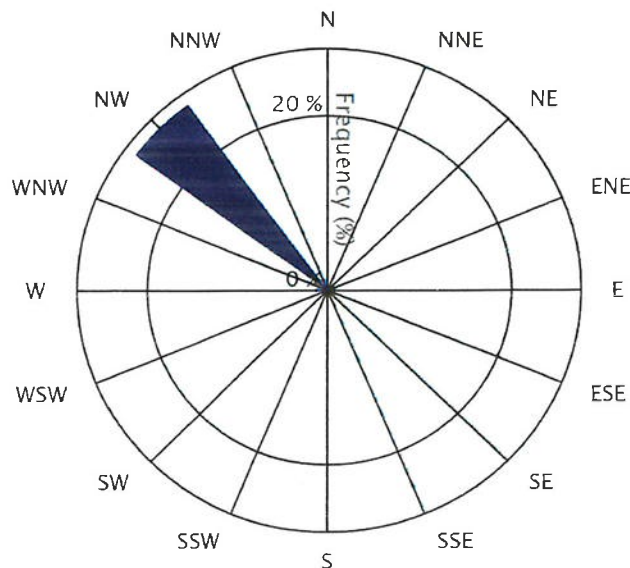
MDX Public Co., Ltd.

Sample No. 26095

Sampling Source : บ้านแปลงยาวบน

Sampling Date : July 23-26, 2025

Calm 70.8 %



0.4-1.9
  2.0-3.9
  4.0-5.9
  6.0-7.9
  8.0-9.9
  > 9.9 (m/s)

WD/WS	Percentage of Occurrence of Wind Direct Grouped in Various Wind Speed						Total
	0.4-1.9 m/s	2.0-3.9 m/s	4.0-5.9 m/s	6.0-7.9 m/s	8.0-9.9 m/s	> 9.9 m/s	
N	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNE	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NE	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENE	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ESE	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SE	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSE	0.0	0.0	0.0	0.0	0.0	0.0	0.0
S	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SW	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	1.4	0.0	0.0	0.0	0.0	0.0	1.4
WNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NW	26.4	0.0	0.0	0.0	0.0	0.0	26.4
NNW	1.4	0.0	0.0	0.0	0.0	0.0	1.4
Total	29.2	0.0	0.0	0.0	0.0	0.0	

COPY

## Wind Speed &amp; Wind Direction

Request No. LA68-R0803

MDX Public Co., Ltd.

Sample No. 26095

Sampling Source : บ้านแปลงยาวบน

Sampling Date : July 23-26, 2025

Time	July 23-24, 2025		July 24-25, 2025		July 25-26, 2025	
	Wind Speed (m/s)	Wind Direction	Wind Speed (m/s)	Wind Direction	Wind Speed (m/s)	Wind Direction
11:00-12:00	0.0	-	0.9	W	1.3	NW
12:00-13:00	0.0	-	0.9	NW	1.8	NW
13:00-14:00	0.0	-	1.3	NW	1.3	NNW
14:00-15:00	0.0	-	0.4	NW	1.3	NW
15:00-16:00	0.4	NW	0.4	NW	1.3	NW
16:00-17:00	1.3	NW	0.9	NW	0.9	NW
17:00-18:00	0.9	NW	0.9	NW	0.9	NW
18:00-19:00	0.0	-	0.4	NW	0.4	NW
19:00-20:00	0.0	-	0.0	-	0.0	-
20:00-21:00	0.0	-	0.0	-	0.0	-
21:00-22:00	0.0	-	0.0	-	0.0	-
22:00-23:00	0.0	-	0.0	-	0.0	-
23:00-00:00	0.0	-	0.0	-	0.0	-
00:00-01:00	0.0	-	0.0	-	0.0	-
01:00-02:00	0.0	-	0.0	-	0.0	-
02:00-03:00	0.0	-	0.0	-	0.0	-
03:00-04:00	0.0	-	0.0	-	0.0	-
04:00-05:00	0.0	-	0.0	-	0.0	-
05:00-06:00	0.0	-	0.0	-	0.0	-
06:00-07:00	0.0	-	0.0	-	0.0	-
07:00-08:00	0.0	-	0.0	-	0.0	-
08:00-09:00	0.0	-	0.0	-	0.0	-
09:00-10:00	0.0	-	0.0	-	0.0	-
10:00-11:00	0.0	-	0.4	NW	0.4	NW

COPY

## Wind Speed &amp; Wind Direction

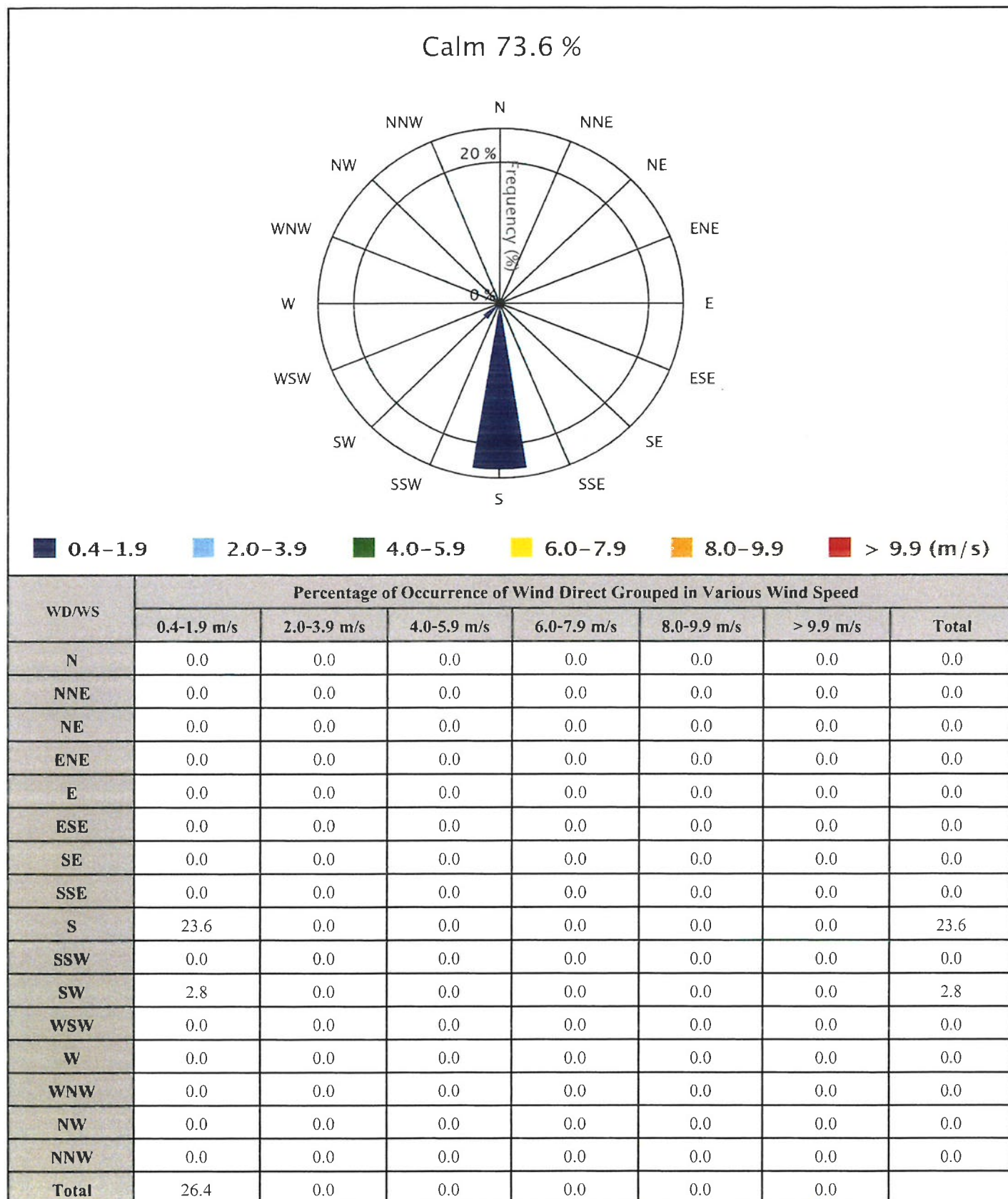
Request No. LA68-R0803

MDX Public Co., Ltd.

Sample No. 26094

Sampling Source : บ้านแปลงไม้แดง

Sampling Date : July 23-26, 2025



COPY

## Wind Speed &amp; Wind Direction

Request No. LA68-R0803

MDX Public Co., Ltd.

Sample No. 26094

Sampling Source : บ้านแปลงไม้แดง

Sampling Date : July 23-26, 2025

Time	July 23-24, 2025		July 24-25, 2025		July 25-26, 2025	
	Wind Speed (m/s)	Wind Direction	Wind Speed (m/s)	Wind Direction	Wind Speed (m/s)	Wind Direction
10:00-11:00	0.4	S	0.4	S	0.4	S
11:00-12:00	0.4	S	0.9	S	0.4	S
12:00-13:00	0.4	S	0.4	S	0.4	S
13:00-14:00	0.4	S	0.4	S	0.4	SW
14:00-15:00	0.4	S	0.0	-	0.4	SW
15:00-16:00	0.4	S	0.4	S	0.4	S
16:00-17:00	0.4	S	0.0	-	0.4	S
17:00-18:00	0.0	-	0.0	-	0.0	-
18:00-19:00	0.0	-	0.0	-	0.0	-
19:00-20:00	0.0	-	0.0	-	0.0	-
20:00-21:00	0.0	-	0.0	-	0.0	-
21:00-22:00	0.0	-	0.0	-	0.0	-
22:00-23:00	0.0	-	0.0	-	0.0	-
23:00-00:00	0.0	-	0.0	-	0.0	-
00:00-01:00	0.0	-	0.0	-	0.0	-
01:00-02:00	0.0	-	0.0	-	0.0	-
02:00-03:00	0.0	-	0.0	-	0.0	-
03:00-04:00	0.0	-	0.0	-	0.0	-
04:00-05:00	0.0	-	0.0	-	0.0	-
05:00-06:00	0.0	-	0.0	-	0.0	-
06:00-07:00	0.0	-	0.0	-	0.0	-
07:00-08:00	0.0	-	0.0	-	0.0	-
08:00-09:00	0.0	-	0.0	-	0.0	-
09:00-10:00	0.0	-	0.0	-	0.0	-

COPY

Request No. LA68-R0803

Report No. R6808-0031 - R6808-0033

## TEST REPORT

CUSTOMER : MDX Public Co., Ltd.  
ADDRESS : Gateway City Industrial Estate T. Huasomrong, Plangyao District, Chachoengsao 24190  
SAMPLE SOURCE : MDX Public Co., Ltd.  
SAMPLE POINT : บริเวณภายในพื้นที่โครงการ (สถานีดาวเทียม)  
PARAMETER\* :  $L_{eq}$  1 hr.,  $L_{eq}$  24 hr. &  $L_{dn}$  SAMPLE NO. : 26090-26092  
DETERMINATION METHOD : ISO 1996-1:2016 MEASURING DATE : 23-26/07/2025  
INSTRUMENT : Integrated Sound Level Meter RECEIVED DATE : 26/07/2025  
S/N 01120950 : Class 1 REPORTED DATE : 02/08/2025

TIME \ DATE	23-24/07/2025 ( $L_{eq}$ )	24-25/07/2025 ( $L_{eq}$ )	25-26/07/2025 ( $L_{eq}$ )	UNIT
11:00 - 12:00 <sup>1/</sup>	55.0	55.1	58.1	dB(A)
12:00 - 13:00	54.6	55.7	56.6	dB(A)
13:00 - 14:00	56.4	56.8	56.1	dB(A)
14:00 - 15:00	54.7	57.7	58.8	dB(A)
15:00 - 16:00	56.5	57.3	58.3	dB(A)
16:00 - 17:00	57.6	56.9	58.7	dB(A)
17:00 - 18:00	57.4	56.2	58.1	dB(A)
18:00 - 19:00	55.3	55.4	55.7	dB(A)
19:00 - 20:00	56.3	56.2	56.9	dB(A)
20:00 - 21:00	56.1	58.2	57.6	dB(A)
21:00 - 22:00	55.8	57.3	57.6	dB(A)
22:00 - 23:00	57.2	56.2	58.8	dB(A)
23:00 - 00:00	57.6	57.9	61.1	dB(A)
00:00 - 01:00	57.7	57.6	60.1	dB(A)
01:00 - 02:00	56.8	57.3	58.1	dB(A)
02:00 - 03:00	55.7	57.0	55.7	dB(A)
03:00 - 04:00	54.8	57.0	54.2	dB(A)
04:00 - 05:00	54.6	56.1	56.6	dB(A)
05:00 - 06:00	55.9	55.1	56.9	dB(A)
06:00 - 07:00	56.1	56.1	58.4	dB(A)
07:00 - 08:00	57.5	58.2	57.8	dB(A)
08:00 - 09:00	56.8	57.8	57.8	dB(A)
09:00 - 10:00	56.9	56.9	59.0	dB(A)
10:00 - 11:00	55.5	57.9	57.9	dB(A)
$L_{eq}$ 24 hr.	56.3	56.9	57.9	dB(A)
$L_{dn}$	62.8	63.2	64.6	dB(A)
Standard	70 <sup>1/,2/</sup>	70 <sup>1/,2/</sup>	70 <sup>1/,2/</sup>	dB(A)

REMARK : <sup>1/</sup> Notification of Office of The National Environmental Board Volume 15 B.E. 2540 (1997)<sup>2/</sup> Notification of Ministry of the Industry B.E. 2548 (2005)<sup>3/</sup> Start Time

\* Parameter Outside The Scope of The Registration of The Department of Industrial Works.

(Measurement By Mr. Suphakorn Noppornpitak)



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
THIS REPORT SHALL NOT REPRODUCED EXCEPT IN FULL  
WITHOUT THE WRITTEN APPROVAL LABORATORY

Approved By.....

(MRS. WANPEN LHAOCHINDAWAT)

02/08/2025

COPY

Request No. LA68-R0803

Report No. R6808-0028 - R6808-0030

## TEST REPORT

CUSTOMER : MDX Public Co., Ltd.  
ADDRESS : Gateway City Industrial Estate T. Huasomrong, Plangyao District, Chachoengsao 24190  
SAMPLE SOURCE : MDX Public Co., Ltd.  
SAMPLE POINT : บริเวณเตาเผาขยะ  
PARAMETER\* :  $L_{eq}$  1 hr.,  $L_{eq}$  24 hr. &  $L_{dn}$   
DETERMINATION METHOD : ISO 1996-1:2016  
INSTRUMENT : Integrated Sound Level Meter  
S/N 01120949 : Class 1

SAMPLE NO. : 26087-26089  
MEASURING DATE : 23-26/07/2025  
RECEIVED DATE : 26/07/2025  
REPORTED DATE : 02/08/2025

TIME \ DATE	23-24/07/2025 ( $L_{eq}$ )	24-25/07/2025 ( $L_{eq}$ )	25-26/07/2025 ( $L_{eq}$ )	UNIT
11:00 - 12:00 <sup>1/3</sup>	44.3	43.8	43.6	dB(A)
12:00 - 13:00	43.9	44.5	44.5	dB(A)
13:00 - 14:00	44.1	44.4	45.4	dB(A)
14:00 - 15:00	44.7	44.3	43.2	dB(A)
15:00 - 16:00	45.0	45.3	43.7	dB(A)
16:00 - 17:00	47.7	45.4	45.5	dB(A)
17:00 - 18:00	47.3	45.8	47.1	dB(A)
18:00 - 19:00	51.4	45.7	47.6	dB(A)
19:00 - 20:00	50.9	54.0	51.9	dB(A)
20:00 - 21:00	51.6	52.6	54.6	dB(A)
21:00 - 22:00	52.1	50.8	53.3	dB(A)
22:00 - 23:00	51.9	50.0	51.7	dB(A)
23:00 - 00:00	51.2	50.2	51.7	dB(A)
00:00 - 01:00	50.6	50.0	52.1	dB(A)
01:00 - 02:00	49.4	50.8	52.5	dB(A)
02:00 - 03:00	50.0	47.9	53.3	dB(A)
03:00 - 04:00	49.8	48.5	51.3	dB(A)
04:00 - 05:00	50.3	48.6	50.4	dB(A)
05:00 - 06:00	52.3	52.4	52.7	dB(A)
06:00 - 07:00	51.5	51.2	52.7	dB(A)
07:00 - 08:00	49.3	49.9	47.8	dB(A)
08:00 - 09:00	52.6	45.8	44.9	dB(A)
09:00 - 10:00	52.2	47.6	43.8	dB(A)
10:00 - 11:00	44.6	43.9	45.0	dB(A)
$L_{eq}$ 24 hr.	50.0	49.1	50.3	dB(A)
$L_{dn}$	57.1	56.4	58.2	dB(A)
Standard	70 <sup>1/2</sup>	70 <sup>1/2</sup>	70 <sup>1/2</sup>	dB(A)

REMARK : <sup>1/</sup> Notification of Office of The National Environmental Board Volume 15 B.E. 2540 (1997)<sup>2/</sup> Notification of Ministry of the Industry B.E. 2548 (2005)<sup>3/</sup> Start Time\* Parameter Outside The Scope of The Registration of The Department of Industrial Works.  
(Measurement By Mr. Suphakorn Noppornpitak)

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By.....

(MRS. WANPEN LHAOCHINDAWAT)

02/08/2025

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
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WITHOUT THE WRITTEN APPROVAL LABORATORY

COPY

## Test Report

Request No : W6807180

Report No : 6807-1502

Customer : MDX Public Co.,Ltd.\*\*

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110\*\*

Sampling Source : WWTP\*\*

Sample No : W 68070759

Sample Name : Influent\*\*

Sampling Date : 04/07/2025\*\*

Sampling By : ETC\*\*

Sampling Time : 9:05 AM - 3:05 PM\*\*

Sampling Method : Composit\*\*

Received Date : 05/07/2025

Tested Date : 07/07/2025 - 16/07/2025

Reported Date : 23/07/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Arsenic *	mg/L	Continuous Hydride Generation/AAS Method (SM:3114B)	< 0.0020	≤0.25
Biochemical Oxygen Demand #	mg/L	5-Day BOD Test, Membrane Electrode Method (SM:5210B)	13.8	≤500
Cadmium *	mg/L	Digestion, Inductively Coupled Plasma Method (SM:3030F, 3120B)	< 0.03	≤0.03
Chemical Oxygen Demand #	mg/L	Closed Reflux, Titrimetric Method (SM:5220C)	62	≤750
Copper *	mg/L	Digestion, Inductively Coupled Plasma Method (SM:3030F, 3120B)	0.03	≤2

Physical Appearance : 1. Sample : yellow, lightly SS

2. Container : Normal [ PE 0.5 L [ 4 Bottle], PE 1.0 L [ 2 Bottle ], PE 1.8 L, G 1.0 L ]

Remark : 1. /1 Notification of Industrial Estate Authority of Thailand 029 / 2567 (2024)

2. # = ISO/IEC 17025:2017 Accredited by DSS, SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

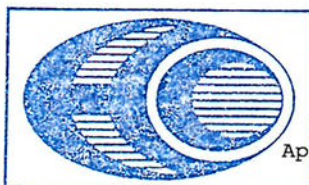
3. Miss Apiradee Chuen-arom is Section Head / Miss Nunnaphat Bakhuntod is Technical Management.

4. \* = Test Report/Sampling marked Not Accredited, Sampling By Mr. Parkpoom Buasawad (จ-003-ท-0017)\*

5. \*\* = These data are non laboratory data.

Examined By : .....

(Miss Apiradee Chuen-arom)  
(จ-003-ท-0007)  
23/07/2025



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)  
(จ-003-ท-0005)  
23/07/2025

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
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WITHOUT THE WRITTEN APPROVAL LABORATORY

## Test Report

Request No : W6807180

Report No : 6807-1502

Customer : MDX Public Co.,Ltd.\*\*

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110\*\*

Sampling Source : WWTP\*\*

Sample No : W 68070759

Sample Name : Influent\*\*

Sampling Date : 04/07/2025\*\*

Sampling By : ETC\*\*

Sampling Time : 9:05 AM - 3:05 PM\*\*

Sampling Method : Composit\*\*

Received Date : 05/07/2025

Tested Date : 07/07/2025 - 16/07/2025

Reported Date : 23/07/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Lead *	mg/L	Digestion, Inductively Coupled Plasma Method (SM:3030F, 3120B)	< 0.03	≤0.2
Mercury #	mg/L	Digestion, Cold -Vapor Atomic Absorption Spectrometric Method (SM:3112B)	< 0.0010	≤0.005
Oil and Grease *	mg/L	Liquid-Liquid, Partition-Gravimetric Method (SM:5520B)	< 3.0	≤10
pH (on site) *		Electrometric Method	6.7	5.5-9.0
Phenol *	mg/L	Distillation, Direct Photometric Method (SM:5530B,D)	< 0.005	≤1
Temperature *	°C	Laboratory and Field Method (SM:2550 B)	33	≤45

Physical Appearance : 1. Sample : yellow, lightly SS

2. Container : Normal [ PE 0.5 L [ 4 Bottle ], PE 1.0 L [ 2 Bottle ], PE 1.8 L, G 1.0 L ]

Remark : 1. /I Notification of Industrial Estate Authority of Thailand 029 / 2567 (2024)

2. # = ISO/IEC 17025:2017 Accredited by DSS, SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

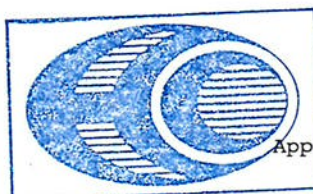
3. Miss Apiradee Chuen-arom is Section Head / Miss Nunnaphat Bakhuntod is Technical Management.

4. \* = Test Report/Sampling marked Not Accredited, Sampling By Mr. Parkpoom Buasawad (จ-003-ก-0017)\*

5. \*\* = These data are non laboratory data.

Examined By : .....

(Miss Apiradee Chuen-arom)  
(จ-003-ก-0007)  
23/07/2025



บริษัท อีสเทิร์นไทยคอนซัลติง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)  
(จ-003-ก-0005)  
23/07/2025

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
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## Test Report

Request No : W6807180

Report No : 6807-1502

Customer : MDX Public Co.,Ltd.\*\*

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110\*\*

Sampling Source : WWTP\*\*

Sample No : W 68070759

Sample Name : Influent\*\*

Sampling Date : 04/07/2025\*\*

Sampling By : ETC\*\*

Sampling Time : 9:05 AM - 3:05 PM\*\*

Sampling Method : Composit\*\*

Received Date : 05/07/2025

Tested Date : 07/07/2025 - 16/07/2025

Reported Date : 23/07/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Total Suspended Solids #	mg/L	Dried at 103-105 degree celsius (SM:2540D)	8	≤200

Physical Apperance : 1. Sample : yellow, lightly SS

2. Container : Normal [ PE 0.5 L [ 4 Bottle], PE 1.0 L [ 2 Bottle ], PE 1.8 L, G 1.0 L ]

Remark : 1. /1 Notification of Industrial Estate Authority of Thailand 029 / 2567 (2024)

2. # = ISO/IEC 17025:2017 Accredited by DSS, SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

3. Miss Apiradee Chuen-arom is Section Head / Miss Nunnaphat Bakhuntod is Technical Management.

4. \* = Test Report/Sampling marked Not Accredited, Sampling By Mr. Parkpoom Buasawad (จ-003-ก-0017)\*

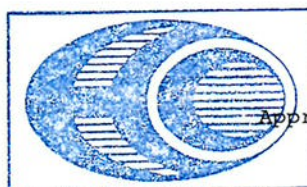
5. \*\* = These data are non laboratory data.

Examined By : .....

(Miss Apiradee Chuen-arom)

(จ-003-ก-0007)

23/07/2025



บริษัท อีสเทิร์นไทยคอนซัลติง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)

(จ-003-ก-0005)

23/07/2025

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
THIS REPORT SHALL NOT REPRODUCED EXCEPT IN FULL  
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**Test Report**

Request No : W6807180

Report No : 6807-1502

Customer : MDX Public Co.,Ltd.

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110

Sampling Source : WWTP

Sample No : W 68070759

Sample Name : Influent

Sampling Date : 04/07/2025

Sampling By : ETC

Sampling Time : 9:05 AM - 3:05 PM

Sampling Method : Composit

Received Date : 05/07/2025

Tested Date : 07/07/2025 - 24/07/2025

Reported Date : 24/07/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Cresol #	mg/L	Gas Chromatography	2.88	-

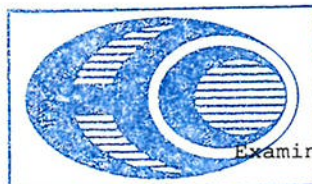
Physical Apperance : 1. Sample : yellow, lightly SS

2. Container : Normal [ PE 0.5 L [ 4 Bottle], PE 1.0 L [ 2 Bottle ], PE 1.8 L, G 1.0 L ]

Remark : 1. /1 Notification of Industrial Estate Authority of Thailand 029 / 2567 (2024)

2. # Tested by Rajpracha Samasai Institute, Department of Disease Control, Ministry of Public Health.

3. Sampling By Mr. Parkpoom Buasawad



บริษัท อีสเทิร์นไทยคอนซัลติง 1992 จำกัด

Examined By : .....

(Miss Apiradee Chuen-arom)  
24/07/2025REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
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WITHOUT THE WRITTEN APPROVAL LABORATORY**COPY**

## Test Report

Request No : W6807181

Report No : 6807-1085

Customer : MDX Public Co.,Ltd.

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110

Sampling Source : WWTP

Sample No : W 68070763

Sample Name : Influent

Sampling Date : 04/07/2025

Sampling By : ETC

Sampling Time : 3:05 PM

Sampling Method : Grab

Received Date : 05/07/2025

Tested Date : 14/07/2025

Reported Date : 17/07/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Coliform Bacteria	MPN:100 mL	MPN Test Method (SM:9221B)	>160,000	-

Physical Apperance : 1. Sample : yellow, turbid

2. Container : Normal [ G 0.25 L ]

Remark : 1. /I Notification of Industrial Estate Authority of Thailand 029 / 2567 (2024)

2. SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023

3. Parameter Outside The Scope of The Registration of Department of Industrial Works

4. Sampling By Mr. Parkpoom Buasawad



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....

(Miss Apiradee Chuen-arom)

17/07/2025

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
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WITHOUT THE WRITTEN APPROVAL LABORATORY

Page 1 of 1

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## Test Report

Request No : W6807180

Report No : 6807-1502

Customer : MDX Public Co.,Ltd.

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110

Sampling Source : WWTP

Sample No : W 68070759

Sample Name : Influent

Sampling Date : 04/07/2025

Sampling By : ETC

Sampling Time : 9:05 AM - 3:05 PM

Sampling Method : Composit

Received Date : 05/07/2025

Tested Date : 07/07/2025 - 16/07/2025

Reported Date : 23/07/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Flow Rate	m <sup>3</sup> /day	Calculation Method	6,747	-

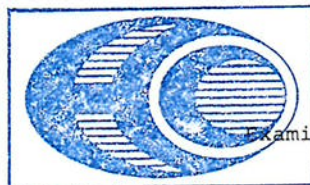
Physical Apperance : 1. Sample : yellow, lightly SS

2. Container : Normal [ PE 0.5 L [ 4 Bottle], PE 1.0 L [ 2 Bottle ], PE 1.8 L, G 1.0 L ]

Remark : 1. /1 Notification of Industrial Estate Authority of Thailand 029 / 2567 (2024)

2. Parameter Outside The Scope of The Registration of Department of Industrial Works

3. Sampling By Mr. Parkpoom Buasawad



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....

(Miss Apiradee Chuen-arom)

23/07/2025

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
THIS REPORT SHALL NOT REPRODUCED EXCEPT IN FULL  
WITHOUT THE WRITTEN APPROVAL LABORATORY

COPY

## Test Report

Request No : W6808025

Report No : 6808-1455

Customer : MDX Public Co.,Ltd.\*\*

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110\*\*

Sampling Source : WWTP\*\*

Sample No : W 68080060

Sample Name : Influent\*\*

Sampling Date : 01/08/2025\*\*

Sampling By : ETC\*\*

Sampling Time : 9:05 AM - 3:05 PM\*\*

Sampling Method : Composit\*\*

Received Date : 02/08/2025

Tested Date : 04/08/2025 - 25/08/2025

Reported Date : 27/08/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Arsenic *	mg/L	Continuous Hydride Generation/AAS Method (SM:3114B)	< 0.0020	≤0.25
Biochemical Oxygen Demand #	mg/L	5-Day BOD Test, Membrane Electrode Method (SM:5210B)	15.1	≤500
Cadmium *	mg/L	Digestion,Inductively Coupled Plasma Method (SM:3030F, 3120B)	< 0.03	≤0.03
Chemical Oxygen Demand #	mg/L	Closed Reflux,Titrimetric Method (SM:5220C)	58	≤750
Copper *	mg/L	Digestion,Inductively Coupled Plasma Method (SM:3030F, 3120B)	0.04	≤2

Physical Apperance : 1. Sample : yellowish, lightly SS

2. Container : Normal [ PE 0.5 L (4 Bottle) , PE 1.8 L , G 1.0 L ]

Remark : 1. /1 Notification of Industrial Estate Authority of Thailand 029 / 2567 (2024)

2. # = ISO/IEC 17025:2017 Accredited by DSS, SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

3. Miss Apiradee Chuen-arom is Section Head / Miss Nunnaphat Bakhuntod is Technical Management.

4. \* = Test Report/Sampling marked Not Accredited, Sampling By Mr. Songpon Phiwuan (จ-003-ก-0017)\*

5. \*\* = These data are non laboratory data.

Examined By : .....

(Miss Apiradee Chuen-arom)

(จ-003-ก-0007)

27/08/2025



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)

(จ-003-ก-0005)

27/08/2025

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
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## Test Report

Request No : W6808025

Report No : 6808-1455

Customer : MDX Public Co.,Ltd.\*\*

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110\*\*

Sampling Source : WWTP\*\*

Sample No : W 68080060

Sample Name : Influent\*\*

Sampling Date : 01/08/2025\*\*

Sampling By : ETC\*\*

Sampling Time : 9:05 AM - 3:05 PM\*\*

Sampling Method : Composit\*\*

Received Date : 02/08/2025

Tested Date : 04/08/2025 - 25/08/2025

Reported Date : 27/08/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Lead *	mg/L	Digestion, Inductively Coupled Plasma Method (SM:3030F, 3120B)	< 0.03	≤ 0.2
Mercury #	mg/L	Digestion, Cold-Vapor Atomic Absorption Spectrometric Method (SM:3112B)	< 0.0010	≤ 0.005
Oil and Grease *	mg/L	Liquid-Liquid, Partition-Gravimetric Method (SM:5520B)	< 3.0	≤ 10
pH (on site) *		Electrometric Method	7.4	5.5-9.0
Phenol *	mg/L	Distillation, Direct Photometric Method (SM:5530B,D)	0.029	≤ 1
Temperature *	°C	Laboratory and Field Method (SM:2550 B)	28	≤ 45

Physical Apperance : 1. Sample : yellowish, lightly SS

2. Container : Normal [ PE 0.5 L (4 Bottle) , PE 1.8 L , G 1.0 L ]

Remark : 1. /I Notification of Industrial Estate Authority of Thailand 029 / 2567 (2024)

2. # = ISO/IEC 17025:2017 Accredited by DSS, SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

3. Miss Apiradee Chuen-arom is Section Head / Miss Nunnaphat Bakhuntod is Technical Management.

4. \* = Test Report/Sampling marked Not Accredited, Sampling By Mr. Songpon Phiwan (จ-003-ท-0017)\*

5. \*\* = These data are non laboratory data.

Examined By : .....

(Miss Apiradee Chuen-arom)  
(จ-003-ท-0007)  
27/08/2025



บริษัท อีสเทิร์นไทยคอนซัลติง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)  
(จ-003-ท-0005)  
27/08/2025

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
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## Test Report

Request No : W6808025

Report No : 6808-1455

Customer : MDX Public Co.,Ltd.\*\*

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110\*\*

Sampling Source : WWTP\*\*

Sample No : W 68080060

Sample Name : Influent\*\*

Sampling Date : 01/08/2025\*\*

Sampling By : ETC\*\*

Sampling Time : 9:05 AM - 3:05 PM\*\*

Sampling Method : Composit\*\*

Received Date : 02/08/2025

Tested Date : 04/08/2025 - 25/08/2025

Reported Date : 27/08/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Total Suspended Solids #	mg/L	Dried at 103-105 degree celsius (SM:2540D)	17	≤200

Physical Apperance : 1. Sample : yellowish, lightly SS

2. Container : Normal [ PE 0.5 L (4 Bottle) , PE 1.8 L , G 1.0 L ]

Remark : 1. /1 Notification of Industrial Estate Authority of Thailand 029 / 2567 (2024)

2. # = ISO/IEC 17025:2017 Accredited by DSS, SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

3. Miss Apiradee Chuen-arom is Section Head / Miss Nunnaphat Bakhuntod is Technical Management.

4. \* = Test Report/Sampling marked Not Accredited, Sampling By Mr. Songpon Phiwuan (จ-003-ค-0017)\*

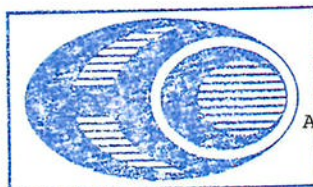
5. \*\* = These data are non laboratory data.

Examined By : .....

(Miss Apiradee Chuen-arom)

(จ-003-ค-0007)

27/08/2025



บริษัท อีสเทิร์นไทยคอนซัลติง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)

(จ-003-ค-0005)

27/08/2025

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
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## Test Report

Request No : W6808025

Report No : 6808-1455

Customer : MDX Public Co.,Ltd.

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110

Sampling Source : WWTP

Sample No : W 68080060

Sample Name : Influent

Sampling Date : 01/08/2025

Sampling By : ETC

Sampling Time : 9:05 AM - 3:05 PM

Sampling Method : Composit

Received Date : 02/08/2025

Tested Date : 04/08/2025 - 25/08/2025

Reported Date : 27/08/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Cresol #	mg/L	Gas Chromatography	ตรวจไม่พบ	-

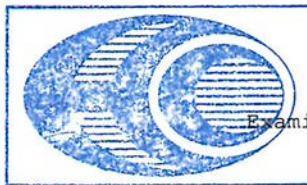
Physical Apperance : 1. Sample : yellowish, lightly SS

2. Container : Normal [ PE 0.5 L (4 Bottle) , PE 1.8 L , G 1.0 L ]

Remark : 1. /I Notification of Industrial Estate Authority of Thailand 029 / 2567 (2024)

2. # Tested by Rajpracha Samasai Institute, Department of Disease Control, Ministry of Public Health.

3. Sampling By Mr. Songpon Phiwuan



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....

(Miss Apiradee Chuen-arom)

27/08/2025

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## Test Report

Request No : W6808027

Report No : 6808-0665

Customer : MDX Public Co.,Ltd.

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110

Sampling Source : WWTP

Sample No : W 68080065

Sample Name : Influent

Sampling Date : 01/08/2025

Sampling By : ETC

Sampling Time : 3:00 PM

Sampling Method : Grab

Received Date : 02/08/2025

Tested Date : 06/08/2025

Reported Date : 13/08/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Coliform Bacteria	MPN:100 mL	MPN Test Method (SM:9221B)	>160,000	-

Physical Apperance : 1. Sample : yellow, turbid

2. Container : Normal [ G 0.25 L]

Remark : 1. /I Notification of Industrial Estate Authority of Thailand 029 / 2567 (2024)

2. SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023

3. Parameter Outside The Scope of The Registration of Department of Industrial Works

4. Sampling By Mr. Songpon Phiuwan



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....

(Miss Apiradee Chuen-arom)

13/08/2025

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## Test Report

Request No : W6808025

Report No : 6808-1455

Customer : MDX Public Co.,Ltd.

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110

Sampling Source : WWTP

Sample No : W 68080060

Sample Name : Influent

Sampling Date : 01/08/2025

Sampling By : ETC

Sampling Time : 9:05 AM - 3:05 PM

Sampling Method : Composit

Received Date : 02/08/2025

Tested Date : 04/08/2025 - 25/08/2025

Reported Date : 27/08/2025

Parameter	Unit	Method	Result	Standard/ <sup>1</sup>
Flow Rate	m <sup>3</sup> /day	Calculation Method	5,397	-

Physical Apperance : 1. Sample : yellowish, lightly SS

2. Container : Normal [ PE 0.5 L (4 Bottle) , PE 1.8 L , G 1.0 L ]

Remark : 1. /1 Notification of Industrial Estate Authority of Thailand 029 / 2567 (2024)

2. Parameter Outside The Scope of The Registration of Department of Industrial Works

3. Sampling By Mr. Songpon Phiwuan



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : 

(Miss Apiradee Chuen-arom)

27/08/2025

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## Test Report

Request No : W6809189

Report No : 6809-1775

Customer : MDX Public Co.,Ltd.\*\*

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110\*\*

Sampling Source : WWTP\*\*

Sample No : W 68090596

Sample Name : Influent\*\*

Sampling Date : 05/09/2025\*\*

Sampling By : ETC\*\*

Sampling Time : 9:05 AM - 3:05 PM\*\*

Sampling Method : Composit\*\*

Received Date : 06/09/2025

Tested Date : 08/09/2025 - 13/09/2025

Reported Date : 25/09/2025

Parameter	Unit	Method	Result	Standard/ <sup>1</sup>
Arsenic *	mg/L	Continuous Hydride Generation/AAS Method (SM:3114B)	< 0.0020	≤0.25
Biochemical Oxygen Demand #	mg/L	5-Day BOD Test, Membrane Electrode Method (SM:5210B)	26.4	≤500
Cadmium @	mg/L	Digestion,Inductively Coupled Plasma Method (SM:3030F, 3120B)	< 0.03	≤0.03
Chemical Oxygen Demand #	mg/L	Closed Reflux,Titrimetric Method (SM:5220C)	109	≤750
Copper @	mg/L	Digestion,Inductively Coupled Plasma Method (SM:3030F, 3120B)	< 0.03	≤2

Physical Apperance : 1. Sample : Wastewater (yellow, lightly SS)

2. Container : Normal [ PE 0.5 L (4 Bottle) , PE 1.8 L , G 1.0 L ]

Remark : 1. /I Notification of Industrial Estate Authority of Thailand 029 / 2567 (2024)

2. @ = ISO/IEC 17025:2017 Accredited by TISI., # = ISO/IEC 17025:2017 Accredited by DSS,

SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

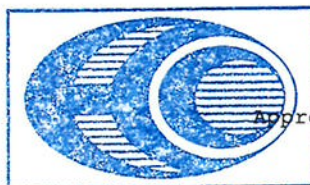
3. Miss Apiradee Chuen-arom is Section Head / Miss Nunnaphat Bakhuntod is Technical Management.

4. \* = Test Report/Sampling marked Not Accredited, Sampling By Mr. Supharek Phatklang (จ-003-ค-0031)\*

5. \*\* = These data are non laboratory data.

Examined By : .....

(Miss Apiradee Chuen-arom)  
(จ-003-ค-0007)  
25/09/2025



บริษัท อีสเทิร์นไทยคอนซัลติง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)  
(จ-003-ค-0005)  
25/09/2025

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
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**COPY**

## Test Report

Request No : W6809189

Report No : 6809-1775

Customer : MDX Public Co.,Ltd.\*\*

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110\*\*

Sampling Source : WWTP\*\*

Sample No : W 68090596

Sample Name : Influent\*\*

Sampling Date : 05/09/2025\*\*

Sampling By : ETC\*\*

Sampling Time : 9:05 AM - 3:05 PM\*\*

Sampling Method : Composit\*\*

Received Date : 06/09/2025

Tested Date : 08/09/2025 - 13/09/2025

Reported Date : 25/09/2025

Parameter	Unit	Method	Result	Standard <sup>1/</sup>
Lead <sup>@</sup>	mg/L	Digestion, Inductively Coupled Plasma Method (SM:3030F, 3120B)	< 0.03	≤ 0.2
Mercury <sup>#</sup>	mg/L	Digestion, Cold -Vapor Atomic Absorption Spectrometric Method (SM:3112B)	< 0.0010	≤ 0.005
Oil and Grease <sup>@</sup>	mg/L	Liquid-Liquid, Partition-Gravimetric Method (SM:5520B)	< 3.0	≤ 10
pH (on site) <sup>*</sup>		Electrometric Method	7.1	5.5-9.0
Phenol <sup>*</sup>	mg/L	Distillation, Direct Photometric Method (SM:5530B,D)	< 0.005	≤ 1
Temperature <sup>*</sup>	°C	Laboratory and Field Method (SM:2550 B)	32	≤ 45

Physical Apperance : 1. Sample : Wastewater (yellow, lightly SS)

2. Container : Normal [ PE 0.5 L (4 Bottle) , PE 1.8 L , G 1.0 L ]

Remark : 1. /1 Notification of Industrial Estate Authority of Thailand 029 / 2567 (2024)

2. @ = ISO/IEC 17025:2017 Accredited by TISI., # = ISO/IEC 17025:2017 Accredited by DSS,

SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

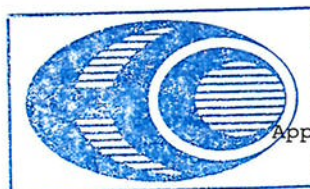
3. Miss Apiradee Chuen-arom is Section Head / Miss Nunnaphat Bakhuntod is Technical Management.

4. \* = Test Report/Sampling marked Not Accredited, Sampling By Mr. Supharerk Phatklang (จ-003-ท-0031)\*

5. \*\* = These data are non laboratory data.

Examined By : .....

(Miss Apiradee Chuen-arom)  
(จ-003-ท-0007)  
25/09/2025



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)  
(จ-003-ท-0005)  
25/09/2025

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
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## Test Report

Request No : W6809189

Report No : 6809-1775

Customer : MDX Public Co.,Ltd.\*\*

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110\*\*

Sampling Source : WWTP\*\*

Sample No : W 68090596

Sample Name : Influent\*\*

Sampling Date : 05/09/2025\*\*

Sampling By : ETC\*\*

Sampling Time : 9:05 AM - 3:05 PM\*\*

Sampling Method : Composit\*\*

Received Date : 06/09/2025

Tested Date : 08/09/2025 - 13/09/2025

Reported Date : 25/09/2025

Parameter	Unit	Method	Result	Standard/ <sup>1</sup>
Total Suspended Solids #	mg/L	Dried at 103-105 degree celsius (SM:2540D)	11	≤200

Physical Apperance : 1. Sample : Wastewater (yellow, lightly SS)

2. Container : Normal [ PE 0.5 L (4 Bottle) , PE 1.8 L , G 1.0 L ]

Remark : 1. /1 Notification of Industrial Estate Authority of Thailand 029 / 2567 (2024)

2. @ = ISO/IEC 17025:2017 Accredited by TISI., # = ISO/IEC 17025:2017 Accredited by DSS,

SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

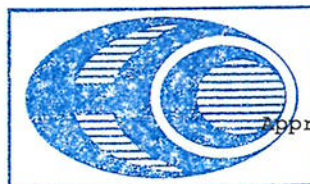
3. Miss Apiradee Chuen-arom is Section Head / Miss Nunnaphat Bakhuntod is Technical Management.

4. \* = Test Report/Sampling marked Not Accredited, Sampling By Mr. Supharerk Phatklang (จ-003-ค-0031)\*

5. \*\* = These data are non laboratory data.

Examined By : .....

(Miss Apiradee Chuen-arom)  
(จ-003-ค-0007)  
25/09/2025



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)  
(จ-003-ค-0005)  
25/09/2025

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
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## Test Report

Request No : W6809189

Report No : 6809 - 1775

Customer : MDX Public Co.,Ltd.

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110

Sampling Source : WWTP

Sample No : W 68090596

Sample Name : Influent

Sampling Date : 05/09/2025

Sampling By : ETC

Sampling Time : 9:05 AM - 3:05 PM

Sampling Method : Composit

Received Date : 06/09/2025

Tested Date : 08/09/2025 - 01/10/2025

Reported Date : 03/10/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Cresol #	mg/L	Gas Chromatography	ตรวจไม่พบ	-

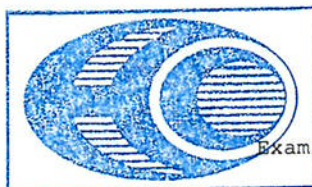
Physical Apperance : 1. Sample : Wastewater (yellow, lightly SS)

2. Container : Normal [ PE 0.5 L (4 Bottle) , PE 1.8 L , G 1.0 L ]

Remark : 1. /1 Notification of Industrial Estate Authority of Thailand 029 / 2567 (2024)

2. # Tested by Rajpracha Samasai Institute, Department of Disease Control, Ministry of Public Health.

3. Sampling By Mr. Supharek Phatklang



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : 

(Miss Apiradee Chuen-arom)

03/10/2025

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
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WITHOUT THE WRITTEN APPROVAL LABORATORY

## Test Report

Request No : W6809191

Report No : 6809-1404

Customer : MDX Public Co.,Ltd.

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110

Sampling Source : WWTP

Sample No : W 68090601

Sample Name : Influent

Sampling Date : 05/09/2025

Sampling By : ETC

Sampling Time : 3:10 PM

Sampling Method : Grab

Received Date : 06/09/2025

Tested Date : 16/09/2025

Reported Date : 18/09/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Coliform Bacteria	MPN:100 mL	MPN Test Method (SM:9221B)	>160,000	-

Physical Apperance : 1. Sample : Wastewater (yellow, turbid)

2. Container : Normal [ G 0.25 L]

Remark : 1. /1 Notification of Industrial Estate Authority of Thailand 029 / 2567 (2024)

2. SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023
3. Parameter Outside The Scope of The Registration of Department of Industrial Works
4. Sampling By Mr. Supharerk Phatklang



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : (Miss Apiradee Chuen-arom)  
18/09/2025

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
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WITHOUT THE WRITTEN APPROVAL LABORATORY

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## Test Report

Request No : W6809189

Report No : 6809-1775

Customer : MDX Public Co.,Ltd.

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110

Sampling Source : WWTP

Sample No : W 68090596

Sample Name : Influent

Sampling Date : 05/09/2025

Sampling By : ETC

Sampling Time : 9:05 AM - 3:05 PM

Sampling Method : Composit

Received Date : 06/09/2025

Tested Date : 08/09/2025 - 13/09/2025

Reported Date : 25/09/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Flow Rate	m <sup>3</sup> /day	Calculation Method	4,357	-

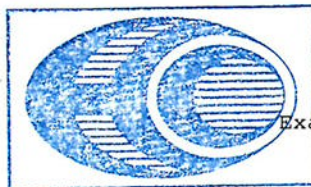
Physical Apperance : 1. Sample : Wastewater (yellow, lightly SS)

2. Container : Normal [ PE 0.5 L (4 Bottle) , PE 1.8 L , G 1.0 L]

Remark : 1. /1 Notification of Industrial Estate Authority of Thailand 029 / 2567 (2024)

2. Parameter Outside The Scope of The Registration of Department of Industrial Works

3. Sampling By Mr. Supharerk Phatklang



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....

(Miss Apiradee Chuen-arom)

25/09/2025

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
THIS REPORT SHALL NOT REPRODUCED EXCEPT IN FULL  
WITHOUT THE WRITTEN APPROVAL LABORATORY

## Test Report

Request No : W6810121

Report No : 6810-1769

Customer : MDX Public Co.,Ltd. \*\*

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110 \*\*

Sampling Source : WWTP \*\*

Sample No : W 68100410

Sample Name : Influent \*\*

Sampling Date : 03/10/2025 \*\*

Sampling By : ETC \*\*

Sampling Time : 9:05 AM - 3:05 PM \*\*

Sampling Method : Composit \*\*

Received Date : 04/10/2025

Tested Date : 04/10/2025 - 28/10/2025

Reported Date : 29/10/2025

Parameter	Unit	Method	Result	Standard/ <sup>1</sup>
Arsenic *	mg/L	Continuous Hydride Generation/AAS Method (SM:3114B)	< 0.0020	≤0.25
Biochemical Oxygen Demand #	mg/L	5-Day BOD Test, Membrane Electrode Method (SM:5210B)	9.4	≤500
Cadmium @	mg/L	Digestion,Inductively Coupled Plasma Method (SM:3030F, 3120B)	< 0.03	≤0.03
Chemical Oxygen Demand #	mg/L	Closed Reflux,Titrimetric Method (SM:5220C)	63	≤750
Copper @	mg/L	Digestion,Inductively Coupled Plasma Method (SM:3030F, 3120B)	0.03	≤2

Physical Apperance : 1. Sample : Wastewater (yellowish , lightly SS)

2. Container : Normal [ PE 0.5 L (4 Bottle), PE 1.0 L (2 Bottle), G 1.0 L ]

Remark : 1. /1 Notification of Industrial Estate Authority of Thailand 029 / 2567 (2024)

2. @ = ISO/IEC 17025:2017 Accredited by TISI., # = ISO/IEC 17025:2017 Accredited by DSS,

SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

3. Miss Apiradee Chuen-arom is Section Head / Miss Nunnaphat Bakhuntod is Technical Management.

4. \* = Test Report/Sampling marked Not Accredited, Sampling By Mr. Aocha Khwansirimongkhon (จ-003-ท-0034)\*

5. \*\* = These data are non laboratory data.

Examined By : .....

(Miss Apiradee Chuen-arom)  
(จ-003-ท-0007)  
29/10/2025



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)  
(จ-003-ท-0005)  
29/10/2025

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
THIS REPORT SHALL NOT REPRODUCED EXCEPT IN FULL  
WITHOUT THE WRITTEN APPROVAL LABORATORY

## Test Report

Request No : W6810121

Report No : 6810-1769

Customer : MDX Public Co.,Ltd. \*\*

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110 \*\*

Sampling Source : WWTP \*\*

Sample No : W 68100410

Sample Name : Influent \*\*

Sampling Date : 03/10/2025 \*\*

Sampling By : ETC \*\*

Sampling Time : 9:05 AM - 3:05 PM \*\*

Sampling Method : Composit \*\*

Received Date : 04/10/2025

Tested Date : 04/10/2025 - 28/10/2025

Reported Date : 29/10/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Lead @	mg/L	Digestion, Inductively Coupled Plasma Method (SM:3030F, 3120B)	< 0.03	≤ 0.2
Mercury #	mg/L	Digestion, Cold-Vapor Atomic Absorption Spectrometric Method (SM:3112B)	< 0.0010	≤ 0.005
Oil and Grease @	mg/L	Liquid-Liquid, Partition-Gravimetric Method (SM:5520B)	< 3.0	≤ 10
pH (on site) *		Electrometric Method	7.1	5.5-9.0
Phenol *	mg/L	Distillation, Direct Photometric Method (SM:5530B,D)	0.042	≤ 1
Temperature *	°C	Laboratory and Field Method (SM:2550 B)	30	≤ 45

Physical Appearance : 1. Sample : Wastewater (yellowish, lightly SS)

2. Container : Normal [ PE 0.5 L (4 Bottle), PE 1.0 L (2 Bottle), G 1.0 L ]

Remark : 1. /1 Notification of Industrial Estate Authority of Thailand 029 / 2567 (2024)

2. @ = ISO/IEC 17025:2017 Accredited by TISI., # = ISO/IEC 17025:2017 Accredited by DSS,

SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

3. Miss Apiradee Chuen-arom is Section Head / Miss Nunnaphat Bakhuntod is Technical Management.

4. \* = Test Report/Sampling marked Not Accredited, Sampling By Mr. Aocha Khwansirimongkhon (จ-003-ก-0034)\*

5. \*\* = These data are non laboratory data.

Examined By : .....

(Miss Apiradee Chuen-arom)  
(จ-003-ก-0007)  
29/10/2025



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)  
(จ-003-ก-0005)  
29/10/2025

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
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WITHOUT THE WRITTEN APPROVAL LABORATORY

**COPY**

## Test Report

Request No : W6810121

Report No : 6810-1769

Customer : MDX Public Co.,Ltd. \*\*

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110 \*\*

Sampling Source : WWTP \*\*

Sample No : W 68100410

Sample Name : Influent \*\*

Sampling Date : 03/10/2025 \*\*

Sampling By : ETC \*\*

Sampling Time : 9:05 AM - 3:05 PM \*\*

Sampling Method : Composit \*\*

Received Date : 04/10/2025

Tested Date : 04/10/2025 - 28/10/2025

Reported Date : 29/10/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Total Suspended Solids #	mg/L	Dried at 103-105 degree celsius (SM:2540D)	13	≤200

Physical Apperance : 1. Sample : Wastewater (yellowish , lightly SS)

2. Container : Normal [ PE 0.5 L (4 Bottle), PE 1.0 L (2 Bottle), G 1.0 L ]

Remark : 1. /1 Notification of Industrial Estate Authority of Thailand 029 / 2567 (2024)

2. @ = ISO/IEC 17025:2017 Accredited by TISI., # = ISO/IEC 17025:2017 Accredited by DSS,

SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

3. Miss Apiradee Chuen-arom is Section Head / Miss Nunnaphat Bakhuntod is Technical Management.

4. \* = Test Report/Sampling marked Not Accredited, Sampling By Mr. Aocha Khwansirimongkhon (จ-003-ท-0034)\*

5. \*\* = These data are non laboratory data.

Examined By : .....

(Miss Apiradee Chuen-arom)

(จ-003-ท-0007)

29/10/2025



บริษัท อีสเทิร์นไทยคอนซัลติง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)

(จ-003-ท-0005)

29/10/2025

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## Test Report

Request No : W6810121

Report No : 6810-1769

Customer : MDX Public Co.,Ltd.

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110

Sampling Source : WWTP

Sample No : W 68100410

Sample Name : Influent

Sampling Date : 03/10/2025

Sampling By : ETC

Sampling Time : 9:05 AM - 3:05 PM

Sampling Method : Composit

Received Date : 04/10/2025

Tested Date : 04/10/2025 - 28/10/2025

Reported Date : 29/10/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Cresol #	mg/L	Gas Chromatography	ตรวจไม่พบ	-

Physical Apperance : 1. Sample : Wastewater (yellowish , lightly SS)

2. Container : Normal [ PE 0.5 L (4 Bottle), PE 1.0 L (2 Bottle), G 1.0 L ]

Remark : 1. /1 Notification of Industrial Estate Authority of Thailand 029 / 2567 (2024)

2. # Tested by Rajpracha Samasai Institute, Department of Disease Control, Ministry of Public Health.

3. Sampling By Mr. Aocha Khwansirimongkhon



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : 

(Miss Apiradee Chuen-arom)

29/10/2025

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
THIS REPORT SHALL NOT REPRODUCED EXCEPT IN FULL  
WITHOUT THE WRITTEN APPROVAL LABORATORY

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## Test Report

Request No : W6810122

Report No : 6810-1083

Customer : MDX Public Co.,Ltd.

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110

Sampling Source : WWTP

Sample No : W 68100414

Sample Name : Influent

Sampling Date : 03/10/2025

Sampling By : ETC

Sampling Time : 3:05 PM

Sampling Method : Grab

Received Date : 04/10/2025

Tested Date : 15/10/2025

Reported Date : 20/10/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Coliform Bacteria	MPN:100 mL	MPN Test Method (SM:9221B)	>160,000	-

Physical Apperance : 1. Sample : Wastewater (yellow , turbid)

2. Container : Normal [ G 0.25 L ]

Remark : 1. /1 Notification of Industrial Estate Authority of Thailand 029 / 2567 (2024)

- SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023
- Parameter Outside The Scope of The Registration of Department of Industrial Works
- Sampling By Mr. Aocha Khwansirimongkhon



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : (Miss Apiradee Chuen-arom)  
20/10/2025

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## Test Report

Request No : W6810121

Report No : 6810-1769

Customer : MDX Public Co.,Ltd.

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110

Sampling Source : WWTP

Sample No : W 68100410

Sample Name : Influent

Sampling Date : 03/10/2025

Sampling By : ETC

Sampling Time : 9:05 AM - 3:05 PM

Sampling Method : Composit

Received Date : 04/10/2025

Tested Date : 04/10/2025 - 28/10/2025

Reported Date : 29/10/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Flow Rate	m <sup>3</sup> /day	Calculation Method	6,210	-

Physical Apperance : 1. Sample : Wastewater (yellowish , lightly SS)

2. Container : Normal [ PE 0.5 L (4 Bottle), PE 1.0 L (2 Bottle), G 1.0 L ]

Remark : 1. /1 Notification of Industrial Estate Authority of Thailand 029 / 2567 (2024)

2. Parameter Outside The Scope of The Registration of Department of Industrial Works

3. Sampling By Mr. Aocha Khwansirimongkhon



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....

(Miss Apiradee Chuen-arom)

29/10/2025

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
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## Test Report

Request No : W6811200

Report No : 6811-1588

Customer : MDX Public Co.,Ltd. \*\*

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110 \*\*

Sampling Source : WWTP\*\*

Sample No : W 68110659

Sample Name : Influent\*\*

Sampling Date : 07/11/2025\*\*

Sampling By : ETC\*\*

Sampling Time : 9:10 AM - 3:10 PM\*\*

Sampling Method : Composit\*\*

Received Date : 08/11/2025

Tested Date : 08/11/2025 - 28/11/2025

Reported Date : 06/12/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Arsenic *	mg/L	Continuous Hydride Generation/AAS Method (SM:3114B)	< 0.0020	≤ 0.25
Biochemical Oxygen Demand #	mg/L	5-Day BOD Test, Membrane Electrode Method (SM:5210B)	13.9	≤ 500
Cadmium @	mg/L	Digestion, Inductively Coupled Plasma Method (SM:3030F, 3120B)	< 0.03	≤ 0.03
Chemical Oxygen Demand #	mg/L	Closed Reflux, Titrimetric Method (SM:5220C)	53	≤ 750
Copper @	mg/L	Digestion, Inductively Coupled Plasma Method (SM:3030F, 3120B)	0.04	≤ 2

Physical Apperance : 1. Sample : Wastewater (yellowish , lightly SS)

2. Container : Normal [ PE 0.5 L (4 Bottle), PE 1.0 L (2 Bottle), G 1.0 L ]

Remark : 1. /1 Notification of Industrial Estate Authority of Thailand 029 / 2567 (2024)

2. @ = ISO/IEC 17025:2017 Accredited by TISI., # = ISO/IEC 17025:2017 Accredited by DSS,

SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

3. Miss Apiradee Chuen-arom is Section Head / Miss Nunnaphat Bakhuntod is Technical Management.

4. \* = Test Report/Sampling marked Not Accredited, Sampling By Mr. Songpon Phiwan (จ-003-ท-0016) \*

5. \*\* = These data are non laboratory data.

Examined By : .....

(Miss Apiradee Chuen-arom)

(จ-003-ท-0007)

06/12/2025



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)

(จ-003-ท-0005)

06/12/2025

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## Test Report

Request No : W6811200

Report No : 6811-1588

Customer : MDX Public Co.,Ltd. \*\*

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110 \*\*

Sampling Source : WWTP\*\*

Sample No : W 68110659

Sample Name : Influent\*\*

Sampling Date : 07/11/2025\*\*

Sampling By : ETC\*\*

Sampling Time : 9:10 AM - 3:10 PM\*\*

Sampling Method : Composit\*\*

Received Date : 08/11/2025

Tested Date : 08/11/2025 - 28/11/2025

Reported Date : 06/12/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Lead @	mg/L	Digestion, Inductively Coupled Plasma Method (SM:3030F, 3120B)	< 0.03	≤ 0.2
Mercury #	mg/L	Digestion, Cold -Vapor Atomic Absorption Spectrometric Method (SM:3112B)	< 0.0010	≤ 0.005
Oil and Grease @	mg/L	Liquid-Liquid, Partition-Gravimetric Method (SM:5520B)	< 3.0	≤ 10
pH (on site) *		Electrometric Method	7.0	5.5-9.0
Phenol *	mg/L	Distillation, Direct Photometric Method (SM:5530B,D)	0.020	≤ 1
Temperature *	°C	Laboratory and Field Method (SM:2550 B)	27	≤ 45

Physical Apperance : 1. Sample : Wastewater (yellowish , lightly SS)

2. Container : Normal [ PE 0.5 L (4 Bottle), PE 1.0 L (2 Bottle), G 1.0 L ]

Remark : 1. /1 Notification of Industrial Estate Authority of Thailand 029 / 2567 (2024)

2. @ = ISO/IEC 17025:2017 Accredited by TISI., # = ISO/IEC 17025:2017 Accredited by DSS,

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4. \* = Test Report/Sampling marked Not Accredited, Sampling By Mr. Songpon Phiwuan (จ-003-ก-0016) \*

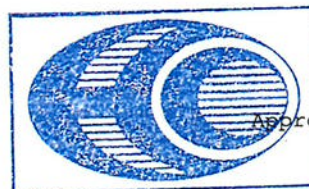
5. \*\* = These data are non laboratory data.

Examined By : .....

(Miss Apiradee Chuen-arom)

(จ-003-ก-0007)

06/12/2025



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)

(จ-003-ก-0005)

06/12/2025

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## Test Report

Request No : W6811200

Report No : 6811-1588

Customer : MDX Public Co.,Ltd. \*\*

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110 \*\*

Sampling Source : WWTP\*\*

Sample No : W 68110659

Sample Name : Influent\*\*

Sampling Date : 07/11/2025\*\*

Sampling By : ETC\*\*

Sampling Time : 9:10 AM - 3:10 PM\*\*

Sampling Method : Composit\*\*

Received Date : 08/11/2025

Tested Date : 08/11/2025 - 28/11/2025

Reported Date : 06/12/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Total Suspended Solids #	mg/L	Dried at 103-105 degree celsius (SM:2540D)	19	≤200

Physical Apperance : 1. Sample : Wastewater (yellowish , lightly SS)

2. Container : Normal [ PE 0.5 L (4 Bottle), PE 1.0 L (2 Bottle), G 1.0 L ]

Remark : 1. /1 Notification of Industrial Estate Authority of Thailand 029 / 2567 (2024)

2. @ = ISO/IEC 17025:2017 Accredited by TISI., # = ISO/IEC 17025:2017 Accredited by DSS,

SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

3. Miss Apiradee Chuen-arom is Section Head / Miss Nunnaphat Bakhuntod is Technical Management.

4. \* = Test Report/Sampling marked Not Accredited, Sampling By Mr. Songpon Phiwan (จ-003-ท-0016) \*

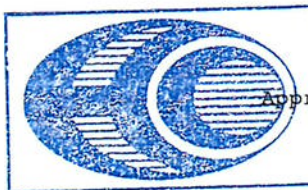
5. \*\* = These data are non laboratory data.

Examined By : .....

(Miss Apiradee Chuen-arom)

(จ-003-ท-0007)

06/12/2025



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)

(จ-003-ท-0005)

06/12/2025

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
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## Test Report

Request No : W6811200

Report No : 6811 -1588

Customer : MDX Public Co.,Ltd.

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110

Sampling Source : WWTP

Sample No : W 68110659

Sample Name : Influent

Sampling Date : 07/11/2025

Sampling By : ETC

Sampling Time : 9:10 AM - 3:10 PM

Sampling Method : Composit

Received Date : 08/11/2025

Tested Date : 08/11/2025 - 28/11/2025

Reported Date : 06/12/2025

Parameter	Unit	Method	Result	Standard/ <sup>1</sup>
Cresol #	mg/L	Gas Chromatography	ตรวจไม่พบ	-

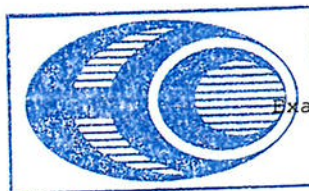
Physical Apperance : 1. Sample : Wastewater (yellowish , lightly SS)

2. Container : Normal [ PE 0.5 L (4 Bottle), PE 1.0 L (2 Bottle), G 1.0 L ]

Remark : 1. /1 Notification of Industrial Estate Authority of Thailand 029 / 2567 (2024)

2. # Tested by Rajpracha Samasai Institute, Department of Disease Control, Ministry of Public Health.

3. Sampling By Mr. Songpon Phiwuan



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....

(Miss Apiradee Chuen-arom)

06/12/2025

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COPY

## Test Report

Request No : W6811201

Report No : 6811-1176

Customer : MDX Public Co.,Ltd.

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110

Sampling Source : WWTP

Sample No : W 68110663

Sample Name : Influent

Sampling Date : 07/11/2025

Sampling By : ETC

Sampling Time : 3:10 PM

Sampling Method : Grab

Received Date : 08/11/2025

Tested Date : 17/11/2025

Reported Date : 19/11/2025

Parameter	Unit	Method	Result	Standard/ <sup>1</sup>
Coliform Bacteria	MPN:100 mL	MPN Test Method (SM:9221B)	>160,000	-

Physical Apperance : 1. Sample : Wastewater (yellow , turbid)

2. Container : Normal [ G 0.25 L ]

Remark : 1. /1 Notification of Industrial Estate Authority of Thailand 029 / 2567 (2024)

2. SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023

3. Parameter Outside The Scope of The Registration of Department of Industrial Works

4. Sampling By Mr. Songpon Phiwan



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....

(Miss Apiradee Chuen-arom)

19/11/2025

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THIS REPORT SHALL NOT REPRODUCED EXCEPT IN FULL  
WITHOUT THE WRITTEN APPROVAL LABORATORY

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## Test Report

Request No : W6811200

Report No : 6811-1588

Customer : MDX Public Co.,Ltd.

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110

Sampling Source : WWTP

Sample No : W 68110659

Sample Name : Influent

Sampling Date : 07/11/2025

Sampling By : ETC

Sampling Time : 9:10 AM - 3:10 PM

Sampling Method : Composit

Received Date : 08/11/2025

Tested Date : 08/11/2025 - 28/11/2025

Reported Date : 06/12/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Flow Rate	m <sup>3</sup> /day	Calculation Method	6,222	-

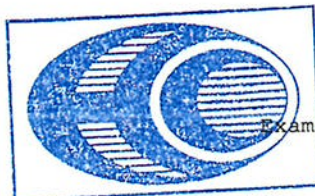
Physical Apperance : 1. Sample : Wastewater (yellowish , lightly SS)

2. Container : Normal [ PE 0.5 L (4 Bottle), PE 1.0 L (2 Bottle), G 1.0 L ]

Remark : 1. /1 Notification of Industrial Estate Authority of Thailand 029 / 2567 (2024)

2. Parameter Outside The Scope of The Registration of Department of Industrial Works

3. Sampling By Mr. Songpon Phiwuan



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....

(Miss Apiradee Chuen-arom)

06/12/2025

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
THIS REPORT SHALL NOT REPRODUCED EXCEPT IN FULL  
WITHOUT THE WRITTEN APPROVAL LABORATORY

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## Test Report

Request No : W6812153

Report No : 6901-0018

Customer : MDX Public Co.,Ltd. \*\*

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110 \*\*

Sampling Source : WWTP \*\*

Sample No : W 68120494

Sample Name : Influent \*\*

Sampling Date : 04/12/2025 \*\*

Sampling By : ETC \*\*

Sampling Time : 9:10 AM - 3:10 PM \*\*

Sampling Method : Composit \*\*

Received Date : 06/12/2025

Tested Date : 06/12/2025 - 25/12/2025

Reported Date : 05/01/2026

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Arsenic *	mg/L	Continuous Hydride Generation/AAS Method (SM:3114B)	< 0.0020	≤0.25
Biochemical Oxygen Demand #	mg/L	5-Day BOD Test, Membrane Electrode Method (SM:5210B)	41.0	≤500
Cadmium @	mg/L	Digestion,Inductively Coupled Plasma Method (SM:3030F, 3120B)	< 0.03	≤0.03
Chemical Oxygen Demand #	mg/L	Closed Reflux,Titrimetric Method (SM:5220C)	132	≤750
Copper @	mg/L	Digestion,Inductively Coupled Plasma Method (SM:3030F, 3120B)	0.06	≤2

Physical Apperance : 1. Sample : Wastewater (slightly-gray , lightly SS)  
2. Container : Normal [ PE 0.5 L (4 Bottle), PE 1.0 L (2 Bottle), G 1.0 L ]

Remark : 1. /1 Notification of Industrial Estate Authority of Thailand 029 / 2567 (2024)

2. @ = ISO/IEC 17025:2017 Accredited by TISI., # = ISO/IEC 17025:2017 Accredited by DSS,

SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

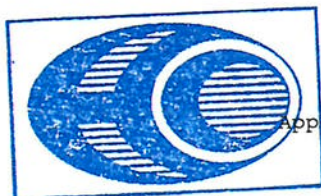
3. Miss Apiradee Chuen-arom is Section Head / Miss Nunnaphat Bakhuntod is Technical Management.

4. \* = Test Report/Sampling marked Not Accredited, Sampling By Mr. Supharerk Phatklang (จ-003-ท-0031) \*

5. \*\* = These data are non laboratory data.

Examined By : .....

(Miss Apiradee Chuen-arom)  
(จ-003-ท-0007)  
05/01/2026



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)  
(จ-003-ท-0005)  
05/01/2026

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
THIS REPORT SHALL NOT REPRODUCED EXCEPT IN FULL  
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**COPY**

## Test Report

Request No : W6812153

Report No : 6901-0018

Customer : MDX Public Co.,Ltd. \*\*

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110 \*\*

Sampling Source : WWTP \*\*

Sample No : W 68120494

Sample Name : Influent \*\*

Sampling Date : 04/12/2025 \*\*

Sampling By : ETC \*\*

Sampling Time : 9:10 AM - 3:10 PM \*\*

Sampling Method : Composit \*\*

Received Date : 06/12/2025

Tested Date : 06/12/2025 - 25/12/2025

Reported Date : 05/01/2026

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Lead @	mg/L	Digestion, Inductively Coupled Plasma Method (SM:3030F, 3120B)	0.03	≤0.2
Mercury #	mg/L	Digestion, Cold-Vapor Atomic Absorption Spectrometric Method (SM:3112B)	< 0.0010	≤0.005
Oil and Grease @	mg/L	Liquid-Liquid, Partition-Gravimetric Method (SM:5520B)	< 3.0	≤10
pH (on site) *		Electrometric Method	7.4	5.5-9.0
Phenol *	mg/L	Distillation, Direct Photometric Method (SM:5530B,D)	0.025	≤1
Temperature *	°C	Laboratory and Field Method (SM:2550 B)	31	≤45

Physical Apperance : 1. Sample : Wastewater (slightly-gray , lightly SS)  
2. Container : Normal [ PE 0.5 L (4 Bottle), PE 1.0 L (2 Bottle), G 1.0 L ]

Remark : 1. /I Notification of Industrial Estate Authority of Thailand 029 / 2567 (2024)

2. @ = ISO/IEC 17025:2017 Accredited by TISI., # = ISO/IEC 17025:2017 Accredited by DSS,

SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

3. Miss Apiradee Chuen-arom is Section Head / Miss Nunnaphat Bakhuntod is Technical Management.

4. \* = Test Report/Sampling marked Not Accredited, Sampling By Mr. Supharerk Phatklang (1-003-ก-0031) \*

5. \*\* = These data are non laboratory data.

Examined By : .....

(Miss Apiradee Chuen-arom)

(1-003-ก-0007)

05/01/2026



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)

(1-003-ก-0005)

05/01/2026

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## Test Report

Request No : W6812153

Report No : 6901-0018

Customer : MDX Public Co.,Ltd. \*\*

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110 \*\*

Sampling Source : WWTP \*\*

Sample No : W 68120494

Sample Name : Influent \*\*

Sampling Date : 04/12/2025 \*\*

Sampling By : ETC \*\*

Sampling Time : 9:10 AM - 3:10 PM \*\*

Sampling Method : Composit \*\*

Received Date : 06/12/2025

Tested Date : 06/12/2025 - 25/12/2025

Reported Date : 05/01/2026

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Total Suspended Solids #	mg/L	Dried at 103-105 degree celsius (SM:2540D)	32	≤200

Physical Apperance : 1. Sample : Wastewater (slightly-gray , lightly SS)  
2. Container : Normal [ PE 0.5 L (4 Bottle), PE 1.0 L (2 Bottle), G 1.0 L ]

Remark : 1. /1 Notification of Industrial Estate Authority of Thailand 029 / 2567 (2024)  
2. @ = ISO/IEC 17025:2017 Accredited by TISI., # = ISO/IEC 17025:2017 Accredited by DSS,  
SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.  
3. Miss Apiradee Chuen-arom is Section Head / Miss Nunnaphat Bakhuntod is Technical Management.  
4. \* = Test Report/Sampling marked Not Accredited, Sampling By Mr. Supharerk Phatklang (1-003-ค-0031) \*  
5. \*\* = These data are non laboratory data.

Examined By : .....

(Miss Apiradee Chuen-arom)  
(1-003-ค-0007)  
05/01/2026



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Approved By : .....

(Miss Nunnaphat Bakhuntod)  
(1-003-ค-0005)  
05/01/2026

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## Test Report

Request No : W6812153

Report No : 6901-0018

Customer : MDX Public Co.,Ltd.

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110

Sampling Source : WWTP

Sample No : W 68120494

Sample Name : Influent

Sampling Date : 04/12/2025

Sampling By : ETC

Sampling Time : 9:10 AM - 3:10 PM

Sampling Method : Composit

Received Date : 06/12/2025

Tested Date : 06/12/2025 - 25/12/2025

Reported Date : 05/01/2026

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Cresol #	mg/L	Gas Chromatography	ตรวจไม่พบ	-

Physical Apperance : 1. Sample : Wastewater (slightly-gray , lightly SS)

2. Container : Normal [ PE 0.5 L (4 Bottle), PE 1.0 L (2 Bottle), G 1.0 L ]

Remark : 1. /1 Notification of Industrial Estate Authority of Thailand 029 / 2567 (2024)

2. # Tested by Rajpracha Samasai Institute, Department of Disease Control, Ministry of Public Health.

3. Sampling By Mr. Supharerk Phatklang



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....

(Miss Apiradee Chuen-arom)

05/01/2026

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THIS REPORT SHALL NOT REPRODUCED EXCEPT IN FULL  
WITHOUT THE WRITTEN APPROVAL LABORATORY

COPY



## Test Report

Request No : W6812154

Report No : 6812-1217

Customer : MDX Public Co.,Ltd.

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110

Sampling Source : WWTP

Sample No : W 68120498

Sample Name : Influent

Sampling Date : 04/12/2025

Sampling By : ETC

Sampling Time : 3:05 PM

Sampling Method : Grab

Received Date : 06/12/2025

Tested Date : 16/12/2025

Reported Date : 18/12/2025

Parameter	Unit	Method	Result	Standard/ <sup>1</sup>
Coliform Bacteria	MPN:100 mL	MPN Test Method (SM:9221B)	>160,000	-

Physical Apperance : 1. Sample : Wastewater (yellow , turbid)

2. Container : Normal [ G 0.25 L ]

Remark : 1. /1 Notification of Industrial Estate Authority of Thailand 029 / 2567 (2024)

2. SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

3. Parameter Outside The Scope of The Registration of Department of Industrial Works

4. Sampling By Mr. Supharek Phátklang



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....

(Miss Apiradee Chuen-arom)

18/12/2025

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
THIS REPORT SHALL NOT REPRODUCED EXCEPT IN FULL  
WITHOUT THE WRITTEN APPROVAL LABORATORY

COPY

## Test Report

Request No : W6812153

Report No : 6901-0018

Customer : MDX Public Co.,Ltd.

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110

Sampling Source : WWTP

Sample No : W 68120494

Sample Name : Influent

Sampling Date : 04/12/2025

Sampling By : ETC

Sampling Time : 9:10 AM - 3:10 PM

Sampling Method : Composit

Received Date : 06/12/2025

Tested Date : 06/12/2025 - 25/12/2025

Reported Date : 05/01/2026

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Flow Rate	m <sup>3</sup> /day	Calculation Method	2,804	-

Physical Apperance : 1. Sample : Wastewater (slightly-gray , lightly SS)

2. Container : Normal [ PE 0.5 L (4 Bottle), PE 1.0 L (2 Bottle), G 1.0 L ]

Remark : 1. /1 Notification of Industrial Estate Authority of Thailand 029 / 2567 (2024)

2. Parameter Outside The Scope of The Registration of Department of Industrial Works

3. Sampling By Mr. Supharerk Phatklang



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
THIS REPORT SHALL NOT REPRODUCED EXCEPT IN FULL  
WITHOUT THE WRITTEN APPROVAL LABORATORY

Examined By : .....

(Miss Apiradee Chuen-arom)

05/01/2026

COPY

## Test Report

Request No : W6807180

Report No : 6807-1503

Customer : MDX Public Co.,Ltd.\*\*

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110\*\*

Sampling Source : WWTP\*\*

Sample No : W 68070760

Sample Name : Effluent\*\*

Sampling Date : 04/07/2025\*\*

Sampling By : ETC\*\*

Sampling Time : 9:00 AM - 3:00 PM\*\*

Sampling Method : Composit\*\*

Received Date : 05/07/2025

Tested Date : 07/07/2025 - 16/07/2025

Reported Date : 23/07/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Arsenic *	mg/L	Continuous Hydride Generation/AAS Method (SM:3114B)	< 0.0020	≤0.25
Biochemical Oxygen Demand #	mg/L	5-Day BOD Test, Membrane Electrode Method (SM:5210B)	< 2.0	≤20
Cadmium *	mg/L	Digestion, Inductively Coupled Plasma Method (SM:3030F, 3120B)	< 0.03	≤0.03
Chemical Oxygen Demand #	mg/L	Closed Reflux, Titrimetric Method (SM:5220C)	< 40	≤120
Copper *	mg/L	Digestion, Inductively Coupled Plasma Method (SM:3030F, 3120B)	0.03	≤2
Hexavalent Chromium *	mg/L as Cr <sup>6+</sup>	Filtration, Colorimetric Method (SM:3500 -Cr B)	< 0.050	≤0.25

Physical Appearance : 1. Sample : yellow, lightly SS

2. Container : Normal [ PE 0.5 L [ 4 Bottle], PE 1.0 L [ 2 Bottle ], PE 1.8 L, G 1.0 L ]

Remark : 1. /1 Notification of the Ministry of Natural Resources and Environmental , B.E. 2559 (2016)

2. # = ISO/IEC 17025:2017 Accredited by DSS, SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

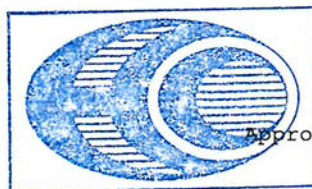
3. Miss Apiradee Chuen-arom is Section Head / Miss Nunnaphat Bakhuntod is Technical Management.

4. \* = Test Report/Sampling marked Not Accredited, Sampling By Mr. Parkpoom Buasawad (1-003-ท-0017)\*

5. \*\* = These data are non laboratory data.

Examined By : .....

(Miss Apiradee Chuen-arom)  
(1-003-ท-0007)  
23/07/2025



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)  
(1-003-ท-0005)  
23/07/2025

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
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WITHOUT THE WRITTEN APPROVAL LABORATORY

## Test Report

Request No : W6807180

Report No : 6807-1503

Customer : MDX Public Co.,Ltd.\*\*

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110\*\*

Sampling Source : WWTP\*\*

Sample No : W 68070760

Sample Name : Effluent\*\*

Sampling Date : 04/07/2025\*\*

Sampling By : ETC\*\*

Sampling Time : 9:00 AM - 3:00 PM\*\*

Sampling Method : Composit\*\*

Received Date : 05/07/2025

Tested Date : 07/07/2025 - 16/07/2025

Reported Date : 23/07/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Lead *	mg/L	Digestion, Inductively Coupled Plasma Method (SM:3030F, 3120B)	< 0.03	≤ 0.2
Mercury #	mg/L	Digestion, Cold -Vapor Atomic Absorption Spectrometric Method (SM:3112B)	< 0.0010	≤ 0.005
Nickel *	mg/L	Digestion, Inductively Coupled Plasma Method (SM:3030F, 3120B)	0.07	≤ 1
Oil and Grease *	mg/L	Liquid-Liquid, Partition-Gravimetric Method (SM:5520B)	< 3.0	≤ 5
pH (on site) *		Electrometric Method	6.7	5.5-9.0
Phenol *	mg/L	Distillation, Direct Photometric Method (SM:5530B,D)	< 0.005	≤ 1

Physical Apperance : 1. Sample : yellow, lightly SS

2. Container : Normal [ PE 0.5 L [ 4 Bottle], PE 1.0 L [ 2 Bottle ], PE 1.8 L, G 1.0 L ]

Remark : 1. /1 Notification of the Ministry of Natural Resources and Environmental , B.E. 2559 (2016)

2. # = ISO/IEC 17025:2017 Accredited by DSS, SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

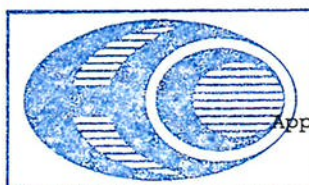
3. Miss Apiradee Chuen-arom is Section Head / Miss Nunnaphat Bakhuntod is Technical Management.

4. \* = Test Report/Sampling marked Not Accredited, Sampling By Mr. Parkpoom Buasawad (จ-003-ท-0017)\*

5. \*\* = These data are non laboratory data.

Examined By : .....

(Miss Apiradee Chuen-arom)  
(จ-003-ท-0007)  
23/07/2025



บริษัท อีสเทิร์นไทยคอนซัลติง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)  
(จ-003-ท-0005)  
23/07/2025

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## Test Report

Request No : W6807180

Report No : 6807-1503

Customer : MDX Public Co.,Ltd.\*\*

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110\*\*

Sampling Source : WWTP\*\*

Sample No : W 68070760

Sample Name : Effluent\*\*

Sampling Date : 04/07/2025\*\*

Sampling By : ETC\*\*

Sampling Time : 9:00 AM - 3:00 PM\*\*

Sampling Method : Composit\*\*

Received Date : 05/07/2025

Tested Date : 07/07/2025 - 16/07/2025

Reported Date : 23/07/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Temperature *	°C	Laboratory and Field Method (SM:2550 B)	24	≤40
Total Suspended Solids #	mg/L	Dried at 103-105 degree celsius (SM:2540D)	<5	≤50
Zinc *	mg/L	Digestion, Inductively Coupled Plasma Method (SM:3030F, 3120B)	0.05	≤5

Physical Apperance : 1. Sample : yellow, lightly SS

2. Container : Normal [ PE 0.5 L [ 4 Bottle], PE 1.0 L [ 2 Bottle ], PE 1.8 L, G 1.0 L ]

Remark : 1. /1 Notification of the Ministry of Natural Resources and Environmental , B.E. 2559 (2016)

2. # = ISO/IEC 17025:2017 Accredited by DSS, SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

3. Miss Apiradee Chuen-arom is Section Head / Miss Nunnaphat Bakhuntod is Technical Management.

4. \* = Test Report/Sampling marked Not Accredited, Sampling By Mr. Parkpoom Buasawad (จ-003-ค-0017)\*

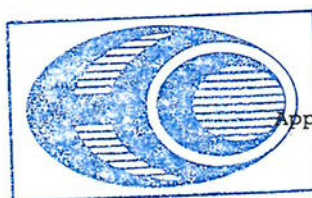
5. \*\* = These data are non laboratory data.

Examined By : .....

(Miss Apiradee Chuen-arom)

(จ-003-ค-0007)

23/07/2025



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)

(จ-003-ค-0005)

23/07/2025

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## Test Report

Request No : W6807180

Report No : 6807 - 1503

Customer : MDX Public Co.,Ltd.

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110

Sampling Source : WWTP

Sample No : W 68070760

Sample Name : Effluent

Sampling Date : 04/07/2025

Sampling By : ETC

Sampling Time : 9:00 AM - 3:00 PM

Sampling Method : Composit

Received Date : 05/07/2025

Tested Date : 07/07/2025 - 24/07/2025

Reported Date : 24/07/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Cresol #	mg/L	Gas Chromatography	ตรวจไม่พบ	-

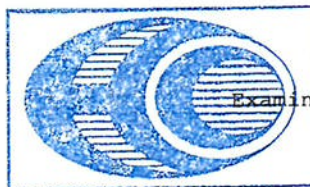
Physical Apperance : 1. Sample : yellow, lightly SS

2. Container : Normal [ PE 0.5 L [ 4 Bottle], PE 1.0 L [ 2 Bottle ], PE 1.8 L, G 1.0 L ]

Remark : 1. /1 Notification of the Ministry of Natural Resources and Environmental , B.E. 2559 (2016)

2. # Tested by Rajpracha Samasai Institute, Department of Disease Control, Ministry of Public Health.

3. Sampling By Mr. Parkpoom Buasawad



Examined By : .....

(Miss Apiradee Chuen-arom)

24/07/2025

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
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## Test Report

Request No : W6807181

Report No : 6807-1086

Customer : MDX Public Co.,Ltd.

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110

Sampling Source : WWTP

Sample No : W 68070764

Sample Name : Effluent

Sampling Date : 04/07/2025

Sampling By : ETC

Sampling Time : 3:00 PM

Sampling Method : Grab

Received Date : 05/07/2025

Tested Date : 14/07/2025

Reported Date : 17/07/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Coliform Bacteria	MPN:100 mL	MPN Test Method (SM:9221B)	ND	-

Physical Apperance : 1. Sample : yellow, lightly SS

2. Container : Normal [ G 0.25 L ]

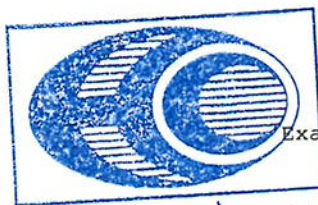
Remark : 1. /1 Notification of the Ministry of Natural Resources and Environmental , B.E. 2559 (2016)

2. SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

3. Parameter Outside The Scope of The Registration of Department of Industrial Works

4. Sampling By Mr. Supharker Phatklang

5. LOQ = Level of Quantitation [ LOQ of Coliform Bacteria = 1.8 MPN:100 mL ] / ND = Not Detected



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....

(Miss Apiradee Chuen-arom)

17/07/2025

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
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WITHOUT THE WRITTEN APPROVAL LABORATORY

Page 1 of 1

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## Test Report

Request No : W6807180

Report No : 6807-1503

Customer : MDX Public Co.,Ltd.

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110

Sampling Source : WWTP

Sample No : W 68070760

Sample Name : Effluent

Sampling Date : 04/07/2025

Sampling By : ETC

Sampling Time : 9:00 AM - 3:00 PM

Sampling Method : Composit

Received Date : 05/07/2025

Tested Date : 07/07/2025 - 16/07/2025

Reported Date : 23/07/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Flow Rate	m <sup>3</sup> /day	Calculation Method	6,747	-

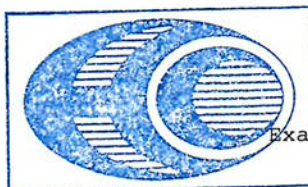
Physical Apperance : 1. Sample : yellow, lightly SS

2. Container : Normal [ PE 0.5 L [ 4 Bottle], PE 1.0 L [ 2 Bottle ], PE 1.8 L, G 1.0 L ]

Remark : 1. /1 Notification of the Ministry of Natural Resources and Environmental , B.E. 2559 (2016)

2. Parameter Outside The Scope of The Registration of Department of Industrial Works

3. Sampling By Mr. Parkpoom Buasawad



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....

(Miss Apiradee Chuen-arom)

23/07/2025

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
THIS REPORT SHALL NOT REPRODUCED EXCEPT IN FULL  
WITHOUT THE WRITTEN APPROVAL LABORATORY

## Test Report

Request No : W6808025

Report No : 6808-1456

Customer : MDX Public Co.,Ltd.\*\*

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110\*\*

Sampling Source : WWTP\*\*

Sample No : W 68080061

Sample Name : Effluent\*\*

Sampling Date : 01/08/2025\*\*

Sampling By : ETC\*\*

Sampling Time : 9:00 AM - 3:00 PM\*\*

Sampling Method : Composit\*\*

Received Date : 02/08/2025

Tested Date : 04/08/2025 - 25/08/2025

Reported Date : 27/08/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Arsenic *	mg/L	Continuous Hydride Generation/AAS Method (SM:3114B)	< 0.0020	≤0.25
Biochemical Oxygen Demand #	mg/L	5-Day BOD Test, Membrane Electrode Method (SM:5210B)	< 2.0	≤20
Cadmium *	mg/L	Digestion, Inductively Coupled Plasma Method (SM:3030F, 3120B)	< 0.03	≤0.03
Chemical Oxygen Demand #	mg/L	Closed Reflux, Titrimetric Method (SM:5220C)	< 40	≤120
Copper *	mg/L	Digestion, Inductively Coupled Plasma Method (SM:3030F, 3120B)	< 0.03	≤2
Hexavalent Chromium *	mg/L as Cr <sup>6+</sup>	Filtration, Colorimetric Method (SM:3500 -Cr B)	< 0.050	≤0.25

Physical Apperance : 1. Sample : yellow, lightly SS

2. Container : Normal [ PE 0.5 L (4 Bottle) , PE 1.8 L , G 1.0 L ]

Remark : 1. /1 Notification of the Ministry of Natural Resources and Environmental , B.E. 2559 (2016)

2. # = ISO/IEC 17025:2017 Accredited by DSS, SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

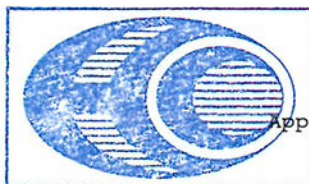
3. Miss Apiradee Chuen-arom is Section Head / Miss Nunnaphat Bakhuntod is Technical Management.

4. \* = Test Report/Sampling marked Not Accredited, Sampling By Mr. Songpon Phiwan (จ-003-ก-0016)\*

5. \*\* = These data are non laboratory data.

Examined By : .....

(Miss Apiradee Chuen-arom)  
(จ-003-ก-0007)  
27/08/2025



บริษัท อีสเทิร์นไทยคอนซัลติง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)  
(จ-003-ก-0005)  
27/08/2025

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
THIS REPORT SHALL NOT REPRODUCED EXCEPT IN FULL  
WITHOUT THE WRITTEN APPROVAL LABORATORY

## Test Report

Request No : W6808025

Report No : 6808-1456

Customer : MDX Public Co.,Ltd.\*\*

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110\*\*

Sampling Source : WWTP\*\*

Sample No : W 68080061

Sample Name : Effluent\*\*

Sampling Date : 01/08/2025\*\*

Sampling By : ETC\*\*

Sampling Time : 9:00 AM - 3:00 PM\*\*

Sampling Method : Composit\*\*

Received Date : 02/08/2025

Tested Date : 04/08/2025 - 25/08/2025

Reported Date : 27/08/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Lead *	mg/L	Digestion,Inductively Coupled Plasma Method (SM:3030F, 3120B)	< 0.03	≤0.2
Mercury #	mg/L	Digestion, Cold -Vapor Atomic Absorption Spectrometric Method (SM:3112B)	< 0.0010	≤0.005
Nickel *	mg/L	Digestion,Inductively Coupled Plasma Method (SM:3030F, 3120B)	0.05	≤1
Oil and Grease *	mg/L	Liquid-Liquid, Partition-Gravimetric Method (SM:5520B)	< 3.0	≤5
pH (on site) *		Electrometric Method	7.4	5.5-9.0
Phenol *	mg/L	Distillation,Direct Photometric Method (SM:5530B,D)	0.024	≤1

Physical Apperance : 1. Sample : yellow, lightly SS

2. Container : Normal [ PE 0.5 L (4 Bottle) , PE 1.8 L , G 1.0 L ]

Remark : 1. /1 Notification of the Ministry of Natural Resources and Environmental , B.E. 2559 (2016)

2. # = ISO/IEC 17025:2017 Accredited by DSS, SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

3. Miss Apiradee Chuen-arom is Section Head / Miss Nunnaphat Bakhuntod is Technical Management.

4. \* = Test Report/Sampling marked Not Accredited, Sampling By Mr. Songpon Phiwuan (จ-003-ก-0016)\*

5. \*\* = These data are non laboratory data.

Examined By : .....

(Miss Apiradee Chuen-arom)

(จ-003-ก-0007)

27/08/2025



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)

(จ-003-ก-0005)

27/08/2025

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
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## Test Report

Request No : W6808025

Report No : 6808-1456

Customer : MDX Public Co.,Ltd.\*\*

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110\*\*

Sampling Source : WWTP\*\*

Sample No : W 68080061

Sample Name : Effluent\*\*

Sampling Date : 01/08/2025\*\*

Sampling By : ETC\*\*

Sampling Time : 9:00 AM - 3:00 PM\*\*

Sampling Method : Composit\*\*

Received Date : 02/08/2025

Tested Date : 04/08/2025 - 25/08/2025

Reported Date : 27/08/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Temperature *	°C	Laboratory and Field Method (SM:2550 B)	30	≤40
Total Suspended Solids #	mg/L	Dried at 103-105 degree celsius (SM:2540D)	< 5	≤50
Zinc *	mg/L	Digestion,Inductively Coupled Plasma Method (SM:3030F, 3120B)	0.05	≤5

Physical Apperance : 1. Sample : yellow, lightly SS

2. Container : Normal [ PE 0.5 L (4 Bottle) , PE 1.8 L , G 1.0 L ]

Remark : 1. /1 Notification of the Ministry of Natural Resources and Environmental , B.E. 2559 (2016)

2. # = ISO/IEC 17025:2017 Accredited by DSS, SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

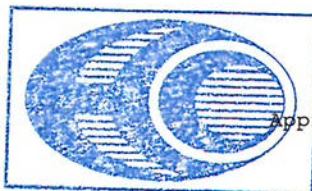
3. Miss Apiradee Chuen-arom is Section Head / Miss Nunnaphat Bakhuntod is Technical Management.

4. \* = Test Report/Sampling marked Not Accredited, Sampling By Mr. Songpon Phiwuan (จ-003-ท-0016)\*

5. \*\* = These data are non laboratory data.

Examined By : .....

(Miss Apiradee Chuen-arom)  
(จ-003-ท-0007)  
27/08/2025



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)  
(จ-003-ท-0005)  
27/08/2025

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## Test Report

Request No : W6808025

Report No : 6808 - 1456

Customer : MDX Public Co.,Ltd.

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110

Sampling Source : WWTP

Sample No : W 68080061

Sample Name : Effluent

Sampling Date : 01/08/2025

Sampling By : ETC

Sampling Time : 9:00 AM - 3:00 PM

Sampling Method : Composit

Received Date : 02/08/2025

Tested Date : 04/08/2025 - 25/08/2025

Reported Date : 27/08/2025

Parameter	Unit	Method	Result	Standard/ <sup>1</sup>
Cresol #	mg/L	Gas Chromatography	ตรวจไม่พบ	-

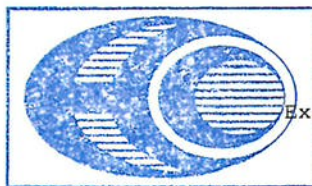
Physical Apperance : 1. Sample : yellow, lightly SS

2. Container : Normal [ PE 0.5 L (4 Bottle) , PE 1.8 L , G 1.0 L ]

Remark : 1. /1 Notification of the Ministry of Natural Resources and Environmental , B.E. 2559 (2016)

2. # Tested by Rajpracha Samasai Institute, Department of Disease Control, Ministry of Public Health.

3. Sampling By Mr. Songpon Phiwuan



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....

(Miss Apiradee Chuen-arom)  
27/08/2025REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
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WITHOUT THE WRITTEN APPROVAL LABORATORY

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**Test Report**

Request No : W6808027

Report No : 6808-0666

Customer : MDX Public Co.,Ltd.

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110

Sampling Source : WWTP

Sample No : W 68080066

Sample Name : Effluent

Sampling Date : 01/08/2025

Sampling By : ETC

Sampling Time : 3:00 PM

Sampling Method : Grab

Received Date : 02/08/2025

Tested Date : 06/08/2025

Reported Date : 13/08/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Coliform Bacteria	MPN:100 mL	MPN Test Method (SM:9221B)	7.8	-

Physical Apperance : 1. Sample : yellowish, lightly SS

2. Container : Normal [ G 0.25 L]

Remark : 1. /1 Notification of the Ministry of Natural Resources and Environmental , B.E. 2559 (2016)

2. SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

3. Parameter Outside The Scope of The Registration of Department of Industrial Works

4. Sampling By Mr. Songpon Phiwuan



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....

(Miss Apiradee Chuen-arom)

13/08/2025

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
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WITHOUT THE WRITTEN APPROVAL LABORATORY

COPY

## Test Report

Request No : W6808025

Report No : 6808-1456

Customer : MDX Public Co.,Ltd.

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110

Sampling Source : WWTP

Sample No : W 68080061

Sample Name : Effluent

Sampling Date : 01/08/2025

Sampling By : ETC

Sampling Time : 9:00 AM - 3:00 PM

Sampling Method : Composit

Received Date : 02/08/2025

Tested Date : 04/08/2025 - 25/08/2025

Reported Date : 27/08/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Flow Rate	m <sup>3</sup> /day	Calculation Method	5,397	-

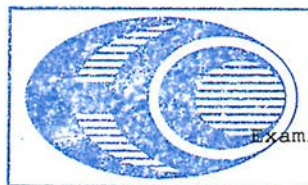
Physical Apperance : 1. Sample : yellow, lightly SS

2. Container : Normal [ PE 0.5 L (4 Bottle) , PE 1.8 L , G 1.0 L]

Remark : 1. /1 Notification of the Ministry of Natural Resources and Environmental , B.E. 2559 (2016)

2. Parameter Outside The Scope of The Registration of Department of Industrial Works

3. Sampling By Mr. Songpon Phiwuan



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....

(Miss Apiradee Chuen-arom)

27/08/2025

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## Test Report

Request No : W6809189

Report No : 6809-1776

Customer : MDX Public Co.,Ltd.\*\*

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110\*\*

Sampling Source : WWTP\*\*

Sample No : W 68090597

Sample Name : Effluent\*\*

Sampling Date : 05/09/2025\*\*

Sampling By : ETC\*\*

Sampling Time : 9:00 AM - 3:00 PM\*\*

Sampling Method : Composit\*\*

Received Date : 06/09/2025

Tested Date : 08/09/2025 - 24/09/2025

Reported Date : 25/09/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Arsenic *	mg/L	Continuous Hydride Generation/AAS Method (SM:3114B)	< 0.0020	≤0.25
Biochemical Oxygen Demand #	mg/L	5-Day BOD Test, Membrane Electrode Method (SM:5210B)	2.4	≤20
Cadmium @	mg/L	Digestion,Inductively Coupled Plasma Method (SM:3030F, 3120B)	< 0.03	≤0.03
Chemical Oxygen Demand #	mg/L	Closed Reflux,Titrimetric Method (SM:5220C)	61	≤120
Copper @	mg/L	Digestion,Inductively Coupled Plasma Method (SM:3030F, 3120B)	< 0.03	≤2
Hexavalent Chromium *	mg/L as Cr <sup>6+</sup>	Filtration, Colorimetric Method (SM:3500 -Cr B)	< 0.050	≤0.25

Physical Apperance : 1. Sample : Wastewater (yellowish, lightly SS)

2. Container : Normal [ PE 0.5 L(4 Bottle) , PE 1.8 L , G 1.0 L]

Remark : 1. /1 Notification of the Ministry of Natural Resources and Environmental , B.E. 2559 (2016)

2. @ = ISO/IEC 17025:2017 Accredited by TISI., # = ISO/IEC 17025:2017 Accredited by DSS,

SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

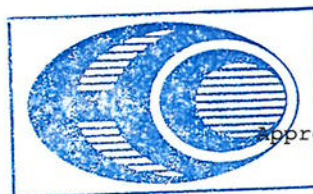
3. Miss Apiradee Chuen-arom is Section Head / Miss Nunnaphat Bakhuntod is Technical Management.

4. \* = Test Report/Sampling marked Not Accredited, Sampling By Mr. Supharek Phatklang (จ-003-ก-0031)\*

5. \*\* = These data are non laboratory data.

Examined By : .....

(Miss Apiradee Chuen-arom)  
(จ-003-ก-0007)  
25/09/2025



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)  
(จ-003-ก-0005)  
25/09/2025

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## Test Report

Request No : W6809189

Report No : 6809-1776

Customer : MDX Public Co.,Ltd.\*\*

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110\*\*

Sampling Source : WWTP\*\*

Sample No : W 68090597

Sample Name : Effluent\*\*

Sampling Date : 05/09/2025\*\*

Sampling By : ETC\*\*

Sampling Time : 9:00 AM - 3:00 PM\*\*

Sampling Method : Composit\*\*

Received Date : 06/09/2025

Tested Date : 08/09/2025 - 24/09/2025

Reported Date : 25/09/2025

Parameter	Unit	Method	Result	Standard/ <sup>1</sup>
Lead <sup>@</sup>	mg/L	Digestion, Inductively Coupled Plasma Method (SM:3030F, 3120B)	< 0.03	≤ 0.2
Mercury <sup>#</sup>	mg/L	Digestion, Cold -Vapor Atomic Absorption Spectrometric Method (SM:3112B)	< 0.0010	≤ 0.005
Nickel <sup>@</sup>	mg/L	Digestion, Inductively Coupled Plasma Method (SM:3030F, 3120B)	0.04	≤ 1
Oil and Grease <sup>@</sup>	mg/L	Liquid-Liquid, Partition-Gravimetric Method (SM:5520B)	< 3.0	≤ 5
pH (on site) <sup>*</sup>		Electrometric Method	7.2	5.5-9.0
Phenol <sup>*</sup>	mg/L	Distillation, Direct Photometric Method (SM:5530B,D)	< 0.005	≤ 1

Physical Apperance : 1. Sample : Wastewater (yellowish, lightly SS)

2. Container : Normal [ PE 0.5 L(4 Bottle) , PE 1.8 L , G 1.0 L]

Remark : 1. /1 Notification of the Ministry of Natural Resources and Environmental , B.E. 2559 (2016)

2. @ = ISO/IEC 17025:2017 Accredited by TISI, # = ISO/IEC 17025:2017 Accredited by DSS,

SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

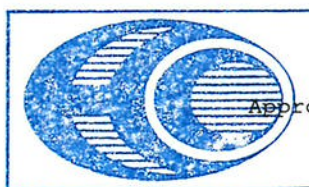
3. Miss Apiradee Chuen-arom is Section Head / Miss Nunnaphat Bakhuntod is Technical Management.

4. \* = Test Report/Sampling marked Not Accredited, Sampling By Mr. Supharerk Phatklang (จ-003-ท-0031)\*

5. \*\* = These data are non laboratory data.

Examined By : .....

(Miss Apiradee Chuen-arom)  
(จ-003-ท-0007)  
25/09/2025



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)  
(จ-003-ท-0005)  
25/09/2025

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## Test Report

Request No : W6809189

Report No : 6809-1776

Customer : MDX Public Co.,Ltd.\*\*

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110\*\*

Sampling Source : WWTP\*\*

Sample No : W 68090597

Sample Name : Effluent\*\*

Sampling Date : 05/09/2025\*\*

Sampling By : ETC\*\*

Sampling Time : 9:00 AM - 3:00 PM\*\*

Sampling Method : Composit\*\*

Received Date : 06/09/2025

Tested Date : 08/09/2025 - 24/09/2025

Reported Date : 25/09/2025

Parameter	Unit	Method	Result	Standard/ <sup>1</sup>
Temperature *	°C	Laboratory and Field Method (SM:2550 B)	32	≤40
Total Kjeldahl Nitrogen *	mg/L as NH <sub>3</sub> -N	Macro Kjeldahl Method (SM:4500 -Norg B)	< 5	≤100
Total Suspended Solids #	mg/L	Dried at 103-105 degree celsius (SM:2540D)	7	≤50
Zinc @	mg/L	Digestion,Inductively Coupled Plasma Method (SM:3030F, 3120B)	0.05	≤5

Physical Apperance : 1. Sample : Wastewater (yellowish, lightly SS)

2. Container : Normal [ PE 0.5 L(4 Bottle) , PE 1.8 L , G 1.0 L]

Remark : 1. /1 Notification of the Ministry of Natural Resources and Environmental , B.E. 2559 (2016)

2. @ = ISO/IEC 17025:2017 Accredited by TISI., # = ISO/IEC 17025:2017 Accredited by DSS,

SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

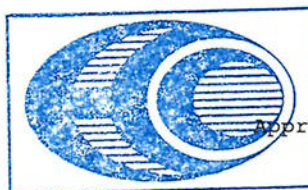
3. Miss Apiradee Chuen-arom is Section Head / Miss Nunnaphat Bakhuntod is Technical Management.

4. \* = Test Report/Sampling marked Not Accredited, Sampling By Mr. Supharerk Phatklang (จ-003-ค-0031)\*

5. \*\* = These data are non laboratory data.

Examined By : .....

(Miss Apiradee Chuen-arom)  
(จ-003-ค-0007)  
25/09/2025



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)  
(จ-003-ค-0005)  
25/09/2025

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## Test Report

Request No : W6809189

Report No : 6809-1776

Customer : MDX Public Co.,Ltd.

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110

Sampling Source : WWTP

Sample No : W 68090597

Sample Name : Effluent

Sampling Date : 05/09/2025

Sampling By : ETC

Sampling Time : 9:00 AM - 3:00 PM

Sampling Method : Composit

Received Date : 06/09/2025

Tested Date : 08/09/2025 - 01/10/2025

Reported Date : 03/10/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Cresol #	mg/L	Gas Chromatography	ตรวจไม่พบ	-

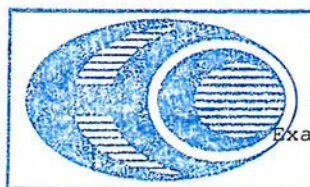
Physical Apperance : 1. Sample : Wastewater (yellowish, lightly SS)

2. Container : Normal [ PE 0.5 L(4 Bottle) , PE 1.8 L , G 1.0 L]

Remark : 1. /I Notification of the Ministry of Natural Resources and Environmental , B.E. 2559 (2016)

2. # Tested by Rajpracha Samasai Institute, Department of Disease Control, Ministry of Public Health.

3. Sampling By Mr. Supharerk Phatklang



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....

(Miss Apiradee Chuen-arom)

03/10/2025

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
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## Test Report

Request No : W6809191

Report No : 6809-1405

Customer : MDX Public Co.,Ltd.

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110

Sampling Source : WWTP

Sample No : W 68090602

Sample Name : Effluent

Sampling Date : 05/09/2025

Sampling By : ETC

Sampling Time : 3:00 PM

Sampling Method : Grab

Received Date : 06/09/2025

Tested Date : 16/09/2025

Reported Date : 18/09/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Coliform Bacteria	MPN:100 mL	MPN Test Method (SM:9221B)	2.0	-

Physical Apperance : 1. Sample : Wastewater (lightly SS)

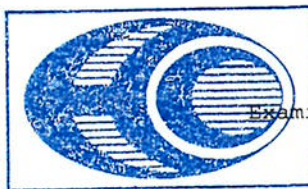
2. Container : Normal [ G 0.25 L ]

Remark : 1. /1 Notification of the Ministry of Natural Resources and Environmental , B.E. 2559 (2016)

2. SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

3. Parameter Outside The Scope of The Registration of Department of Industrial Works

4. Sampling By Mr. Supharerk Phatklang



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....

(Miss Apiradee Chuen-arom)

18/09/2025

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
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## Test Report

Request No : W6809189

Report No : 6809-1776

Customer : MDX Public Co.,Ltd.

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110

Sampling Source : WWTP

Sample No : W 68090597

Sample Name : Effluent

Sampling Date : 05/09/2025

Sampling By : ETC

Sampling Time : 9:00 AM - 3:00 PM

Sampling Method : Composit

Received Date : 06/09/2025

Tested Date : 08/09/2025 - 24/09/2025

Reported Date : 25/09/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Ammonia Nitrogen	mg/L as NH <sub>3</sub> -N	Distillation and Titrimetric Method (SM:4500 -NH <sub>3</sub> B,4500 -NH <sub>3</sub> C)	< 2.00	-
Flow Rate	m <sup>3</sup> /day	Calculation Method	4,357	-
Nitrate	mg/L as NO <sub>3</sub> <sup>-</sup>	Cadmium Reduction Method (SM:4500 -NO <sub>3</sub> - E)	50.2	-

Physical Apperance : 1. Sample : Wastewater (yellowish, lightly SS)

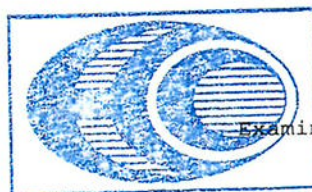
2. Container : Normal [ PE 0.5 L(4 Bottle) , PE 1.8 L , G 1.0 L]

Remark : 1. /1 Notification of the Ministry of Natural Resources and Environmental , B.E. 2559 (2016)

2. SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

3. Parameter Outside The Scope of The Registration of Department of Industrial Works

4. Sampling By Mr. Supharek Phatklang



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....

(Miss Apiradee Chuen-arom)

25/09/2025

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
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WITHOUT THE WRITTEN APPROVAL LABORATORY

## Test Report

Request No : W6810121

Report No : 6810-1770

Customer : MDX Public Co.,Ltd. \*\*

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110 \*\*

Sampling Source : WWTP \*\*

Sample No : W 68100411

Sample Name : Effluent \*\*

Sampling Date : 03/10/2025 \*\*

Sampling By : ETC \*\*

Sampling Time : 9:00 AM - 3:00 PM \*\*

Sampling Method : Composit \*\*

Received Date : 04/10/2025

Tested Date : 04/10/2025 - 28/10/2025

Reported Date : 29/10/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Arsenic *	mg/L	Continuous Hydride Generation/AAS Method (SM:3114B)	< 0.0020	≤0.25
Biochemical Oxygen Demand #	mg/L	5-Day BOD Test, Membrane Electrode Method (SM:5210B)	< 2.0	≤20
Cadmium @	mg/L	Digestion, Inductively Coupled Plasma Method (SM:3030F, 3120B)	< 0.03	≤0.03
Chemical Oxygen Demand #	mg/L	Closed Reflux, Titrimetric Method (SM:5220C)	51	≤120
Copper @	mg/L	Digestion, Inductively Coupled Plasma Method (SM:3030F, 3120B)	< 0.03	≤2
Hexavalent Chromium *	mg/L as Cr <sup>6+</sup>	Filtration, Colorimetric Method (SM:3500 -Cr B)	< 0.050	≤0.25

Physical Apperance : 1. Sample : Wastewater (yellowish , lightly SS)

2. Container : Normal [ PE 0.5 L (5 Bottle), PE 1.0 L (2 Bottle), G 01.0 L ]

Remark : 1. /1 Notification of the Ministry of Natural Resources and Environmental , B.E. 2559 (2016)

2. @ = ISO/IEC 17025:2017 Accredited by TISI, # = ISO/IEC 17025:2017 Accredited by DSS,

SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

3. Miss Apiradee Chuen-arom is Section Head / Miss Nunnaphat Bakhuntod is Technical Management.

4. \* = Test Report/Sampling marked Not Accredited, Sampling By Mr. Aocha Khwansirimongkhon (จ-003-ท-0034)\*

5. \*\* = These data are non laboratory data.

Examined By : .....

(Miss Apiradee Chuen-arom)

(จ-003-ท-0007)

29/10/2025



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)

(จ-003-ท-0005)

29/10/2025

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
THIS REPORT SHALL NOT REPRODUCED EXCEPT IN FULL  
WITHOUT THE WRITTEN APPROVAL LABORATORY

## Test Report

Request No : W6810121

Report No : 6810-1770

Customer : MDX Public Co.,Ltd. \*\*

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110 \*\*

Sampling Source : WWTP \*\*

Sample No : W 68100411

Sample Name : Effluent \*\*

Sampling Date : 03/10/2025 \*\*

Sampling By : ETC \*\*

Sampling Time : 9:00 AM - 3:00 PM \*\*

Sampling Method : Composit \*\*

Received Date : 04/10/2025

Tested Date : 04/10/2025 - 28/10/2025

Reported Date : 29/10/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Lead @	mg/L	Digestion, Inductively Coupled Plasma Method (SM:3030F, 3120B)	< 0.03	≤ 0.2
Mercury #	mg/L	Digestion, Cold-Vapor Atomic Absorption Spectrometric Method (SM:3112B)	< 0.0010	≤ 0.005
Nickel @	mg/L	Digestion, Inductively Coupled Plasma Method (SM:3030F, 3120B)	0.05	≤ 1
Oil and Grease @	mg/L	Liquid-Liquid, Partition-Gravimetric Method (SM:5520B)	< 3.0	≤ 5
pH (on site) *		Electrometric Method	7.2	5.5-9.0
Phenol *	mg/L	Distillation, Direct Photometric Method (SM:5530B,D)	< 0.005	≤ 1

Physical Appearance : 1. Sample : Wastewater (yellowish, lightly SS)

2. Container : Normal [ PE 0.5 L (5 Bottle), PE 1.0 L (2 Bottle), G 01.0 L ]

Remark : 1. /1 Notification of the Ministry of Natural Resources and Environmental, B.E. 2559 (2016)

2. @ = ISO/IEC 17025:2017 Accredited by TISI., # = ISO/IEC 17025:2017 Accredited by DSS,

SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

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4. \* = Test Report/Sampling marked Not Accredited, Sampling By Mr. Aocha Khwansirimongkhon (จ-003-ท-0034)\*

5. \*\* = These data are non laboratory data.

Examined By : .....

(Miss Apiradee Chuen-arom)  
(จ-003-ท-0007)  
29/10/2025



บริษัท อีสเทิร์นไทยคอนซัลติง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)  
(จ-003-ท-0005)  
29/10/2025

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
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## Test Report

Request No : W6810121

Report No : 6810-1770

Customer : MDX Public Co.,Ltd. \*\*

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110 \*\*

Sampling Source : WWTP \*\*

Sample No : W 68100411

Sample Name : Effluent \*\*

Sampling Date : 03/10/2025 \*\*

Sampling By : ETC \*\*

Sampling Time : 9:00 AM - 3:00 PM \*\*

Sampling Method : Composit \*\*

Received Date : 04/10/2025

Tested Date : 04/10/2025 - 28/10/2025

Reported Date : 29/10/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Temperature *	°C	Laboratory and Field Method (SM:2550 B)	29	≤40
Total Suspended Solids #	mg/L	Dried at 103-105 degree celsius (SM:2540D)	< 5	≤50
Zinc @	mg/L	Digestion, Inductively Coupled Plasma Method (SM:3030F, 3120B)	0.05	≤5

Physical Apperance : 1. Sample : Wastewater (yellowish , lightly SS)

2. Container : Normal [ PE 0.5 L (5 Bottle), PE 1.0 L (2 Bottle), G 01.0 L ]

Remark : 1. /1 Notification of the Ministry of Natural Resources and Environmental , B.E. 2559 (2016)

2. @ = ISO/IEC 17025:2017 Accredited by TISI., # = ISO/IEC 17025:2017 Accredited by DSS,

SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

3. Miss Apiradee Chuen-arom is Section Head / Miss Nunnaphat Bakhuntod is Technical Management.

4. \* = Test Report/Sampling marked Not Accredited, Sampling By Mr. Aocha Khwansirimongkhon (จ-003-ท-0034)\*

5. \*\* = These data are non laboratory data.

Examined By : .....

(Miss Apiradee Chuen-arom)  
(จ-003-ท-0007)  
29/10/2025



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)  
(จ-003-ท-0005)  
29/10/2025

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
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WITHOUT THE WRITTEN APPROVAL LABORATORY

## Test Report

Request No : W6810121

Report No : 6810-1770

Customer : MDX Public Co.,Ltd.

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110

Sampling Source : WWTP

Sample No : W 68100411

Sample Name : Effluent

Sampling Date : 03/10/2025

Sampling By : ETC

Sampling Time : 9:00 AM - 3:00 PM

Sampling Method : Composit

Received Date : 04/10/2025

Tested Date : 04/10/2025 - 28/10/2025

Reported Date : 29/10/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Cresol #	mg/L	Gas Chromatography	ตรวจไม่พบ	-

Physical Apperance : 1. Sample : Wastewater (yellowish , lightly SS)

2. Container : Normal [ PE 0.5 L (5 Bottle), PE 1.0 L (2 Bottle), G 1.0 L ]

Remark : 1. /1 Notification of the Ministry of Natural Resources and Environmental , B.E. 2559 (2016)

2. # Tested by Rajpracha Samasai Institute, Department of Disease Control, Ministry of Public Health.

3. Sampling By Mr. Aocha Khwansirimongkhon



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : 

(Miss Apiradee Chuen-arom)

29/10/2025

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
THIS REPORT SHALL NOT REPRODUCED EXCEPT IN FULL  
WITHOUT THE WRITTEN APPROVAL LABORATORY

## Test Report

Request No : W6810122

Report No : 6810-1084

Customer : MDX Public Co.,Ltd.

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110

Sampling Source : WWTP

Sample No : W 68100415

Sample Name : Effluent

Sampling Date : 03/10/2025

Sampling By : ETC

Sampling Time : 3:00 PM

Sampling Method : Grab

Received Date : 04/10/2025

Tested Date : 15/10/2025

Reported Date : 20/10/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Coliform Bacteria	MPN:100 mL	MPN Test Method (SM:9221B)	11	-

Physical Apperance : 1. Sample : Wastewater (yellow , lightly SS)

2. Container : Normal [ G 0.25 L ]

Remark : 1. /1 Notification of the Ministry of Natural Resources and Environmental , B.E. 2559 (2016)

2. SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023

3. Parameter Outside The Scope of The Registration of Department of Industrial Works

4. Sampling By Mr. Aocha Khwansirimongkhon



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....

(Miss Apiradee Chuen-arom)  
20/10/2025

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
THIS REPORT SHALL NOT REPRODUCED EXCEPT IN FULL  
WITHOUT THE WRITTEN APPROVAL LABORATORY

## Test Report

Request No : W6810121

Report No : 6810-1770

Customer : MDX Public Co.,Ltd.

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110

Sampling Source : WWTP

Sample No : W 68100411

Sample Name : Effluent

Sampling Date : 03/10/2025

Sampling By : ETC

Sampling Time : 9:00 AM - 3:00 PM

Sampling Method : Composit

Received Date : 04/10/2025

Tested Date : 04/10/2025 - 28/10/2025

Reported Date : 29/10/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Flow Rate	m <sup>3</sup> /day	Calculation Method	6,210	-

Physical Apperance : 1. Sample : Wastewater (yellowish , lightly SS)

2. Container : Normal [ PE 0.5 L (5 Bottle), PE 1.0 L (2 Bottle), G 1.0 L ]

Remark : 1. /1 Notification of the Ministry of Natural Resources and Environmental , B.E. 2559 (2016)

2. Parameter Outside The Scope of The Registration of Department of Industrial Works

3. Sampling By Mr. Aocha Khwansirimongkhon



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : 

(Miss Apiradee Chuen-arom)

29/10/2025

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
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## Test Report

Request No : W6811200

Report No : 6811-1589

Customer : MDX Public Co.,Ltd. \*\*

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110 \*\*

Sampling Source : WWTP\*\*

Sample No : W 68110660

Sample Name : Effluent\*\*

Sampling Date : 07/11/2025\*\*

Sampling By : ETC\*\*

Sampling Time : 9:00 AM - 3:00 PM\*\*

Sampling Method : Composit\*\*

Received Date : 08/11/2025

Tested Date : 08/11/2025 - 04/12/2025

Reported Date : 06/12/2025

Parameter	Unit	Method	Result	Standard/ <sup>1</sup>
Arsenic *	mg/L	Continuous Hydride Generation/AAS Method (SM:3114B)	< 0.0020	≤0.25
Biochemical Oxygen Demand #	mg/L	5-Day BOD Test, Membrane Electrode Method (SM:5210B)	< 2.0	≤20
Cadmium @	mg/L	Digestion, Inductively Coupled Plasma Method (SM:3030F, 3120B)	< 0.03	≤0.03
Chemical Oxygen Demand #	mg/L	Closed Reflux, Titrimetric Method (SM:5220C)	< 40	≤120
Copper @	mg/L	Digestion, Inductively Coupled Plasma Method (SM:3030F, 3120B)	0.03	≤2
Hexavalent Chromium *	mg/L as Cr <sup>6+</sup>	Filtration, Colorimetric Method (SM:3500 -Cr B)	< 0.050	≤0.25

Physical Appearance : 1. Sample : Wastewater (yellowish , lightly SS)

2. Container : Normal [ PE 0.5 L (5 Bottle), PE 1.0 L (2 Bottle), G 1.0 L ]

Remark : 1. /1 Notification of the Ministry of Natural Resources and Environmental , B.E. 2559 (2016)

2. @ = ISO/IEC 17025:2017 Accredited by TISI., # = ISO/IEC 17025:2017 Accredited by DSS,

SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

3. Miss Apiradee Chuen-arom is Section Head / Miss Nunnaphat Bakhuntod is Technical Management.

4. \* = Test Report/Sampling marked Not Accredited, Sampling By Mr. Songpon Phiwan (จ-003-ค-0016) \*

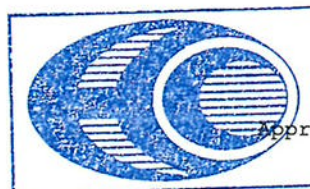
5. \*\* = These data are non laboratory data.

Examined By : .....

(Miss Apiradee Chuen-arom)

(จ-003-ค-0007)

06/12/2025



บริษัท อีสเทิร์นไทยคอนซัลติง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)

(จ-003-ค-0005)

06/12/2025

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
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WITHOUT THE WRITTEN APPROVAL LABORATORY

## Test Report

Request No : W6811200

Report No : 6811 - 1589

Customer : MDX Public Co.,Ltd. \*\*

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110 \*\*

Sampling Source : WWTP\*\*

Sample No : W 68110660

Sample Name : Effluent\*\*

Sampling Date : 07/11/2025\*\*

Sampling By : ETC\*\*

Sampling Time : 9:00 AM - 3:00 PM\*\*

Sampling Method : Composit\*\*

Received Date : 08/11/2025

Tested Date : 08/11/2025 - 04/12/2025

Reported Date : 06/12/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Lead @	mg/L	Digestion, Inductively Coupled Plasma Method (SM:3030F, 3120B)	< 0.03	≤ 0.2
Mercury #	mg/L	Digestion, Cold -Vapor Atomic Absorption Spectrometric Method (SM:3112B)	< 0.0010	≤ 0.005
Nickel @	mg/L	Digestion, Inductively Coupled Plasma Method (SM:3030F, 3120B)	0.07	≤ 1
Oil and Grease @	mg/L	Liquid-Liquid, Partition-Gravimetric Method (SM:5520B)	< 3.0	≤ 5
pH (on site) *		Electrometric Method	7.5	5.5-9.0
Phenol *	mg/L	Distillation, Direct Photometric Method (SM:5530B,D)	< 0.005	≤ 1

Physical Appearance : 1. Sample : Wastewater (yellowish, lightly SS)

2. Container : Normal [ PE 0.5 L (5 Bottle), PE 1.0 L (2 Bottle), G 1.0 L ]

Remark : 1. /1 Notification of the Ministry of Natural Resources and Environmental, B.E. 2559 (2016)

2. @ = ISO/IEC 17025:2017 Accredited by TISI, # = ISO/IEC 17025:2017 Accredited by DSS,

SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

3. Miss Apiradee Chuen-arom is Section Head / Miss Nunnaphat Bakhuntod is Technical Management.

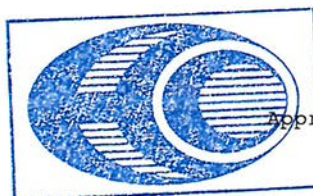
4. \* = Test Report/Sampling marked Not Accredited, Sampling By Mr. Songpon Phiwan (จ-003-ก-0016) \*

5. \*\* = These data are non laboratory data.

Examined By : .....

(Miss Apiradee Chuen-arom)  
(จ-003-ก-0007)

06/12/2025



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)  
(จ-003-ก-0005)

06/12/2025

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
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## Test Report

Request No : W6811200

Report No : 6811 - 1589

Customer : MDX Public Co.,Ltd. \*\*

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110 \*\*

Sampling Source : WWTP\*\*

Sample No : W 68110660

Sample Name : Effluent\*\*

Sampling Date : 07/11/2025\*\*

Sampling By : ETC\*\*

Sampling Time : 9:00 AM - 3:00 PM\*\*

Sampling Method : Composit\*\*

Received Date : 08/11/2025

Tested Date : 08/11/2025 - 04/12/2025

Reported Date : 06/12/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Temperature *	°C	Laboratory and Field Method (SM:2550 B)	27	≤40
Total Suspended Solids #	mg/L	Dried at 103-105 degree celsius (SM:2540D)	7	≤50
Zinc @	mg/L	Digestion, Inductively Coupled Plasma Method (SM:3030F, 3120B)	0.08	≤5

Physical Apperance : 1. Sample : Wastewater (yellowish , lightly SS)

2. Container : Normal [ PE 0.5 L (5 Bottle), PE 1.0 L (2 Bottle), G 1.0 L ]

Remark : 1. /1 Notification of the Ministry of Natural Resources and Environmental , B.E. 2559 (2016)

2. @ = ISO/IEC 17025:2017 Accredited by TISI., # = ISO/IEC 17025:2017 Accredited by DSS,

SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

3. Miss Apiradee Chuen-arom is Section Head / Miss Nunnaphat Bakhuntod is Technical Management.

4. \* = Test Report/Sampling marked Not Accredited, Sampling By Mr. Songpon Phiwan (1-003-ก-0016) \*

5. \*\* = These data are non laboratory data.

Examined By : .....

(Miss Apiradee Chuen-arom)

(1-003-ก-0007)

06/12/2025



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)

(1-003-ก-0005)

06/12/2025

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
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## Test Report

Request No : W6811200

Report No : 6811-1589

Customer : MDX Public Co.,Ltd.

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110

Sampling Source : WWTP

Sample No : W 68110660

Sample Name : Effluent

Sampling Date : 07/11/2025

Sampling By : ETC

Sampling Time : 9:00 AM - 3:00 PM

Sampling Method : Composit

Received Date : 08/11/2025

Tested Date : 08/11/2025 - 04/12/2025

Reported Date : 06/12/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Cresol #	mg/L	Gas Chromatography	ตรวจไม่พบ	-

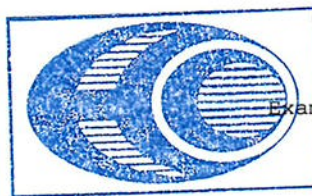
Physical Apperance : 1. Sample : Wastewater (yellowish , lightly SS)

2. Container : Normal [ PE 0.5 L (5 Bottle), PE 1.0 L (2 Bottle), G 1.0 L ]

Remark : 1. /1 Notification of the Ministry of Natural Resources and Environmental , B.E. 2559 (2016)

2. # Tested by Rajpracha Samasai Institute, Department of Disease Control, Ministry of Public Health.

3. Sampling By Mr. Songpon Phiwuan



Examined By : .....

(Miss Apiradee Chuen-arom)  
06/12/2025

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
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## Test Report

Request No : W6811201

Report No : 6811-1177

Customer : MDX Public Co.,Ltd.

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110

Sampling Source : WWTP

Sample No : W 68110664

Sample Name : Effluent

Sampling Date : 07/11/2025

Sampling By : ETC

Sampling Time : 3:00 PM

Sampling Method : Grab

Received Date : 08/11/2025

Tested Date : 17/11/2025

Reported Date : 19/11/2025

Parameter	Unit	Method	Result	Standard/ <sup>1</sup>
Coliform Bacteria	MPN:100 mL	MPN Test Method (SM:9221B)	230	-

Physical Apperance : 1. Sample : Wastewater (yellowish , lightly SS)

2. Container : Normal [ G 0.25 L ]

Remark : 1. /1 Notification of the Ministry of Natural Resources and Environmental , B.E. 2559 (2016)

2. SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023

3. Parameter Outside The Scope of The Registration of Department of Industrial Works

4. Sampling By Mr. Songpon Phiwan



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....

(Miss Apiradee Chuen-arom)

19/11/2025

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WITHOUT THE WRITTEN APPROVAL LABORATORY

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## Test Report

Request No : W6811200

Report No : 6811-1589

Customer : MDX Public Co.,Ltd.

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110

Sampling Source : WWTP

Sample No : W 68110660

Sample Name : Effluent

Sampling Date : 07/11/2025

Sampling By : ETC

Sampling Time : 9:00 AM - 3:00 PM

Sampling Method : Composit

Received Date : 08/11/2025

Tested Date : 08/11/2025 - 04/12/2025

Reported Date : 06/12/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Flow Rate	m <sup>3</sup> /day	Calculation Method	6,222	-

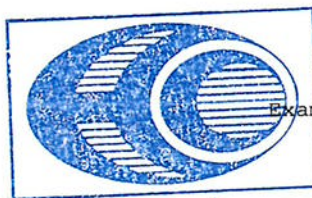
Physical Apperance : 1. Sample : Wastewater (yellowish , lightly SS)

2. Container : Normal [ PE 0.5 L (5 Bottle), PE 1.0 L (2 Bottle), G 1.0 L ]

Remark : 1. /1 Notification of the Ministry of Natural Resources and Environmental , B.E. 2559 (2016)

2. Parameter Outside The Scope of The Registration of Department of Industrial Works

3. Sampling By Mr. Songpon Phiwan



Examined By : .....

(Miss Apiradee Chuen-arom)

06/12/2025

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
THIS REPORT SHALL NOT REPRODUCED EXCEPT IN FULL  
WITHOUT THE WRITTEN APPROVAL LABORATORY

## Test Report

Request No : W6812153

Report No : 6901-0019

Customer : MDX Public Co.,Ltd. \*\*

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110 \*\*

Sampling Source : WWTP \*\*

Sample No : W 68120495

Sample Name : Effluent \*\*

Sampling Date : 04/12/2025 \*\*

Sampling By : ETC \*\*

Sampling Time : 9:00 AM - 3:00 PM \*\*

Sampling Method : Composit \*\*

Received Date : 06/12/2025

Tested Date : 06/12/2025 - 25/12/2025

Reported Date : 06/01/2026

Parameter	Unit	Method	Result	Standard <sup>1/</sup>
Arsenic *	mg/L	Continuous Hydride Generation/AAS Method (SM:3114B)	< 0.0020	≤0.25
Biochemical Oxygen Demand #	mg/L	5-Day BOD Test, Membrane Electrode Method (SM:5210B)	6.7	≤20
Cadmium @	mg/L	Digestion, Inductively Coupled Plasma Method (SM:3030F, 3120B)	< 0.03	≤0.03
Chemical Oxygen Demand #	mg/L	Closed Reflux, Titrimetric Method (SM:5220C)	< 40	≤120
Copper @	mg/L	Digestion, Inductively Coupled Plasma Method (SM:3030F, 3120B)	< 0.03	≤2
Hexavalent Chromium *	mg/L as Cr <sup>6+</sup>	Filtration, Colorimetric Method (SM:3500 -Cr B)	< 0.050	≤0.25

Physical Appearance : 1. Sample : Wastewater (yellowish , lightly SS)  
2. Container : Normal [ PE 0.5 L (5 Bottle), PE 1.0 L (2 Bottle), G 1.0 L ]

Remark : 1. /I Notification of the Ministry of Natural Resources and Environmental , B.E. 2559 (2016)  
2. @ = ISO/IEC 17025:2017 Accredited by TISI., # = ISO/IEC 17025:2017 Accredited by DSS,  
SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.  
3. Miss Apiradee Chuen-arom is Section Head / Miss Nunnaphat Bakhuntod is Technical Management.  
4. \* = Test Report/Sampling marked Not Accredited, Sampling By Mr. Supharerk Phatklang (จ-003-ท-0031) \*  
5. \*\* = These data are non laboratory data.

Examined By : .....

(Miss Apiradee Chuen-arom)  
(จ-003-ท-0007)  
06/01/2026



บริษัท อีสเทิร์นไทยคอนซัลติง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)  
(จ-003-ท-0005)  
06/01/2026

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WITHOUT THE WRITTEN APPROVAL LABORATORY

## Test Report

Request No : W6812153

Report No : 6901-0019

Customer : MDX Public Co.,Ltd. \*\*

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110 \*\*

Sampling Source : WWTP \*\*

Sample No : W 68120495

Sample Name : Effluent \*\*

Sampling Date : 04/12/2025 \*\*

Sampling By : ETC \*\*

Sampling Time : 9:00 AM - 3:00 PM \*\*

Sampling Method : Composit \*\*

Received Date : 06/12/2025

Tested Date : 06/12/2025 - 25/12/2025

Reported Date : 06/01/2026

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Lead @	mg/L	Digestion, Inductively Coupled Plasma Method (SM:3030F, 3120B)	< 0.03	≤ 0.2
Mercury #	mg/L	Digestion, Cold -Vapor Atomic Absorption Spectrometric Method (SM:3112B)	< 0.0010	≤ 0.005
Nickel @	mg/L	Digestion, Inductively Coupled Plasma Method (SM:3030F, 3120B)	0.07	≤ 1
Oil and Grease @	mg/L	Liquid-Liquid, Partition-Gravimetric Method (SM:5520B)	< 3.0	≤ 5
pH (on site) *		Electrometric Method	7.2	5.5-9.0
Phenol *	mg/L	Distillation, Direct Photometric Method (SM:5530B,D)	0.020	≤ 1

Physical Appearance : 1. Sample : Wastewater (yellowish , lightly SS)

2. Container : Normal [ PE 0.5 L (5 Bottle), PE 1.0 L (2 Bottle), G 1.0 L ]

Remark : 1. /1 Notification of the Ministry of Natural Resources and Environmental , B.E. 2559 (2016)

2. @ = ISO/IEC 17025:2017 Accredited by TISI., # = ISO/IEC 17025:2017 Accredited by DSS,

SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

3. Miss Apiradee Chuen-arom is Section Head / Miss Nunnaphat Bakhuntod is Technical Management.

4. \* = Test Report/Sampling marked Not Accredited, Sampling By Mr. Supharerk Phatklang (จ-003-ท-0031) \*

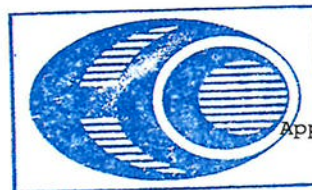
5. \*\* = These data are non laboratory data.

Examined By : .....

(Miss Apiradee Chuen-arom)

(จ-003-ท-0007)

06/01/2026



บริษัท อีสเทิร์นไทยคอนซัลติง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)

(จ-003-ท-0005)

06/01/2026

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
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## Test Report

Request No : W6812153

Report No : 6901-0019

Customer : MDX Public Co.,Ltd. \*\*

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110 \*\*

Sampling Source : WWTP \*\*

Sample No : W 68120495

Sample Name : Effluent \*\*

Sampling Date : 04/12/2025 \*\*

Sampling By : ETC \*\*

Sampling Time : 9:00 AM - 3:00 PM \*\*

Sampling Method : Composit \*\*

Received Date : 06/12/2025

Tested Date : 06/12/2025 - 25/12/2025

Reported Date : 06/01/2026

Parameter	Unit	Method	Result	Standard/ <sup>1</sup>
Temperature *	°C	Laboratory and Field Method (SM:2550 B)	33	≤40
Total Suspended Solids #	mg/L	Dried at 103-105 degree celsius (SM:2540D)	< 5	≤50
Zinc @	mg/L	Digestion, Inductively Coupled Plasma Method (SM:3030F, 3120B)	0.10	≤5

Physical Apperance : 1. Sample : Wastewater (yellowish , lightly SS)

2. Container : Normal [ PE 0.5 L (5 Bottle), PE 1.0 L (2 Bottle), G 1.0 L ]

Remark : 1. /1 Notification of the Ministry of Natural Resources and Environmental , B.E. 2559 (2016)

2. @ = ISO/IEC 17025:2017 Accredited by TISI., # = ISO/IEC 17025:2017 Accredited by DSS,

SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

3. Miss Apiradee Chuen-arom is Section Head / Miss Nunnaphat Bakhuntod is Technical Management.

4. \* = Test Report/Sampling marked Not Accredited, Sampling By Mr. Supharerk Phatklang (จ-003-ท-0031) \*

5. \*\* = These data are non laboratory data.

Examined By : .....

(Miss Apiradee Chuen-arom)

(จ-003-ท-0007)

06/01/2026



บริษัท อีสเทิร์นไทยคอนซัลติง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)

(จ-003-ท-0005)

06/01/2026

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## Test Report

Request No : W6812153

Report No : 6901-0019

Customer : MDX Public Co.,Ltd.

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110

Sampling Source : WWTP

Sample No : W 68120495

Sample Name : Effluent

Sampling Date : 04/12/2025

Sampling By : ETC

Sampling Time : 9:00 AM - 3:00 PM

Sampling Method : Composit

Received Date : 06/12/2025

Tested Date : 06/12/2025 - 25/12/2025

Reported Date : 06/01/2026

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Cresol #	mg/L	Gas Chromatography	ตรวจไม่พบ	-

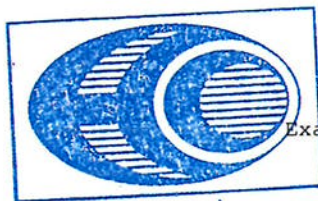
Physical Apperance : 1. Sample : Wastewater (yellowish , lightly SS)

2. Container : Normal [ PE 0.5 L (5 Bottle), PE 1.0 L (2 Bottle), G 1.0 L ]

Remark : 1. /1 Notification of the Ministry of Natural Resources and Environmental , B.E. 2559 (2016)

2. # Tested by Rajpracha Samasai Institute, Department of Disease Control, Ministry of Public Health.

3. Sampling By Mr. Supharerk Phatklang



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....

(Miss Apiradee Chuen-arom)

06/01/2026

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## Test Report

Request No : W6812154

Report No : 6812-1218

Customer : MDX Public Co.,Ltd.

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110

Sampling Source : WWTP

Sample No : W 68120499

Sample Name : Effluent

Sampling Date : 04/12/2025

Sampling By : ETC

Sampling Time : 3:00 PM

Sampling Method : Grab

Received Date : 06/12/2025

Tested Date : 16/12/2025

Reported Date : 18/12/2025

Parameter	Unit	Method	Result	Standard/ <sup>1</sup>
Coliform Bacteria	MPN:100 mL	MPN Test Method (SM:9221B)	330	-

Physical Apperance : 1. Sample : Wastewater (lightly SS)

2. Container : Normal [ G 0.25 L ]

Remark : 1. /1 Notification of the Ministry of Natural Resources and Environmental , B.E. 2559 (2016)

2. SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

3. Parameter Outside The Scope of The Registration of Department of Industrial Works

4. Sampling By Mr. Supharker Phatklang



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : 

(Miss Apiradee Chuen-arom)

18/12/2025

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
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## Test Report

Request No : W6812153

Report No : 6901-0019

Customer : MDX Public Co.,Ltd.

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110

Sampling Source : WWTP

Sample No : W 68120495

Sample Name : Effluent

Sampling Date : 04/12/2025

Sampling By : ETC

Sampling Time : 9:00 AM - 3:00 PM

Sampling Method : Composit

Received Date : 06/12/2025

Tested Date : 06/12/2025 - 25/12/2025

Reported Date : 06/01/2026

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Flow Rate	m <sup>3</sup> /day	Calculation Method	2,804	-

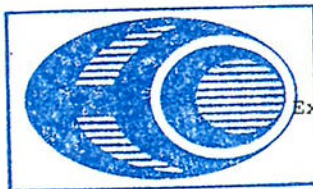
Physical Apperance : 1. Sample : Wastewater (yellowish , lightly SS)

2. Container : Normal [ PE 0.5 L (5 Bottle), PE 1.0 L (2 Bottle), G 1.0 L ]

Remark : 1. /1 Notification of the Ministry of Natural Resources and Environmental , B.E. 2559 (2016)

2. Parameter Outside The Scope of The Registration of Department of Industrial Works

3. Sampling By Mr. Supharek Phatklang



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....

(Miss Apiradee Chuen-arom)

06/01/2026

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
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## Test Report

Request No : W6809194

Report No : 6809-1781

Customer : MDX Public Co.,Ltd.

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110

Sampling Source : Surface Water

Sample No : W 68090608

Sample Name : ดินน้ำของพื้นที่โครงการ 200 เมตร

Sampling Date : 05/09/2025

Sampling By : ETC

Sampling Time : 9:35 AM

Sampling Method : Grab

Received Date : 06/09/2025

Tested Date : 08/09/2025 - 20/09/2025

Reported Date : 25/09/2025

Parameter	Unit	Method	Result	Standard <sup>2</sup>	Standard <sup>1</sup>
Ammonia Nitrogen #	mg/L	Spectrophotometer	0.28	≤ 0.5	≤0.5

Physical Apperance : 1. Sample : Water (yellow, lightly SS)

2. Container : Normal [ PE 0.5 L(3 Bottle) , PE 2.0 L , G 0.25 L]

Remark : 1. /1 Surface Water Quality Standards, Notification of the Environment Board No. 8, B.E. 2537 (1994), Class 4.

2. /2 Surface Water Quality Standards Notification of the Environment Board No. 8 BE. 2537 (1994) , Class 3

3. # Tested by the office of Public Health and Environmental Technology Services Faculty of Public Health Mahidol University

4. Sampling By Mr. Supharek Phatklang



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....

(Miss Apiradee Chuen-arom)

25/09/2025

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## Test Report

Request No : W6809194

Report No : 6809-1781

Customer : MDX Public Co.,Ltd.\*\*

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110\*\*

Sampling Source : Surface Water\*\*

Sample No : W 68090608

Sample Name : ต้นน้ำของพื้นที่โครงการ 200 เมตร\*\*

Sampling Date : 05/09/2025\*\*

Sampling By : ETC\*\*

Sampling Time : 9:35 AM\*\*

Sampling Method : Grab\*\*

Received Date : 06/09/2025

Tested Date : 08/09/2025 - 20/09/2025

Reported Date : 25/09/2025

Parameter	Unit	Method	Result	Standard <sup>2</sup>	Standard <sup>1</sup>
Arsenic *	mg/L	Continuous Hydride Generation/AAS Method (SM:3114B)	< 0.0020	≤ 0.01	≤ 0.01
Biochemical Oxygen Demand #	mg/L	5-Day BOD Test, Membrane Electrode Method (SM:5210B)	4.5	≤ 2	≤ 4
Dissolved Oxygen *	mg/L	Membrane Electrode Method (SM:4500 -O G)	2.3	≥ 4	≥ 2
Fecal Coliform Bacteria *	MPN:100 mL	MPN Test Method (SM:9221E)	13,000	≤ 4000	-
Lead @	mg/L	Digestion, Inductively Coupled Plasma Method (SM:3030F, 3120B)	< 0.010	≤ 0.05	≤ 0.05
Mercury #	mg/L	Digestion, Cold -Vapor Atomic Absorption Spectrometric Method (SM:3112B)	< 0.0010	≤ 0.002	≤ 0.002

Physical Apperance : 1. Sample : Water (yellow, lightly SS)

2. Container : Normal [ PE 0.5 L(3 Bottle) , PE 2.0 L , G 0.25 L]

Remark : 1. /1 Surface Water Quality Standards, Notification of the Environment Board No. 8, B.E. 2537 (1994), Class 4.

2. /2 Surface Water Quality Standards Notification of the Environment Board No. 8 BE. 2537 (1994) , Class 3

3. @ = ISO/IEC 17025:2017 Accredited by TISI., # = ISO/IEC 17025:2017 Accredited by DSS,

SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

4. Parameter Outside The Scope of The Registration of Department of Industrial Works

5. Miss Nunnaphat Bakhuntod is Technical Management. / \*\* = These data are non laboratory data.

6. \* = Test Report/Sampling marked Not Accredited. Sampling By Mr. Supharerk Phatklang \*

7. ข\*\*\* = อุณหภูมิของน้ำจะต้องไม่สูงกว่าอุณหภูมิตามบรรทัดฐาน 3 องศาเซลเซียส



Examined By : .....

(Miss Nunnaphat Bakhuntod)  
25/09/2025

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

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## Test Report

Request No : W6809194

Report No : 6809-1781

Customer : MDX Public Co.,Ltd.\*\*

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110\*\*

Sampling Source : Surface Water\*\*

Sample No : W 68090608

Sample Name : ดินน้ำของพื้นที่โครงการ 200 เมตร\*\*

Sampling Date : 05/09/2025\*\*

Sampling By : ETC\*\*

Sampling Time : 9:35 AM\*\*

Sampling Method : Grab\*\*

Received Date : 06/09/2025

Tested Date : 08/09/2025 - 20/09/2025

Reported Date : 25/09/2025

Parameter	Unit	Method	Result	Standard <sup>2</sup>	Standard <sup>1</sup>
Nitrate *	mg/L as NO <sub>3</sub> <sup>-</sup>	Cadmium Reduction Method (SM:4500 -NO3- E)	1.62	≤ 5	-
Nitrogen (Nitrate) *	mg/L as NO <sub>3</sub> <sup>-</sup> N	Cadmium Reduction Method (SM:4500 -NO3- B)	0.37	≤ 5	≤5
Oil and Grease @	mg/L	Liquid-Liquid, Partition-Gravimetric Method (SM:5520B)	<3.0	-	-
pH (on site) *		Electrometric Method	7.4	5.0-9.0	5.0-9.0
Temperature *	°C	Laboratory and Field Method (SM:2550 B)	30	๗***	๗***
Total Suspended Solids #	mg/L	Dried at 103-105 degree celsius (SM:2540D)	19	-	-

Physical Apperance : 1. Sample : Water (yellow, lightly SS)

2. Container : Normal [ PE 0.5 L(3 Bottle) , PE 2.0 L , G 0.25 L]

Remark : 1. /1 Surface Water Quality Standards, Notification of the Environment Board No. 8, B.E. 2537 (1994), Class 4.

2. /2 Surface Water Quality Standards Notification of the Environment Board No. 8 BE. 2537 (1994) , Class 3

3. @ = ISO/IEC 17025:2017 Accredited by TISL, # = ISO/IEC 17025:2017 Accredited by DSS,

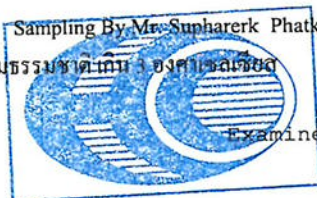
SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

4. Parameter Outside The Scope of The Registration of Department of Industrial Works

5. Miss Nunnaphat Bakhuntod is Technical Management. / \*\* = These data are non laboratory data.

6. \* = Test Report/Sampling marked Not Accredited, Sampling By Mr. Supharerk Phatklang \*

7. ๗\*\*\* = คุณหมอน้ำจะต้องไม่สูงกว่าอุณหภูมิตามธรรมชาติเกิน ๓ องศาเซลเซียส



Examined By : .....

(Miss Nunnaphat Bakhuntod)

25/09/2025

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

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## Test Report

Request No : W6809194

Report No : 6809-1780

Customer : MDX Public Co.,Ltd.

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110

Sampling Source : Surface Water

Sample No : W 68090607

Sample Name : จุติระบายนน้ำทิ้ง (จุดบรรจบท้ายอ่างเก็บน้ำ)

Sampling Date : 05/09/2025

Sampling By : ETC

Sampling Time : 10:55 AM

Sampling Method : Grab

Received Date : 06/09/2025

Tested Date : 08/09/2025 - 20/09/2025

Reported Date : 25/09/2025

Parameter	Unit	Method	Result	Standard <sup>2</sup>	Standard <sup>1</sup>
Ammonia Nitrogen #	mg/L	Spectrophotometer	0.31	≤ 0.5	≤0.5

Physical Apperance : 1. Sample : Water (yellowish, lightly SS)

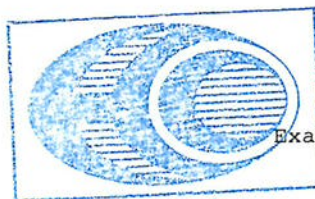
2. Container : Normal [ PE 0.5 L(3 Bottle) , PE 2.0 L , G 0.25 L]

Remark : 1. /1 Surface Water Quality Standards, Notification of the Environment Board No. 8, B.E. 2537 (1994), Class 4.

2. /2 Surface Water Quality Standards Notification of the Environment Board No. 8 BE. 2537 (1994) , Class 3

3. # Tested by the office of Public Health and Environmental Technology Services Faculty of Public Health Mahidol University

4. Sampling By Mr. Supharek Phatklang



บริษัท อีสเทิร์นไทยคอนซัลติง 1992 จำกัด

Examined By : .....

(Miss Apiradee Chuen-arom)

25/09/2025

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## Test Report

Request No : W6809194

Report No : 6809-1780

Customer : MDX Public Co.,Ltd.\*\*  
Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110\*\*  
Sampling Source : Surface Water\*\* Sample No : W 68090607  
Sample Name : จุติระบายนน้ำทิ้ง (จุดบรรจบท้ายอ่างเก็บน้ำ)\*\* Sampling Date : 05/09/2025\*\*  
Sampling By : ETC\*\* Sampling Time : 10:55 AM\*\*  
Sampling Method : Grab\*\* Received Date : 06/09/2025  
Tested Date : 08/09/2025 - 20/09/2025 Reported Date : 25/09/2025

Parameter	Unit	Method	Result	Standard <sup>2</sup>	Standard <sup>1</sup>
Arsenic *	mg/L	Continuous Hydride Generation/AAS Method (SM:3114B)	< 0.0020	≤ 0.01	≤0.01
Biochemical Oxygen Demand #	mg/L	5-Day BOD Test, Membrane Electrode Method (SM:5210B)	4.5	≤ 2	≤4
Dissolved Oxygen *	mg/L	Membrane Electrode Method (SM:4500 -O G)	3.2	≥ 4	≥2
Fecal Coliform Bacteria *	MPN:100 mL	MPN Test Method (SM:9221E)	7.8	≤ 4000	-
Lead @	mg/L	Digestion, Inductively Coupled Plasma Method (SM:3030F, 3120B)	< 0.010	≤ 0.05	≤0.05
Mercury #	mg/L	Digestion, Cold -Vapor Atomic Absorption Spectrometric Method (SM:3112B)	< 0.0010	≤ 0.002	≤0.002

Physical Apperance : 1. Sample : Water (yellowish, lightly SS)

2. Container : Normal [ PE 0.5 L(3 Bottle) , PE 2.0 L , G 0.25 L]

Remark : 1. /1 Surface Water Quality Standards, Notification of the Environment Board No. 8, B.E. 2537 (1994), Class 4.

2. /2 Surface Water Quality Standards Notification of the Environment Board No. 8 BE. 2537 (1994) , Class 3

3. @ = ISO/IEC 17025:2017 Accredited by TISI., # = ISO/IEC 17025:2017 Accredited by DSS,

SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

4. Parameter Outside The Scope of The Registration of Department of Industrial Works

5. Miss Nunnaphat Bakhuntod is Technical Management. / \*\* = These data are non laboratory data.

6. \* = Test Report/Sampling marked Not Accredited. Sampling By Mr. Supharerk Phatklang \*

7. ท\*\*\* = อุณหภูมิของน้ำจะต้องไม่สูงกว่าอุณหภูมิตามธรรมชาติเกิน 3 องศาเซลเซียส



Examined By : .....

(Miss Nunnaphat Bakhuntod)  
25/09/2025

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
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## Test Report

Request No : W6809194

Report No : 6809-1780

Customer : MDX Public Co.,Ltd.\*\*

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110\*\*

Sampling Source : Surface Water\*\*

Sample No : W 68090607

Sample Name : จุติระบายน้ำทิ้ง (จุดบรรจบท้ายอ่างเก็บน้ำ)\*\*

Sampling Date : 05/09/2025\*\*

Sampling By : ETC\*\*

Sampling Time : 10:55 AM\*\*

Sampling Method : Grab\*\*

Received Date : 06/09/2025

Tested Date : 08/09/2025 - 20/09/2025

Reported Date : 25/09/2025

Parameter	Unit	Method	Result	Standard <sup>2</sup>	Standard <sup>1</sup>
Nitrate *	mg/L as NO <sub>3</sub>	Cadmium Reduction Method (SM:4500 -NO3- E)	60.0	≤ 5	-
Nitrogen (Nitrate) *	mg/L as NO <sub>3</sub> - N	Cadmium Reduction Method (SM:4500 -NO3 -B)	13.5	≤ 5	≤5
Oil and Grease @	mg/L	Liquid-Liquid, Partition-Gravimetric Method (SM:5520B)	< 3.0	-	-
pH (on site) *		Electrometric Method	7.4	5.0-9.0	5.0-9.0
Temperature *	°C	Laboratory and Field Method (SM:2550 B)	31	***	***
Total Suspended Solids #	mg/L	Dried at 103-105 degree celsius (SM:2540D)	7	-	-

Physical Apperance : 1. Sample : Water (yellowish, lightly SS)

2. Container : Normal [ PE 0.5 L(3 Bottle) , PE 2.0 L , G 0.25 L]

Remark : 1. /1 Surface Water Quality Standards, Notification of the Environment Board No. 8, B.E. 2537 (1994), Class 4.

2. /2 Surface Water Quality Standards Notification of the Environment Board No. 8 BE. 2537 (1994) , Class 3

3. @ = ISO/IEC 17025:2017 Accredited by TISI., # = ISO/IEC 17025:2017 Accredited by DSS,

SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

4. Parameter Outside The Scope of The Registration of Department of Industrial Works

5. Miss Nunnaphat Bakhuntod is Technical Management. / \*\* = These data are non laboratory data.

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7. \*\*\* = อุณหภูมิของน้ำจะต้องไม่สูงกว่าอุณหภูมิตามธรรมชาติเกิน 3 องศาเซลเซียส



Examined By : .....

(Miss Nunnaphat Bakhuntod)

25/09/2025

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

## Test Report

Request No : W6809194

Report No : 6809-1779

Customer : MDX Public Co.,Ltd.

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110

Sampling Source : Surface Water

Sample No : W 68090606

Sample Name : ฝายคลองวังด้วน

Sampling Date : 05/09/2025

Sampling By : ETC

Sampling Time : 8:50 AM

Sampling Method : Grab

Received Date : 06/09/2025

Tested Date : 08/09/2025 - 20/09/2025

Reported Date : 25/09/2025

Parameter	Unit	Method	Result	Standard <sup>2</sup>	Standard <sup>1</sup>
Ammonia Nitrogen #	mg/L	Spectrophotometer	0.50	≤ 0.5	≤ 0.5

Physical Apperance : 1. Sample : Water (yellow, lightly SS)

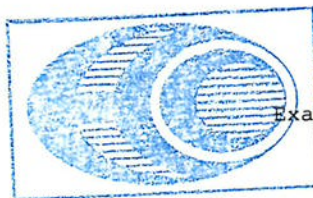
2. Container : Normal [ PE 0.5 L(3 Bottle) , PE 2.0 L , G 0.25 L]

Remark : 1. /1 Surface Water Quality Standards, Notification of the Environment Board No. 8, B.E. 2537 (1994), Class 4.

2. /2 Surface Water Quality Standards Notification of the Environment Board No. 8 BE. 2537 (1994) , Class 3

3. # Tested by the office of Public Health and Environmental Technology Services Faculty of Public Health Mahidol University

4. Sampling By Mr. Supharek Phatklang



บริษัท อีสเทิร์นไทยคอนซัลติง 1992 จำกัด

Examined By : 

(Miss Apiradee Chuen-arom)

25/09/2025

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
THIS REPORT SHALL NOT REPRODUCED EXCEPT IN FULL  
WITHOUT THE WRITTEN APPROVAL LABORATORY

COPY

## Test Report

Request No : W6809194

Report No : 6809-1779

Customer : MDX Public Co.,Ltd.\*\*

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110\*\*

Sampling Source : Surface Water\*\*

Sample No : W 68090606

Sample Name : ฝายคลองวังด้วน\*\*

Sampling Date : 05/09/25\*\*

Sampling By : ETC\*\*

Sampling Time : 8:50 AM\*\*

Sampling Method : Grab\*\*

Received Date : 06/09/2025

Tested Date : 08/09/2025 - 20/09/2025

Reported Date : 25/09/2025

Parameter	Unit	Method	Result	Standard <sup>2</sup>	Standard <sup>1</sup>
Arsenic *	mg/L	Continuous Hydride Generation/AAS Method (SM:3114B)	< 0.0020	≤ 0.01	≤ 0.01
Biochemical Oxygen Demand #	mg/L	5-Day BOD Test, Membrane Electrode Method (SM:5210B)	4.0	≤ 2	≤ 4
Dissolved Oxygen *	mg/L	Membrane Electrode Method (SM:4500 -O G)	2.5	≥ 4	≥ 2
Fecal Coliform Bacteria *	MPN:100 mL	MPN Test Method (SM:9221E)	460	≤ 4000	-
Lead @	mg/L	Digestion, Inductively Coupled Plasma Method (SM:3030F, 3120B)	< 0.010	≤ 0.05	≤ 0.05
Mercury #	mg/L	Digestion, Cold-Vapor Atomic Absorption Spectrometric Method (SM:3112B)	< 0.0010	≤ 0.002	≤ 0.002

Physical Apperance : 1. Sample : Water (yellow, lightly SS)

2. Container : Normal [ PE 0.5 L(3 Bottle) , PE 2.0 L , G 0.25 L]

Remark : 1. /1 Surface Water Quality Standards, Notification of the Environment Board No. 8, B.E. 2537 (1994), Class 4.

2. /2 Surface Water Quality Standards Notification of the Environment Board No. 8 BE. 2537 (1994) , Class 3

3. @ = ISO/IEC 17025:2017 Accredited by TISI., # = ISO/IEC 17025:2017 Accredited by DSS,

SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

4. Parameter Outside The Scope of The Registration of Department of Industrial Works

5. Miss Nunnaphat Bakhuntod is Technical Management. / \*\* = These data are non laboratory data.

6. \* = Test Report/Sampling marked Not Accredited, Sampling By Mr. Supharerk Phatklang \*

7. ท\*\*\* = อุณหภูมิของน้ำจะต้องไม่สูงกว่าอุณหภูมิตามธรรมชาติเกิน 3 องศาเซลเซียส



Examined By : .....

(Miss Nunnaphat Bakhuntod)  
25/09/2025

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

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## Test Report

Request No : W6809194

Report No : 6809-1779

Customer : MDX Public Co.,Ltd.\*\*

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110\*\*

Sampling Source : Surface Water\*\*

Sample No : W 68090606

Sample Name : ฝายคลองวังด้วน\*\*

Sampling Date : 05/09/2025\*\*

Sampling By : ETC\*\*

Sampling Time : 8:50 AM\*\*

Sampling Method : Grab\*\*

Received Date : 06/09/2025

Tested Date : 08/09/2025 - 20/09/2025

Reported Date : 25/09/2025

Parameter	Unit	Method	Result	Standard <sup>2</sup>	Standard <sup>1</sup>
Nitrate *	mg/L as NO <sub>3</sub> <sup>-</sup>	Cadmium Reduction Method (SM:4500 -NO <sub>3</sub> - E)	4.96	≤ 5	-
Nitrogen (Nitrate) *	mg/L as NO <sub>3</sub> <sup>-</sup> N	Cadmium Reduction Method (SM:4500 -NO <sub>3</sub> -B)	1.12	≤ 5	≤5
Oil and Grease @	mg/L	Liquid-Liquid, Partition-Gravimetric Method (SM:5520B)	< 3.0	-	-
pH (on site) *		Electrometric Method	7.5	5.0-9.0	5.0-9.0
Temperature *	°C	Laboratory and Field Method (SM:2550 B)	29	๗***	๗***
Total Suspended Solids #	mg/L	Dried at 103-105 degree celsius (SM:2540D)	<5	-	-

Physical Apperance : 1. Sample : Water (yellow, lightly SS)

2. Container : Normal [ PE 0.5 L(3 Bottle) , PE 2.0 L , G 0.25 L ]

Remark : 1. /1 Surface Water Quality Standards, Notification of the Environment Board No. 8, B.E. 2537 (1994), Class 4.

2. /2 Surface Water Quality Standards Notification of the Environment Board No. 8 BE. 2537 (1994) , Class 3

3. @ = ISO/IEC 17025:2017 Accredited by TISI, # = ISO/IEC 17025:2017 Accredited by DSS,

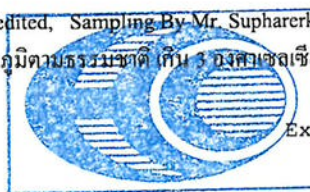
SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

4. Parameter Outside The Scope of The Registration of Department of Industrial Works

5. Miss Nunnaphat Bakhuntod is Technical Management. / \*\* = These data are non laboratory data.

6. \* = Test Report/Sampling marked Not Accredited, Sampling By Mr. Supharerk Phatklang \*

7. ๗\*\*\* = อุณหภูมิของน้ำจะต้องไม่สูงกว่าอุณหภูมิตามบรรทัดที่เก็บ 3 องศาเซลเซียส



Examined By : .....

(Miss Nunnaphat Bakhuntod)

25/09/2025

บริษัท อีสเทิร์นไทยคอนซัลติง 1992 จำกัด

**TEST REPORT**

Customer : MDX Public Co.,Ltd.\*\*  
Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110\*\*  
Sampling Source : Ground Water\*\* Sample No. : W 68071563, W 68090603, W 68100427  
Sample Name : น้ำดื่มไร้\*\* Sampling Date : 16/07/2025, 05/09/2025, 03/10/2025  
Sampling By : ETC\*\* Sampling Time : 12:00 PM, 3:30 PM, 11:45 AM\*\*  
Sampling Method : Grab\*\* Received Date : 17/07/2025, 06/09/2025, 04/10/2025  
Tested Date : 17/07/2025 – 31/07/2025 Reported Date : 18/10/2025

Parameter	Unit	Method	Result	Standard <sup>/2</sup>	Standard <sup>/1</sup>
Arsenic *	mg/L	Continuous Hydride Generation/AAS Method (SM:3114B)	< 0.0020	None	< 0.01
Chloride *	mg/L as Cl <sub>2</sub>	Argentometric Method (SM:4500-Cl- B)	10.5	≤ 250	-
Coliform Bacteria * <sup>/3</sup>	MPN:100 mL	MPN Test Method (SM:9221B)	ND	Less than 2.2	-
Copper *	mg/L	Digestion, Inductively Coupled Plasma Method (SM:3030F, 3120B)	< 0.03	≤ 1	≤ 1
Iron *	mg/L	Digestion, Inductively Coupled Plasma Method (SM:3030F, 3120B)	< 0.03	≤ 0.5	-
Lead *	mg/L	Digestion, Inductively Coupled Plasma Method (SM:3030F, 3120B)	< 0.010	None	≤ 0.01

Physical Appearance : 1. Sample : lightly SS

2. Container : Normal [ PE 0.5 L [ 3 Bottle], PE 2.0 L, G 0.25 L ]

- Remark :
1. /1 Ground Water Standard Notification of the National of Environment Board No. 20, B.E. 2543 (2000)
  2. /2 Drinking water form Deep Wells Quality Standards,  
Notification of the Ministry of Natural Resources and Environment B.E. 2551 (2008)
  3. /3 Sample No. W68090603 : Sampling Date 05/09/2025 (3:30 PM) : Tested Date 06/09/2025 – 16/09/2025
  4. /4 Sample No. W68100427 : Sampling Date 03/10/2025 (11:45 AM) : Tested Date 04/10/2025
  5. Parameter Outside The Scope of The Registration of Department of Industrial Works
  6. # = ISO/IEC 17025:2017 Accredited by DSS, Standard Methods for the Examination of Water and Wastewater,  
APHA, AWWA, WEF, 24th Edition, 2023.
  7. Miss Nunnaphat Bakhuntod is Technical Management. / \*\* = These data are non laboratory data
  8. \* = Test Report/Sampling marked Not Accredited, Sampling By Mr. Parkpoom Buasawad\*
  9. MDL = Method Detection Limit [ MDL of Coliform Bacteria = 1.8 MPN:100 mL ] / ND = Not Detected

SUPPLEMENT TO TEST REPORT NO. 6808-0123



Examined By.....

( Miss Nunnaphat Bakhuntod )

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

18 / 10 / 2025

REPORTED TESTS REFER TO SUBMITTED SAMPLES ONLY  
THIS REPORT SHALL NOT REPRODUCED EXCEPT IN FULL  
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**TEST REPORT**

Customer : MDX Public Co.,Ltd.\*\*  
Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110\*\*  
Sampling Source : Ground Water\*\* Sample No. : W 68071563, W 68090603, W 68100427  
Sample Name : น้ำเนื้้นไร่\*\* Sampling Date : 16/07/2025, 05/09/2025, 03/10/2025  
Sampling By : ETC\*\* Sampling Time : 12:00 PM, 3:30 PM, 11:45 AM\*\*  
Sampling Method : Grab\*\* Received Date : 17/07/2025, 06/09/2025, 04/10/2025  
Tested Date : 17/07/2025 – 31/07/2025 Reported Date : 18/10/2025

Parameter	Unit	Method	Result	Standard <sup>12</sup>	Standard <sup>11</sup>
M-Alkalinity *	mg/L as CaCO <sub>3</sub>	Titration Method (SM:2320B)	79.4	-	-
Mercury #	mg/L	Digestion, Cold-Vapor Atomic Absorption Spectrometric Method (SM:3112B)	< 0.0010	None	≤ 0.001
pH (on site) * <sup>14</sup>		Electrometric Method	7.2	7.0-8.5	-
Temperature *	°C	Laboratory and Field Method (SM:2550B)	28	-	-
Total Dissolved Solids #	mg/L	Dried at 180 degree celsius (SM:2540C)	153	≤ 600	-
Total Suspended Solids #	mg/L	Dried at 103-105 degree celsius (SM:2540D)	< 5	-	-
Turbidity *	NTU	Nephelometric Method (SM:2130B)	0.18	≤ 5	-

Physical Apperance : 1. Sample : lightly SS  
2. Container : Normal [ PE 0.5 L [ 3 Bottle], PE 2.0 L, G 0.25 L ]

- Remark :
1. /1 Ground Water Standard Notification of the National of Environment Board No. 20, B.E. 2543 (2000)
  2. /2 Drinking water form Deep Wells Quality Standards, Notification of the Ministry of Natural Resources and Environment B.E. 2551 (2008)
  3. /3 Sample No. W68090603 : Sampling Date 05/09/2025 (3:30 PM) : Tested Date 06/09/2025 – 16/09/2025
  4. /4 Sample No. W68100427 : Sampling Date 03/10/2025 (11:45 AM) : Tested Date 04/10/2025
  5. Parameter Outside The Scope of The Registration of Department of Industrial Works
  6. # = ISO/IEC 17025:2017 Accredited by DSS, Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.
  7. Miss Nunnaphat Bakhuntod is Technical Management. / \*\* = These data are non laboratory data
  8. \* = Test Report/Sampling marked Not Accredited, Sampling By Mr. Parkpoom Buasawad\*
  9. MDL = Method Detection Limit [ MDL of Coliform Bacteria = 1.8 MPN:100 mL ] / ND = Not Detected

SUPPLEMENT TEST REPORT NO. 6808-0123



Examined By.....

( Miss Nunnaphat Bakhuntod )

บริษัท อีสเทิร์นไทยคอนซัลติง 1992 จำกัด

18 / 10 / 2025

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## Test Report

Request No : W6807463, W6811204

Report No : 6808-0124-1,6811-1179

Customer : MDX Public Co.,Ltd. \*\*

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110 \*\*

Sampling Source : Ground Water \*\*

Sample No : W 68071564, W68110667

Sample Name : Monitoring Well \*\*

Sampling Date : 16/07/2025, 07/11/2025\*\*

Sampling By : ETC\*\*

Sampling Time : 11:10 AM, 12:15 PM\*\*

Sampling Method : Grab \*\*

Received Date : 17/07/2025, 08/11/2025

Tested Date : 17/07/2025 - 31/07/2025

Reported Date : 19/11/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Chloride #	mg/L as Cl <sub>2</sub>	Argentometric Method (SM:4500-Cl- B)	190	-
Copper *	mg/L	Digestion,Inductively Coupled Plasma Method (SM:3030F, 3120B)	< 0.03	≤1
Iron *	mg/L	Digestion,Inductively Coupled Plasma Method (SM:3030F, 3120B)	3.42	-
M-Alkalinity *	mg/L as CaCO <sub>3</sub>	Titration Method (SM:2320B)	649	-
Temperature *	°C	Laboratory and Field Method (SM:2550 B)	30	-
Total Bacteria */2	CFU/mL	Pour Plate Count Method (SM:9215B)	55	-
Total Dissolved Solids #	mg/L	Dried at 180 degree celsius (SM:2540C)	900	-

Physical Apperance : 1. Sample : orange, lightly SS

2. Container : Normal [ PE 0.5 L(3 Bottle) , PE 2.0 L , G 0.25 L]

Remark : 1. /1 Ground Water Standard Notification of the National of Environment Board No. 20 , B.E. 2543 (2000)

2. # = ISO/IEC 17025:2017 Accredited by DSS, SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

3. /2 Sample No. W68110667 : Sampling Date 07/11/2025 (12:15 PM) : Tested Date 08/11/2025 – 17/11/2025

4. Parameter Outside The Scope of The Registration of Department of Industrial Works

5. Miss Nunnaphat Bakhuntod is Technical Management. / \*\* = These data are non laboratory data.

6. \* = Test Report/Sampling marked Not Accredited, Sampling By Mr. Parkpoom Buasawad \*

SUPPLEMENT TO TEST REPORT NO 6808-0124



Examined By : .....

(Miss Nunnaphat Bakhuntod)

19/11/2025

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
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## Test Report

Request No : W6807463

Report No : 6808-0124

Customer : MDX Public Co.,Ltd. \*\*

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110 \*\*

Sampling Source : Ground Water \*\*

Sample No : W 68071564

Sample Name : Monitoring Well \*\*

Sampling Date : 16/07/2025\*\*

Sampling By : ETC\*\*

Sampling Time : 11:10 AM\*\*

Sampling Method : Grab \*\*

Received Date : 17/07/2025

Tested Date : 17/07/2025 - 31/07/2025

Reported Date : 04/08/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Arsenic *	mg/L	Continuous Hydride Generation/AAS Method (SM:3114B)	< 0.0020	≤0.01
Lead *	mg/L	Digestion, Inductively Coupled Plasma Method (SM:3030F, 3120B)	< 0.010	≤0.01
Mercury #	mg/L	Digestion, Cold-Vapor Atomic Absorption Spectrometric Method (SM:3112B)	< 0.0010	≤0.001
pH (on site) *		Electrometric Method	6.8	-

Physical Apperance : 1. Sample : orange, lightly SS

2. Container : Normal [ PE 0.5 L(3 Bottle) , PE 2.0 L , G 0.25 L]

Remark : 1. /1 Ground Water Standard Notification of the National of Environment Board No. 20 , B.E. 2543 (2000)

2. # = ISO/IEC 17025:2017 Accredited by DSS, SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

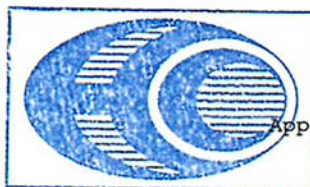
3. Miss Apiradee Chuen-arom is Section Head / Miss Nunnaphat Bakhuntod is Technical Management.

4. \* = Test Report/Sampling marked Not Accredited, Sampling By Mr. Parkpoom Buasawad (จ-003-ก-0017) \*

5. \*\* = These data are non laboratory data.

Examined By : .....

(Miss Apiradee Chuen-arom)  
(จ-003-ก-0007)  
04/08/2025



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)  
(จ-003-ก-0005)  
04/08/2025

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## Test Report

Request No : W6807463

Report No : 6808-0124

Customer : MDX Public Co.,Ltd. \*\*

Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110 \*\*

Sampling Source : Ground Water \*\*

Sample No : W 68071564

Sample Name : Monitoring Well \*\*

Sampling Date : 16/07/2025\*\*

Sampling By : ETC\*\*

Sampling Time : 11:10 AM\*\*

Sampling Method : Grab \*\*

Received Date : 17/07/2025

Tested Date : 17/07/2025 - 31/07/2025

Reported Date : 04/08/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Total Suspended Solids #	mg/L	Dried at 103-105 degree celsius (SM:2540D)	57	-
Turbidity *	NTU	Nephelometric Method (SM:2130B)	163	-

Physical Apperance : 1. Sample : orange, lightly SS

2. Container : Normal [ PE 0.5 L(3 Bottle) , PE 2.0 L , G 0.25 L]

Remark : 1./1 Ground Water Standard Notification of the National of Environment Board No. 20 , B.E. 2543 (2000)

2. # = ISO/IEC 17025:2017 Accredited by DSS, SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

3. Parameter Outside The Scope of The Registration of Department of Industrial Works

4. Miss Nunnaphat Bakhuntod is Technical Management.

5. \* = Test Report/Sampling marked Not Accredited, Sampling By Mr. Parkpoom Buasawad \*

6. \*\* = These data are non laboratory data.



Examined By : .....

(Miss Nunnaphat Bakhuntod)  
04/08/2025

บริษัท อีสเทิร์นไทยคอนซัลติง 1992 จำกัด

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ภาคผนวกที่ 3

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เอกสารขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

ที่ อก ๐๓๒๐/๑๑๓๔๒



กรมโรงงานอุตสาหกรรม  
ถนนพระรามที่ ๖ แขวงทุ่งพญาไท  
เขตราชเทวี กรุงเทพฯ ๑๐๔๐๐

๒๗ กรกฎาคม ๒๕๖๖

เรื่อง ต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

เรียน กรรมการผู้จัดการ บริษัท อีสเทิร์น ไทย คอนซัลติ้ง ๑๙๙๒ จำกัด

อ้างถึง คำขอต่ออายุของห้องปฏิบัติการวิเคราะห์เอกชน ลงวันที่ ๗ มิถุนายน ๒๕๖๖

สิ่งที่ส่งมาด้วย เอกสารแนบท้ายหนังสือรับต่ออายุขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

๑. รายชื่อผู้ควบคุมดูแลห้องปฏิบัติการวิเคราะห์ จำนวน ๔๐ ราย
๒. รายชื่อเจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ จำนวน ๒๕ ราย
๓. ขอบข่ายสารมลพิษที่ได้รับขึ้นทะเบียนจากกรมโรงงานอุตสาหกรรม จำนวน ๒๙๒ รายการ  
จำนวน ๑๙ แผ่น

ตามหนังสือที่อ้างถึง บริษัท อีสเทิร์น ไทย คอนซัลติ้ง ๑๙๙๒ จำกัด ขอต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน เลขทะเบียน ว-๐๐๓ สถานที่ตั้งเลขที่ ๖๘๓ หมู่ที่ ๑๑ ถนนสุขุมวิท ๘ ตำบลหนองขาม อำเภอสรีราชา จังหวัดชลบุรี ต่อกรมโรงงานอุตสาหกรรม นั้น

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว ให้บริษัท อีสเทิร์น ไทย คอนซัลติ้ง ๑๙๙๒ จำกัด ต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน โดยมีองค์ประกอบดังนี้

- ก. ผู้ควบคุมดูแลห้องปฏิบัติการวิเคราะห์ จำนวน ๔๐ ราย ตามสิ่งที่ส่งมาด้วย ๑
- ข. เจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ จำนวน ๒๕ ราย ตามสิ่งที่ส่งมาด้วย ๒
- ค. ขอบข่ายสารมลพิษที่ได้รับขึ้นทะเบียนให้วิเคราะห์ในน้ำเสีย จำนวน ๔๗ รายการ  
อากาศเสีย (ปล่องระบาย) จำนวน ๒๑ รายการ น้ำใต้ดิน จำนวน ๑๑๑ รายการ สิ่งปฏิกูลหรือวัสดุที่ไม่ใช้แล้ว  
จำนวน ๑๘ รายการ และดิน จำนวน ๙๕ รายการ รวมทั้งสิ้นจำนวน ๒๙๒ รายการ ตามสิ่งที่ส่งมาด้วย ๓

หนังสือฉบับนี้จะหมดอายุในวันที่ ๕ กรกฎาคม ๒๕๖๙ หากประสงค์จะต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน ให้ยื่นคำขอต่ออายุพร้อมเอกสารประกอบคำขอต่อกรมโรงงานอุตสาหกรรม ภายใน ๓๐ วัน ก่อนวันสิ้นอายุของหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน ทั้งนี้ สามารถยื่นคำขอผ่านระบบอิเล็กทรอนิกส์ได้ที่หน้าเว็บไซต์กรมโรงงานอุตสาหกรรม

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ

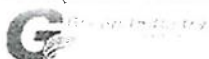
(นายทวี อำพาพันธ์)

ผู้อำนวยการศูนย์วิจัยและเตือนภัยมลพิษโรงงานภาคตะวันออก  
ปฏิบัติราชการแทนอธิบดีกรมโรงงานอุตสาหกรรม

ศูนย์วิจัยและเตือนภัยมลพิษโรงงานภาคตะวันออก

โทร. ๐ ๓๓๑๓ ๖๐๕๕ ต่อ ๕๐๐๑-๒

ไปรษณีย์อิเล็กทรอนิกส์ [eirw@diw.mail.go.th](mailto:eirw@diw.mail.go.th)



“อุตสาหกรรมก้าวไกล ประเทศไทยก้าวหน้า ร่วมกันพัฒนา อุตสาหกรรมสีเขียว”

COPY



เอกสารแนบท้ายหนังสือรับต่ออายุขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

บริษัท อีสเทิร์น ไทย คอนซัลตติ้ง ๑๙๙๒ จำกัด เลขทะเบียน ว-๐๐๓

ที่ อก ๐๓๒๐/๑๑๓๔๒

ลงวันที่ ๒๗ กรกฎาคม ๒๕๖๖

ก. ผู้ควบคุมดูแลห้องปฏิบัติการวิเคราะห์ จำนวน ๔๐ ราย

๑) นางสาวมาลีเกษ เลขะวัจกุล	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๐๑
๒) นายวัฒนา โคตรหล้า	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๐๒
๓) นางวรรณเพ็ญ เหลาจินดาวัฒน์	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๐๓
๔) นายกะวีร์ สุธาทรัพย์	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๐๔
๕) นางสาวนันท์ณภัส แปะขุนทด	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๐๕
๖) นางสาวพรนภา หลงคำหงษ์	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๐๖
๗) นางสาวอภิรดี ชื่นอารมย์	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๐๗
๘) นางสาวอัจฉรี จิตตะยโสธร	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๐๘
๙) นางสาวจิรพร ปานคง	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๐๙
๑๐) นายสุทธา สองธนี	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๑๐
๑๑) นางสาวนันประภา อูยสูงเนิน	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๑๑
๑๒) นายธงไชย บุญศักดิ์	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๑๒
๑๓) นางสาวธนาพร กลิ่นโสภณ	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๑๓
๑๔) นายธีระพงษ์ นวลอินทร์	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๑๔
๑๕) นางสาวแพรว พลแสน	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๑๕
๑๖) นายทรงพล ผิวอ้วน	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๑๖
๑๗) นายภาคภูมิ บัวสวัสดิ์	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๑๗
๑๘) นางสาวจันทน์ สายพันธ์	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๑๘
๑๙) นายภาณุพงศ์ บำรุงรส	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๑๙
๒๐) นางสาวปภาณิน จันตะสอน	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๒๐
๒๑) นายวรกร ไวทยะเสวี	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๒๑
๒๒) นางสาววรรณภา ไชยศิริ	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๒๒
๒๓) นางสาวพรพิมล ภูมิคอนสาร	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๒๓
๒๔) นางสาวธมลวรรณ ผลอ้อ	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๒๔
๒๕) นางสาวบุญเรือง บุญถม	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๒๕
๒๖) นางสาวกัลสินท์ ป้อมน้อย	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๒๖
๒๗) นายชานูวัฒน์ โชติวงค์	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๒๗
๒๘) นางสาวพจณี งามวิสัย	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๒๘
๒๙) นายวิญญ์วัล สิงห์โต	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๒๙
๓๐) นางสาวนุกูล อารศรี	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๓๐
๓๑) นายศุภฤกษ์ พาดกลาง	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๓๑
๓๒) นายณิชาพล ทองหล่อ	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๓๒
๓๓) นายธรรมรัตน์ โพธิ์ตันคำ	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๓๓
๓๔) นายโอชา ขวัญศิริมงคล	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๓๔
๓๕) นายเมธี สุขประเสริฐ	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๓๕

COPY

๓๖) นางสาวพรพินิต...

๓๖) นางสาวพรพินันท์ วิริยกุลกุล	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๓๖
๓๗) นางสาวอาภาภรณ์ เสริมสนธิ	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๓๗
๓๘) นางสาวนภัทร์ธมณต์ ประดิษฐ์นุช	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๓๘
๓๙) นางสาวสุนิษา เอ็งเส้ง	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๓๙
๔๐) นางสาวระพิน อ้นชั้น	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๔๐

ข. เจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ จำนวน ๒๕ ราย

๑) นางสาวดวงกมล เนื้อทอง	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๐๑
๒) นางสาววัชรภรณ์ อินทสุข	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๐๒
๓) นางสาวกัญจน์ธวิภา จันทร์ชอดแก้ว	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๐๓
๔) นางสาวฉัตรสุดา มงคลโกชนัน	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๐๔
๕) นางสาวณัฐวดี อำนวยทัศน	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๐๕
๖) นางสาวนิอรธมา ปาระ	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๐๖
๗) นางสาวธัญลักษณ์ ชันโต	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๐๗
๘) นางสาวสุทธิดา สร้างแก้ว	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๐๘
๙) นายอุดมทรัพย์ เจนจบจริง	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๐๙
๑๐) นายณราธิป สงวนศิลป์	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๑๐
๑๑) นายวีระชัย พอใจ	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๑๑
๑๒) นายอัญชลี ทะพงษ์	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๑๒
๑๓) นางสาวสุมลิตรา มีแก่น	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๑๓
๑๔) นางสาวสวรรณยา เพชรประไพ	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๑๔
๑๕) นางสาวจุฑามาศ เจริญพรหม	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๑๕
๑๖) นางสาวนิภาพร คำขมภู	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๑๖
๑๗) นางสาวอรชา พันธุ์เมือง	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๑๗
๑๘) นายกิตติ ไพโรจน์	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๑๘
๑๙) นายชาญณรงค์ ตั้งธรรมรักษ์	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๑๙
๒๐) นางสาวปวีรศา เอสนันเทียะ	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๒๐
๒๑) นางสาวจุฑาทิพย์ กิจดี	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๒๑
๒๒) นางสาวสุภาวดี ศรีละออง	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๒๒
๒๓) นางสาวณัฐชยา บรรพบุตร	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๒๓
๒๔) นางสาวณัฐนิช นนตานอก	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๒๔
๒๕) นางสาวดวงสุดา แสนวันดี	ทะเบียนเลขที่	ว-๐๐๓-จ-๐๐๒๕

COPY

เอกสารแนบท้ายหนังสือรับต่ออายุขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

บริษัท อีสเทิร์น ไทย คอนซัลติ้ง ๑๙๙๒ จำกัด เลขทะเบียน ว-๐๐๓

ที่ อก ๐๓๒๐/๑๑๓๔๒

ลงวันที่ ๒๗ กรกฎาคม ๒๕๖๖

ขอขยายสารมลพิษที่ได้รับขึ้นทะเบียนจากกรมโรงงานอุตสาหกรรม จำนวน ๒๙๒ รายการ

น้ำเสีย จำนวน 47 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Aldrin	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[4]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method <sup>[4]</sup>
2	Arsenic	1) Continuous Hydride Generation/Atomic Absorption Spectrometric Method <sup>[4]</sup> 2) Digestion, Inductively Coupled Plasma Method <sup>[4]</sup>
3	Barium	Digestion, Inductively Coupled Plasma Method <sup>[4]</sup>
4	$\alpha$ -BHC	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[4]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method <sup>[4]</sup>
5	$\beta$ -BHC	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[4]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method <sup>[4]</sup>
6	$\delta$ -BHC	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[4]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method <sup>[4]</sup>
7	$\gamma$ -BHC	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[4]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method <sup>[4]</sup>
8	Biochemical Oxygen Demand	1) 5-Day BOD Test, Membrane Electrode Method <sup>[4]</sup> 2) 5-Day BOD Test, Azide Modification Method <sup>[4]</sup>
9	Cadmium	Digestion, Inductively Coupled Plasma Method <sup>[4]</sup>
10	Chemical Oxygen Demand	Closed Reflux, Titrimetric Method <sup>[4]</sup>
11	cis-Chlordane	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[4]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method <sup>[4]</sup>
12	trans-Chlordane	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[4]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method <sup>[4]</sup>
13	Chromium	1) Digestion, Direct Air-Acetylene Flame Method <sup>[4]</sup> 2) Digestion, Inductively Coupled Plasma Method <sup>[4]</sup>

COPY

14 Color...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
14	Color	ADMI Weighted-Ordinate Spectrophotometric Method <sup>[4]</sup>
15	Copper	1) Digestion, Direct Air-Acetylene Flame Method <sup>[4]</sup> 2) Digestion, Inductively Coupled Plasma Method <sup>[4]</sup>
16	Cyanide	Distillation, Colorimetric Method <sup>[4]</sup>
17	4,4'-DDD	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[4]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method <sup>[4]</sup>
18	4,4'-DDE	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[4]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method <sup>[4]</sup>
19	DDT	Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method <sup>[4]</sup>
20	Dieldrin	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[4]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method <sup>[4]</sup>
21	Endosulfan I	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[4]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method <sup>[4]</sup>
22	Endosulfan II	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[4]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method <sup>[4]</sup>
23	Endosulfan sulfate	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[4]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method <sup>[4]</sup>
24	Endrin	Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method <sup>[4]</sup>
25	Endrin aldehyde	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[4]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method <sup>[4]</sup>
26	Endrin ketone	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[4]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method <sup>[4]</sup>
27	Formaldehyde	Distillation, Colorimetric Method <sup>[3]</sup>
28	Free Chlorine	1) Iodometric Method <sup>[4]</sup> 2) Colorimetric Method <sup>[4]</sup>

**COPY**

29 Heptachlor...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
29	Heptachlor	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[4]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method <sup>[4]</sup>
30	Heptachlor Epoxide	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[4]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method <sup>[4]</sup>
31	Hexavalent Chromium	Filtration, Colorimetric Method <sup>[4]</sup>
32	Lead	1) Digestion, Direct Air-Acetylene Flame Method <sup>[4]</sup> 2) Digestion, Inductively Coupled Plasma Method <sup>[4]</sup>
33	Manganese	Digestion, Inductively Coupled Plasma Method <sup>[4]</sup>
34	Mercury	Digestion, Cold-Vapor Atomic Absorption Spectrometric Method <sup>[4]</sup>
35	Methoxychlor	Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method <sup>[4]</sup>
36	Nickel	1) Digestion, Direct Air-Acetylene Flame Method <sup>[4]</sup> 2) Digestion, Inductively Coupled Plasma Method <sup>[4]</sup>
37	Oil and Grease	Liquid-Liquid, Partition-Gravimetric Method <sup>[4]</sup>
38	pH	Electrometric Method <sup>[4]</sup>
39	Phenols	Distillation, Direct Photometric Method <sup>[4]</sup>
40	Selenium	Digestion, Hydride Generation/Atomic Absorption Spectrometric Method <sup>[4]</sup>
41	Sulfide	ZnS Precipitation, Iodometric Method <sup>[4]</sup>
42	Temperature	Field Method <sup>[4]</sup>
43	Trivalent Chromium	1) Digestion, Direct Air-Acetylene Flame Method; Filtration, Colorimetric Method; Calculation <sup>[4]</sup> 2) Digestion, Inductively Coupled Plasma Method; Colorimetric Method; Calculation <sup>[4]</sup>
44	Total Dissolved Solids	Dried at 180 °C <sup>[4]</sup>
45	Total Kjeldahl Nitrogen	Macro Kjeldahl Method <sup>[4]</sup>
46	Total Suspended Solids	Dried at 103-105 °C <sup>[4]</sup>
47	Zinc	Digestion, Inductively Coupled Plasma Method <sup>[4]</sup>

COPY

อากาศเสีย...

อากาศเสีย (ปล่องระบาย) จำนวน 21 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Antimony	Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>[5]</sup>
2	Arsenic	Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>[5]</sup>
3	Cadmium	Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>[5]</sup>
4	Carbon Monoxide	1) Bag, Non-Dispersive Infrared Method <sup>[5]</sup> 2) Instrumental Analyzer Method <sup>[5]</sup>
5	Chromium	Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>[5]</sup>
6	Cobalt	Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>[5]</sup>
7	Copper	Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>[5]</sup>
8	Hydrogen Sulfide	Absorption Sampling, Iodometric Method <sup>[5]</sup>
9	Lead	Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>[5]</sup>
10	Manganese	Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>[5]</sup>
11	Mercury	Isokinetic Sampling, Digestion, Cold-Vapor Atomic Absorption Spectrometric Method <sup>[5]</sup>
12	Nickel	Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>[5]</sup>
13	Opacity	Ringelmann's Method <sup>[1,5]</sup>
14	Oxides of Nitrogen	1) Absorption Sampling, Phenoldisulfonic Acid Method <sup>[8]</sup> 2) Instrumental Analyzer Method <sup>[7]</sup>
15	Selenium	Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>[5]</sup>
16	Sulfur Dioxide	1) Absorption Sampling, Barium-Thorin Titrimetric Method <sup>[5]</sup> 2) Instrumental Analyzer Method <sup>[5]</sup>
17	Sulfuric Acid	Isokinetic Sampling, Barium-Thorin Titrimetric Method <sup>[6]</sup>
18	Tin	Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>[5]</sup>

COPY

19 Total Suspended Particulate...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
19	Total Suspended Particulate	Isokinetic Sampling, Gravimetric Method <sup>[6]</sup>
20	Vanadium	Isokinetic Sampling, Digestion, Inductively Coupled Plasma Method <sup>[5]</sup>
21	Xylene	Adsorption Sampling, Gas Chromatographic Method <sup>[6]</sup>

น้ำใต้ดิน จำนวน 111 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Acenaphthene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
2	Acetone	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
3	Aldrin	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
4	Anthracene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
5	Antimony	Digestion, Inductively Coupled Plasma Method <sup>[4]</sup>
6	Arsenic	1) Continuous Hydride Generation/Atomic Absorption Spectrometric Method <sup>[4]</sup> 2) Digestion, Inductively Coupled Plasma Method <sup>[4]</sup>
7	Barium	Digestion, Inductively Coupled Plasma Method <sup>[4]</sup>
8	Benz(a)anthracene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
9	Benzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
10	Benzo(b)fluoranthene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
11	Benzo(k)fluoranthene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
12	Benzo(a)pyrene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
13	Benzo[g,h,i]perylene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
14	Beryllium	Digestion, Inductively Coupled Plasma Method <sup>[4]</sup>

**COPY**

15 Bis(2-chloroethyl)ether...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
15	Bis(2-chloroethyl)ether	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
16	Bis(2-ethylhexyl)phthalate	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
17	Bromodichloromethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
18	Bromoform	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
19	Butanol	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
20	Butyl benzyl phthalate	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
21	Cadmium	Digestion, Inductively Coupled Plasma Method <sup>[4]</sup>
22	Carbazole	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
23	Carbon disulfide	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
24	Carbon tetrachloride	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
25	Chlordane	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
26	p-Chloroaniline	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
27	Chlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
28	Chlorodibromomethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
29	Chloroform	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
30	2-Chlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
31	Chromium	1) Digestion, Direct Air-Acetylene Flame Method <sup>[4]</sup> 2) Digestion, Inductively Coupled Plasma Method <sup>[4]</sup>
32	Chromium (III)	1) Digestion, Direct Air-Acetylene Flame Method; Filtration, Colorimetric Method; Calculation <sup>[4]</sup> 2) Digestion, Inductively Coupled Plasma Method; Filtration, Colorimetric Method; Calculation <sup>[4]</sup>

**COPY**

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
33	Chromium (VI)	Filtration, Colorimetric Method <sup>[4]</sup>
34	Chrysene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
35	Cyanide	Distillation, Colorimetric Method <sup>[4]</sup>
36	DDD	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
37	DDE	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
38	DDT	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
39	Dibenz(a,h)anthracene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
40	Di-n-butyl phthalate	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
41	1,2-Dichlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
42	1,3-Dichlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
43	1,4-Dichlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
44	1,1-Dichloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
45	1,2-Dichloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
46	1,1-Dichloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
47	cis-1,2-Dichloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
48	trans-1,2-Dichloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
49	2,4-Dichlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
50	1,2-Dichloropropane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
51	1,3-Dichloropropane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>



**COPY**

52 Dieldrin...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
52	Dieldrin	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
53	Diethyl phthalate	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
54	2,4-Dimethylphenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
55	2,4-Dinitrotoluene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
56	2,6-Dinitrotoluene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
57	Di-n-octyl phthalate	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
58	Endosulfan	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
59	Endrin	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
60	Ethylbenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
61	Fluoranthene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
62	Fluorene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
63	Heptachlor	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
64	Heptachlor epoxide	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
65	Hexachlorobenzene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
66	Hexachloro-1,3-butadiene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
67	n-Hexane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
68	$\alpha$ -HCH	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
69	$\beta$ -HCH	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>

COPY

70  $\gamma$ -HCH...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
70	$\gamma$ -HCH	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
71	Hexachlorocyclopentadiene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
72	Hexachloroethane	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
73	Indeno(1,2,3-cd)pyrene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
74	Isophorone	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
75	Lead	1) Digestion, Direct Air-Acetylene Flame Method <sup>[4]</sup> 2) Digestion, Inductively Coupled Plasma Method <sup>[4]</sup>
76	Manganese	Digestion, Inductively Coupled Plasma Method <sup>[4]</sup>
77	Mercury	Digestion, Cold-Vapor Atomic Absorption Spectrometric Method <sup>[4]</sup>
78	Methoxychlor	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
79	Methylene chloride	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
80	2-Methylphenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
81	2-Methylnaphthalene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
82	Methyl tert-butyl ether	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
83	Naphthalene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
84	Nickel	Digestion, Inductively Coupled Plasma Method <sup>[4]</sup>
85	Nitrobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
86	N-Nitrosodi-n-propylamine	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
87	pH	Electrometric Method <sup>[4]</sup>
88	Phenanthrene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>

COPY

89 Phenol...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
89	Phenol	1) Distillation, Direct Photometric Method <sup>[4]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
90	Pyrene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
91	Selenium	Digestion, Hydride Generation/Atomic Absorption Spectrometric Method <sup>[4]</sup>
92	Silver	Digestion, Inductively Coupled Plasma Method <sup>[4]</sup>
93	Styrene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
94	1,1,2,2-Tetrachloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
95	Trichloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
96	1,2,4-Trichlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
97	1,1,1-Trichloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
98	1,1,2-Trichloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
99	Tetrachloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
100	Toluene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
101	2,4,5-Trichlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
102	2,4,6-Trichlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
103	1,3,5-Trimethylbenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
104	Vanadium	Digestion, Inductively Coupled Plasma Method <sup>[4]</sup>
105	Vinyl acetate	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
106	Vinyl chloride	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>

**COPY**

107 m-Xylene...

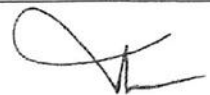
ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
107	m-Xylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
108	o-Xylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
109	p-Xylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
110	Xylene (Total)	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
111	Zinc	Digestion, Inductively Coupled Plasma Method <sup>[4]</sup>

สิ่งปฏิกูลหรือวัสดุที่ไม่ใช้แล้ว จำนวน 18 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Antimony	Digestion, Inductively Coupled Plasma Method <sup>[9,10]</sup>
2	Arsenic	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>[2,9,10]</sup>
		2) Digestion, Inductively Coupled Plasma Method <sup>[9,10]</sup>
3	Barium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>[2,9,10]</sup>
		2) Digestion, Inductively Coupled Plasma Method <sup>[9,10]</sup>
4	Beryllium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>[2,9,10]</sup>
		2) Digestion, Inductively Coupled Plasma Method <sup>[9,10]</sup>
5	Cadmium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>[2,9,10]</sup>
		2) Digestion, Inductively Coupled Plasma Method <sup>[9,10]</sup>
6	Chromium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>[2,9,10]</sup>
		2) Digestion, Inductively Coupled Plasma Method <sup>[9,10]</sup>
7	Chromium (VI)	1) Waste Extraction, Digestion, Colorimetric Method <sup>[2,13]</sup>
		2) Alkaline Digestion, Colorimetric Method <sup>[9,13]</sup>
8	Cobalt	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>[2,9,10]</sup>
		2) Digestion, Inductively Coupled Plasma Method <sup>[9,10]</sup>
9	Copper	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>[2,9,10]</sup>
		2) Digestion, Inductively Coupled Plasma Method <sup>[9,10]</sup>

**COPY**

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
10	Lead	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>[2,9,10]</sup> 2) Digestion, Inductively Coupled Plasma Method <sup>[9,10]</sup>
11	Mercury	1) Waste Extraction, Digestion, Cold Vapor Atomic Absorption Spectrometric Method <sup>[2,11]</sup> 2) Digestion, Cold vapor Atomic Absorption Spectrometric Method <sup>[9,11]</sup>
12	Nickel	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>[2,9,10]</sup> 2) Digestion, Inductively Coupled Plasma Method <sup>[9,10]</sup>
13	Molybdenum	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>[2,9,10]</sup> 2) Digestion, Inductively Coupled Plasma Method <sup>[9,10]</sup>
14	Selenium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>[2,9,10]</sup> 2) Digestion, Inductively Coupled Plasma Method <sup>[9,10]</sup>
15	Silver	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>[2,9,10]</sup> 2) Digestion, Inductively Coupled Plasma Method <sup>[9,10]</sup>
16	Thallium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>[2,9,10]</sup> 2) Digestion, Inductively Coupled Plasma Method <sup>[9,10]</sup>
17	Vanadium	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>[2,9,10]</sup> 2) Digestion, Inductively Coupled Plasma Method <sup>[9,10]</sup>
18	Zinc	1) Waste Extraction, Digestion, Inductively Coupled Plasma Method <sup>[2,9,10]</sup> 2) Digestion, Inductively Coupled Plasma Method <sup>[9,10]</sup>



**COPY**

ดิน...

ดิน จำนวน 95 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Acenaphthene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[15,17]</sup>
2	Acetone	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[14,16]</sup>
3	Anthracene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[15,17]</sup>
4	Antimony	Digestion, Inductively Coupled Plasma Method <sup>[9,10]</sup>
5	Arsenic	Digestion, Inductively Coupled Plasma Method <sup>[9,10]</sup>
6	Barium	Digestion, Inductively Coupled Plasma Method <sup>[9,10]</sup>
7	Benz(a)anthracene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[15,17]</sup>
8	Benzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[14,16]</sup>
9	Benzo(b)fluoranthene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[15,17]</sup>
10	Benzo(k)fluoranthene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[15,17]</sup>
11	Benzo(a)pyrene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[15,17]</sup>
12	Benzo[g,h,i]perylene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[15,17]</sup>
13	Beryllium	Digestion, Inductively Coupled Plasma Method <sup>[9,10]</sup>
14	Bis(2-chloroethyl)ether	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[15,17]</sup>
15	Bis(2-ethylhexyl)phthalate	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[15,17]</sup>
16	Bromodichloromethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[14,16]</sup>
17	Bromoform	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[14,16]</sup>
18	Butanol	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[14,16]</sup>

COPY

19 Butyl benzyl phthalate...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
19	Butyl benzyl phthalate	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[15,17]</sup>
20	Cadmium	Digestion, Inductively Coupled Plasma Method <sup>[9,10]</sup>
21	Carbazole	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[15,17]</sup>
22	Carbon disulfide	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[14,16]</sup>
23	Carbon tetrachloride	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[14,16]</sup>
24	p-Chloroaniline	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[15,17]</sup>
25	Chlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[14,16]</sup>
26	Chlorodibromomethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[14,16]</sup>
27	Chloroform	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[14,16]</sup>
28	2-Chlorophenol	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[15,17]</sup>
29	Chromium	Digestion, Inductively Coupled Plasma Method <sup>[9,10]</sup>
30	Chromium (III)	Digestion, Inductively Coupled Plasma Method; Filtration, Colorimetric Method; Calculation <sup>[9,10]</sup>
31	Chromium (VI)	Alkaline Digestion, Colorimetric Method <sup>[12,13]</sup>
32	Chrysene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[15,17]</sup>
33	Dibenz(a,h)anthracene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[15,17]</sup>
34	Di-n-butyl phthalate	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[15,17]</sup>
35	1,2-Dichlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[14,16]</sup>
36	1,3-Dichlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[14,16]</sup>
37	1,4-Dichlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[14,16]</sup>

COPY

38 1,1-Dichloroethane...

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
38	1,1-Dichloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[14,16]</sup>
39	1,2-Dichloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[14,16]</sup>
40	1,1-Dichloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[14,16]</sup>
41	cis-1,2-Dichloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[14,16]</sup>
42	trans-1,2-Dichloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[14,16]</sup>
43	2,4-Dichlorophenol	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[15,17]</sup>
44	1,2-Dichloropropane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[14,16]</sup>
45	1,3-Dichloropropane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[14,16]</sup>
46	Diethyl phthalate	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[15,17]</sup>
47	2,4-Dimethylphenol	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[15,17]</sup>
48	2,4-Dinitrotoluene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[15,17]</sup>
49	2,6-Dinitrotoluene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[15,17]</sup>
50	Di-n-octyl phthalate	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[15,17]</sup>
51	Ethylbenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[14,16]</sup>
52	Fluoranthene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[15,17]</sup>
53	Fluorene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[15,17]</sup>
54	Hexachlorobenzene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[15,17]</sup>
55	Hexachloro-1,3-butadiene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[15,17]</sup>

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ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
56	n-Hexane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[14,16]</sup>
57	Hexachlorocyclopentadiene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[15,17]</sup>
58	Hexachloroethane	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[15,17]</sup>
59	Indeno(1,2,3-cd)pyrene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[15,17]</sup>
60	Isophorone	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[15,17]</sup>
61	Lead	Digestion, Inductively Coupled Plasma Method <sup>[9,10]</sup>
62	Manganese	Digestion, Inductively Coupled Plasma Method <sup>[9,10]</sup>
63	Mercury	Digestion, Cold-Vapor Atomic Absorption Spectrometric Method <sup>[9,11]</sup>
64	Methylene chloride	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[14,16]</sup>
65	2-Methylphenol	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[15,17]</sup>
66	2-Methylnaphthalene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[15,17]</sup>
67	Methyl tert-butyl ether	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[14,16]</sup>
68	Naphthalene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[14,16]</sup>
69	Nickel	Digestion, Inductively Coupled Plasma Method <sup>[9,10]</sup>
70	Nitrobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[14,16]</sup>
71	N-Nitrosodi-n-propylamine	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[15,17]</sup>
72	Phenanthrene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[15,17]</sup>
73	Phenol	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[15,17]</sup>
74	Pyrene	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[15,17]</sup>

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ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
75	Selenium	Digestion, Inductively Coupled Plasma Method <sup>[9,10]</sup>
76	Silver	Digestion, Inductively Coupled Plasma Method <sup>[9,10]</sup>
77	Styrene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[14,16]</sup>
78	1,1,2,2-Tetrachloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[14,16]</sup>
79	Tetrachloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[14,16]</sup>
80	Toluene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[14,16]</sup>
81	1,2,4-Trichlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[14,16]</sup>
82	1,1,1-Trichloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[14,16]</sup>
83	1,1,2-Trichloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[14,16]</sup>
84	Trichloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[14,16]</sup>
85	2,4,5-Trichlorophenol	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[15,17]</sup>
86	2,4,6-Trichlorophenol	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[15,17]</sup>
87	1,3,5-Trimethylbenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[14,16]</sup>
88	Vanadium	Digestion, Inductively Coupled Plasma Method <sup>[9,10]</sup>
89	Vinyl acetate	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[14,16]</sup>
90	Vinyl chloride	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[14,16]</sup>
91	m-Xylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[14,16]</sup>
92	o-Xylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[14,16]</sup>
93	p-Xylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[14,16]</sup>

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ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
94	Xylene (Total)	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[14,16]</sup>
95	Zinc	Digestion, Inductively Coupled Plasma Method <sup>[9,10]</sup>


### เอกสารอ้างอิง

1. กระทรวงอุตสาหกรรม. **ประกาศกระทรวงอุตสาหกรรม พ.ศ.2549** เรื่องกำหนดค่าปริมาณเขม่าควันที่เจือปนในอากาศที่ระบายออกจากปล่องของหม้อน้ำโรงสีข้าวที่ใช้แก๊สเป็นเชื้อเพลิง. ราชกิจจานุเบกษา. 4 ธันวาคม 2549. เล่มที่ 123 ตอนพิเศษ 125 ง.
2. กระทรวงอุตสาหกรรม. **ประกาศกระทรวงอุตสาหกรรม พ.ศ.2548** เรื่อง การกำจัดสิ่งปฏิกูลหรือวัสดุที่ไม่ใช้แล้ว. ราชกิจจานุเบกษา. 25 มกราคม 2549. เล่มที่ 123 ตอนพิเศษ 11ง.
3. สมาคมวิศวกรรมสิ่งแวดล้อมแห่งประเทศไทย. คู่มือวิเคราะห์น้ำเสีย. พิมพ์ครั้งที่ 4. กรุงเทพฯ: เรือนแก้วการพิมพ์, 2547.
4. APHA, AWWA, WEF. **Standard Methods for the Examination of Water and Wastewater**. 23<sup>rd</sup> ed. Washington, DC : APHA, 2017
5. United States Environmental Protection Agency. **Standard of Performance for New Stationary Sources**. 40 CFR Part 60. Appendix A, 2017.
6. United States Environmental Protection Agency. **Standard of Performance for New Stationary Sources**. 40 CFR Part 60. Appendix A, 2019.
7. United States Environmental Protection Agency. **Standard of Performance for New Stationary Sources**. 40 CFR Part 60. Appendix A, 2020.
8. United States Environmental Protection Agency. **Standard of Performance for New Stationary Sources**. 40 CFR Part 60. Appendix A, 2023.
9. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. **Acid Digestion of Sediments Sludge and Soils. SW-846 Method 3050B**, 1996.
10. United States Environment Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. **Inductively Coupled Plasma-Atomic Emission spectrometry. SW-846 Method 6010C**, 2007.
11. United States Environment Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. **Mercury in Solid or Semisolid Waste (Manual Cold-Vapor Technique). SW-846 Method 7471B**, 2007.
12. United States Environment Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. **Alkaline digestion for Hexavalent Chromium. SW-846 Method 3060A**, 1996.



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13. United States Environment Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. **Chromium. Hexavalent (Colorimetric). SW-846 Method 7196A**, 1992
14. United States Environment Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. **Closed-System Purge-and-Trap and Extraction for Volatile Organics in Soil and Waste Samples. SW-846 Method 5035A**, 2002
15. United States Environment Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. **Ultrasonic Extraction. SW-846 Method 3550C**, 2007
16. United States Environment Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. **Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS). SW-846 Method 8260D**, 2018
17. United States Environment Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. **Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry. SW-846 Method 8270E**, 2018



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ที่ อก ๐๓๒๐/ ๔๖๐๔ 1



กรมโรงงานอุตสาหกรรม  
ถนนพระรามที่ ๖ แขวงทุ่งพญาไท  
เขตราชเทวี กรุงเทพฯ ๑๐๔๐๐

๑๔ พฤษภาคม ๒๕๖๗

เรื่อง เปลี่ยนแปลงเอกสารอ้างอิงวิธีวิเคราะห์สารมลพิษ เปลี่ยนแปลงสารมลพิษในดิน และเปลี่ยนแปลงบุคลากร  
ของห้องปฏิบัติการวิเคราะห์

เรียน กรรมการผู้จัดการ บริษัท อีสเทิร์น ไทย คอนซัลติ้ง ๑๙๙๒ จำกัด

อ้างถึง คำขอขึ้นทะเบียน/ต่ออายุ/เปลี่ยนแปลงบุคลากร และชนิดสารมลพิษของห้องปฏิบัติการวิเคราะห์เอกชน  
ลงวันที่ ๔ มีนาคม ๒๕๖๗

สิ่งที่ส่งมาด้วย เอกสารแนบท้ายหนังสือเปลี่ยนแปลงเอกสารอ้างอิงวิธีวิเคราะห์สารมลพิษ และเปลี่ยนแปลง  
สารมลพิษบริษัท อีสเทิร์น ไทย คอนซัลติ้ง ๑๙๙๒ จำกัด จำนวน ๑๒ แผ่น

ตามคำขอฯ ที่อ้างถึง บริษัท อีสเทิร์น ไทย คอนซัลติ้ง ๑๙๙๒ จำกัด ห้องปฏิบัติการวิเคราะห์  
เอกชน เลขทะเบียน ว-๐๐๓ สถานที่ตั้งเลขที่ ๖๘๓ หมู่ที่ ๑๑ ถนนสุขาภิบาล ๘ ตำบลหนองขาม  
อำเภอศรีราชา จังหวัดชลบุรี แจ้งขอเปลี่ยนแปลงเอกสารอ้างอิงวิธีวิเคราะห์สารมลพิษในน้ำเสีย น้ำใต้ดิน  
เปลี่ยนแปลงสารมลพิษในดิน และเปลี่ยนแปลงบุคลากร นั้น

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว มีความเห็นดังนี้

๑. ให้ยกเลิกผู้ควบคุมดูแลห้องปฏิบัติการวิเคราะห์ จำนวน ๑ ราย

นายวัฒนา โคตรหล้า ทะเบียนเลขที่ ว-๐๐๓-ค-๐๐๐๒

๒. ให้ยกเลิกเจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ จำนวน ๓ ราย

๑) นางสาวอัญชลี ทะพงษ์ ทะเบียนเลขที่ ว-๐๐๓-จ-๐๐๑๒

๒) นางสาวจุฑามาศ เจริญพรหม ทะเบียนเลขที่ ว-๐๐๓-จ-๐๐๑๕

๓) นางสาวณัฐนิช นนตานอก ทะเบียนเลขที่ ว-๐๐๓-จ-๐๐๒๔

๓. ให้ยกเลิกขอบข่ายรายการสารมลพิษในน้ำเสีย และน้ำใต้ดินตามรายการเอกสารแนบท้าย  
หนังสือต่ออายุรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชนที่ อก ๐๓๒๐/๑๑๓๔๒ ลงวันที่ ๒๗ กรกฎาคม ๒๕๖๖

๔. ให้วิเคราะห์สารมลพิษตามขอบข่ายที่ได้รับขึ้นทะเบียนให้วิเคราะห์ในน้ำเสีย จำนวน ๔๗ รายการ  
และน้ำใต้ดิน จำนวน ๑๑๑ รายการ รวมทั้งสิ้นจำนวน ๑๕๘ รายการ ตามเอกสารแนบท้ายหนังสือเปลี่ยนแปลง  
เอกสารอ้างอิงวิธีวิเคราะห์สารมลพิษ เปลี่ยนแปลงสารมลพิษในดิน และเปลี่ยนแปลงบุคลากร ดังสิ่งที่ส่งมาด้วย

๕. ให้วิเคราะห์สารมลพิษตามขอบข่ายที่ได้รับขึ้นทะเบียนให้วิเคราะห์เพิ่มเติมในดิน จำนวน  
๑๒ รายการ ตามเอกสารแนบท้ายหนังสือเปลี่ยนแปลงเอกสารอ้างอิงวิธีวิเคราะห์สารมลพิษเปลี่ยนแปลงสารมลพิษ  
ในดิน และเปลี่ยนแปลงบุคลากร ดังสิ่งที่ส่งมาด้วย

อนึ่ง หนังสือ ....

COPY



อนึ่ง หนังสือฉบับนี้จะหมดอายุพร้อมหนังสือต่ออายุรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์  
เอกชนในวันที่ ๕ กรกฎาคม ๒๕๖๙

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ

(นายพรยศ กลั่นกรอง)

รองอธิบดี ปฏิบัติราชการแทน

อธิบดีกรมโรงงานอุตสาหกรรม

ศูนย์วิจัยและเตือนภัยมลพิษโรงงานภาคตะวันออก

โทร. ๐ ๓๓๑๓ ๖๐๕๙ ต่อ ๕๐๐๑-๒

ไปรษณีย์อิเล็กทรอนิกส์ [eirw@diw.mail.go.th](mailto:eirw@diw.mail.go.th)

COPY



“อุตสาหกรรมก้าวไกล ประเทศไทยก้าวหน้า ร่วมกันพัฒนา อุตสาหกรรมสีเขียว”



เอกสารแนบท้ายหนังสือเปลี่ยนแปลงเอกสารอ้างอิงวิธีวิเคราะห์สารมลพิษ

บริษัท อีสเทิร์น ไทย คอนซัลติ้ง ๑๙๙๒ จำกัด

เลขทะเบียน ว-๐๐๓

ที่ ออก ๐๓๒๐/

ลงวันที่

ขอขยายสารมลพิษที่ได้รับขึ้นทะเบียนจากกรมโรงงานอุตสาหกรรม จำนวน ๑๗๐ รายการ

น้ำเสีย จำนวน 47 รายการ

ลำดับ ที่	สารมลพิษ	วิธีวิเคราะห์
1	Aldrin	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[1]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method <sup>[1]</sup>
2	Arsenic	1) Continuous Hydride Generation/Atomic Absorption Spectrometric Method <sup>[1]</sup> 2) Digestion, Inductively Coupled Plasma Method <sup>[1]</sup>
3	Barium	Digestion, Inductively Coupled Plasma Method <sup>[1]</sup>
4	$\alpha$ -BHC	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[1]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method <sup>[1]</sup>
5	$\beta$ -BHC	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[1]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method <sup>[1]</sup>
6	$\delta$ -BHC	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[1]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method <sup>[1]</sup>
7	$\gamma$ -BHC	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[1]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method <sup>[1]</sup>
8	Biochemical Oxygen Demand	1) 5-Day BOD Test, Membrane Electrode Method <sup>[1]</sup> 2) 5-Day BOD Test, Azide Modification Method <sup>[1]</sup>
9	Cadmium	Digestion, Inductively Coupled Plasma Method <sup>[1]</sup>
10	Chemical Oxygen Demand	Closed Reflux, Titrimetric Method <sup>[1]</sup>
11	cis-Chlordane	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[1]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method <sup>[1]</sup>

COPY

12 trans-Chlordane ...

ลำดับ ที่	สารมลพิษ	วิธีวิเคราะห์
12	trans-Chlordane	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[1]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method <sup>[1]</sup>
13	Chromium	1) Digestion, Direct Air-Acetylene Flame Method <sup>[1]</sup> 2) Digestion, Inductively Coupled Plasma Method <sup>[1]</sup>
14	Color	ADMI Weighted-Ordinate Spectrophotometric Method <sup>[1]</sup>
15	Copper	1) Digestion, Direct Air-Acetylene Flame Method <sup>[1]</sup> 2) Digestion, Inductively Coupled Plasma Method <sup>[1]</sup>
16	Cyanide	Distillation, Colorimetric Method <sup>[1]</sup>
17	4,4'-DDD	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[1]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method <sup>[1]</sup>
18	4,4'-DDE	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[1]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method <sup>[1]</sup>
19	DDT	Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method <sup>[1]</sup>
20	Dieldrin	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[1]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method <sup>[1]</sup>
21	Endosulfan I	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[1]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method <sup>[1]</sup>
22	Endosulfan II	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[1]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method <sup>[1]</sup>
23	Endosulfan sulfate	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[1]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method <sup>[1]</sup>
24	Endrin	Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method <sup>[1]</sup>

**COPY**

25 Endrin aldehyde ...

ลำดับ ที่	สารมลพิษ	วิธีวิเคราะห์
25	Endrin aldehyde	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[1]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method <sup>[1]</sup>
26	Endrin ketone	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[1]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method <sup>[1]</sup>
27	Formaldehyde	Distillation, Colorimetric Method <sup>[4]</sup>
28	Free Chlorine	1) Iodometric Method <sup>[1]</sup> 2) Colorimetric Method <sup>[1]</sup>
29	Heptachlor	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[1]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method <sup>[1]</sup>
30	Heptachlor Epoxide	1) Liquid-Liquid Extraction, Gas Chromatographic Method <sup>[1]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method <sup>[1]</sup>
31	Hexavalent Chromium	Filtration, Colorimetric Method <sup>[1]</sup>
32	Lead	1) Digestion, Direct Air-Acetylene Flame Method <sup>[1]</sup> 2) Digestion, Inductively Coupled Plasma Method <sup>[1]</sup>
33	Manganese	Digestion, Inductively Coupled Plasma Method <sup>[1]</sup>
34	Mercury	Digestion, Cold-Vapor Atomic Absorption Spectrometric Method <sup>[1]</sup>
35	Methoxychlor	Liquid-Liquid Extraction, Gas Chromatographic / Mass Spectrometric Method <sup>[1]</sup>
36	Nickel	1) Digestion, Direct Air-Acetylene Flame Method <sup>[1]</sup> 2) Digestion, Inductively Coupled Plasma Method <sup>[1]</sup>
37	Oil and Grease	Liquid-Liquid, Partition-Gravimetric Method <sup>[1]</sup>
38	pH	Electrometric Method <sup>[1]</sup>
39	Phenols	Distillation, Direct Photometric Method <sup>[1]</sup>
40	Selenium	Digestion, Hydride Generation/Atomic Absorption Spectrometric Method <sup>[1]</sup>

**COPY**

ลำดับ ที่	สารมลพิษ	วิธีวิเคราะห์
41	Sulfide	ZnS Precipitation, Iodometric Method <sup>[1]</sup>
42	Temperature	Field Method <sup>[1]</sup>
43	Trivalent Chromium	1) Digestion, Direct Air-Acetylene Flame Method; Filtration, Colorimetric Method; Calculation <sup>[1]</sup> 2) Digestion, Inductively Coupled Plasma Method; Colorimetric Method; Calculation <sup>[1]</sup>
44	Total Dissolved Solids	Dried at 180 °C <sup>[1]</sup>
45	Total Kjeldahl Nitrogen	Macro Kjeldahl Method <sup>[1]</sup>
46	Total Suspended Solids	Dried at 103-105 °C <sup>[1]</sup>
47	Zinc	Digestion, Inductively Coupled Plasma Method <sup>[1]</sup>

น้ำใต้ดิน จำนวน 111 รายการ

ลำดับ ที่	สารมลพิษ	วิธีวิเคราะห์
1	Acenaphthene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
2	Acetone	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
3	Aldrin	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
4	Anthracene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
5	Antimony	Digestion, Inductively Coupled Plasma Method <sup>[1]</sup>
6	Arsenic	1) Continuous Hydride Generation/Atomic Absorption Spectrometric Method <sup>[1]</sup> 2) Digestion, Inductively Coupled Plasma Method <sup>[1]</sup>
7	Barium	Digestion, Inductively Coupled Plasma Method <sup>[1]</sup>
8	Benz(a)anthracene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>

**COPY**

ลำดับ ที่	สารมลพิษ	วิธีวิเคราะห์
9	Benzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
10	Benzo(b)fluoranthene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
11	Benzo(k)fluoranthene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
12	Benzo(a)pyrene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
13	Benzo[g,h,i]perylene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
14	Beryllium	Digestion, Inductively Coupled Plasma Method <sup>[1]</sup>
15	Bis(2-chloroethyl)ether	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
16	Bis(2-ethylhexyl)phthalate	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
17	Bromodichloromethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
18	Bromoform	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
19	Butanol	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
20	Butyl benzyl phthalate	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
21	Cadmium	Digestion, Inductively Coupled Plasma Method <sup>[1]</sup>
22	Carbazole	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
23	Carbon disulfide	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
24	Carbon tetrachloride	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>

ลำดับ ที่	สารมลพิษ	วิธีวิเคราะห์
25	Chlordane	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
26	p-Chloroaniline	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
27	Chlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
28	Chlorodibromomethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
29	Chloroform	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
30	2-Chlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
31	Chromium	1) Digestion, Direct Air-Acetylene Flame Method <sup>[1]</sup> 2) Digestion, Inductively Coupled Plasma Method <sup>[1]</sup>
32	Chromium (III)	1) Digestion, Direct Air-Acetylene Flame Method; Filtration, Colorimetric Method; Calculation <sup>[1]</sup> 2) Digestion, Inductively Coupled Plasma Method; Filtration, Colorimetric Method; Calculation <sup>[1]</sup>
33	Chromium (VI)	Filtration, Colorimetric Method <sup>[1]</sup>
34	Chrysene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
35	Cyanide	Distillation, Colorimetric Method <sup>[1]</sup>
36	DDD	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
37	DDE	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
38	DDT	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
39	Dibenz(a,h)anthracene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>

COPY

40 Di-n-butyl phthalate ...

ลำดับ ที่	สารมลพิษ	วิธีวิเคราะห์
40	Di-n-butyl phthalate	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
41	1,2-Dichlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
42	1,3-Dichlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
43	1,4-Dichlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
44	1,1-Dichloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
45	1,2-Dichloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
46	1,1-Dichloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
47	cis-1,2-Dichloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
48	trans-1,2-Dichloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
49	2,4-Dichlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
50	1,2-Dichloropropane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
51	1,3-Dichloropropane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
52	Dieldrin	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
53	Diethyl phthalate	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
54	2,4-Dimethylphenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>

**COPY**

55 2,4-Dinitrotoluene ...

ลำดับ ที่	สารมลพิษ	วิธีวิเคราะห์
55	2,4-Dinitrotoluene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
56	2,6-Dinitrotoluene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
57	Di-n-octyl phthalate	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
58	Endosulfan	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
59	Endrin	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
60	Ethylbenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
61	Fluoranthene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
62	Fluorene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
63	Heptachlor	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
64	Heptachlor epoxide	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
65	Hexachlorobenzene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
66	Hexachloro-1,3-butadiene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
67	n-Hexane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
68	$\alpha$ -HCH	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
69	$\beta$ -HCH	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>

ลำดับ ที่	สารมลพิษ	วิธีวิเคราะห์
70	$\gamma$ -HCH	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
71	Hexachlorocyclopentadiene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
72	Hexachloroethane	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
73	Indeno(1,2,3-cd)pyrene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
74	Isophorone	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
75	Lead	1) Digestion, Direct Air-Acetylene Flame Method <sup>[1]</sup> 2) Digestion, Inductively Coupled Plasma Method <sup>[1]</sup>
76	Manganese	Digestion, Inductively Coupled Plasma Method <sup>[1]</sup>
77	Mercury	Digestion, Cold-Vapor Atomic Absorption Spectrometric Method <sup>[1]</sup>
78	Methoxychlor	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
79	Methylene chloride	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
80	2-Methylphenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
81	2-Methylnaphthalene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
82	Methyl tert-butyl ether	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
83	Naphthalene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
84	Nickel	Digestion, Inductively Coupled Plasma Method <sup>[1]</sup>
85	Nitrobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>

ลำดับ ที่	สารมลพิษ	วิธีวิเคราะห์
86	N-Nitrosodi-n-propylamine	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[1]</sup>
87	pH	Electrometric Method <sup>[4]</sup>
88	Phenanthrene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
89	Phenol	1) Distillation, Direct Photometric Method <sup>[4]</sup> 2) Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
90	Pyrene	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
91	Selenium	Digestion, Hydride Generation/Atomic Absorption Spectrometric Method <sup>[4]</sup>
92	Silver	Digestion, Inductively Coupled Plasma Method <sup>[4]</sup>
93	Styrene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
94	1,1,2,2-Tetrachloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
95	Trichloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
96	1,2,4-Trichlorobenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
97	1,1,1-Trichloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
98	1,1,2-Trichloroethane	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
99	Tetrachloroethylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
100	Toluene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
101	2,4,5-Trichlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>

ลำดับ ที่	สารมลพิษ	วิธีวิเคราะห์
102	2,4,6-Trichlorophenol	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
103	1,3,5-Trimethylbenzene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
104	Vanadium	Digestion, Inductively Coupled Plasma Method <sup>[4]</sup>
105	Vinyl acetate	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
106	Vinyl chloride	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
107	m-Xylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
108	o-Xylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
109	p-Xylene	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
110	Xylene (Total)	Purge and Trap, Gas Chromatographic/Mass Spectrometric Method <sup>[4]</sup>
111	Zinc	Digestion, Inductively Coupled Plasma Method <sup>[4]</sup>

**ดิน จำนวน 12 รายการ**

ลำดับ ที่	สารมลพิษ	วิธีวิเคราะห์
1	$\alpha$ -HCH	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[2,3]</sup>
2	$\beta$ -HCH	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[2,3]</sup>
3	$\gamma$ -HCH	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[2,3]</sup>
4	Heptachlor	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[2,3]</sup>

**COPY**

5 Aldrin ...

ลำดับ ที่	สารมลพิษ	วิธีวิเคราะห์
5	Aldrin	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[2,3]</sup>
6	Heptachlor epoxide	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[2,3]</sup>
7	Chlordane	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[2,3]</sup>
8	Dieldrin	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[2,3]</sup>
9	Endrin	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[2,3]</sup>
10	DDD	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[2,3]</sup>
11	DDT	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[2,3]</sup>
12	Methoxychlor	Ultrasonic Extraction, Gas Chromatographic/Mass Spectrometric Method <sup>[2,3]</sup>

#### เอกสารอ้างอิง

1. APHA, AWWA, WEF. **Standard Methods for the Examination of Water and Wastewater**. 24<sup>th</sup> ed. Washington, DC: APHA, 2023.
2. United States Environment Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. **Ultrasonic Extraction. SW-846 Method 3550C**, 2007
3. United States Environment Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. **Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry. SW-846 Method 8270E**, 2018
4. สมาคมวิศวกรรมสิ่งแวดล้อมแห่งประเทศไทย. คู่มือวิเคราะห์น้ำเสีย. พิมพ์ครั้งที่ 4. กรุงเทพฯ: เรือนแก้วการพิมพ์, 2547.

**COPY**

ภาคผนวกที่ 4

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ใบรับรองความสามารถห้องปฏิบัติการ



ที่ อว 0303/169

## ใบรับรองความสามารถห้องปฏิบัติการทดสอบ

ใบรับรองฉบับนี้ให้ไว้เพื่อแสดงว่า

**ห้องปฏิบัติการ บริษัท อีสเทิร์น ไทย คอนซัลติ้ง 1992 จำกัด**  
**เลขที่ 683 หมู่ที่ 11 ถนนสุขาภิบาล 8 ตำบลหนองขาม**  
**อำเภอศรีราชา จังหวัดชลบุรี 20230**

ได้ผ่านการประเมินความสามารถห้องปฏิบัติการทดสอบตามมาตรฐาน ISO/IEC 17025 : 2017  
และข้อกำหนด กฎระเบียบ และเงื่อนไขการรับรองความสามารถห้องปฏิบัติการทดสอบ  
ของสำนักบริหารและรับรองห้องปฏิบัติการ กรมวิทยาศาสตร์บริการ

**หมายเลขการรับรองระบบงานที่ ทดสอบ - 0159**

รายละเอียดการรับรองดังขอบข่ายการรับรองแนบท้าย

ออกให้ ณ วันที่ : 10 มกราคม 2568

หมดอายุ วันที่ : 6 พฤศจิกายน 2570

ลงชื่อ :



(นางจันทน์ วรสรรพวิทย)

ผู้อำนวยการสำนักบริหารและรับรองห้องปฏิบัติการ

สำนักบริหารและรับรองห้องปฏิบัติการ กรมวิทยาศาสตร์บริการ  
กระทรวงการอุดมศึกษา วิทยาศาสตร์ วิจัยและนวัตกรรม

## ขอข่ายการรับรองความสามารถห้องปฏิบัติการทดสอบ

ชื่อห้องปฏิบัติการ : ห้องปฏิบัติการ บริษัท อีสเทิร์น ไทย คอนซัลตัง 1992 จำกัด

สถานที่ตั้ง : เลขที่ 683 หมู่ที่ 11 ถนนสุขาภิบาล 8 ตำบลหนองขาม  
อำเภอศรีราชา จังหวัดชลบุรี 20230

หมายเลขการรับรองระบบงานที่ : ทดสอบ - 0159

สถานะของห้องปฏิบัติการ : ☒ ถาวร ☐ นอกสถานที่ ☐ชั่วคราว ☐ เคลื่อนที่

ลำดับ ที่	วัสดุ / ผลิตภัณฑ์ที่ทดสอบ	รายการที่ทดสอบ / ช่วงของการทดสอบ	วิธีทดสอบ / เทคนิคที่ใช้
1	น้ำ	- ซีโอดี 40 mg/L ถึง 5 000 mg/L  - โปรท 0.001 mg/L ถึง 0.02 mg/L  - บีโอดี 2 mg/L ถึง 5 000 mg/L	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 <sup>th</sup> ed., 2023, part 5220 C  Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 <sup>th</sup> ed., 2023, part 3112 B  Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 <sup>th</sup> ed., 2023, part 5210 B

ออกครั้งแรก ณ วันที่ 21 พฤศจิกายน 2560

ฉบับที่ 5

สำนักบริหารและรับรองห้องปฏิบัติการ กรมวิทยาศาสตร์บริการ กระทรวงการอุดมศึกษา วิทยาศาสตร์ วิจัย และนวัตกรรม

## ขอข่ายการรับรองความสามารถห้องปฏิบัติการทดสอบ

ชื่อห้องปฏิบัติการ : ห้องปฏิบัติการ บริษัท อีสเทิร์น ไทย คอนซัลติง 1992 จำกัด

สถานที่ตั้ง : เลขที่ 683 หมู่ที่ 11 ถนนสุขาภิบาล 8 ตำบลหนองขาม  
อำเภอศรีราชา จังหวัดชลบุรี 20230

หมายเลขการรับรองระบบงานที่ : ทดสอบ - 0159

สถานะของห้องปฏิบัติการ : ☒ ถาวร ☐ นอกสถานที่ ☐ชั่วคราว ☐เคลื่อนที่

ลำดับ ที่	วัสดุ / ผลิตภัณฑ์ที่ทดสอบ	รายการที่ทดสอบ / ช่วงของการทดสอบ	วิธีทดสอบ / เทคนิคที่ใช้
1 (ต่อ)	น้ำ	- สารที่ละลายได้ทั้งหมด ที่อุณหภูมิ 180 °C 25 mg/L ถึง 10 000 mg/L  - สารแขวนลอยทั้งหมด ที่อุณหภูมิ 103 °C ถึง 105 °C 5 mg/L ถึง 2 000 mg/L  - ฟลูออไรด์ 0.5 mg/L ถึง 10 mg/L	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 <sup>th</sup> ed., 2023, part 2540 C  Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 <sup>th</sup> ed., 2023, part 2540 D  Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 <sup>th</sup> ed., 2023, part 4500-F <sup>-</sup> C

ออกครั้งแรก ณ วันที่ 21 พฤศจิกายน 2560

ฉบับที่ 5

สำนักบริหารและรับรองห้องปฏิบัติการ กรมวิทยาศาสตร์บริการ กระทรวงการอุดมศึกษา วิทยาศาสตร์ วิจัย และนวัตกรรม

## ขอข่ายการรับรองความสามารถห้องปฏิบัติการทดสอบ

ชื่อห้องปฏิบัติการ : ห้องปฏิบัติการ บริษัท อีสเทิร์น ไทย คอนซัลตติ้ง 1992 จำกัด

สถานที่ตั้ง : เลขที่ 683 หมู่ที่ 11 ถนนสุขาภิบาล 8 ตำบลหนองขาม  
อำเภอศรีราชา จังหวัดชลบุรี 20230

หมายเลขการรับรองระบบงานที่ : ทดสอบ - 0159

สถานะของห้องปฏิบัติการ : ☒ ถาวร ☐ นอกสถานที่ ☐ชั่วคราว ☐ เคลื่อนที่

ลำดับ ที่	วัสดุ / ผลิตภัณฑ์ที่ทดสอบ	รายการที่ทดสอบ / ช่วงของการทดสอบ	วิธีทดสอบ / เทคนิคที่ใช้
1 (ต่อ)	น้ำ	- คลอไรด์ 50 mg/L ถึง 2 000 mg/L  - ความกระด้างทั้งหมด (คำนวณเป็นแคลเซียมคาร์บอเนต) 50 mg/L ถึง 500 mg/L	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 <sup>th</sup> ed., 2023, part 4500-Cl <sup>-</sup> B  Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 <sup>th</sup> ed., 2023, part 2340 C

ออกครั้งแรก ณ วันที่ 21 พฤศจิกายน 2560

ฉบับที่ 5

สำนักบริหารและรับรองห้องปฏิบัติการ กรมวิทยาศาสตร์บริการ กระทรวงการอุดมศึกษา วิทยาศาสตร์ วิจัย และนวัตกรรม

## ขอข่ายการรับรองความสามารถห้องปฏิบัติการทดสอบ

ชื่อห้องปฏิบัติการ : ห้องปฏิบัติการ บริษัท อีสเทิร์น ไทย คอนซัลติง 1992 จำกัด

สถานที่ตั้ง : เลขที่ 683 หมู่ที่ 11 ถนนสุขาภิบาล 8 ตำบลหนองขาม  
อำเภอศรีราชา จังหวัดชลบุรี 20230

หมายเลขการรับรองระบบงานที่ : ทดสอบ - 0159

สถานะของห้องปฏิบัติการ : ☒ ถาวร ☐ นอกสถานที่ ☐ชั่วคราว ☐เคลื่อนที่

ลำดับ ที่	วัสดุ / ผลิตภัณฑ์ที่ทดสอบ	รายการที่ทดสอบ / ช่วงของการทดสอบ	วิธีทดสอบ / เทคนิคที่ใช้
2	น้ำเสีย	- ซีโอดี 40 mg/L ถึง 5 000 mg/L  - โปรท 0.001 mg/L ถึง 0.02 mg/L  - บีโอดี 2 mg/L ถึง 5 000 mg/L	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 <sup>th</sup> ed., 2023, part 5220 C  Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 <sup>th</sup> ed., 2023, part 3112 B  Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 <sup>th</sup> ed., 2023, part 5210 B

ออกครั้งแรก ณ วันที่ 21 พฤศจิกายน 2560

ฉบับที่ 5

สำนักบริหารและรับรองห้องปฏิบัติการ กรมวิทยาศาสตร์บริการ กระทรวงการอุดมศึกษา วิทยาศาสตร์ วิจัย และนวัตกรรม

## ขอข่ายการรับรองความสามารถห้องปฏิบัติการทดสอบ

ชื่อห้องปฏิบัติการ : ห้องปฏิบัติการ บริษัท อีสเทิร์น ไทย คอนซัลติง 1992 จำกัด

สถานที่ตั้ง : เลขที่ 683 หมู่ที่ 11 ถนนสุขาภิบาล 8 ตำบลหนองขาม  
อำเภอศรีราชา จังหวัดชลบุรี 20230

หมายเลขการรับรองระบบงานที่ : ทดสอบ - 0159

สถานะของห้องปฏิบัติการ : ☒ ถาวร ☐ นอกสถานที่ ☐ชั่วคราว ☐เคลื่อนที่

ลำดับ ที่	วัสดุ / ผลิตภัณฑ์ที่ทดสอบ	รายการที่ทดสอบ / ช่วงของการทดสอบ	วิธีทดสอบ / เทคนิคที่ใช้
2 (ต่อ)	น้ำเสีย	<p>- สารที่ละลายได้ทั้งหมด ที่อุณหภูมิ 180 °C 25 mg/L ถึง 10 000 mg/L</p> <p>- สารแขวนลอยทั้งหมด ที่อุณหภูมิ 103 °C ถึง 105 °C 5 mg/L ถึง 2 000 mg/L</p> <p>- ฟลูออไรด์ 0.5 mg/L ถึง 10 mg/L</p>	<p>Standard Methods for the Examination of Water and Wastewater, APHA, AWWA &amp; WEF, 24<sup>th</sup> ed., 2023, part 2540 C</p> <p>Standard Methods for the Examination of Water and Wastewater, APHA, AWWA &amp; WEF, 24<sup>th</sup> ed., 2023, part 2540 D</p> <p>Standard Methods for the Examination of Water and Wastewater, APHA, AWWA &amp; WEF, 24<sup>th</sup> ed., 2023, part 4500-F<sup>-</sup> C</p>

ออกครั้งแรก ณ วันที่ 21 พฤศจิกายน 2560

ฉบับที่ 5

สำนักบริหารและรับรองห้องปฏิบัติการ กรมวิทยาศาสตร์บริการ กระทรวงการอุดมศึกษา วิทยาศาสตร์ วิจัย และนวัตกรรม

## ขอข่ายการรับรองความสามารถห้องปฏิบัติการทดสอบ

ชื่อห้องปฏิบัติการ : ห้องปฏิบัติการ บริษัท อีสเทิร์น ไทย คอนซัลตติ้ง 1992 จำกัด

สถานที่ตั้ง : เลขที่ 683 หมู่ที่ 11 ถนนสุขาภิบาล 8 ตำบลหนองขาม  
อำเภอศรีราชา จังหวัดชลบุรี 20230

หมายเลขการรับรองระบบงานที่ : ทดสอบ - 0159

สถานะของห้องปฏิบัติการ : ☒ ถาวร ☐ นอกสถานที่ ☐ชั่วคราว ☐เคลื่อนที่

ลำดับ ที่	วัสดุ / ผลิตภัณฑ์ที่ทดสอบ	รายการที่ทดสอบ / ช่วงของการทดสอบ	วิธีทดสอบ / เทคนิคที่ใช้
2 (ต่อ)	น้ำเสีย	- คลอไรต์ 50 mg/L ถึง 2 000 mg/L  - ความกระด้างทั้งหมด (คำนวณเป็นแคลเซียมคาร์บอเนต) 50 mg/L ถึง 500 mg/L	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 <sup>th</sup> ed., 2023, part 4500-Cl <sup>-</sup> B  Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 <sup>th</sup> ed., 2023, part 2340 C
3	น้ำทะเล	- สารแขวนลอยทั้งหมด ที่อุณหภูมิ 103 °C ถึง 105 °C 5 mg/L ถึง 100 mg/L	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 24 <sup>th</sup> ed., 2023, part 2540 D

ออกให้ ณ วันที่ : 10 มกราคม 2568

ลงชื่อ :



(นางจันทร์รัตน์ วรสรรพวิทย)

ผู้อำนวยการสำนักบริหารและรับรองห้องปฏิบัติการ

ออกครั้งแรก ณ วันที่ 21 พฤศจิกายน 2560

ฉบับที่ 5



ใบรับรองเลขที่ 23-LB0251  
(Certificate No.)

## ใบรับรองระบบงาน (Certificate of Accreditation)

อาศัยอำนาจตามความในพระราชบัญญัติการมาตรฐานแห่งชาติ พ.ศ. ๒๕๕๑  
(By Virtue of National Standardization Act B.E. 2551 (2008))

เลขาธิการสำนักงานมาตรฐานผลิตภัณฑ์อุตสาหกรรม  
(Secretary-General, Thai Industrial Standards Institute)

ออกใบรับรองฉบับนี้ให้  
(Issues this certificate to)

บริษัท อีสเทิร์น ไทย คอนซัลติง 1992 จำกัด  
(Eastern Thai Consulting 1992 Co., Ltd.)

ตั้งอยู่เลขที่  
(Address)

๖๘๓ หมู่ที่ ๑๑ ถนนสุขาภิบาล ๘ ตำบลหนองขาม อำเภอสรีราชา จังหวัดชลบุรี  
(683 Moo 11, Sukhapibarn 8 Road, Nongkham, Sriracha, Chonburi)

ได้รับการรับรองความสามารถ  
(Certificate of competence)

ตามมาตรฐานเลขที่ มอก. ๑๗๐๒๕ - ๒๕๖๑  
(Standard No. TIS 17025-2561 (2018) (ISO/IEC 17025: 2017))

ข้อกำหนดทั่วไปว่าด้วยความสามารถของ ห้องปฏิบัติการทดสอบและห้องปฏิบัติการสอบเทียบ  
(General requirements for the competence of testing and calibration laboratories)

หมายเลขการรับรองที่ ทดสอบ ๑๗๑๒  
(Accreditation No. Testing 1712)

โดยมีรายละเอียดสาขาและขอบข่ายที่ได้ใบรับรอง แสดงไว้ใน QR CODE และ [www.tisi.go.th](http://www.tisi.go.th)  
(Details of the scheme and scope of the certificate are shown in QR CODE and [www.tisi.go.th](http://www.tisi.go.th))

ออกให้ ณ วันที่ ๒๓ สิงหาคม พ.ศ. ๒๕๖๖  
(Issue date : 23 August B.E. 2566 (2023))

(นายเอกนิติ รมยานนท์)

รองเลขาธิการสำนักงานมาตรฐานผลิตภัณฑ์อุตสาหกรรม

ปฏิบัติราชการแทน

เลขาธิการสำนักงานมาตรฐานผลิตภัณฑ์อุตสาหกรรม



c88f6993



รายละเอียดสาขาและขอบข่ายใบรับรองห้องปฏิบัติการ

(Scope of Accreditation for Testing)

ใบรับรองเลขที่ 23-LB0251

(Certification No. 23-LB0251)



ชื่อห้องปฏิบัติการ

(Laboratory Name)

บริษัท อีสเทิร์น ไทย คอนซัลติ้ง 1992 จำกัด

(Eastern Thai Consulting 1992 Co.,Ltd.)

หมายเลขการรับรองที่

(Accreditation No.)

ทดสอบ 1712

(Testing 1712)

ฉบับที่ 01

(Issue No.01)

ออกให้ตั้งแต่วันที่ 17 กรกฎาคม พ.ศ. 2566

(Valid from) (17 July B.E.2566 (2023))

ถึงวันที่ 16 กรกฎาคม พ.ศ. 2571

(Until) (16 July B.E.2571 (2028))

สถานภาพห้องปฏิบัติการ

(Laboratory status)

☒ ถาวร

(Permanent)

☐ นอกสถานที่

(Site)

☐ชั่วคราว

(Temporary)

☐เคลื่อนที่

(Mobile)

☐หลายสถานที่

(Multisite)

สาขาการทดสอบ (Field of Testing)	รายการทดสอบ (Parameter)	วิธีทดสอบ (Test Method)
<p>สาขาสิ่งแวดล้อม (Environmental field)</p> <p>1. น้ำ ( Water )</p>	<p>- โลหะหนัก (Heavy metal)</p> <ul style="list-style-type: none"> <li>โครเมียม (Cr) 0.03 mg/L to 2.00 mg/L</li> <li>ทองแดง (Cu) 0.03 mg/L to 2.00 mg/L</li> <li>เหล็ก (Fe) 0.03 mg/L to 2.00 mg/L</li> <li>ตะกั่ว (Pb) 0.01 mg/L to 1.00 mg/L</li> <li>นิกเกิล (Ni) 0.03 mg/L to 2.00 mg/L</li> <li>อลูมิเนียม (Al) 0.10 mg/L to 2.00 mg/L</li> <li>แบเรียม (Ba) 0.03 mg/L to 2.00 mg/L</li> <li>แคดเมียม (Cd) 0.003 mg/L to 1.00 mg/L</li> <li>แมงกานีส (Mn) 0.03 mg/L to 2.00 mg/L</li> <li>เงิน (Ag) 0.05 mg/L to 2.00 mg/L</li> <li>สังกะสี (Zn) 0.03 mg/L to 2.00 mg/L</li> </ul>	<p>- Standard Method for the Examination of Water and Wastewater, APHA, AWWA, WEF 23<sup>rd</sup> edition 2017. Part 3030 F and 3120 B</p>

กระทรวงอุตสาหกรรมสำนักงานมาตรฐานผลิตภัณฑ์อุตสาหกรรม

(Ministry of Industry, Thai Industrial Standards Institute)

รายละเอียดสาขาและขอบข่ายใบรับรองห้องปฏิบัติการ

(Scope of Accreditation for Testing)

ใบรับรองเลขที่ 23-LB0251

(Certification No. 23-LB0251)



ฉบับที่ 01

(Issue No.)

ออกให้ตั้งแต่วันที่ 17 กรกฎาคม พ.ศ. 2566

(Valid from)

(17 July B.E.2566 (2023))

ถึงวันที่ 16 กรกฎาคม พ.ศ. 2571

(Until) (16 July B.E.2571 (2028))

สถานภาพห้องปฏิบัติการ

(Laboratory status)

☒ ถาวร

(Permanent)

☐ นอกสถานที่

(Site)

☐ชั่วคราว

(Temporary)

☐เคลื่อนที่

(Mobile)

☐หลายสถานที่

(Multisite)

สาขาการทดสอบ (Field of Testing)	รายการทดสอบ (Parameter)	วิธีทดสอบ (Test Method)
<p>สาขาสิ่งแวดล้อม (Environmental field)</p> <p>1. น้ำ (ต่อ) (Water ) (cont.)</p> <p>2. น้ำเสีย (Wastewater )</p>	<p>- ไขมันและน้ำมัน (Oil &amp; Grease) 3.0 mg/L - 20.0 mg/L</p> <p>- โลหะหนัก (Heavy metal)</p> <ul style="list-style-type: none"> <li>โครเมียม (Cr) 0.03 mg/L to 2.00 mg/L</li> <li>ทองแดง (Cu) 0.03 mg/L to 2.00 mg/L</li> <li>เหล็ก (Fe) 0.03 mg/L to 2.00 mg/L</li> <li>ตะกั่ว (Pb) 0.03 mg/L to 2.00 mg/L</li> <li>นิกเกิล (Ni) 0.03 mg/L to 2.00 mg/L</li> <li>อลูมิเนียม (Al) 0.10 mg/L to 2.00 mg/L</li> <li>แบเรียม (Ba) 0.03 mg/L to 2.00 mg/L</li> <li>แคดเมียม (Cd) 0.03 mg/L to 2.00 mg/L</li> </ul>	<p>- Standard Method for the Examination of Water and Wastewater, APHA, AWWA, WEF 23<sup>rd</sup> edition 2017. Part 5520 B</p> <p>- Standard Method for the Examination of Water and Wastewater, APHA, AWWA, WEF 23<sup>rd</sup> edition 2017. Part 3030 F and 3120 B</p>

รายละเอียดสาขาและขอบข่ายใบรับรองห้องปฏิบัติการ

(Scope of Accreditation for Testing)

ใบรับรองเลขที่ 23-LB0251

(Certification No. 23-LB0251)



ฉบับที่ 01

(Issue No.01)

ออกให้ตั้งแต่วันที่ 17 กรกฎาคม พ.ศ. 2566

(Valid from)

(17 July B.E.2566 (2023))

ถึงวันที่ 16 กรกฎาคม พ.ศ. 2571

(Until) (16 July B.E.2571 (2028))

สถานภาพห้องปฏิบัติการ

(Laboratory status)

☒ ถาวร

(Permanent)

☐ นอกสถานที่

(Site)

☐ชั่วคราว

(Temporary)

☐เคลื่อนที่

(Mobile)

☐หลายสถานที่

(Multisite)

สาขาการทดสอบ (Field of Testing)	รายการทดสอบ (Parameter)	วิธีทดสอบ (Test Method)
<p>สาขาสังแวดล้อม (Environmental field)</p> <p>2. น้ำเสีย (ต่อ) (Wastewater ) (cont.)</p>	<p>- โลหะหนัก (ต่อ) (Heavy metal) (cont.)</p> <ul style="list-style-type: none"> <li>• แมงกานีส (Mn) 0.03 mg/L to 2.00 mg/L</li> <li>• เงิน (Ag) 0.05 mg/L to 2.00 mg/L</li> <li>• สังกะสี (Zn) 0.03 mg/L to 2.00 mg/L</li> </ul> <p>- ไขมันและน้ำมัน (Oil &amp; Grease) 3.0 mg/L - 20.0 mg/L</p>	<p>- Standard Method for the Examination of Water and Wastewater, APHA, AWWA, WEF 23<sup>rd</sup> edition 2017. Part 3030 F and 3120 B</p> <p>- Standard Method for the Examination of Water and Wastewater, APHA, AWWA, WEF 23<sup>rd</sup> edition 2017. Part 5520 B</p>

รายละเอียดสาขาและขอบข่ายใบรับรองห้องปฏิบัติการ

(Scope of Accreditation for Testing)

ใบรับรองเลขที่ 23-LB0251

(Certification No. 23-LB0251)



ฉบับที่ 01  
(Issue No.)

ออกให้ตั้งแต่วันที่ 17 กรกฎาคม พ.ศ. 2566  
(Valid from) (17 July B.E.2566 (2023))

ถึงวันที่ 16 กรกฎาคม พ.ศ. 2571  
(Until) (16 July B.E.2571 (2028))

สถานภาพห้องปฏิบัติการ  
(Laboratory status)

☐ ถาวร

(Permanent)

☒ นอกสถานที่

(Site)

☐ ชั่วคราว

(Temporary)

☐ เคลื่อนที่

(Mobile)

☐ หลายสถานที่

(Multisite)

สาขาการทดสอบ (Field of Testing)	รายการทดสอบ (Parameter)	วิธีทดสอบ (Test Method)
<p>สาขาสีสิ่งแวดล้อม (Environmental field)</p> <p>3.พื้นที่การทำงาน (Workplace)</p>	<p>- ระดับเสียง (Sound Level)</p> <ul style="list-style-type: none"> <li>ระดับเสียงเฉลี่ย <math>L_{eqT}</math> ช่วง 30 - 130 dB(A)</li> <li>ระดับเสียงสูงสุด <math>L_{max}</math> ช่วง 30 - 130 dB(A)</li> </ul>	<p>- ISO 11202:2010</p> <p>- ประกาศกระทรวงอุตสาหกรรม เรื่องมาตรการคุ้มครองความปลอดภัยในการประกอบกิจการโรงงานเกี่ยวกับสภาวะแวดล้อมในการทำงาน พ.ศ.2546 ลงวันที่ 6 พ.ย. 2546 (Notification of The Ministry of Industry B.E. 2546 (2003) on the Safety Protection Measures in Factory Regarding Working Area Environment, dated November 6, 2003)</p> <p>- ประกาศกรมสวัสดิการและคุ้มครองแรงงาน เรื่องมาตรฐานระดับเสียงที่ยอมให้ลูกจ้างได้รับเฉลี่ยตลอดระยะเวลาการทำงานในแต่ละวัน ลงวันที่ 13 ธ.ค. 2560 (Notification of the Department of Labor Protection and Welfare on the standard of noise level that employees are allowed to receive in average period of work each day, dated December 13, 2017.)</p> <p>- ประกาศกรมสวัสดิการและคุ้มครองแรงงาน เรื่องหลักเกณฑ์ วิธีการตรวจวัดและการวิเคราะห์สภาวะการทำงานเกี่ยวกับระดับความร้อน แสงสว่าง หรือเสียง รวมทั้งระยะเวลาและประเภทกิจการที่ต้องดำเนินการ ลงวันที่ 8 ก.พ. 2561 (Notification of the Department of Labor Protection and Welfare on Criteria, Measurement Methods, and Analysis of Working Conditions Regarding Heat, Light, or Noise Levels, Including Duration and Types of Businesses to Be Performed, dated February 8, 2018.)</p>

รายละเอียดสาขาและขอบข่ายใบรับรองห้องปฏิบัติการ

(Scope of Accreditation for Testing)

ใบรับรองเลขที่ 23-LB0251

(Certification No. 23-LB0251)



ฉบับที่ 01

(Issue No.)

ออกให้ตั้งแต่วันที่ 17 กรกฎาคม พ.ศ. 2566

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(Until) (16 July B.E.2571 (2028))

สถานภาพห้องปฏิบัติการ

(Laboratory status)

☐ ถาวร

(Permanent)

☒ นอกสถานที่

(Site)

☐ชั่วคราว

(Temporary)

☐เคลื่อนที่

(Mobile)

☐หลายสถานที่

(Multisite)

สาขาการทดสอบ (Field of Testing)	รายการทดสอบ (Parameter)	วิธีทดสอบ (Test Method)
<p>สาขาสิ่งแวดล้อม (Environmental field)</p> <p>4. บรรยากาศ (Ambient)</p>	<p>- ระดับเสียง (Sound Level)</p> <ul style="list-style-type: none"> <li>• ระดับเสียงเฉลี่ย LeqT ช่วง 30.0 - 130.0 dB(A)</li> <li>• ระดับเสียงสูงสุด Lmax ช่วง 30.0 - 130.0 dB(A)</li> </ul>	<p>- ISO 1996 - 1 : 2016</p> <p>- ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ ฉบับที่ 15 (2540) เรื่องกำหนด มาตรฐาน ระดับเสียงโดยทั่วไป ลงวันที่ 12 มี.ค. 2540 (Notification of The National Environmental Board Volume 15 B.E. 2540 (1997) on the general noise level standards, dated March 12, 1997)</p> <p>- ประกาศกรมควบคุมมลพิษ เรื่อง การ คำนวณค่าระดับเสียง ลงวันที่ 11 ส.ค. 2540 (Notification of the Pollution Control Department on the calculation of the noise level, dated August 11, 1997.)</p> <p>- ประกาศกรมโรงงานอุตสาหกรรม เรื่อง วิธีการตรวจวัดระดับเสียงการรบกวน ระดับ เสียงเฉลี่ย 24 ชั่วโมง และระดับเสียงสูงสุดที่ เกิดจากการประกอบกิจการโรงงาน พ.ศ. 2553 ลงวันที่ 20 ธ.ค. 2553 (Notification of the Department of Industrial Works on Methods for Measuring Noise Annoyance, Noise Levels 24-Hour Average and Maximum Noise Level from Factory B.E. 2553, dated December 20, 2010.)</p>

ภาคผนวกที่ 5

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สรุปเอกสารการสอบเทียบอุปกรณ์เครื่องมือ

**ANALYTICAL BALANCE (DU)**

**Model : XS205DU**


**Serial No. : 1126323724**

Mettler-Toledo (Thailand) Ltd.  
846/4 - 846/5846/4 - 846/5 Lasalle Rd., Bangna Tai  
Bangna District, Bangkok 10260  
+66 2723 0382  
MT-TH.ServiceSupport@mtl.com



## Accuracy Calibration Certificate

### Customer

Company: EASTERN THAI CONSULTING 1992 CO., LTD.  
Address: 683 Moo 11, Sukhaphiban 8 Rd., Nong Kham  
City: Sriracha Contact: Sasiporn Nakin  
Zip / Postal: 20230  
State / Province: Chonburi  
Order Number: 

### Weighing Device



Manufacturer: Mettler Toledo Instrument Type: Weighing Instrument  
Model: XS205DU Asset Number: LABE 05/1  
Serial No.: 1126323724 Terminal Model: SAT  
Building: Laboratory Terminal Serial No.: 1126323724  
Floor: 1 Terminal Asset No.: N/A  
Room: Analytical Balance

Range	Max. Capacity	Readability (d)
1	81 g	0.00001 g
2	220 g	0.0001 g

### Procedure

Calibration Guideline: EURAMET cg-18 v. 4.0 (11/2015)  
METTLER TOLEDO Work Instruction: CP/W002/20  
This calibration certificate contains measurements for As Found calibration. No As Left calibration was performed because the device was not modified after As Found calibration. Therefore, results for As Left correspond to As Found.  
The sensitivity/span of the weighing instrument was adjusted before calibration with a built-in weight.  
In accordance with EURAMET cg-18 (11/2015), the test loads were selected to reflect the specific use of the weighing device or to accommodate specific calibration conditions.

	Temperature		Humidity	
As Found	Start: 25.7 °C	End: 25.8 °C	Start: 50.9 %	End: 50.6 %

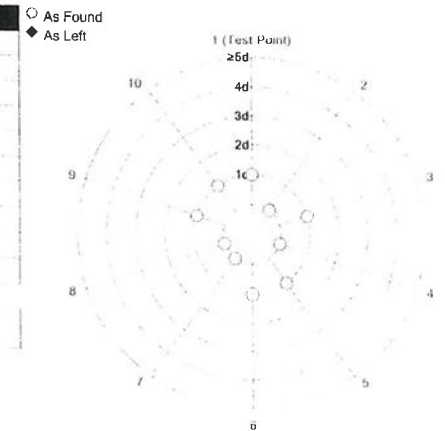
As Found Calibration Date: 09-Dec-2024 Calibrator:   
As Left Calibration Date: N/A  
Issue Date: 11-Dec-2024 Somsak Sattanaco  
Approved Signatory:   
Technical Manager / Head of Calibration Center

## Measurement Results

### Repeatability

Test Load: 70 g

	As Found	As Left
1	70.00004 g	N/A
2	70.00005 g	N/A
3	70.00004 g	N/A
4	70.00005 g	N/A
5	70.00006 g	N/A
6	70.00004 g	N/A
7	70.00005 g	N/A
8	70.00005 g	N/A
9	70.00006 g	N/A
10	70.00006 g	N/A
Standard Deviation	0.000008 g	N/A

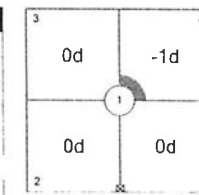


The "d" in the graph represents the readability of the range/interval in which the test was performed.  
The results of this graph are based upon the absolute values of the differences from the mean value.

### Eccentricity

Test Load: 100 g

Position	As Found	As Left
1	100.0000 g	N/A
2	100.0000 g	N/A
3	100.0000 g	N/A
4	99.9999 g	N/A
5	100.0000 g	N/A
Maximum Deviation	0.0001 g	N/A



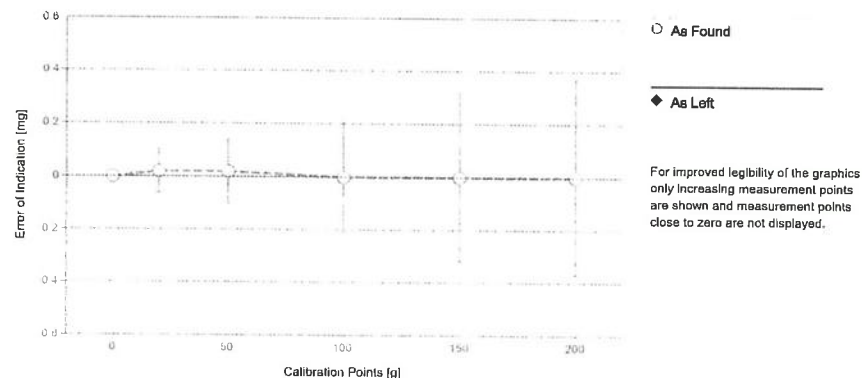
As Found  
The "d" in the graph represents the readability of the range/interval in which the test was performed.

Error of Indication

As Found

	Reference Value	Indication	Error of Indication	Expanded Uncertainty	k
1	0.00000 g	0.00000 g	0.00000 g	0.017 mg	2
2	0.01000 g	0.01000 g	0.00000 g	0.020 mg	2
3	0.10000 g	0.10000 g	0.00000 g	0.023 mg	2
4	1.00000 g	1.00000 g	0.00000 g	0.032 mg	2
5	4.99998 g	5.00000 g	0.00002 g	0.048 mg	2
6	10.00001 g	10.00001 g	0.00000 g	0.061 mg	2
7	19.99999 g	20.00001 g	0.00002 g	0.082 mg	2
8	50.00003 g	50.00005 g	0.00002 g	0.12 mg	2
9	100.00000 g	100.00000 g	0.00000 g	0.21 mg	2
10	150.00000 g	150.00000 g	0.00000 g	0.32 mg	2
11	200.00000 g	200.00000 g	0.00000 g	0.37 mg	2

\*The calculated uncertainty was replaced by the CMC (Calibration and Measurement Capabilities) value because the calculated uncertainty was smaller than the CMC value.



The expanded measurement uncertainty is reported as the standard measurement uncertainty multiplied by the coverage factor k such that the coverage probability corresponds to approximately 95 %.

The user is responsible for maintaining environmental conditions and the settings of the weighing instrument when it was calibrated. The results of this calibration certificate relate only to the calibrated item.

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Test Equipment

All weights used for metrological testing are traceable to national or international standards. The weights were calibrated and certified by an accredited calibration laboratory.

Weight Set 1: OIML E2

Weight Set No.:	WS37	Date of Issue:	17-Jun-2024
Certificate Number:	186753-1	Calibration Due Date:	20-Jan-2025

Weight Set 2: OIML E2

Weight Set No.:	WS87	Date of Issue:	04-Jul-2023
Certificate Number:	186520	Calibration Due Date:	02-Jan-2025

Thermo Hygrometer

Equipment No.:	IN279	Date of Issue:	19-Jun-2024
Certificate Number:	SG-H-00577/67	Calibration Due Date:	17-Jun-2025

Remarks

FACT adjustment functionality activated  
Equipment condition: Good  
Next calibration according to customer's procedure  
Calibration data not decide by calibration laboratory

End of Accredited Section

The information below and any attachments to this calibration certificate are not part of the accredited calibration.

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## Measurement Uncertainty of the Weighing Instrument in Use

Stated is the expanded uncertainty with  $k=2$  in use. The formula shall be used for the estimation of the uncertainty under consideration of the errors of indication. The value R represents the net load indication in the unit of measure of the device.

Temperature coefficient for the evaluation of the measurement uncertainty in use:  $1.5 \cdot 10^{-6} / K$

Temperature range on site for the evaluation of the measurement uncertainty in use: 3 K

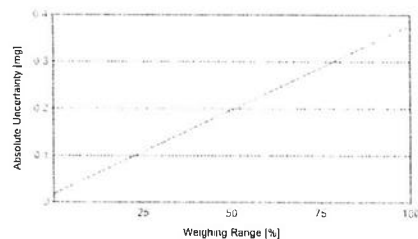
### Linearization of Uncertainty Equation

Range		As Found		As Left
d	Max			
1	0.00001 g	81 g	$U_1 = 0.018 \text{ mg} + 0.00444 \text{ mg/g} \cdot R$	N/A
2	0.0001 g	220 g	$U_2 = 0.06 \text{ mg} + 0.00439 \text{ mg/g} \cdot R$	N/A

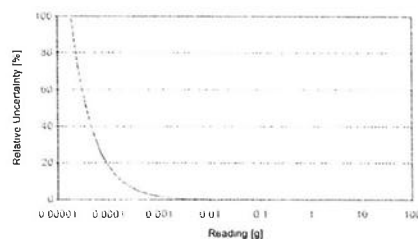
To optimize the stability of the linearization, besides of the zero load only increasing measurement points with a test load of 5% of the measurement range or larger are taken for the calculation of the linear equation.

### Absolute and Relative Measurement Uncertainty in Use for Various Net Indications (Examples)

Net Indication	As Found		As Left	
0.00220 g	0.018 mg	0.82%	N/A	N/A
0.02200 g	0.018 mg	0.082%	N/A	N/A
0.22000 g	0.019 mg	0.0086%	N/A	N/A
2.20000 g	0.028 mg	0.0013%	N/A	N/A
220.0000 g	1.0 mg	0.00047%	N/A	N/A



As Found



As Left

The weighing range shown in the absolute uncertainty graph refers to the first interval/range of the device.

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# GWP® Certificate



As  
Found



As  
Left



The weighing device meets the given process requirements.

The weighing device meets the given process requirements.

Tests Performed: ☒ As Found ☐ As Left ☒ No adjustments/modifications made. As Left results correspond to As Found.

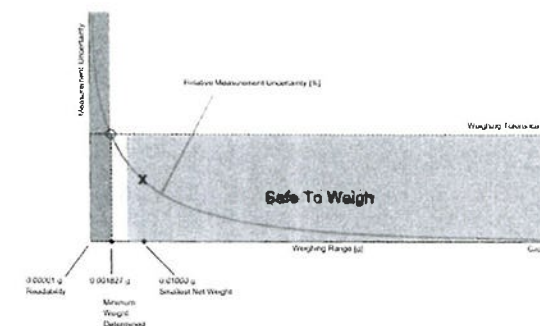
## Process Requirements

Weighing Tolerance: 1%

Smallest Net Weight: 0.01000 g

Safety Factor: 2

### Safe Weighing Range



While the values in this graph reflect the actual calibration results, the measurement uncertainty curves are simply a visual representation. This graph reflects As Left testing, unless only As Found was performed.

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## Minimum Weight

### As Found Minimum Weight Table

Range 1

Minimum weights for different weighing tolerances and safety factors					
Tolerance	Safety Factor				
	1	2	3	5	10
0.1%	0.018339 g	0.036842 g	0.055511 g	0.093358 g	0.191052 g
0.2%	0.009149 g	0.018339 g	0.027570 g	0.046156 g	0.093358 g
0.5%	0.003655 g	0.007316 g	0.010984 g	0.018339 g	0.036842 g
1%	0.001827 g	0.003655 g	0.005485 g	0.009149 g	0.018339 g
2%	0.000913 g	0.001827 g	0.002740 g	0.004569 g	0.009149 g
5%	0.000365 g	0.000730 g	0.001096 g	0.001827 g	0.003655 g

The minimum weight table applies to the fine range of the weighing device.

✓ Pass: The determined minimum weight meets the requirement for the smallest net weight.

### As Left Minimum Weight Table

Range 1

Minimum weights for different weighing tolerances and safety factors					
Tolerance	Safety Factor				
	1	2	3	5	10
0.1%	0.018339 g	0.036842 g	0.055511 g	0.093358 g	0.191052 g
0.2%	0.009149 g	0.018339 g	0.027570 g	0.046156 g	0.093358 g
0.5%	0.003655 g	0.007316 g	0.010984 g	0.018339 g	0.036842 g
1%	0.001827 g	0.003655 g	0.005485 g	0.009149 g	0.018339 g
2%	0.000913 g	0.001827 g	0.002740 g	0.004569 g	0.009149 g
5%	0.000365 g	0.000730 g	0.001096 g	0.001827 g	0.003655 g

The minimum weight table applies to the fine range of the weighing device.

✓ Pass: The determined minimum weight meets the requirement for the smallest net weight.

At these net minimum weight values, the measurement uncertainty of the weighing device is equal to or less than 1/1 (no safety factor), 1/2, 1/3, 1/5, or 1/10 of the required tolerance. The values are calculated with  $k = 2$  and based on the linear formula of the measurement uncertainty of the weighing device in use.

The safety factor for As Found is always 1. This implies no safety factor. As Found testing looks at the behavior of the instrument from the past until test occurred. For the past, it is necessary to know that the tolerance was met, but not the safety factor. The safety factor is a proactive measure to apply for future measurements.

#### Notes on minimum weight values in above table:

1. If "N/A" is shown above, no appropriate value could be calculated.
2. METTLER TOLEDO is not responsible for the definition of the process requirements.

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## Measurement Results

### Results Summary

	Repeatability	Eccentricity	Error of Indication
As Found	✓	✓	✓
As Left	✓	✓	✓

✓ = Passed

✗ = Failed

⚠ = Safety Factor not met

### Repeatability

Test Load: 70 g

Tolerance	Control Limit	As Found		As Left	
		Std. Deviation	Result	Std. Deviation	Result
0.1%	0.000005 g	0.000008 g	✗	0.000008 g	✗
0.2%	0.000010 g		✓		⚠
0.5%	0.000025 g		✓		✓
1%	0.000050 g		✓		✓
2%	0.000100 g		✓		✓
5%	0.000250 g		✓		✓

The weighing tolerance is met if the standard deviation is less than or equal to the corresponding control limit.

### Eccentricity

Test Load: 100 g

Tolerance	Control Limit	As Found		As Left	
		Deviation	Result	Deviation	Result
0.1%	0.0500 g	0.0001 g	✓	0.0001 g	✓
0.2%	0.1000 g		✓		✓
0.5%	0.2500 g		✓		✓
1%	0.5000 g		✓		✓
2%	1.0000 g		✓		✓
5%	2.5000 g		✓		✓

The weighing tolerance is met if the deviation is less than or equal to the corresponding control limit.

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Error of Indication

As Found

		Control limits for various weighing tolerances					
Reference Value	Error	0.1%	0.2%	0.5%	1%	2%	5%
0.00000 g	0.00000 g	N/A	N/A	N/A	N/A	N/A	N/A
19.99999 g	0.00002 g	0.01000 g	0.02000 g	0.05000 g	0.10000 g	0.20000 g	0.50000 g
50.00003 g	0.00002 g	0.02500 g	0.05000 g	0.12500 g	0.25000 g	0.50000 g	1.25000 g
100.00000 g	0.00000 g	0.05000 g	0.10000 g	0.25000 g	0.50000 g	1.00000 g	2.50000 g
150.00000 g	0.00000 g	0.07500 g	0.15000 g	0.37500 g	0.75000 g	1.50000 g	3.75000 g
200.00000 g	0.00000 g	0.10000 g	0.20000 g	0.50000 g	1.00000 g	2.00000 g	5.00000 g
Result		✓	✓	✓	✓	✓	✓

As Left

		Control limits for various weighing tolerances					
Reference Value	Error	0.1%	0.2%	0.5%	1%	2%	5%
0.00000 g	0.00000 g	N/A	N/A	N/A	N/A	N/A	N/A
19.99999 g	0.00002 g	0.01000 g	0.02000 g	0.05000 g	0.10000 g	0.20000 g	0.50000 g
50.00003 g	0.00002 g	0.02500 g	0.05000 g	0.12500 g	0.25000 g	0.50000 g	1.25000 g
100.00000 g	0.00000 g	0.05000 g	0.10000 g	0.25000 g	0.50000 g	1.00000 g	2.50000 g
150.00000 g	0.00000 g	0.07500 g	0.15000 g	0.37500 g	0.75000 g	1.50000 g	3.75000 g
200.00000 g	0.00000 g	0.10000 g	0.20000 g	0.50000 g	1.00000 g	2.00000 g	5.00000 g
Result		✓	✓	✓	✓	✓	✓

The weighing tolerance is met if the error (of indication) for each test point is less than or equal to the corresponding control limit for that particular weighing tolerance. Results at or close to the zero point cannot be assessed.

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**ANALYTICAL BALANCE**

**Model : MS204TS/00**

**Serial No. : B904136539**


Mettler-Toledo (Thailand) Ltd.  
846/4 - 846/5 Lasalle Rd., Bangna Tai Sub-District  
Bangna District, Bangkok 10260  
+66 2723 0382  
MT-TH.ServiceSupport@mt.com



NSC-TISI-TIS 17025  
CALIBRATION 0062

## Accuracy Calibration Certificate

### Customer

Company: EASTERN THAI CONSULTING 1992 CO., LTD.  
Address: 683 Moo 11, Sukhaphiban 8 Rd., Nong Kham  
City: Sriracha Contact: Sasiporn Nakin  
Zip / Postal: 20230  
State / Province: Chonburi  
Order Number: 

### Weighing Device

Manufacturer: Mettler Toledo Instrument Type: Weighing Instrument  
Model: MS204TS/00 Asset Number: LABE 05/4  
Serial No.: B904136539 Terminal Model: N/A  
Building: Laboratory Terminal Serial No.: N/A  
Floor: 1 Terminal Asset No.: N/A  
Room: Balance

Range	Max. Capacity	Readability (d)
1	220 g	0.0001 g

### Procedure

Calibration Guideline: EURAMET cg-18 v. 4.0 (11/2015)

METTLER TOLEDO Work Instruction: CP/W002/20

This calibration certificate contains measurements for As Found calibration. No As Left calibration was performed because the device was not modified after As Found calibration. Therefore, results for As Left correspond to As Found.

The sensitivity/span of the weighing instrument was adjusted before calibration with a built-in weight.

In accordance with EURAMET cg-18 (11/2015), the test loads were selected to reflect the specific use of the weighing device or to accommodate specific calibration conditions.

	Temperature		Humidity	
As Found	Start: 24.2 °C	End: 24.3 °C	Start: 37.9 %	End: 37.9 %

As Found Calibration Date: 29-Jan-2025  
As Left Calibration Date: N/A  
Issue Date: 01-Feb-2025

Calibrator:   
Khomsan Prataung  
Approved Signatory:   
Naruephon C.  
Technical Manager / Head of Calibration Center

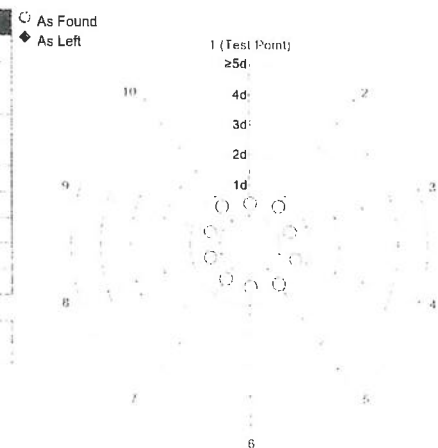
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## Measurement Results

### Repeatability

Test Load: 100 g

	As Found	As Left
1	100.0000 g	N/A
2	99.9999 g	N/A
3	100.0000 g	N/A
4	99.9999 g	N/A
5	99.9999 g	N/A
6	100.0000 g	N/A
7	100.0000 g	N/A
8	100.0000 g	N/A
9	100.0000 g	N/A
10	99.9999 g	N/A
Standard Deviation	0.00005 g	N/A



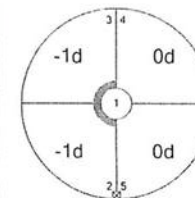
The "d" in the graph represents the readability of the range/interval in which the test was performed.

The results of this graph are based upon the absolute values of the differences from the mean value.

### Eccentricity

Test Load: 100 g

Position	As Found	As Left
1	100.0000 g	N/A
2	99.9999 g	N/A
3	99.9999 g	N/A
4	100.0000 g	N/A
5	100.0000 g	N/A
Maximum Deviation	0.0001 g	N/A



As Found

The "d" in the graph represents the readability of the range/interval in which the test was performed.

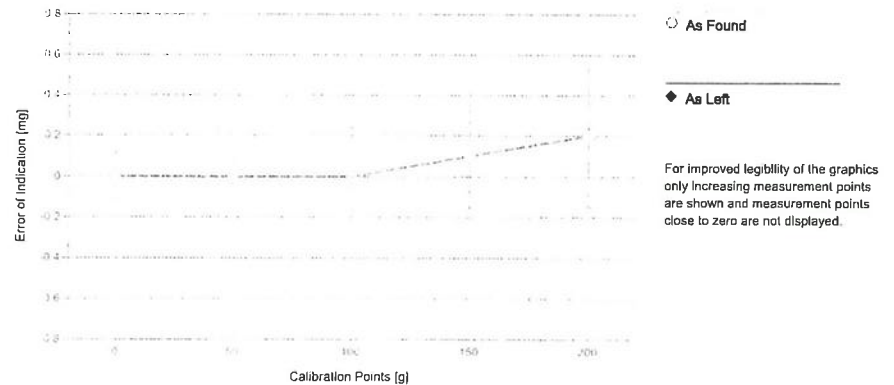
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Error of Indication

As Found

	Reference Value	Indication	Error of Indication	Expanded Uncertainty	k
1	0.0000 g	0.0000 g	0.0000 g	0.12 mg	2
2	0.0100 g	0.0100 g	0.0000 g	0.13 mg	2
3	0.0500 g	0.0500 g	0.0000 g	0.13 mg	2
4	0.1000 g	0.1000 g	0.0000 g	0.13 mg	2
5	1.0000 g	1.0000 g	0.0000 g	0.13 mg	2
6	5.0000 g	5.0000 g	0.0000 g	0.14 mg	2
7	10.0000 g	10.0000 g	0.0000 g	0.14 mg	2
8	50.0000 g	50.0000 g	0.0000 g	0.16 mg	2
9	100.0000 g	100.0000 g	0.0000 g	0.24 mg	2
10 1	150.0000 g	150.0001 g	0.0001 g	0.31 mg	2
11 1	200.0000 g	200.0002 g	0.0002 g	0.35 mg	2

1The calculated uncertainty was replaced by the CMC (Calibration and Measurement Capabilities) value because the calculated uncertainty was smaller than the CMC value.



The expanded measurement uncertainty is reported as the standard measurement uncertainty multiplied by the coverage factor k such that the coverage probability corresponds to approximately 95 %.

The user is responsible for maintaining environmental conditions and the settings of the weighing instrument when it was calibrated.  
The results of this calibration certificate relate only to the calibrated item.

Test Equipment

All weights used for metrological testing are traceable to national or international standards. The weights were calibrated and certified by an accredited calibration laboratory.

Weight Set 1: OIML E2

Weight Set No.:	WS32	Date of Issue:	07-Aug-2024
Certificate Number:	193673	Calibration Due Date:	30-Jan-2026

Weight Set 2: OIML E2

Weight Set No.:	WS32-1	Date of Issue:	06-Sep-2024
Certificate Number:	C436717337	Calibration Due Date:	26-Jan-2026

Thermo Hygrometer

Equipment No.:	IN277	Date of Issue:	19-Jun-2024
Certificate Number:	SG-H-00575/67	Calibration Due Date:	18-Jun-2025

Remarks

FACT adjustment functionality activated  
Equipment condition: Good  
Next calibration according to customer's procedure  
Calibration data not decide by calibration laboratory

End of Accredited Section

The information below and any attachments to this calibration certificate are not part of the accredited calibration.

Measurement Uncertainty of the Weighing Instrument in Use

Stated is the expanded uncertainty with k=2 in use. The formula shall be used for the estimation of the uncertainty under consideration of the errors of indication. The value R represents the net load indication in the unit of measure of the device.

Temperature coefficient for the evaluation of the measurement uncertainty in use: 1,5 · 10<sup>-6</sup> / K

Temperature range on site for the evaluation of the measurement uncertainty in use: 5 K

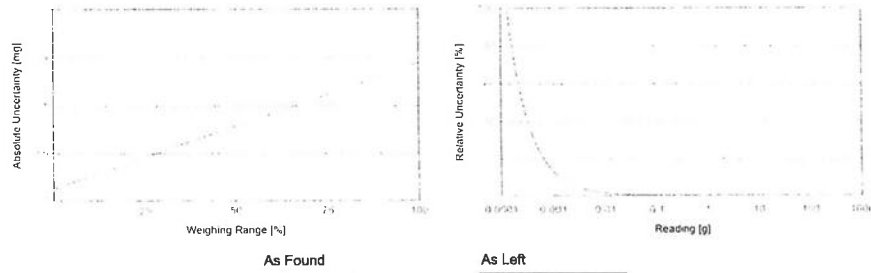
Linearization of Uncertainty Equation

Range			As Found	As Left
	d	Max		
1	0.0001 g	220 g	U <sub>1</sub> = 0.13 mg + 0.00598 mg/g · R	N/A

To optimize the stability of the linearization, besides of the zero load only increasing measurement points with a test load of 5% of the measurement range or larger are taken for the calculation of the linear equation.

Absolute and Relative Measurement Uncertainty in Use for Various Net Indications (Examples)

Net Indication	As Found		As Left	
0.0220 g	0.13 mg	0.59%	N/A	N/A
0.2200 g	0.13 mg	0.060%	N/A	N/A
2.2000 g	0.14 mg	0.0065%	N/A	N/A
22.0000 g	0.26 mg	0.0012%	N/A	N/A
220.0000 g	1.4 mg	0.00066%	N/A	N/A



GWP® Certificate

# GWP® Certificate



As  
Found



As  
Left



The weighing device meets the given process requirements.

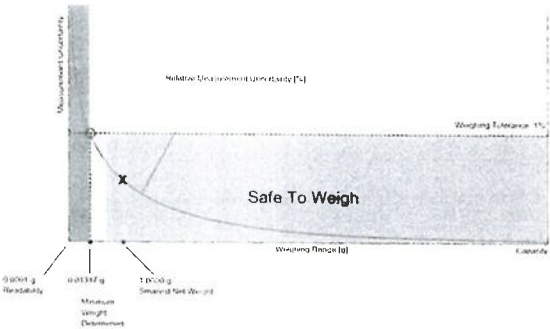
The weighing device meets the given process requirements.

Tests Performed: ☒ As Found ☒ As Left ☒ No adjustments/modifications made. As Left results correspond to As Found.

## Process Requirements

Weighing Tolerance: 1% | Smallest Net Weight: 1,0000 g | Safety Factor: 2

### Safe Weighing Range



While the values in this graph reflect the actual calibration results, the measurement uncertainty curves are simply a visual representation. This graph reflects As Left testing, unless only As Found was performed.

## Minimum Weight

### As Found Minimum Weight Table

Minimum weights for different weighing tolerances and safety factors					
Tolerance	Safety Factor				
	1	2	3	5	10
0.1%	0.13245 g	0.26650 g	0.40219 g	0.67859 g	1.40037 g
0.2%	0.06603 g	0.13245 g	0.19927 g	0.33414 g	0.67859 g
0.5%	0.02636 g	0.05279 g	0.07928 g	0.13245 g	0.26650 g
1%	0.01317 g	0.02636 g	0.03957 g	0.06603 g	0.13245 g
2%	0.00658 g	0.01317 g	0.01977 g	0.03296 g	0.06603 g
5%	0.00263 g	0.00527 g	0.00790 g	0.01317 g	0.02636 g

✓ Pass: The determined minimum weight meets the requirement for the smallest net weight.

### As Left Minimum Weight Table

Minimum weights for different weighing tolerances and safety factors					
Tolerance	Safety Factor				
	1	2	3	5	10
0.1%	0.13245 g	0.26650 g	0.40219 g	0.67859 g	1.40037 g
0.2%	0.06603 g	0.13245 g	0.19927 g	0.33414 g	0.67859 g
0.5%	0.02636 g	0.05279 g	0.07928 g	0.13245 g	0.26650 g
1%	0.01317 g	0.02636 g	0.03957 g	0.06603 g	0.13245 g
2%	0.00658 g	0.01317 g	0.01977 g	0.03296 g	0.06603 g
5%	0.00263 g	0.00527 g	0.00790 g	0.01317 g	0.02636 g

✓ Pass: The determined minimum weight meets the requirement for the smallest net weight.

At these net minimum weight values, the measurement uncertainty of the weighing device is equal to or less than 1/1 (no safety factor), 1/2, 1/3, 1/5, or 1/10 of the required tolerance. The values are calculated with  $k = 2$  and based on the linear formula of the measurement uncertainty of the weighing device in use.

The safety factor for As Found is always 1. This implies no safety factor. As Found testing looks at the behavior of the instrument from the past until test occurred. For the past, it is necessary to know that the tolerance was met, but not the safety factor. The safety factor is a proactive measure to apply for future measurements.

#### Notes on minimum weight values in above table:

1. If "N/A" is shown above, no appropriate value could be calculated.
2. METTLER TOLEDO is not responsible for the definition of the process requirements.

## Measurement Results

### Results Summary

	Repeatability	Eccentricity	Error of Indication
As Found	✓	✓	✓
As Left	✓	✓	✓

✓ = Passed

✗ = Failed

NA = Safety Factor not met

### Repeatability

Test Load: 100 g

Tolerance	Control Limit	As Found		As Left	
		Std. Deviation	Result	Std. Deviation	Result
0.1%	0.00050 g	0.00005 g	✓	0.00005 g	✓
0.2%	0.00100 g		✓		✓
0.5%	0.00250 g		✓		✓
1%	0.00500 g		✓		✓
2%	0.01000 g		✓		✓
5%	0.02500 g		✓		✓

The weighing tolerance is met if the standard deviation is less than or equal to the corresponding control limit.

### Eccentricity

Test Load: 100 g

Tolerance	Control Limit	As Found		As Left	
		Deviation	Result	Deviation	Result
0.1%	0.0500 g	0.0001 g	✓	0.0001 g	✓
0.2%	0.1000 g		✓		✓
0.5%	0.2500 g		✓		✓
1%	0.5000 g		✓		✓
2%	1.0000 g		✓		✓
5%	2.5000 g		✓		✓

The weighing tolerance is met if the deviation is less than or equal to the corresponding control limit.

Error of Indication

As Found

		Control limits for various weighing tolerances					
Reference Value	Error	0.1%	0.2%	0.5%	1%	2%	5%
0.0000 g	0.0000 g	N/A	N/A	N/A	N/A	N/A	N/A
50.0000 g	0.0000 g	0.0250 g	0.0500 g	0.1250 g	0.2500 g	0.5000 g	1.2500 g
100.0000 g	0.0000 g	0.0500 g	0.1000 g	0.2500 g	0.5000 g	1.0000 g	2.5000 g
150.0000 g	0.0001 g	0.0750 g	0.1500 g	0.3750 g	0.7500 g	1.5000 g	3.7500 g
200.0000 g	0.0002 g	0.1000 g	0.2000 g	0.5000 g	1.0000 g	2.0000 g	5.0000 g
Result		✓	✓	✓	✓	✓	✓

As Left

		Control limits for various weighing tolerances					
Reference Value	Error	0.1%	0.2%	0.5%	1%	2%	5%
0.0000 g	0.0000 g	N/A	N/A	N/A	N/A	N/A	N/A
50.0000 g	0.0000 g	0.0250 g	0.0500 g	0.1250 g	0.2500 g	0.5000 g	1.2500 g
100.0000 g	0.0000 g	0.0500 g	0.1000 g	0.2500 g	0.5000 g	1.0000 g	2.5000 g
150.0000 g	0.0001 g	0.0750 g	0.1500 g	0.3750 g	0.7500 g	1.5000 g	3.7500 g
200.0000 g	0.0002 g	0.1000 g	0.2000 g	0.5000 g	1.0000 g	2.0000 g	5.0000 g
Result		✓	✓	✓	✓	✓	✓

The weighing tolerance is met if the error (of indication) for each test point is less than or equal to the corresponding control limit for that particular weighing tolerance. Results at or close to the zero point cannot be assessed.

**BAROMETER**

**Serial No. : N/A[S41020124]**



# CALIBRATION LABORATORY Co., LTD.

2/10-11,14,55 Soi Prasert Manukit 29 Yaek 4, Prasert Manukit Rd., Ladphrao, Bangkok 10230  
Tel. 02-578-0353-4 Fax: 02-578-2672 www.cal-laboratory.com E-mail: sale@cal-laboratory.com



## CERTIFICATE OF CALIBRATION

### FOR

NOMENCLATURE : BAROMETER  
MANUFACTURER : BARIO  
MODEL / TYPE : N/A  
SERIAL NO. : N/A[S41020124]  
CLID. NO. : 212500828  
JOB CONTROL NO. : 250507051351  
CALIBRATION SERVICE : ☒ IN-LABORATORY ☐ ON-SITE

CUSTOMER : EASTERN THAI CONSULTING 1992 CO., LTD.  
683 MOO 11, SUKHAPIBARN 8 RD,  
NONGKHAM, SRIRACHA, CHONBURI 20230

DATE OF RECEIVED : 07 May 2025

DATE OF ISSUED : 09 May 2025

The report of calibration shall not be reproduced except in full without approval of the Calibration Laboratory Co., Ltd.

Calibrated By : Sittipong Pimdee  
Calibration Engineer

Approved By : Mongkol Yotsoontorn  
Authorized Signatory  
09 May 2025



This Calibration Certificate documents the traceability to national standards, which realize the units of measurement according to the International System of Units (SI)

Certificate No. Q25051351

F3-011-05/12-23

page 1 of 3

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Tel. 02-578-0353-4 Fax: 02-578-2672 www.cal-laboratory.com E-mail: sale@cal-laboratory.com



## REPORT OF CALIBRATION

### FOR

NOMENCLATURE : BAROMETER  
MANUFACTURER : BARIO  
MODEL / TYPE : N/A  
SERIAL NO. : N/A[S41020124]  
DATE OF CALIBRATION : 08 May 2025

#### ENVIRONMENT CONDITIONS :

Temperature : ( 23 ± 2 ) °C

Relative Humidity : ( 55 ± 10 ) %RH

#### PROCEDURE USED :

This instrument was calibrated under procedure No. CLC-CPPP-08 according to DKD-R 6-1 as calibration guidelines.

The calibration was performed by direct measurement with Reference Pressure Monitor which maintained by the Calibration Laboratory Co., Ltd.

#### REFERENCE STANDARD USED :

Reference Pressure Monitor, Fluke Model RPM3 S/N. 829.

#### TRACEABILITY :

The measurements are traceable to International System of Units (SI), through National Institute of Metrology (Thailand).  
Certificate No. MP-0245-24, Due Date 11 November 2025.

#### UNCERTAINTY :

The reported uncertainty is based on a standard uncertainty multiplied by coverage factor of  $k = 2$ . It has been evaluated according to the "Calibration of Pressure Gauges (DKD-R 6-1)" which provides a level of confidence approximately 95%.

Certificate No. Q25051351

F3-011-05/12-23

page 2 of 3

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Tel. 02-578-0353-4 Fax: 02-578-2672 www.cal-laboratory.com E-mail: sale@cal-laboratory.com



CONDITION OF CALIBRATION ITEM : RECEIVED IN GOOD OPERATIONAL CONDITION

MEASUREMENT RESULTS : ( X ) without adjustment ( ) adjustment

The DUC was exercised by applying a known pressure from its zero to full scale 1 times. Then 2 series of known gauge pressure were applied. The STD reading were recorded and the means value were reported in the table below.

## CALIBRATION DATA

### CORRECTION OF PRESSURE

DUC Test point ( hPa )	STD Reading ( hPa )		Correction ( hPa )	
	Up	Down	Up	Down
990	990.7	990.7	+0.7	+0.7
1000	1000.7	1000.8	+0.7	+0.8
1010	1010.8	1010.8	+0.8	+0.8
1020	1020.8	1020.9	+0.8	+0.9
1030	1030.9	1030.9	+0.9	+0.9

Uncertainty of measurement = 0.7 hPa

Transmitting fluid : Air.

Note. The Scope of Accredited ANAB Certificate No. ACDM-2814 Version 015 Page 44 of 68

This report is valid for the above stated instrument/s only.

### End of Certificate ###

Certificate No. Q25051351

F3-011-05/12-23

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**CERTIFICATE OF ANALYSIS**

**EPA PROTOCOL GAS**

**Cylinder No. : EB0145030**

# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA Protocol

Part Number: E03NI99E15AC0U4      Reference Number: 160-402242242-1  
Cylinder Number: EB0145030      Cylinder Volume: 144.4 CF  
Laboratory: 124 - Plumsteadville - PA      Cylinder Pressure: 2015 PSIG  
PGVP Number: A12021      Valve Outlet: 350  
Gas Code: CH4,PPN,BALN      Certification Date: Oct 15, 2021

Expiration Date: Oct 15, 2029

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 000/R-12/031, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS					
Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
METHANE	180.0 PPM	177.0 PPM	G1	+/- 1.0% NIST Traceable	10/15/2021
PROPANE	185.0 PPM	187.0 PPM	G1	+/- 1.0% NIST Traceable	10/15/2021
NITROGEN	Balance				
CALIBRATION STANDARDS					
Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	08011503	K002564	246.7 PPM METHANE/AIR	+/- 0.6%	May 15, 2025
NTRM	200602-06	6162660Y	243.3 PPM PROPANE/AIR	+/- 0.5%	Mar 17, 2027
ANALYTICAL EQUIPMENT					
Instrument/Make/Model	Analytical Principle		Last Multipoint Calibration		
Nicolet IS50 FTIR AUP2110295 CH4	FTIR		Oct 13, 2021		
Nicolet IS50 FTIR AUP2110295 C3H8	FTIR		Oct 14, 2021		

Triad Data Available Upon Request

### NOTES:

Gross Weight: 28.0 Kg  
Net Weight: 4.9 Kg  
PO# 5221004861



*Michael A. Miller*  
Approved for Release



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**CERTIFICATE OF ANALYSIS**

**EPA PROTOCOL GAS**

**Cylinder No. : EB0062815**

# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA Protocol

Part Number: E04NI99E15ACX9C      Reference Number: 82-401135335-1  
Cylinder Number: EB0062815      Cylinder Volume: 144.4 CF  
Laboratory: 124 - Riverton (SAP) - NJ      Cylinder Pressure: 2015 PSIG  
PGVP Number: B52018      Valve Outlet: 660  
Gas Code: CO,NO,NOX,SO2,BALN      Certification Date: Mar 13, 2018

Expiration Date: Mar 13, 2026

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS					
Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
NOX	50.00 PPM	50.55 PPM	G1	+/- 1.4% NIST Traceable	03/06/2018, 03/13/2018
NITRIC OXIDE	50.00 PPM	50.50 PPM	G1	+/- 1.4% NIST Traceable	03/06/2018, 03/13/2018
SULFUR DIOXIDE	50.00 PPM	51.01 PPM	G1	+/- 1.0% NIST Traceable	03/06/2018, 03/13/2018
CARBON MONOXIDE	2000 PPM	1977 PPM	G1	+/- 1.0% NIST Traceable	03/06/2018
NITROGEN	Balance				

CALIBRATION STANDARDS					
Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	16060807	CC442564	50.42 PPM NITRIC OXIDE/NITROGEN	+/- 0.8%	Jun 27, 2020
PRM	12367	APEX1099237	9.82 PPM NITROGEN DIOXIDE/AIR	+/- 2.0%	Jun 02, 2017
GMIS	0315201604	CC503358	4.975 PPM NITROGEN DIOXIDE/NITROGEN	+/- 1.6%	Mar 15, 2019
NTRM	16011025	CC473218	49.02 PPM SULFUR DIOXIDE/NITROGEN	+/- 0.8%	Jun 07, 2022
NTRM	12060735	CC356192	2488 PPM CARBON MONOXIDE/NITROGEN	+/- 0.6%	Dec 14, 2026

The SRM, PRM or RGM noted above is only in reference to the GMIS used in the assay and not part of the analysis.

ANALYTICAL EQUIPMENT		
Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nicolet 6700 APW1100391 CO	FTIR	Feb 08, 2018
Nicolet 6700 APW1100391 NO	FTIR	Feb 15, 2018
Nicolet 6700 APW1100391 NO2	FTIR	Feb 16, 2018
Nicolet 6700 APW1100391 SO2	FTIR	Mar 01, 2018

### Triad Data Available Upon Request

NOTES:NET WEIGHT: 10.43lbs

GROSS WEIGHT: 60.93lbs

PO# 5218000763

This calibration std. has been certified in accordance with the May 2012 EPA Traceability Protocol, Document EPA-600/R-12/531. All testing processes and measurements conform to the requirements of ISO/IEC 17025 and to Airgas ISO 9001:2000 and relate only to items identified on this certificate. All values are certified to be NIST Traceable with total uncertainty as detailed under Analytical Uncertainty. This document shall not be reproduced in full without written approval of the issuer.



TESTING CERT No. 3082.05

*Dom Moore*  
Approved for Release

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**DRY GAS METER XC-572-V**

**Serial No. : 1110070**

## Certificate Of Calibration

Method 5 Pre-Test Console Calibration - Cubic meter (m<sup>3</sup>)

### Meter Console Information

Console Model : XC-572-V  
Console serial : 1110070  
DGM Model #: SK25EX  
DGM Serial #: 00010036

### Calibration Condition

Cal. Date: 30-Jul-25  
Due Date: 30-Jul-26  
Cal. Report No.: WDS-SV6806004  
Ambient Temp (°C): 25  
Pressure (mm Hg): 758  
Relative Humidity (%): 60

### Factors/Conversion

Std. Temp. (°K): 298  
Std. Pressure (mm Hg): 760  
K<sub>1</sub> (K/mm Hg): 0.3857

### Reference Equipment

WTM Model: W-NKoDa-5B WTM Cal. Due Date: Dec. 2026  
WTM Serial: 600245 Gamma: 1.0000

### UUT Meter (DGM)

Run Time (minutes)	DGM Orifice (mm H <sub>2</sub> O)	Volume		Outlet Temp		Volume		Outlet Temp	
		Initial	Final	Initial	Final	Initial	Final	Initial	Final
a	P <sub>m(g)</sub>	V <sub>int</sub>	V <sub>ext</sub>	t <sub>int</sub>	t <sub>ext</sub>	V <sub>int</sub>	V <sub>ext</sub>	t <sub>int</sub>	t <sub>ext</sub>
15.00	13.0	2.1638	2.3279	28	28	126.27216	126.43261	26	26
10.00	25.0	2.3396	2.4977	28	28	126.44405	126.59853	27	27
8.00	50.0	2.5143	2.6957	29	29	126.61477	126.79196	27	27
7.00	80.0	2.7083	2.9147	29	29	126.80434	127.00613	27	27
5.00	120.0	2.9325	3.1125	31	31	127.02345	127.19970	27	27

### Reference Meter (WTM)

### Standardized Data

Test Meter		Reference Meter		Correction Factor		Flow Rate	ΔH@ (mm H <sub>2</sub> O)	
Std. Volume	Std. Flow Rate	Std. Volume	Std. Flow Rate	"Gamma"	Variation	Std & Corr	0.0212 SCMM	Variation
V <sub>m(std)</sub> (m <sup>3</sup> )	Q <sub>m(std)</sub> m <sup>3</sup> /min	V <sub>w(std)</sub> (m <sup>3</sup> )	Q <sub>w(std)</sub> m <sup>3</sup> /min	(Y)	(ΔY)	Q <sub>m(std)</sub> (corr)	ΔH <sub>e</sub>	ΔΔH <sub>e</sub>
0.160	0.011	0.157	0.010	0.983	0.003	0.010	52.228	4.584
0.154	0.015	0.150	0.015	0.977	-0.002	0.015	48.640	0.997
0.176	0.022	0.173	0.022	0.979	-0.001	0.022	47.347	-0.296
0.201	0.029	0.197	0.028	0.977	-0.003	0.028	44.980	-2.663
0.175	0.035	0.172	0.034	0.982	0.003	0.034	45.022	-2.622

0.980 = Y Avg.

47.644 = ΔH@ Avg.

Pass/Fail Result: Pass

Note: For Calibration Factor Y, the ratio of the reading of the calibration meter to the dry gas meter, acceptable tolerance of individual values from the average is ±0.02.

Note: For ΔH<sub>e</sub>, orifice pressure differential that equates to 0.75cfm (0.0212m<sup>3</sup>/min) at standard temperature and pressure, acceptable tolerance of individual values from the average is ±0.2inches (5.1mm) H<sub>2</sub>O.

Approved By:

*Palpasu Chaisana*  
(Palpasu Chaisana)  
Service Manager

Date: 30-Jul-25

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## Certificate of Calibration - Supplemental

METHOD 5 PRE-TEST CONSOLE CALIBRATION

### Nomenclature

P<sub>a</sub> - Barometric Pressure  
DGM - Dry Gas Meter  
K<sub>1</sub> - Constant based on standard temp and press  
Θ - Run time, in minutes  
P<sub>m</sub> - ΔH (Meter Pressure, gauge)  
V<sub>m</sub> - Volume collected by test meter, corrected for STP  
Q<sub>m(std)</sub> - Calculated flow rate of test meter  
K' - Critical orifice coefficient  
P<sub>w</sub> - Measured pressure of reference meter  
t<sub>w</sub> - Temperature measured in reference meter  
t<sub>m</sub> - Temperature measured in test meter  
Y - Ratio of volume collected from test meter and orifice  
sc - Scaling Factor  
Counts<sub>std</sub> - Number of pulse counts, standardized  
Counts<sub>raw</sub> - Number of raw pulse counts of a calibration run

### Equations

$$V_{w(std)} = Y * K_1 \frac{V_w * (P_{bar} + \frac{P_{m(g)}}{13.6})}{T_w}$$

$$V_{m(std)} = Counts_{std} * Y_{sc(avg)}$$

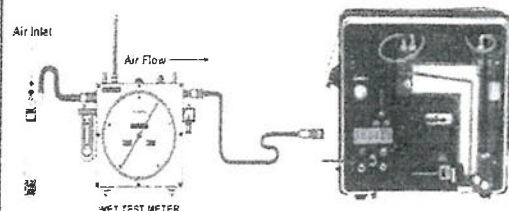
$$Counts_{std} = K_1 \frac{C_{total} * (P_{bar} + \frac{P_{m(g)}}{13.6})}{T_m}$$

$$Q_{w(std)} = \frac{V_{w(std)}}{\Theta} \quad Y_{sc} = \frac{V_{w(std)}}{Counts_{std}}$$

$$K_1 = \frac{T_{std}}{P_{std}} \quad Y = \frac{V_{w(std)}}{V_{m(std)}}$$

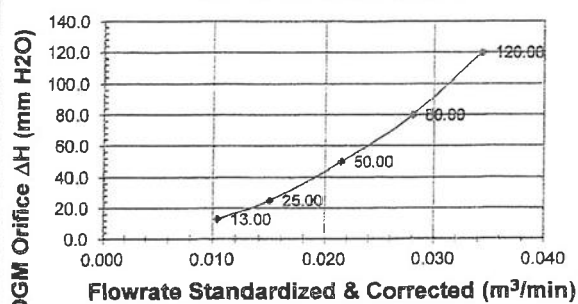
$$Metric \Delta H_a = \frac{P_{m(g)} * 0.0011696 * (P_{bar} + \frac{P_{m(g)}}{13.6})}{T_m} * \left( \frac{T_w * \Theta}{V_w * P_{bar}} \right)^2$$

### Calibration Train



### Calibration Graphs

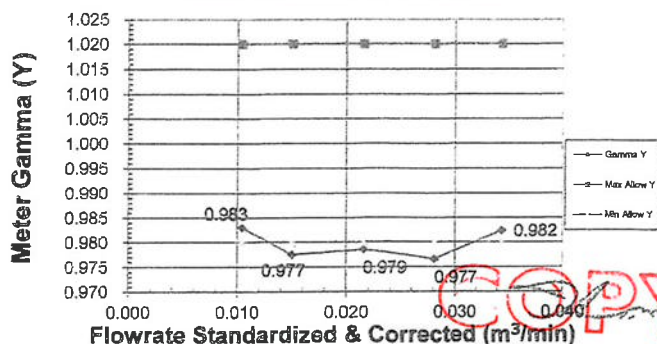
#### Meter Pressure vs Flowrate



Console Serial: 1110070

Console Model: XC-572-V

#### Meter Gamma vs Flowrate



Console Serial: 1110070

Console Model: XC-572-V

TEMPERATURE DISPLAY CALIBRATION

**Meter Console Information**

Console Model : XC-572-V  
Console serial : 1110070  
Temp Indicator Model : 765-KF  
Temp Indicator Serial : JC20668

**Calibration Conditions**

Cal. Date : 30-Jul-25  
Due Date : 30-Jul-26  
Cal. Report No. : WDS-SV6806004  
Ambient Temp. (°C) : 25  
Pressure (mm Hg) : 758  
Humidity (%) : 60

**Reference Equipment**

Temp. Meter Model : Fluke 714B  
Serial No. : 60560035  
Cal. Date : 07-Apr-25  
Temp Meter Model : Fluke 179  
Serial No. : 58620112  
Cal. Date : 06-Feb-25

**Temperature Sensor Calibration**

Reference Point	Ref. Thermometer Temperature	Thermocouple Display Temperature	Temperature Difference
#	°C	°C	°C
1	-18.0	-18.0	0.0
2	38.0	38.0	0.0
3	83.0	83.0	0.0
4	149.0	149.0	0.0
5	260.0	260.0	0.0
6	371.0	371.0	0.0
7	482.0	482.0	0.0
8	593.0	593.0	0.0
9	816.0	817.0	-1.0
10	1038.0	1039.0	-1.0
Maximum <sup>1</sup>			1.0

PASS

**Note**

<sup>1</sup> For valid test results, the maximum difference between temperature readings should  $\leq 1.0^{\circ}\text{C}$  (EPA Method 5, Section 6.1.1.8). Perform all TC Channel calibrations. Except meter (DGM) channel

**DGM Out Temperature Sensor Calibration**

Temperature point	Ref Thermometer Temperature	Thermocouple Display Temperature	Temperature Difference
#	°C	°C	°C
Ice	0.0	0.0	0.0
Ambient	26.5	27.0	-0.5
Heat	109.8	110.0	-0.2

**Difference Range**

Temp. Difference  $\pm 2^{\circ}\text{F}$  or  $\pm 1.1^{\circ}\text{C}$

PASS

**Note**

The temperatures of the thermocouple and reference thermometers shall agree to within  $\pm 2^{\circ}\text{F}$ . (EPA Method 5, section 10.5)

Approved By :

  
( Patpasu Chaisana )  
Service Manager

COPY

**Flue gas Analyzer**

**Testo 350XL**

**Serial No. 01807527/002**

**Certificate No:** G 680406  
**Date of issue :** 24-Jun-25

**Instrument description :** Flue Gas Analyzer  
**Instrument model :** Testo 350XL  
**Instrument serial no. :** 01807527/002  
**Control unit serial no. :** 01794619/002  
**ID no. or control no. :** -  
**Manufacturer :** Testo SE & Co. KGaA  
**Probe description :** -  
**Probe model :** -  
**Probe serial no. :** -  
**Customer name :** Eastern Thai Consulting 1992 Company Limited  
**Customer address :** 683 Moo 11, Sukhapibarn 8 Road, Nongkham, Si Racha, Chon Buri 20280

**Total pages of certificate :** 3 Pages  
**Receiving no. :** L-252289  
**Receiving date. :** 20-Jun-25

**Parameter of calibration :** Gas Calibration(Oxygen 2.50, 9.984, 21.01 %vol, Carbon Monoxide 80.45, 300.9, 1007 ppm, Nitrogen Dioxide 30.68, 81.8, 202.6 ppm, Nitric Oxide 30.0, 151.8, 322.5 ppm, Sulphur Dioxide 50.36, 100.7, 600.8 ppm)

**Condition of UUC. :** Used

**Ambient condition :** All of the Measurment were caried out the stabilized labotary  
Temperature : 23 ± 5 °C  
Humidity : 55 ± 15 %RH

**Calibration place :** 17/121 Soi Ngarnwongwan 47 Yaek 48, Toongsonghong, Laksi, Bangkok 10210 THAILAND

**Calibration procedure no :** This Instrument was calibrated by comparison with Standard gas mixture according to calibration Work Instruction no. WI-CL-28-C

*The calibration certificate expanded uncertainty of measurement is stated as the standard uncertainty of measurent Multiplied by coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%. This certificate is applied only to item under test Environmental condition. This Calibration Certificate may not be reporduced other than in full except with the permission of the issuing laboratory. Calibration certificates without signature and seal not valid and The results relate only to the items tested/calibrated. This calibration certificate documents are tracebility to national standards, which realize measurement according to the International System of Units (SI).*

**Date of calibration :** 24-Jun-25

  
Mr. Kwanchai Khamdoun  
Calibration Technician

  
Mrs. Nongluck Wongsettee  
Technical Manager

**COPY**

**Certificate No.:** G 680406

**Standard References (Table 1)**

Standard	Certificate No.	Vendor	Due date
Oxygen ( O2 ) 2.50 % Vol	2412/23	Linde	27-Aug-27
Oxygen ( O2 ) 9.984 % Vol	CG-0113-24	Nimt	01-Aug-29
Oxygen ( O2 ) 21.01 % Vol	CG-0112-24	Nimt	01-Aug-29
Carbon monoxide ( CO ) 80.45 ppm	CG-0132-24	Nimt	10-Sep-29
Carbon monoxide ( CO ) 300.9 ppm	1422/25	Linde	21-May-29
Carbon monoxide ( CO ) 1007 ppm	1870/24	Linde	17-Jun-26
Nitrogen Dioxide ( NO2 ) 30.68 ppm	2832/24	Linde	08-Sep-26
Nitrogen Dioxide ( NO2 ) 81.8 ppm	2330/24	Linde	01-Aug-26
Nitrogen Dioxide ( NO2 ) 202.6 ppm	3794/24	Linde	23-Dec-26
Nitric Oxide ( NO ) 30.0 ppm	CG-0065-24	Nimt	06-May-26
Nitric Oxide ( NO ) 151.8 ppm	0404/25	Linde	09-Feb-27
Nitric Oxide ( NO ) 322.5 ppm	1974/23	Linde	17-Jul-25
Sulphur Dioxide ( SO2 ) 50.36 ppm	2004/23	Linde	17-Jul-25
Sulphur Dioxide ( SO2 ) 100.7 ppm	2662/24	Linde	25-Aug-26
Sulphur Dioxide ( SO2 ) 600.8 ppm	2003/23	Linde	17-Jul-25

**Measured room conditions**

Temperature : 22.8 °C Humidity : 67.4 %RH Pressure : 1009.7 mbar

**Calibration conditions**

Gas Temperature : 23 °C Flow rate : 1,100 ml/min Gas pressure : 1013.9 mbar

**Calibration Results (Befor adjustment) (Table 2)**

Parameter of Standard	Standard Values	Mean of UUC	Error	Uncertainty ( ± )
O2 (%Vol)	2.50	2.44	-0.06	0.15
O2 (%Vol)	9.984	9.89	-0.094	0.20
O2 (%Vol)	21.01	20.94	-0.07	0.30
CO (ppm)	80.45	81	0.55	3.5
CO (ppm)	300.9	302	1.1	6.6
CO (ppm)	1007	1004	-3	12
NO2 (ppm)	30.68	23.3	-7.38	8.6
NO2 (ppm)	81.8	69.4	-12.4	15
NO2 (ppm)	202.6	178.1	-24.5	29
NO (ppm)	30.0	33	3.0	11
NO (ppm)	151.8	171	19.2	28
NO (ppm)	322.5	334	11.5	15
SO2 (ppm)	50.36	50	-0.36	6.0
SO2 (ppm)	100.7	100	-0.7	6.0
SO2 (ppm)	600.8	599	-1.8	13

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Calibration Results (After adjustment) (Table 3)

Parameter of Standard	Standard	Mean of	Error	Uncertainty
	Values	UUC		( ± )
NO2 (ppm)	30.68	29.8	-0.88	8.0
NO2 (ppm)	81.8	79.7	-2.1	8.0
NO2 (ppm)	203	200.1	-2.5	12
NO (ppm)	30.0	31	1.0	8.0
NO (ppm)	151.8	153	1.2	8.0
NO (ppm)	322.5	325	2.5	12

Remark : 1 cmol/mol = 1 %vol. 1 µmol/mol = 1 ppm., No adjustment Sensor(O<sub>2</sub>,CO,SO<sub>2</sub>).

**End of Report**

**COPY**

**Hot Air Oven**

**Model : UFE 500**

**Serial No. : G511.0182**



Page 1 of 3

## CERTIFICATE OF CALIBRATION

Certificate No. : 24-164691

Sample Code : 24-67405-001

Customer : EASTERN THAI CONSULTING 1992 CO., LTD.  
683 Moo 11, Sukhapibarn 8 Rd, Nongkham,  
Sriracha, Chonburi 20230

Location of Calibration : EASTERN THAI CONSULTING 1992 CO., LTD.  
(Hot Lab)

Equipment : Temperature controlled enclosures (Hot air oven)

Manufacturer : Memmert Model : UFE 500

Serial No. : G511.0182 ID No. : LABE 17/4

Date of Receipt : 19 December 2024 Date of Calibration : 19 December 2024

## Condition of Calibration

1. Environment
- |                           |   |
|---------------------------|---|
| 1.1 Ambient temperature   | : Maximum 32.0 °C ; Minimum 31.0 °C     |
| 1.2 Relative humidity     | : Maximum 48.5 % ; Minimum 43.5 %       |
| 1.3 Line voltage supplied | : Maximum 226.3 VAC ; Minimum 222.0 VAC |

## 2. Calibration method

TLAS-G-20: Guidelines for calibration and checks of temperature controlled enclosures.

## 3. Reference standard instrument

Instrument	ID No.	Certificate No.	Due Date
Data Acquisition With Sensor (RTD-Pt100)	LB-DA-11 (RTD-138 to RTD-146)	24-040191	07 April 2025

## 4. This certificate is traceable to the international system of unit (SI Unit).

The measurement is traceable to Asia Medical and Agricultural Laboratory and Research Center Public Company Limited.

## 5. This result of calibration was found accurate as shown on date and place of calibration only.

## 6. Condition of calibration item : Normal

Calibrated by Mr. Nophanon Anusak  
Scientist

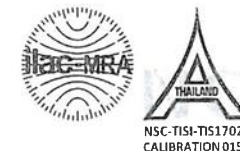
Approved by (Mr. Somchai Neampunt)  
Signed for Director

Issue date 20 December 2024

The uncertainties are for a confidence probability of approximately 95%.

The calibration result is applied only to the above calibrated item and was found accurate as shown on date and place of calibration only.

This Certificate is issued in accordance with the conditions of accreditation granted by the Thai Laboratory Accreditation schema which has assessed the measurement capability of the laboratory and its traceability to recognized national standards and to the unit of measurement realized at the corresponding national standards laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the Asia Medical and Agricultural Laboratory and Research Center Public Company Limited (AMARC).



Page 2 of 3

## REPORT OF CALIBRATION

Certificate No. : 24-164691

Sample Code : 24-67405-001

## Results of Calibration

Resolution : 0.5 °C

## 1. Reporting of Temperature

Calibration point (°C)	UUC* setting (°C)	UUC* reading (°C)	Measured temperature at each positions (°C)									Uncertainty ± (°C)	Coverage factor k
			# 1	# 2	# 3	# 4	# 5	# 6	# 7	# 8	# 9 <sup>ref</sup>		
104	103.5	103.5	104.14	104.15	103.80	104.15	104.09	104.19	103.85	103.65	104.22	0.47	2.00

## 2. Characterization results

Calibration point (°C)	Stability ± (°C)	Uniformity (°C)	Overall variation (°C)
104	0.07	0.63	0.69

## Notes

- UUC\* = Unit Under Calibration

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NSC-TISI-TIS17025  
CALIBRATION 0152

Page 3 of 3

## REPORT OF CALIBRATION

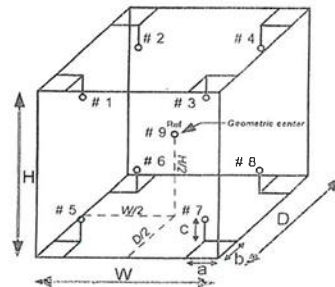
Certificate No. : 24-164691

Sample Code : 24-67405-001

## Results of Calibration

## Notes

1. Sensor installation locations
  - 1.1 All sensors at any corners or walls should be positioned 5 cm (a x b x c) from the wall.
  - 1.2 The reference sensor is preferably located of the geometric center of the chamber.
2. Interior dimensions approx of chamber :  
W = 56 cm ; D = 40 cm ; H = 48 cm
3. Air valve or fresh air level : Off
4. Fan level : Open
5. The quoted uncertainty includes "Stability of chamber and loading effect in chamber at 20% of uniformity".
6. Uniformity - the maximum difference of measured temperatures at any sensors and the measured temperature at the reference location which are observed at the same time.
7. Stability - one-half of the greatest maximum difference of measured temperatures at any one sensor.
8. Overall variation - the difference of the maximum and the minimum measured temperatures throughout observation time.
9. UUC\* reading - the average reading of indicating device that forms the integral part of the enclosure.
10. Calibration results without adjustment.

Figure: Example of sensor  
installation Positions

The result expanded uncertainty of measurement  $U$  is stated as the standard uncertainty of measurement multiplied by the coverage factor  $k$ , which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with UKAS M3003

- End of Report -

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**ORIFICE TRANSFER STANDARD CERTIFICATION**

**WORKSHEET TE-5025A**

**ROOTSMETER S/N 0438320**



TISCH ENVIRONMENTAL, INC.  
145 SOUTH MIAMI AVE  
VILLAGE OF CLEVELAND, OH  
45002  
513.467.9000  
877.263.7810 TOLL FREE  
513.467.9008 FAX

# ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Mar 24, 2016 Rootmeter S/N 0438320 Ta (K) - 295  
Operator Tisch Orifice I.D. - 0136 Pa (mm) - 742.95

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER DIFF Hg (mm)	ORFICE DIFF H2O (in.)
1	NA	NA	1.00	1.3400	3.2	2.00
2	NA	NA	1.00	0.9510	6.3	4.00
3	NA	NA	1.00	0.8510	7.8	5.00
4	NA	NA	1.00	0.8130	8.6	5.50
5	NA	NA	1.00	0.6690	12.6	8.00

## DATA TABULATION

Vstd	(x axis) Qstd	(y axis)	Va	(x axis) Qa	(y axis)
0.9832	0.7337	1.4054	0.9957	0.7430	0.8911
0.9791	1.0296	1.9875	0.9915	1.0426	1.2603
0.9770	1.1481	2.2221	0.9894	1.1626	1.4090
0.9760	1.2006	2.3305	0.9884	1.2157	1.4778
0.9707	1.4510	2.8107	0.9830	1.4694	1.7823
Qstd slope (m) = 1.96262			Qa slope (m) = 1.22896		
intercept (b) = -0.03249			intercept (b) = -0.02060		
coefficient (r) = 0.99993			coefficient (r) = 0.99993		

y axis = SQRT[H2O(Pa/760) (298/Ta)]

y axis = SQRT[H2O(Ta/Pa)]

## CALCULATIONS

Vstd = Diff. Vol [(Pa-Diff. Hg)/760] (298/Ta)  
Qstd = Vstd/Time

Va = Diff Vol [(Pa-Diff Hg)/Pa]  
Qa = Va/Time

For subsequent flow rate calculations:

Qstd = 1/m{ [SQRT(H2O(Pa/760) (298/Ta))] - b}  
Qa = 1/m{ [SQRT H2O(Ta/Pa)] - b}

**COPY**

**THERMO-HYGROMETER**

**Model : 608-H1**

**Serial No. : 45106737**

## CERTIFICATE OF CALIBRATION

Certificate No. : 25-090091

Sample Code : 25-39161-001

Customer : EASTERN THAI CONSULTING 1992 CO., LTD.,  
663 Moo 11, Sukhapibarn 8 Rd., Nongkham,  
Sriracha, Chonburi 20230

Location of Calibration : Asia Medical and Agricultural Laboratory and Research Center Public Company Limited  
(Calibration laboratory)

Equipment : Digital thermo-hygrometer

Manufacturer : testo Model : 608-H1

Serial No. : 45106737 ID No. : LABE 09/7

Date of Receipt : 21 May 2025 Date of Calibration : 23 May 2025

## Condition of Calibration

1. Environment 1.1 Ambient temperature : 23.0 °C ± 3.0 °C  
1.2 Relative humidity : 55.0 % ± 15.0 %

## 2. Calibration method

- 2.1 In-house method: WI-CL-045 By comparison with thermometer standard / chilled mirror hygrometer in controlled chamber.  
2.2 The calibration by comparison unit under calibration (UUC) to the thermometer standard / chilled mirror hygrometer in a chamber at the controlled temperature / relative humidity.

## 3. Reference standard instrument

Instrument	Model	ID No.	Certificate No.	Due Date
3.1 Chilled Mirror	Optidew 401	LB-DP-03 & LB-DP-03 (DP)	TH-0122-24	25 September 2025
3.2 Digital Thermometer	Optidew 401	LB-DP-03 & LB-DP-03 (Temp.)	24-138856	28 October 2025
3.3 Digital Thermometer	34972A	LB-DA-07 with RTD-89	24-106857	21 August 2025

## 4. This certificate is traceable to the international system of unit (SI Unit).

- 4.1 Instrument No. 3.1 through National Institute of Metrology (Thailand).  
4.2 Instrument No. 3.2 and 3.3 through Asia Medical and Agricultural Laboratory and Research Center Public Company Limited.

## 5. This result of calibration was found accurate as shown on date and place of calibration only.

## 6. Condition of calibration item : Normal

Calibrated by Miss Pornsuda Lohabel

Scientist

Approved by

(Mr. Somchai Neampunt)

Signed for Director

Issue date 26 May 2025

The uncertainties are for a confidence probability of approximately 95%.

The calibration result is applied only to the above calibrated item and was found accurate as shown on date and place of calibration only.

This Certificate is issued in accordance with the conditions of accreditation granted by the Thai Laboratory Accreditation scheme which has assessed the measurement capability of the laboratory and its traceability to recognized national standards and to the unit of measurement realized at the corresponding national standards laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the Asia Medical and Agricultural Laboratory and Research Center Public Company Limited (AMARC).

## REPORT OF CALIBRATION

Certificate No. : 25-090091

Sample Code : 25-39161-001

## Results of Calibration

## Temperature measurement

Resolution : 0.1 °C  
Range : 0 °C to 50 °C

Calibration point °C	Average of standard reading		Unit under calibration		uncertainty °C
	Controlled humidity %RH	Temperature °C	Average reading °C	Correction value °C	
20	50	20.01	20.2	- 0.19	± 0.39
25	50	25.01	25.0	+ 0.01	± 0.39
30	50	30.01	30.0	+ 0.01	± 0.39

## Humidity measurement

Resolution : 0.1 %RH  
Range : 10 %RH to 95 %RH

Calibration point %RH	Average of standard reading		Unit under calibration		uncertainty %RH
	Air temperature °C	Calculated humidity %RH	Average reading %RH	Correction value %RH	
45	25.02	45.10	50.2	- 5.10	± 1.3
60	25.02	60.15	65.2	- 5.05	± 1.5
75	25.02	75.01	82.1	- 7.09	± 1.7

## Notes

- Calibration results without adjustment.

The result expanded uncertainty of measurement  $U$  is stated as the standard uncertainty of measurement multiplied by the coverage factor  $k=2.00$ , which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with UKAS M3003.

- End of Report -

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**UV/VIS SPECTROPHOTOMETER**

**Model : UV-1800**

**Serial No. : A11635101643 CD**



**Bara Scientific Co., Ltd.**  
968 U Chu Liang Building Floor7 Rama4 Road  
Silom Bangrak Bangkok Thailand 10500  
Tel : 02-6324300 Fax : 02-6375496-7  
www.barascientific.com



# Certificate of Calibration

Number of Page(s) 1 of 3

**Certificate No.** BSCE-UV-153/25  
**Equipment** UV/Vis Spectrophotometer  
**Model** UV-1800  
**Manufacturer** Shimadzu  
**Serial No.** A11635101643 CD  
**ID No.** LABE 03/2  
**Date of receipt** 21 April 2025  
**Date of calibration** 21 April 2025  
**Date of issue** 25 April 2025

**Customer name** Eastern Thai Consulting 1992 Co., Ltd.

**Address** 683 Moo 11, Sukkaphibarn 8 Rd., Nongkham, Sriracha, Chonburi 20230

**Temperature** (24.7-26.8) °C (On site)  
**Humidity** (36.9-46.2) %RH (On site)

**Equipment condition** Good Operation

**Calibration Location** Analysis Department

**Calibration Procedure** In-house method WI-UV-702-01 based on ASTM E275-01

**Traceability** Wavelength Accuracy is traceable to certificate No. 114485 and 114511  
Photometric Accuracy is traceable to certificate No. 119612 and 114653  
Stray Light is traceable to certificate No. 114484  
The above certificate are traceable to SI unit through Starna Scientific Ltd.  
(UKAS accredited calibration laboratory NO. 0659)

**Calibrated by** Mr.Phongpak Sonbunchu

Approved by

Mr. Pannaphong Phannmekakul  
Technical Manager

The above results are valid exclusively for the calibrated item(s) as mention in this report / certificate.  
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968 U Chu Liang Building Floor7 Rama4 Road  
Silom Bangrak Bangkok Thailand 10500  
Tel : 02-6324300 Fax : 02-6375496-7  
www.barascientific.com



# Certificate of Calibration

**Certificate No.** BSCE-UV-153/25

Number of Page(s) 2 of 3

**Calibration Results:**

## 1.Wavelength Accuracy

Certified Wavelength (nm)	UUC (nm)	Error (nm)	Uncertainty (±nm)
287.71	287.70	-0.01	0.18
445.82	445.87	0.05	0.18
536.52	536.52	0.00	0.18
741.02	741.05	0.03	0.18
879.41	879.33	-0.08	0.18

## 2.Photometric Accuracy (UV)

Wavelength (nm)	Certified Absorbance (A)	UUC (A)	Error (A)	Uncertainty (±A)
235	0.0000 0.7404	-0.0001 0.7416	-0.0001 0.0012	0.0075 0.0075
257	CNR CNR	CNR CNR	CNR CNR	CNR CNR
313	CNR CNR	CNR CNR	CNR CNR	CNR CNR
350	0.0000 0.6397	0.0000 0.6398	0.0000 0.0001	0.0075 0.0075

\*CNR = Customer not request

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Bara Scientific

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Silom Bangkok Bangkok Thailand 10500  
Tel : 02-6324300 Fax : 02-6375496-7  
www.barascientific.com



# Certificate of Calibration

Certificate No. BSCC-UV-153/25

Number of Page(s) 3 of 3

Calibration Results:

## 3. Photometric Accuracy (Visible)

Wavelength (nm)	Certified Absorbance (A)	UUC (A)	Error (A)	Uncertainty ( $\pm A$ )
420.0	0.0000	0.0001	0.0001	0.0042
	0.5733	0.5712	-0.0021	0.0042
	0.7113	0.7097	-0.0016	0.0042
	1.0164	1.0150	-0.0014	0.0042
440.0	0.0000	0.0000	0.0000	0.0042
	0.5581	0.5559	-0.0022	0.0042
	0.6996	0.6975	-0.0021	0.0042
	1.0000	0.9984	-0.0016	0.0042
465.0	CNR	CNR	CNR	CNR
	CNR	CNR	CNR	CNR
	CNR	CNR	CNR	CNR
	CNR	CNR	CNR	CNR
546.1	0.0000	0.0000	0.0000	0.0042
	0.5217	0.5202	-0.0015	0.0042
	0.6970	0.6947	-0.0023	0.0042
	0.9982	0.9969	-0.0013	0.0042
590.0	CNR	CNR	CNR	CNR
	CNR	CNR	CNR	CNR
	CNR	CNR	CNR	CNR
	CNR	CNR	CNR	CNR
635.0	0.0000	0.0000	0.0000	0.0042
	0.5630	0.5620	-0.0010	0.0042
	0.7615	0.7594	-0.0021	0.0042
	1.0953	1.0943	-0.0010	0.0042

\*CNR = Customer not request

## 4. Stray Light\*

Standard	Unit Under Calibration(UUC)		
cut-off wavelength (nm)	Wavelength (nm)	Transmission (%T)	Absorbance (A)
201.10 $\pm$ 0.11nm	200.85	0.9740	2.0116

The Stray light transmission reference is less than 1.0%T and Stray light absorbance reference is greater than 2.00A

\*Stray Light not NSC-ONSC Accredited.

The measurement uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2 providing a level of confidence of approximately 95%.

\*\*\*End of Certificate\*\*\*

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except in full without written approval of the Bara Scientific Co., Ltd.

**SOUND LEVEL CALIBRATOR**

**MODEL : NC-75**

**SERIAL No. : 34302326**

**SITHIPORN ASSOCIATES CO., LTD.**  
**CALIBRATION LABORATORY**

451-451/1 Sirinthorn Road, Bangbunru, Bangplud, Bangkok, 10700 Thailand  
Tel. +66 2433 8331 Email : calibration@sithiphom.com

SITHIPORN



Cert. No. : ACC25018  
Pages : 1 of 3

## Calibration Certificate

**Equipment :** SOUND CALIBRATOR  
**Manufacturer :** RION  
**Model :** NC-75  
**Serial No.:** 34302326  
**ID No.:** -

**Condition As Found :** GOOD

**Customer :** EASTERN THAI CONSULTING 1992 CO., LTD.  
SAHA GROUP INDUSTRIAL PARK, 683 MOO 11,  
NONGKHAM, SIRACHA, CHONBURI 20230 THAILAND.

**Location :** -  
**Ambient Temperature :** ( 23.0  $\pm$  3 ) °C  
**Pressure :** ( 101.3  $\pm$  3 ) kPa  
**Relative Humidity :** ( 50.0  $\pm$  20 ) %

**Received Date :** 02 APRIL 2025  
**Calibration Date :** 30 APRIL 2025  
**Date of Issue :** 02 MAY 2025

**Calibrated by :** Nathakorn Pisutpaisan

**Approved by :**

*T. Petchur*  
( Thanakul Petchurai )

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**SITHIPORN ASSOCIATES**  
**CALIBRATION LABORATORY**

Cert. No. : ACC25018  
Job No. : VC68AC0077  
Pages : 2 of 3

**Calibration Procedure :** CP-AC-03

**Calibration Method :**

This equipment was calibrated by follow on IEC-60942-2003 Standard.

The sound pressure level, frequency and total distortion of the sound calibrator was measured using the reference microphone.

**Condition of this result of calibration :**

1. Reference Standard Instruments :

Instrument	Model	Serial No.	Cert. No.	Due Date
Waveform Generator	33511B	MY52302742	EF-0012-25	11-FEB-26
Digital Multimeter	33461A	MY60024273	CA2025120EA	18-MAR-26
Programmable Attenuator	MAT-1070	62100114	EF-0006-25	11-FEB-26
Condenser Microphone	4180	2977900	AA-1002-25	19-FEB-26
Measuring Amplifier	NA-42KAI	34560495	AA-3002-25	19-FEB-26
Audio Analyzer	AVR-3360A	V744B6069	EF-0013-25	13-FEB-26

2. This result of calibration was found accurate as shown on date and place of calibration for this calibrated item only.

3. This certificate is traceable to the international system of unit maintained at :

3.1 National Institute of Metrology (Thailand).

3.2 Electrical And Electronics Institute (EEI).

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*T. Petchur*

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Cert. No. : ACC25018

Job No. : VC68AC0077

Pages : 3 of 3

**Result of calibration :**

**1. Sound pressure level**

Specified sound pressure level (dB)	Measured value (dB)	Deviated value (dB)	Uncertainty (dB)	Acceptance limit (dB)
94	94.03	0.03	0.15	0.40

**2. Frequency**

Specified Frequency (Hz)	Measured value (Hz)	Deviated value (%)	Uncertainty (%)	Acceptance limit (%)
1000	1000.0	0.0	0.1	1.0

**3. Total distortion**

Measured value ( % )	Uncertainty ( % )	Acceptance limit ( % )
0.79	0.10	3.0

The reported uncertainty is based on a standard uncertainty multiplied by coverage factor  $k = 2$   
or any value following calculation, providing a level of confidence of approximately 95 %

End of Calibration Certificate

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*T. Petch*

**SOUND LEVEL METER**

**MODEL : NL-52A**

**SERIAL No. : 01120950**

Cert. No. : ACL25057  
Pages : 1 of 8

## Calibration Certificate

**Equipment :** SOUND LEVEL METER  
**Manufacturer :** RION  
**Model :** NL-52A / Microphone UC-59 / Preamplifier NH-25  
**Serial No.:** 01120950 / 22043 / 22339  
**ID No.:** -

**Condition As Found :** GOOD

**Customer :** EASTERN THAI CONSULTING 1992 CO., LTD.  
SAHA GROUP INDUSTRIAL PARK, 683 MOO 11,  
NONGKHAM, SIRACHA, CHONBURI 20230 THAILAND.

**Location :** -  
**Ambient Temperature :** ( 23.0  $\pm$  3 ) °C  
**Pressure :** ( 101.3  $\pm$  3 ) kPa  
**Relative Humidity :** ( 50.0  $\pm$  20 ) %

**Received Date :** 06 JANUARY 2025  
**Calibration Date :** 15 - 16 JANUARY 2025  
**Date of Issue :** 17 JANUARY 2025

**Calibrated by :** Nathakorn Pisutpaisan

**Approved by :**

  
( Thanakul Petchurai )

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**Calibration Procedure :** CP-AC-01

### Calibration Method :

This equipment was calibrated by follow on IEC-61672-3 (2013) Standard for sound level meter (SLM).  
The SLM had tests to Acoustical and Electrical signal tests of frequency weighting with Anechoic chamber and Reference Standard Instruments.  
For tests results of each items were made by observation of each Instruments display and also with SLM's display.

### Condition of this result of calibration :

#### 1. Reference Standard Instruments :

Instrument	Model	Serial No.	Cert. No.	Due Date
Waveform Generator	33210A	MY48017076	EF-0009-24	05-FEB-25
Waveform Generator	33511B	MY52302742	EF-0007-24	05-FEB-25
Digital Multimeter	33461A	MY53220104	EEL.BP 21/0267	13-FEB-25
Digital Multimeter	33461A	MY53220076	EEL.BP 20/0267	15-FEB-25
Digital Multimeter	34461A	MY60024273	EEL.BP 22/0267	15-FEB-25
Programmable Attenuator	MAT-1070	62100114	EF-0008-24	05-FEB-25
Condenser Microphone	4180	2977900	AA-1001-24	12-FEB-25
Measuring Amplifier	NA-42KAI	34560495	AA-3001-24	05-FEB-25

2. This result of calibration was found accurate as shown on date and place of calibration for this calibrated item only.  
3. This certificate is traceable to the international system of unit maintained at :  
3.1 National Institute of Metrology (Thailand).  
3.2 Thailand Institute of Scientific and Technological Research (TISTR).

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Cert. No. : ACL25057  
Job No. : VC68AC0048  
Pages : 3 of 8

**Summary of Measurement Result :**

Parameter	Uncertainty (dB)	Maximum-permitted uncertainty of measurement (dB)
1. Absolute sensitivity	0.2	N/A
2. Self-generated noise	0.2	N/A
3. Acoustical signal tests of frequency weightings		
125 Hz	0.3	0.6
1000 Hz	0.3	0.6
8000 Hz	0.3	0.7
4. Electrical signal tests of frequency weightings		
For 10 Hz to 4 kHz	0.3	0.6
For > 4 kHz to 10 kHz	0.3	0.7
For > 10 kHz to 20 kHz	0.3	1.0
5. Frequency and time weightings at 1 kHz	0.2	0.2
6. Long - term stability	0.1	0.1
7. Level linearity on the reference level range	0.2	0.3
8. Level linearity including the level range control	0.2	0.3
9. Tone burst response	0.2	0.3
10. Peak C sound level	0.2	0.35
11. Overload indication	0.2	0.25
12. High level stability	0.1	0.1

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Cert. No. : ACL25057  
Job No. : VC68AC0048  
Page : 4 of 8

**Result of calibration :**

**1. Absolute sensitivity**

Reference Acoustic Signal ( dB )	Measured Value ( dB )	Deviation ( dB )	Acceptance Limit ( dB )
93.9 (93.94)	94.0	0.0	±0.3

**2. Self-generated noise**

2.1 Normal test

Measured Value ( dB )
13.4

2.2 The microphone of the sound level meter was replaced by electrical signal input device.

Frequency Weighting	Weighting ( dB )
A - weight	9.9
C - weight	16.4
Flat	21.9

**3. Acoustical signal tests of frequency weightings**

Meter free-field acoustic response at a level of 84 dB

Frequency ( Hz )	Deviation from various frequency weighting response curve (dB)			
	Flat	C-weight	A-weight	Acceptance Limits
125	0.4	0.4	0.4	± 1.0
1000	0.2	0.2	0.2	± 0.7
8000	0.5	0.5	0.5	+ 1.5, - 2.5

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Cert. No. : ACL25057  
Job No. : VC68AC0048  
Pages : 5 of 8

#### 4. Electrical signal tests of frequency weightings

Weighting network response with relative to 1 kHz.

Frequency ( Hz )	Deviation from various frequency weighting response curve (dB)			
	Flat	C-weight	A-weight	Acceptance Limits
63	0.0	-0.1	0.0	±1.0
125	0.0	0.1	0.0	±1.0
250	0.0	0.0	0.0	±1.0
500	0.0	0.1	0.0	±1.0
1000	0.0	0.0	0.0	±1.0
2000	0.0	0.1	0.0	±1.0
4000	0.0	0.0	0.0	±1.0
8000	0.0	0.1	0.1	+ 1.5, - 2.5
16000	0.0	-1.2	-1.2	+ 2.5, -16.0

#### 5. Frequency and time weightings at 1 kHz

##### 5.1 Frequency weightings at 1 kHz

Frequency Weighting	Anticipated Value ( dB )	Measured Value ( dB )	Deviated Value ( dB )	Acceptance Limits ( dB )
A - weight	94.0	94.0	0.0	± 0.2
C - weight	94.0	94.0	0.0	± 0.2
Flat	94.0	94.0	0.0	± 0.2

##### 5.2 Time weighting at 1 kHz

Frequency Weighting	Anticipated Value ( dB )	Measured Value ( dB )	Deviated Value ( dB )	Acceptance Limits ( dB )
Fast	94.0	94.0	0.0	± 0.1
Slow	94.0	94.0	0.0	± 0.1
Leq	94.0	94.0	0.0	± 0.1

#### 6. Long - term stability

Frequency Weighting	SLM Display at initial ( dB )	SLM Display at final ( dB )	Deviated Value ( dB )	Acceptance Limits ( dB )
A - weight	94.0	94.0	0.0	± 0.1

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Cert. No. : ACL25057  
Job No. : VC68AC0048  
Pages : 6 of 8

#### 7. Level linearity on the reference level range

Anticipated Value ( dB )	Measured Value ( dB )	Deviated Value ( dB )	Acceptance Limits ( dB )
137.0	137.0	0.0	±0.8
136.0	136.0	0.0	±0.8
135.0	135.0	0.0	±0.8
134.0	134.0	0.0	±0.8
133.0	133.0	0.0	±0.8
132.0	132.0	0.0	±0.8
131.0	131.0	0.0	±0.8
129.0	129.0	0.0	±0.8
124.0	124.0	0.0	±0.8
119.0	119.0	0.0	±0.8
114.0	114.0	0.0	±0.8
109.0	109.0	0.0	±0.8
104.0	104.0	0.0	±0.8
99.0	99.0	0.0	±0.8
94.0	94.0	0.0	±0.8
89.0	89.0	0.0	±0.8
84.0	84.0	0.0	±0.8
79.0	79.0	0.0	±0.8
74.0	74.0	0.0	±0.8
69.0	69.0	0.0	±0.8
64.0	64.0	0.0	±0.8
59.0	59.0	0.0	±0.8
54.0	53.9	-0.1	±0.8
49.0	49.0	0.0	±0.8
44.0	44.0	0.0	±0.8
39.0	38.9	-0.1	±0.8
34.0	33.9	-0.1	±0.8
30.0	30.0	0.0	±0.8
29.0	28.9	-0.1	±0.8
28.0	28.0	0.0	±0.8
27.0	26.9	-0.1	±0.8
26.0	26.0	0.0	±0.8
25.0	25.0	0.0	±0.8

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Cert. No. : ACL25057  
Job No. : VC68AC0048  
Pages : 7 of 8

## 8. Level linearity including the level range control

Range	Anticipated Value ( dB )	Measured Value ( dB )	Deviated Value ( dB )	Acceptance Limits ( dB )
130	94.0	94.0	0.0	±0.8

Range	Anticipated Value ( dB )	Measured Value ( dB )	Deviated Value ( dB )	Acceptance Limits ( dB )
130	29.0	28.9	-0.1	±0.8

## 9. Tone burst response

Time Weighting	Tone burst duration, Tb ( ms )	Cycle	Anticipated Value ( dB )	Measured Value ( dB )	Deviated Value ( dB )	Acceptance Limits ( dB )
Fast	0.25	1	108.0	107.9	-0.1	1.0 ; -3.0
	2	8	117.0	117.0	0.0	1.0 ; -1.5
	200	800	134.0	134.1	0.1	±0.5
Slow	2	8	108.0	108.0	0.0	1.0 ; -3.0
	200	800	127.6	127.6	0.0	±0.5
SEL	0.25	1	99.0	98.9	-0.1	1.0 ; -3.0
	2	8	108.0	108.0	0.0	1.0 ; -1.5
	200	800	128.0	128.0	0.0	±0.5

Cert. No. : ACL25057  
Job No. : VC68AC0048  
Pages : 8 of 8

## 10. Peak C sound level

Number of cycle in test signal	Anticipated Value ( dB )	Measured Value, L <sub>peak</sub> ( dB )	Deviated Value ( dB )	Acceptance Limits ( dB )
Continuous	130.0	130.0	0.0	±2.0
One	133.4	133.3	-0.1	±2.0

Number of cycle in test signal	Anticipated Value ( dB )	Measured Value ( dB )	Deviated Value ( dB )	Acceptance Limits ( dB )
Continuous	133.0	133.0	0.0	±1.0
Positive half cycle	135.4	135.2	-0.2	±1.0
Negative half cycle	135.4	135.2	-0.2	±1.0

## 11. Overload indication

Measured value ( dB )		Deviated Value ( dB )	Acceptance Limits ( dB )
Positive one-half cycle	Negative one-half cycle		
89.6	89.6	0.0	±1.5

## 12. High level stability

Frequency Weighting	SLM Display at initial ( dB )	SLM Display at final ( dB )	Deviated Value ( dB )	Acceptance Limits ( dB )
A - weight	137.0	137.0	0.0	±0.1

The reported uncertainty is based on a standard uncertainty multiplied by coverage factor  $k = 2$   
or any value following calculation, providing a level of confidence of approximately 95%

End of Calibration Certificate

**SOUND LEVEL METER**

**MODEL : NL-52A**

**SERIAL No. : 01120949**

Cert. No. : ACL25056  
Pages : 1 of 8

## Calibration Certificate

**Equipment :** SOUND LEVEL METER  
**Manufacturer :** RION  
**Model :** NL-52A / Microphone UC-59 / Preamplifier NH-25  
**Serial No.:** 01120949 / 23003 / 22338  
**ID No.:** -

**Condition As Found :** GOOD

**Customer :** EASTERN THAI CONSULTING 1992 CO., LTD.  
SAHA GROUP INDUSTRIAL PARK, 683 MOO 11,  
NONGKHAM, SIRACHA, CHONBURI 20230 THAILAND.

**Location :** -  
**Ambient Temperature :** ( 23.0  $\pm$  3 ) °C  
**Pressure :** ( 101.3  $\pm$  3 ) kPa  
**Relative Humidity :** ( 50.0  $\pm$  20 ) %

**Received Date :** 06 JANUARY 2025  
**Calibration Date :** 15 - 16 JANUARY 2025  
**Date of Issue :** 17 JANUARY 2025

**Calibrated by :** Nathakorn Pisutpaisan

**Approved by :**

*T. Petchur*  
( Thanakul Petchurai )

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**Calibration Procedure :** CP-AC-01

Cert. No. : ACL25056  
Job No. : VC68AC0048  
Pages : 2 of 8

### Calibration Method :

This equipment was calibrated by follow on IEC-61672-3 (2013) Standard for sound level meter (SLM).  
The SLM had tests to Acoustical and Electrical signal tests of frequency weighting with Anechoic chamber and Reference Standard Instruments.  
For tests results of each items were made by observation of each Instruments display and also with SLM's display.

### Condition of this result of calibration :

#### 1. Reference Standard Instruments :

Instrument	Model	Serial No.	Cert. No.	Due Date
Waveform Generator	33210A	MY48017076	EF-0009-24	05-FEB-25
Waveform Generator	33511B	MY52302742	EF-0007-24	05-FEB-25
Digital Multimeter	33461A	MY53220104	EEL.BP 21/0267	13-FEB-25
Digital Multimeter	33461A	MY53220076	EEL.BP 20/0267	15-FEB-25
Digital Multimeter	34461A	MY60024273	EEL.BP 22/0267	15-FEB-25
Programmable Attenuator	MAT-1070	62100114	EF-0008-24	05-FEB-25
Condenser Microphone	4180	2977900	AA-1001-24	12-FEB-25
Measuring Amplifier	NA-42KAI	34560495	AA-3001-24	05-FEB-25

2. This result of calibration was found accurate as shown on date and place of calibration for this calibrated item only.

3. This certificate is traceable to the international system of unit maintained at :

3.1 National Institute of Metrology (Thailand).

3.2 Thailand Institute of Scientific and Technological Research (TISTR).

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Cert. No. : ACL25056  
Job No. : VC68AC0048  
Pages : 3 of 8

**Summary of Measurement Result :**

Parameter	Uncertainty (dB)	Maximum-permitted uncertainty of measurement (dB)
1. Absolute sensitivity	0.2	N/A
2. Self-generated noise	0.2	N/A
3. Acoustical signal tests of frequency weightings		
125 Hz	0.3	0.6
1000 Hz	0.3	0.6
8000 Hz	0.3	0.7
4. Electrical signal tests of frequency weightings		
For 10 Hz to 4 kHz	0.3	0.6
For > 4 kHz to 10 kHz	0.3	0.7
For > 10 kHz to 20 kHz	0.3	1.0
5. Frequency and time weightings at 1 kHz	0.2	0.2
6. Long - term stability	0.1	0.1
7. Level linearity on the reference level range	0.2	0.3
8. Level linearity including the level range control	0.2	0.3
9. Tone burst response	0.2	0.3
10. Peak C sound level	0.2	0.35
11. Overload indication	0.2	0.25
12. High level stability	0.1	0.1

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Cert. No. : ACL25056  
Job No. : VC68AC0048  
Page : 4 of 8

**Result of calibration :**

**1. Absolute sensitivity**

Reference Acoustic Signal ( dB )	Measured Value ( dB )	Deviation ( dB )	Acceptance Limit ( dB )
93.9 (93.94)	94.0	0.1	±0.3

**2. Self-generated noise**

**2.1 Normal test**

Measured Value ( dB )
14.4

2.2 The microphone of the sound level meter was replaced by electrical signal input device.

Frequency Weighting	Weighting ( dB )
A - weight	7.8
C - weight	12.7
Flat	18.5

**3. Acoustical signal tests of frequency weightings**

Meter free-field acoustic response at a level of 84 dB

Frequency ( Hz )	Deviation from various frequency weighting response curve (dB)			
	Flat	C-weight	A-weight	Acceptance Limits
125	0.3	0.3	0.3	± 1.0
1000	0.3	0.3	0.3	± 0.7
8000	0.1	0.1	0.1	+ 1.5, - 2.5

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*T. Petch*

Cert. No. : ACL25056  
Job No. : VC68AC0048  
Pages : 5 of 8

#### 4. Electrical signal tests of frequency weightings

Weighting network response with relative to 1 kHz.

Frequency ( Hz )	Deviation from various frequency weighting response curve (dB)			
	Flat	C-weight	A-weight	Acceptance Limits
63	0.0	0.0	0.0	±1.0
125	0.0	0.1	0.0	±1.0
250	0.0	0.0	0.0	±1.0
500	0.0	0.0	0.0	±1.0
1000	0.0	0.0	0.0	±1.0
2000	0.0	0.0	0.0	±1.0
4000	0.0	0.0	0.0	±1.0
8000	0.0	0.1	0.1	+ 1.5, - 2.5
16000	0.0	-1.2	-1.2	+ 2.5, -16.0

#### 5. Frequency and time weightings at 1 kHz

##### 5.1 Frequency weightings at 1 kHz

Frequency Weighting	Anticipated Value ( dB )	Measured Value ( dB )	Deviated Value ( dB )	Acceptance Limits ( dB )
A - weight	94.0	94.0	0.0	± 0.2
C - weight	94.0	94.0	0.0	± 0.2
Flat	94.0	94.0	0.0	± 0.2

##### 5.2 Time weighting at 1 kHz

Frequency Weighting	Anticipated Value ( dB )	Measured Value ( dB )	Deviated Value ( dB )	Acceptance Limits ( dB )
Fast	94.0	94.0	0.0	± 0.1
Slow	94.0	94.0	0.0	± 0.1
Leq	94.0	94.0	0.0	± 0.1

#### 6. Long - term stability

Frequency Weighting	SLM Display at initial ( dB )	SLM Display at final ( dB )	Deviated Value ( dB )	Acceptance Limits ( dB )
A - weight	94.0	94.0	0.0	± 0.1

Cert. No. : ACL25056  
Job No. : VC68AC0048  
Pages : 6 of 8

#### 7. Level linearity on the reference level range

Anticipated Value ( dB )	Measured Value ( dB )	Deviated Value ( dB )	Acceptance Limits ( dB )
137.0	137.0	0.0	±0.8
136.0	136.0	0.0	±0.8
135.0	135.0	0.0	±0.8
134.0	134.0	0.0	±0.8
133.0	133.0	0.0	±0.8
132.0	132.0	0.0	±0.8
131.0	131.0	0.0	±0.8
129.0	129.0	0.0	±0.8
124.0	124.0	0.0	±0.8
119.0	119.0	0.0	±0.8
114.0	114.0	0.0	±0.8
109.0	109.0	0.0	±0.8
104.0	104.0	0.0	±0.8
99.0	99.0	0.0	±0.8
94.0	94.0	0.0	±0.8
89.0	89.0	0.0	±0.8
84.0	84.0	0.0	±0.8
79.0	79.0	0.0	±0.8
74.0	74.0	0.0	±0.8
69.0	69.0	0.0	±0.8
64.0	64.0	0.0	±0.8
59.0	59.0	0.0	±0.8
54.0	53.9	-0.1	±0.8
49.0	49.0	0.0	±0.8
44.0	44.0	0.0	±0.8
39.0	38.9	-0.1	±0.8
34.0	34.0	0.0	±0.8
30.0	30.0	0.0	±0.8
29.0	28.9	-0.1	±0.8
28.0	28.0	0.0	±0.8
27.0	27.0	0.0	±0.8
26.0	26.0	0.0	±0.8
25.0	25.0	0.0	±0.8

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Cert. No. : ACL25056  
Job No. : VC68AC0048  
Pages : 7 of 8

**8. Level linearity including the level range control**

Range	Anticipated Value ( dB )	Measured Value ( dB )	Deviated Value ( dB )	Acceptance Limits ( dB )
130	94.0	94.0	0.0	±0.8

Range	Anticipated Value ( dB )	Measured Value ( dB )	Deviated Value ( dB )	Acceptance Limits ( dB )
130	29.0	28.9	-0.1	±0.8

**9. Tone burst response**

Time Weighting	Tone burst duration, Tb ( ms )	Cycle	Anticipated Value ( dB )	Measured Value ( dB )	Deviated Value ( dB )	Acceptance Limits ( dB )
Fast	0.25	1	108.0	107.9	-0.1	1.0 ; -3.0
	2	8	117.0	117.0	0.0	1.0 ; -1.5
	200	800	134.0	134.0	0.0	±0.5
Slow	2	8	108.0	108.0	0.0	1.0 ; -3.0
	200	800	127.6	127.6	0.0	±0.5
SEL	0.25	1	99.0	98.9	-0.1	1.0 ; -3.0
	2	8	108.0	108.0	0.0	1.0 ; -1.5
	200	800	128.0	128.0	0.0	±0.5

Cert. No. : ACL25056  
Job No. : VC68AC0048  
Pages : 8 of 8

**10. Peak C sound level**

Number of cycle in test signal	Anticipated Value ( dB )	Measured Value, L <sub>peak</sub> ( dB )	Deviated Value ( dB )	Acceptance Limits ( dB )
Continuous	130.0	130.0	0.0	±2.0
One	133.4	133.3	-0.1	±2.0

Number of cycle in test signal	Anticipated Value ( dB )	Measured Value ( dB )	Deviated Value ( dB )	Acceptance Limits ( dB )
Continuous	133.0	133.0	0.0	±1.0
Positive half cycle	135.4	135.2	-0.2	±1.0
Negative half cycle	135.4	135.2	-0.2	±1.0

**11. Overload indication**

Measured value ( dB )		Deviated Value ( dB )	Acceptance Limits ( dB )
Positive one-half cycle	Negative one-half cycle		
89.5	89.6	0.1	±1.5

**12. High level stability**

Frequency Weighting	SLM Display at initial ( dB )	SLM Display at final ( dB )	Deviated Value ( dB )	Acceptance Limits ( dB )
A - weight	137.0	137.0	0.0	±0.1

The reported uncertainty is based on a standard uncertainty multiplied by coverage factor  $k = 2$  or any value following calculation, providing a level of confidence of approximately 95 %

End of Calibration Certificate

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**ANALYTICAL BALANCE (DU)**

**Model : XS205DU**


**Serial No. : 1126323724**

Mettler-Toledo (Thailand) Ltd.  
846/4 - 846/5846/4 - 846/5 Lasalle Rd., Bangna Tai  
Bangna District, Bangkok 10260  
+66 2723 0382  
MT-TH.ServiceSupport@mt.com



## Accuracy Calibration Certificate

### Customer

Company: EASTERN THAI CONSULTING 1992 CO., LTD.  
Address: 683 Moo 11, Sukhaphiban 8 Rd., Nong Kham  
City: Sriracha Contact: Sasiporn Nakin  
Zip / Postal: 20230  
State / Province: Chonburi  
Order Number:   
0 3 3 3 1 9 6 1 9

### Weighing Device

Manufacturer: Mettler Toledo Instrument Type: Weighing Instrument  
Model: XS205DU Asset Number: LABE 05/1  
Serial No.: 1126323724 Terminal Model: SAT  
Building: Laboratory Terminal Serial No.: 1126323724  
Floor: 1 Terminal Asset No.: N/A  
Room: Analytical Balance

Range	Max. Capacity	Readability (d)
1	81 g	0.0001 g
2	220 g	0.0001 g

### Procedure

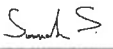

Calibration Guideline: EURAMET cg-18 v. 4.0 (11/2015)  
METTLER TOLEDO Work Instruction: CP/W002/20

This calibration certificate contains measurements for As Found calibration. No As Left calibration was performed because the device was not modified after As Found calibration. Therefore, results for As Left correspond to As Found.

The sensitivity/span of the weighing instrument was adjusted before calibration with a built-in weight.

In accordance with EURAMET cg-18 (11/2015), the test loads were selected to reflect the specific use of the weighing device or to accommodate specific calibration conditions.

	Temperature		Humidity	
As Found	Start: 25.7 °C	End: 25.8 °C	Start: 50.9 %	End: 50.6 %

As Found Calibration Date: 09-Dec-2024 Calibrator:   
As Left Calibration Date: N/A  
Issue Date: 11-Dec-2024  
Approved Signatory:   
Technical Manager / Head of Calibration Center

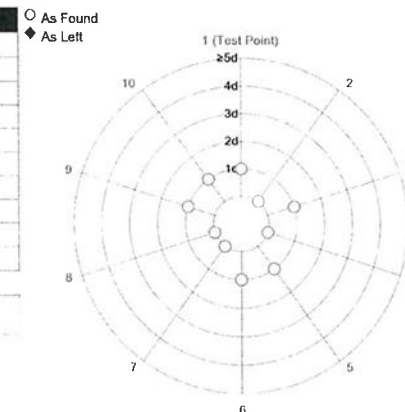
## Measurement Results

### Repeatability

Test Load: 70 g

	As Found	As Left
1	70.00004 g	N/A
2	70.00005 g	N/A
3	70.00004 g	N/A
4	70.00005 g	N/A
5	70.00006 g	N/A
6	70.00004 g	N/A
7	70.00005 g	N/A
8	70.00005 g	N/A
9	70.00006 g	N/A
10	70.00006 g	N/A

Standard Deviation	0.000008 g	N/A
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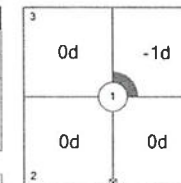
The "d" in the graph represents the readability of the range/interval in which the test was performed.  
The results of this graph are based upon the absolute values of the differences from the mean value.

### Eccentricity

Test Load: 100 g

Position	As Found	As Left
1	100.0000 g	N/A
2	100.0000 g	N/A
3	100.0000 g	N/A
4	99.9999 g	N/A
5	100.0000 g	N/A

Maximum Deviation	0.0001 g	N/A
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As Found

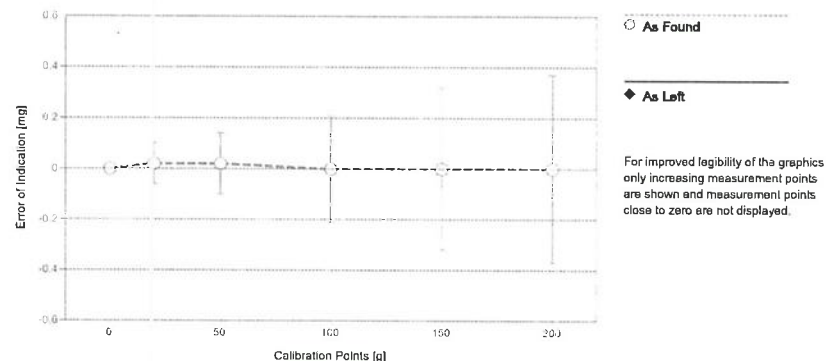
The "d" in the graph represents the readability of the range/interval in which the test was performed.

Error of Indication

As Found

	Reference Value	Indication	Error of Indication	Expanded Uncertainty	k
1	0.00000 g	0.00000 g	0.00000 g	0.017 mg	2
2	0.01000 g	0.01000 g	0.00000 g	0.020 mg	2
3	0.10000 g	0.10000 g	0.00000 g	0.023 mg	2
4	1.00000 g	1.00000 g	0.00000 g	0.032 mg	2
5	4.99998 g	5.00000 g	0.00002 g	0.048 mg	2
6	10.00001 g	10.00001 g	0.00000 g	0.061 mg	2
7	19.99998 g	20.00001 g	0.00002 g	0.082 mg	2
8	50.00003 g	50.00005 g	0.00002 g	0.12 mg	2
9	100.0000 g	100.0000 g	0.0000 g	0.21 mg	2
10	150.0000 g	150.0000 g	0.0000 g	0.32 mg	2
11	200.0000 g	200.0000 g	0.0000 g	0.37 mg	2

\*The calculated uncertainty was replaced by the CMC (Calibration and Measurement Capabilities) value because the calculated uncertainty was smaller than the CMC value.



The expanded measurement uncertainty is reported as the standard measurement uncertainty multiplied by the coverage factor  $k$  such that the coverage probability corresponds to approximately 95 %.

The user is responsible for maintaining environmental conditions and the settings of the weighing instrument when it was calibrated.  
The results of this calibration certificate relate only to the calibrated item.

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Test Equipment

All weights used for metrological testing are traceable to national or international standards. The weights were calibrated and certified by an accredited calibration laboratory.

Weight Set 1: OIML :2

Weight Set No.: WS37 Date of Issue: 17-Jun-2024  
Certificate Number: 186753-1 Calibration Due Date: 20-Jan-2025

Weight Set 2: OIML :2

Weight Set No.: WS87 Date of Issue: 04-Jul-2023  
Certificate Number: 186520 Calibration Due Date: 02-Jan-2025

Thermo Hygrometer

Equipment No.: IN279 Date of Issue: 19-Jun-2024  
Certificate Number: SG-H-00577/67 Calibration Due Date: 17-Jun-2025

Remarks

FACT adjustment functionality activated

Equipment condition: Good

Next calibration according to customer's procedure

Calibration data not decided by calibration laboratory

End of Accredited Section

The information below and any attachments to this calibration certificate are not part of the accredited calibration.

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## Measurement Uncertainty of the Weighing Instrument in Use

Stated is the expanded uncertainty with  $k=2$  in use. The formula shall be used for the estimation of the uncertainty under consideration of the errors of indication. The value  $R$  represents the net load indication in the unit of measure of the device.

Temperature coefficient for the evaluation of the measurement uncertainty in use:  $1.5 \cdot 10^{-6} / K$

Temperature range on site for the evaluation of the measurement uncertainty in use: 3 K

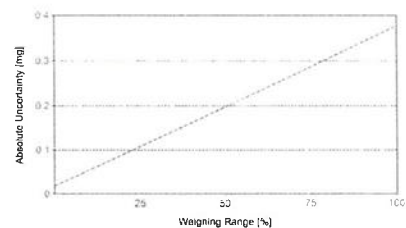
### Linearization of Uncertainty Equation

	Range		As Found	As Left
	d	Max		
1	0.00001 g	81 g	$U_1 = 0.018 \text{ mg} + 0.00444 \text{ mg/g} \cdot R$	N/A
2	0.0001 g	220 g	$U_2 = 0.06 \text{ mg} + 0.00439 \text{ mg/g} \cdot R$	N/A

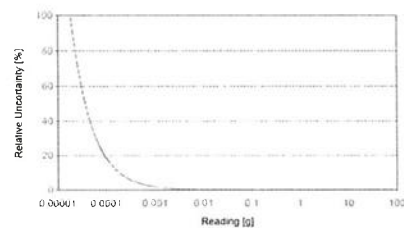
To optimize the stability of the linearization, besides of the zero load only increasing measurement points with a test load of 5% of the measurement range or larger are taken for the calculation of the linear equation.

### Absolute and Relative Measurement Uncertainty in Use for Various Net Indications (Examples)

Net Indication	As Found		As Left	
0.00220 g	0.018 mg	0.82%	N/A	N/A
0.02200 g	0.018 mg	0.082%	N/A	N/A
0.22000 g	0.019 mg	0.0086%	N/A	N/A
2.20000 g	0.028 mg	0.0013%	N/A	N/A
220.0000 g	1.0 mg	0.00047%	N/A	N/A



As Found



As Left

The weighing range shown in the absolute uncertainty graph refers to the first interval/range of the device.

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# GWP® Certificate



As  
Found



As  
Left



The weighing device meets the given process requirements.

The weighing device meets the given process requirements.

Tests Performed: ☒ As Found ☐ As Left ☒ No adjustments/modifications made. As Left results correspond to As Found.

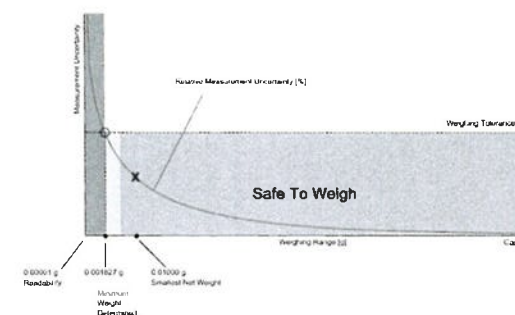
## Process Requirements

Weighing Tolerance: 1%

Smallest Net Weight: 0.01000 g

Safety Factor: 2

### Safe Weighing Range



While the values in this graph reflect the actual calibration results, the measurement uncertainty curves are simply a visual representation. This graph reflects As Left testing, unless only As Found was performed.

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## Minimum Weight

### As Found Minimum Weight Table

Range 1

Tolerance	Minimum weights for different weighing tolerances and safety factors				
	Safety Factor				
	1	2	3	5	10
0.1%	0.016339 g	0.038842 g	0.055511 g	0.093358 g	0.191052 g
0.2%	0.006149 g	0.018339 g	0.027570 g	0.046156 g	0.093358 g
0.5%	0.002655 g	0.007316 g	0.010984 g	0.018339 g	0.036842 g
1%	0.001827 g	0.003655 g	0.005485 g	0.009149 g	0.018339 g
2%	0.000913 g	0.001827 g	0.002740 g	0.004569 g	0.009149 g
5%	0.000365 g	0.000730 g	0.001096 g	0.001827 g	0.003655 g

The minimum weight table applies to the fine range of the weighing device.

✓ Pass: The determined minimum weight meets the requirement for the smallest net weight.

### As Left Minimum Weight Table

Range 1

Tolerance	Minimum weights for different weighing tolerances and safety factors				
	Safety Factor				
	1	2	3	5	10
0.1%	0.016339 g	0.038842 g	0.055511 g	0.093358 g	0.191052 g
0.2%	0.006149 g	0.018339 g	0.027570 g	0.046156 g	0.093358 g
0.5%	0.002655 g	0.007316 g	0.010984 g	0.018339 g	0.036842 g
1%	0.001827 g	0.003655 g	0.005485 g	0.009149 g	0.018339 g
2%	0.000913 g	0.001827 g	0.002740 g	0.004569 g	0.009149 g
5%	0.000365 g	0.000730 g	0.001096 g	0.001827 g	0.003655 g

The minimum weight table applies to the fine range of the weighing device.

✓ Pass: The determined minimum weight meets the requirement for the smallest net weight.

At these net minimum weight values, the measurement uncertainty of the weighing device is equal to or less than 1/1 (no safety factor), 1/2, 1/3, 1/5, or 1/10 of the required tolerance. The values are calculated with  $k = 2$  and based on the linear formula of the measurement uncertainty of the weighing device in use.

The safety factor for As Found is always 1. This implies no safety factor. As Found testing looks at the behavior of the instrument from the past until test occurred. For the present, it is necessary to know that the tolerance was met, but not the safety factor. The safety factor is a proactive measure to apply for future measurements.

#### Notes on minimum weight values in above table:

- If "N/A" is shown above, no appropriate value could be calculated.
- METTLER TOLEDO is not responsible for the definition of the process requirements.

## Measurement Results

### Results Summary

	Repeatability	Eccentricity	Error of Indication
As Found	✓	✓	✓
As Left	✓	✓	✓

✓ = Passed

✗ = Failed

N/A = Safety Factor not met

### Repeatability

Test Load: 70 g

Tolerance	Control Limit	As Found		As Left	
		Std. Deviation	Result	Std. Deviation	Result
0.1%	0.000005 g	0.000008 g	✗	0.000008 g	✗
0.2%	0.000010 g		✓		✓
0.5%	0.000025 g		✓		✓
1%	0.000050 g		✓		✓
2%	0.000100 g		✓		✓
5%	0.000250 g		✓		✓

The weighing tolerance is met if the standard deviation is less than or equal to the corresponding control limit.

### Eccentricity

Test Load: 100 g

Tolerance	Control Limit	As Found		As Left	
		Deviation	Result	Deviation	Result
0.1%	0.0500 g	0.0001 g	✓	0.0001 g	✓
0.2%	0.1000 g		✓		✓
0.5%	0.2500 g		✓		✓
1%	0.5000 g		✓		✓
2%	1.0000 g		✓		✓
5%	2.5000 g		✓		✓

The weighing tolerance is met if the deviation is less than or equal to the corresponding control limit.

## Attachment to Calibration Certificate:

TH2008-028-120824-ACC-TH

GWP® Certificate

## METTLER TOLEDO Service

## Error of Indication

## As Found

Reference Value	Error	Control limits for various weighing tolerances					
		0.1%	0.2%	0.5%	1%	2%	5%
0.00000 g	0.00000 g	N/A	N/A	N/A	N/A	N/A	N/A
19.99999 g	0.00002 g	0.01000 g	0.02000 g	0.05000 g	0.10000 g	0.20000 g	0.50000 g
50.00003 g	0.00002 g	0.02500 g	0.05000 g	0.12500 g	0.25000 g	0.50000 g	1.25000 g
100.00000 g	0.00000 g	0.05000 g	0.10000 g	0.25000 g	0.50000 g	1.00000 g	2.50000 g
150.00000 g	0.00000 g	0.07500 g	0.15000 g	0.37500 g	0.75000 g	1.50000 g	3.75000 g
200.00000 g	0.00000 g	0.10000 g	0.20000 g	0.50000 g	1.00000 g	2.00000 g	5.00000 g
Result		✓	✓	✓	✓	✓	✓

## As Left

Reference Value	Error	Control limits for various weighing tolerances					
		0.1%	0.2%	0.5%	1%	2%	5%
0.00000 g	0.00000 g	N/A	N/A	N/A	N/A	N/A	N/A
19.99999 g	0.00002 g	0.01000 g	0.02000 g	0.05000 g	0.10000 g	0.20000 g	0.50000 g
50.00003 g	0.00002 g	0.02500 g	0.05000 g	0.12500 g	0.25000 g	0.50000 g	1.25000 g
100.00000 g	0.00000 g	0.05000 g	0.10000 g	0.25000 g	0.50000 g	1.00000 g	2.50000 g
150.00000 g	0.00000 g	0.07500 g	0.15000 g	0.37500 g	0.75000 g	1.50000 g	3.75000 g
200.00000 g	0.00000 g	0.10000 g	0.20000 g	0.50000 g	1.00000 g	2.00000 g	5.00000 g
Result		✓	✓	✓	✓	✓	✓

The weighing tolerance is met if the error (of indication) for each test point is less than or equal to the corresponding control limit for that particular weighing tolerance. Results at or close to the zero point cannot be assessed.

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**ANALYTICAL BALANCE (DU)**

**Model : XS205DU**

**Serial No. : B344940005**

Certificate No. : 25-205716  
Sample Code : 25-90375-006

## CERTIFICATE OF CALIBRATION

Customer : EASTERN THAI CONSULTING 1992 CO., LTD.  
683 Moo 11, Sukhapibarn 8 Rd, Nongkham,  
Sriracha, Chonburi 20230

Location of Calibration : EASTERN THAI CONSULTING 1992 CO., LTD.  
(Analytical Balance Room)

Equipment : ELECTRONIC BALANCE

Manufacturer : METTLER TOLEDO

Model : XS205DU

Serial No. : B344940005

ID No. : LABE 05/3

Date of Receipt : 26 November 2025

Date of Calibration : 26 November 2025

Calibrated by Mr. Thanadol Pholthep  
Scientist

Approved by (Mr. Somchai Neampunt)  
Signed for Director

Issue date 28 November 2025

The uncertainties are for a confidence probability of approximately 95%.

The calibration result is applied only to the above calibrated item and was found accurate as shown on date and place of calibration only.

This Certificate is issued in accordance with the conditions of accreditation granted by the Thai Laboratory Accreditation scheme which has assessed the measurement capability of the laboratory and its traceability to recognized national standards and to the unit of measurement realized at the corresponding national standards laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the Asia Medical and Agricultural Laboratory and Research Center Public Company Limited (AMARC).

Certificate No. : 25-205716  
Sample Code : 25-90375-006

## REPORT OF CALIBRATION

Equipment : ELECTRONIC BALANCE  
Manufacturer : METTLER TOLEDO  
Model : XS205DU  
Capacity : Max 81 g / 200 g  
Resolution : 0.00001 g / 0.0001 g  
Serial No. : B344940005  
ID No. : LABE 05/3

## Result of Calibration

## 1. Test weight and repeatability of reading

Repeatability is a measure of the ability of a balance to supply the same result in repetitive weighings with one and the same load under the same measurement condition. The measurement of the repeatability must include both the balance specifications and the ambient (vibration, fluctuating air current/temperature/humidity, etc.) Operator handling of the balance is also included in the standard deviation.

Unit : g	Range : 81	<input type="checkbox"/> Before adjustment	<input type="checkbox"/> After adjustment
	Nominal value	40	80
<input checked="" type="checkbox"/> No adjustment	Standard weight	40.000087	80.000088
<input type="checkbox"/> Adjustment	Average reading of indicator	40.00004	80.00004
	Standard deviation	0.000007	0.000007

Unit : g	Range : 200	<input type="checkbox"/> Before adjustment	<input type="checkbox"/> After adjustment
	Nominal value	100	200
<input checked="" type="checkbox"/> No adjustment	Standard weight	99.999988	200.000015
<input type="checkbox"/> Adjustment	Average reading of indicator	99.9999	199.9997
	Standard deviation	0.000005	0.000005

Certificate No. : 25-205716  
 Sample Code : 25-90375-006

Page 3 of 4

## REPORT OF CALIBRATION

## Result of Calibration

## 2. Sensitivity or value of a scale division

Change in the output variable of a measuring instrument divided by the associated change in the input variable.

Unit : g

Range : 81

Range : 200

Test Point	Sensitivity, S	Test Point	Sensitivity, S
0	1.00000	0	1.0000
40	1.00000	100	1.0000
80	1.00000	200	1.0000

## 3. Departure of indication from nominal value, Linearity

Unit : g

Nominal Value	Standard Value	Average Reading of Indicator	Correction Value	Expanded Uncertainty	Coverage Factor (k)
Unload	0.0000000	0.00000	0.00000	0.000011	2.04
0.01	0.0100016	0.01000	0.00000	0.000011	2.04
0.1	0.1000056	0.10000	0.00001	0.000012	2.02
1	1.0000110	1.00000	0.00001	0.000015	2.01
5	4.9999996	4.99998	0.00002	0.000020	2.00
10	9.9999994	9.99999	0.00000	0.000026	2.00
20	20.0000042	20.00000	0.00004	0.000037	2.00
50	50.0000052	50.00003	0.00002	0.000067	2.00
100	99.999988	100.00000	0.00000	0.000016	2.00
150	150.000040	150.00001	-0.00001	0.000022	2.00
200	200.000015	200.00001	-0.00001	0.000027	2.00

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The result expanded uncertainty of measurement  $U$  is stated as the standard uncertainty of measurement multiplied by the coverage factor  $k$ , which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with UKAS M3003

Certificate No. : 25-205716  
 Sample Code : 25-90375-006

Page 4 of 4

## REPORT OF CALIBRATION

## Result of Calibration :

## 4. Eccentric or off-centre loading

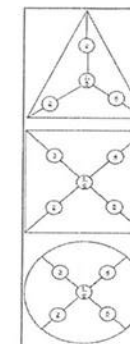
Deviation of the measurement value through off-center (eccentric) loading. The corner load increases with the weight of the load and its removal from the center of the pan support.

☐ Triangular☒ Rectangular☐ Circle

Test weight : 50 and 100

Unit : g

Range	81	200
Position	Reading of indicator	Reading of indicator
1	50.00000	100.0000
2	49.99997	100.0000
3	49.99993	99.9999
4	49.99999	100.0000
5	50.00003	99.9999
6	50.00000	100.0000
Maximum difference	0.00007	0.0001



## Condition of Calibration

1. Calibration Method : WI-CL-004 base on UKAS LAB 14: 2019

2. This result of calibration was found accurate as shown on date and place of calibration only.

3. Condition of Calibration item: Normal

4. This certification is traceable to the International System of Unit maintained at : -

- Through the reference standard laboratory of Asia Medical and Agricultural Laboratory and Research Center Public

Company Limited (Instrument number 1).

5. Reference standard instrument :

Instrument	Class	ID No.	Certificate No.	Due Date
1) STANDARD WEIGHT 1 mg to 1 kg	E2	LB-WE-78	25-134074	18 July 2026

6. Ambient conditions	Min	Max
Temperature (°C)	22.9	24.3
Relative Humidity (%Rh)	45.4	47.7
Air pressure (hPa)	1007.2	1011.0

- End of Report -

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**ANALYTICAL BALANCE**

**Model : SECURA224-1S**

**Serial No. : 0036707137**



Certificate No. : 24-164695  
Sample Code : 24-67405-005

## CERTIFICATE OF CALIBRATION

Customer : EASTERN THAI CONSULTING 1992 CO., LTD.  
683 Moo 11, Sukhapibarn 8 Rd, Nongkham,  
Sriracha, Chonburi 20230

Location of Calibration : EASTERN THAI CONSULTING 1992 CO., LTD.  
(Analytical Balance Room)

Equipment : ELECTRONIC BALANCE

Manufacturer : SARTORIUS

Model : SECURA224-1S

Serial No. : 0036707137

ID No. : LABE 05/2

Date of Receipt : 19 December 2024

Date of Calibration : 19 December 2024

Calibrated by Mr. Thanadol Pholthep  
Scientist

Approved by (Mr. Nuttaput Timula)  
Signed for Director

Issue date 20 December 2024

The uncertainties are for a confidence probability of approximately 95%.

The calibration result is applied only to the above calibrated item and was found accurate as shown on date and place of calibration only.

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Certificate No. : 24-164695  
Sample Code : 24-67405-005

## REPORT OF CALIBRATION

Equipment : ELECTRONIC BALANCE  
Manufacturer : SARTORIUS  
Model : SECURA224-1S  
Capacity : Max 220 g  
Resolution : 0.0001 g  
Serial No. : 0036707137  
ID No. : LABE 05/2

## Result of Calibration

## 1. Test weight and repeatability of reading

Repeatability is a measure of the ability of a balance to supply the same result in repetitive weighings with one and the same load under the same measurement condition. The measurement of the repeatability must include both the balance specifications and the ambient (vibration, fluctuating air current/temperature/humidity, etc.) Operator handling of the balance is also included in the standard deviation.

Unit : g	Range : 220	<input type="checkbox"/> Before adjustment	<input type="checkbox"/> After adjustment
<input checked="" type="checkbox"/> No adjustment	Nominal value	100	200
<input type="checkbox"/> Adjustment	Standard weight	100.000016	200.000028
	Average reading of indicator	100.0000	200.0000
	Standard deviation	0.00005	0.00005

Unit : -	Range : -	<input type="checkbox"/> Before adjustment	<input type="checkbox"/> After adjustment
<input type="checkbox"/> No adjustment	Nominal value	-	-
<input type="checkbox"/> Adjustment	Standard weight	-	-
	Average reading of indicator	-	-
	Standard deviation	-	-

Certificate No. : 24-164695  
Sample Code : 24-67405-005

Page 3 of 4

## REPORT OF CALIBRATION

## Result of Calibration

## 2. Sensitivity or value of a scale division

Change in the output variable of a measuring instrument divided by the associated change in the input variable.

Unit : g

Range : 220

Range :

Test Point	Sensitivity, S	Test Point	Sensitivity, S
0	0.9998		
100	0.9998		
200	0.8998		

## 3. Departure of indication from nominal value, Linearity

Unit : g

Nominal Value	Standard Value	Average Reading of Indicator	Correction Value	Expanded Uncertainty	Coverage Factor (k)
Unload	0.0000000	0.0000	0.0000	0.000094	2.01
0.01	0.0100015	0.0100	0.0000	0.000094	2.01
0.1	0.1000064	0.1000	0.0000	0.000094	2.01
1	1.0000017	1.0000	0.0000	0.000095	2.01
2	2.0000049	2.0000	0.0000	0.000095	2.01
5	5.0000012	5.0000	0.0000	0.000096	2.01
10	9.999992	10.0000	0.0000	0.000097	2.01
20	20.000042	20.0000	0.0000	0.00010	2.01
50	50.000046	50.0000	0.0000	0.00012	2.01
100	100.000016	100.0000	0.0000	0.00016	2.00
200	200.000028	200.0000	0.0000	0.00028	2.00

The result expanded uncertainty of measurement  $U$  is stated as the standard uncertainty of measurement multiplied by the coverage factor  $k$ , which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with UKAS M3003.

Certificate No. : 24-164695  
Sample Code : 24-67405-005

Page 4 of 4

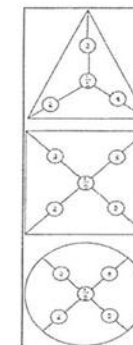
## REPORT OF CALIBRATION

## Result of Calibration :

## 4. Eccentric or off-centre loading

Deviation of the measurement value through off-center (eccentric) loading. The corner load increases with the weight of the load and its removal from the center of the pan support.

Weighing pan	<input checked="" type="radio"/> Circle <input type="radio"/> Triangular <input type="radio"/> Rectangular	Test weight : 100 Unit : g
Range	220	
Position	Reading of indicator	Reading of indicator
1	99.9999	-
2	100.0001	-
3	99.9999	-
4	99.9998	-
5	99.9999	-
6	99.9999	-
Maximum difference	0.0002	-



## Condition of Calibration

1. Calibration Method : WI-CL-004 base on UKAS LAB 14: 2019
2. This result of calibration was found accurate as shown on date and place of calibration only.
3. Condition of Calibration item: Normal
4. This certification is traceable to the International System of Unit maintained at :  
- Through the reference standard laboratory of Asia Medical and Agricultural Laboratory and Research Center Public Company Limited (Instrument number 1).
5. Reference standard instrument :

6. Ambient conditions	Min	Max
Temperature (°C)	25.0	25.4
Relative Humidity (%Rh)	39.8	41.0
Air pressure (hPa)	1011.0	1012.1

Instrument	Class	ID No.	Certificate No.	Due Date
1) STANDARD WEIGHT 1 mg to 1 kg	E2	LB-WF-78	24-097116	02 August 2025

- End of Report -


**ATOMIC ABSORPTION SPECTROPHOTOMETER**

**Model : Pin AAcle 900F**

**Serial No. : PFBS22080801**

### PinAAcle 900F Preventive Maintenance (PM)

Company Name:	EASTERN THAI CONSULTING		
Address (Instrument Location):	683 Moo 11 Nong Kham, Sri Racha, Chonburi 20230		
Serial Number:	PFBS2208081	PM Number:	1/2
Customer Name (if applicable):	K.Channarong	Telephone Number:	096-8761232
Customer Support Engineer Name:	Prasit	Service Order Number:	WO-03149105
Date PM Performed: (DD-MMM-YYYY)	22 APR 2025	Next PM Due Date: (DD-MMM-YYYY)	22 OCT 2025
Standard Labor Hours to Complete PM :		5 hours	

Part Number	Release	Publication Date	
09370145 Rev.9	A	January 2018	

#### Scope

The purpose of this PM is to ensure the continued functionality of the PinAAcle 900F by inspecting and replacing any worn or damaged parts. This service should only be performed by a trained representative of PerkinElmer.

The customer should save their method before the PM begins.

#### General Instructions:

The customer must provide the engineer operational data to demonstrate recent instrument performance prior to starting the PM.

Always check with the customer before making any changes that may affect the customer's analysis or calibration, including a current back-up of system software and/or data files.

The completed document should be signed by an authorized PerkinElmer and customer representative and left with the customer.

Update the PM sticker and instrument logbook as required.

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### Component List

Component / Specific Model	Serial #	Configuration Notes
PinAAcle 900F	PFBS2208081	Syngslisx Ver 5.0.1.2029

### Parts Lists

Parts Included with the PM		
Part Number (if applicable)	Description	Quantity
B0501696	Fan Filters	1
N3160156	O-Ring Kits for Sampling Introduction ( Stainless Steels Nebulizer)	N/A
N3160157	O-Ring Kits for Sampling Introduction ( Plastic Nebulizer)	2
N9301714	Replacement Acetylene Filter Cartridge	2
TH001022	Replacement Air Filter Cartridge	1

#### Additional Reagents and Standards Required for PM

Part Number (if applicable)	Description	Quality	Batch/Lot #	Expired Date (MM/YY)
N9300183	1000 mg/L Copper Standard	AR	26-87CUY1	APR-2025

#### Additional Reagents and Standards Required for PM (Customer Support Solution)

Part Number (if applicable)	Description	Quantity	Batch/Lot #	Expiration Date (MM/YY)
N/A	DI Water	250 ml.	AR	AR
N/A	0.5% HNO <sub>3</sub>	250 ml.	AR	AR

**COPY**

Additional Tools Required for PM			
Part Number (if applicable)	Description	Quantity	Serial #
N1013000	0.2A Neutral density filter	1	MG0-135
N1013002	1.0A Neutral density filter	1	MG2-258
03030997	System 2 EDL Driver	1	030309-97E
N3050605	As System 2 EDL	1	17986
N3050121	Cu Lumina HCL	1	000003793D12
N3050109	Ba Lumina HCL	1	041123-010120
N3050139	K Lumina HCL	1	0000037B8E1D
N3050152	NI Lumina HCL	1	

## Procedure Checklist

Use (✓) to check off those steps in the checklist that have been completed.

### 1. General:

- ☒ Review the instrument performance with the customer and document any recent problems.
- ☒ Inspect the customer log book and make any appropriate PM entries.
- ☒ Perform general inspection of system for cleanliness.

### 2. PC Instrument Software:

- ☒ Instrument Software user files/databases archived, packed, and/or deleted as needed.

### 3. Mechanical:

- ☒ Inspect and clean all fans and filters. Replace filters if necessary
- ☒ Inspect all gas lines for leaks and/or wear. Replace if needed.
- ☒ Clean exterior of the instrument.
- ☒ Inspect the burner head, burner chamber, and nebulizer. Clean if needed as stated in the Hardware Guide.
- ☒ Check burner head dimensions with the feeler gauge as stated in the Hardware Guide in the Maintenance chapter section on cleaning the burner head and checking sloth width. Replace if out of specification
- ☒ Check the condition of the end cap, burner head, and nebulizer O-rings. Replace if necessary.
- ☒ Check the drain system for signs of wear. Replace worn or damaged parts.
- ☒ Visually check for proper flame conditions when igniting the Air-C2H2 and N2O-C2H2 flames (if applicable).

### 4. Electrical:

- ☒ Inspect PC boards. Clean if necessary.
- ☒ Carefully check all internal and external cable connections.
- ☒ Check instrument firmware revisions upgrade to current levels (if necessary)
- ☒ Run Diagnostics Test within the Advanced function of the Spectrometer page. Check the results in the service log folder in the Spectrometer BM Log Viewer.

### 5. Optics:

- ☒ Inspect and clean the sample compartment windows, if needed.
- ☒ Inspect optics. Clean or replace if necessary,

### 6. Gasses:

- ☒ Verify that the Gasses supplied to the instrument are within the pressure and purity specifications found in the PinAAcle 900 Series Pre-installation Checklist SDB.
- ☒ Verify that the acetylene filter and air filter element is dry. Replace if necessary.

## 7. Flame Interlock Check:

Description: Check to ensure that all safety interlocks are closed.

Parameter	Specification	Test Results	Pass/Fail
Flame Sensor	Air/C <sub>2</sub> H <sub>2</sub> Flame correctly shuts down	Active	Passed
Drain Sensor	Air/C <sub>2</sub> H <sub>2</sub> Flame correctly shuts down	Active	Passed
Nebulizer Sensor	Air/C <sub>2</sub> H <sub>2</sub> Flame correctly shuts down	Active	Passed
C <sub>2</sub> H <sub>2</sub> Pressure Sensor	Air/C <sub>2</sub> H <sub>2</sub> Flame correctly shuts down	Active	Passed
Air Pressure Sensor	Air/C <sub>2</sub> H <sub>2</sub> Flame correctly shuts down	Active	Passed
Burner Head Sensor	Choosing Nitrous Oxide as the oxidant should trigger an interlock shuts down	Active	Passed

## 8. After PM Performance tests:

### 8.1 Detector Linearity with Barium

Description: Ensures that the detector is linear in the Visible Range.

Parameter	Specification	Certificate Value at 553.6 nm (Abs.)	Test Results	Pass/Fail
1.0 A ND Filter	± 5% from Cert.	0.9995	0.9994	Passed
0.2 A ND Filter	± 5% from Cert.	0.1936	0.1874	Passed

### 8.2 Baseline Noise at 1.0 Absorbance with Barium

Description: Ensures that a high absorbance will not produce excessive noise.

Parameter	Specification	Results	Pass/Fail
Standard Deviation	≤ 0.010	0.0015	Passed

### 8.3 AA Baseline Noise with Copper

Description: Check baseline noise.

Parameter	Specification	Results	Pass/Fail
Standard Deviation	≤ 0.001	0.0001	Passed

COPY

### 8.4 D<sub>2</sub> Background Compensation with Copper

Description: Verifies the instruments ability to compensate for Background absorption.

Parameter	Specification	Results	Pass/Fail
Standard Deviation	≤ 0.010	0.0013	Passed

### 8.5 AA-BG Baseline Noise with Copper

Description: Ensures that background correction does not produce excessive noise.

Parameter	Specification	Results	Pass/Fail
Standard Deviation	≤ 0.005	0.0001	Passed

### 8.6 AA-BG Baseline Noise with Arsenic

Description: Ensures that background correction does not produce excessive noise at a low wavelength.

Parameter	Specification	Results	Pass/Fail
Standard Deviation	≤ 0.005	0.0001	Passed

### 8.7 Flame Sensitivity

Description: Instrument Sensitivity checked against Copper standard.

Standard Copper Sensitivity	Specification	Results (Abs.)	Pass/Fail
5 mg/L Sensitivity SS Neb (if applicable)	> 0.250 Abs.	N/A	Passed
2 mg/L Sensitivity HS Neb (if applicable)	> 0.250 Abs.	0.3402	Passed

## 10. Review:

- ☒ Review with the customer PM work performed.
- ☒ Review with the customer routine maintenance procedures.
- ☒ Discuss recommended customer supplied materials to have on hand.
- ☒ Attach PM sticker.

COPY

### Additional Comments

Additional Comments Regarding the PM

### Review

*The preventive maintenance checks and if applicable performance tests for PinAAcle 900F have been completed.*

*This PinAAcle 900F Passes ☒ Fails ☐ the preventive maintenance.*

Review of Preventive Maintenance:

Authorized PerkinElmer Representative:

Rasit

Date:

22 APR 2025

(DD-MMM-YYYY)

Authorized Customer Representative:

621025524

Date:

22 APR 2025

(DD-MMM-YYYY)

COPY


**ATOMIC ABSORPTION SPECTROPHOTOMETER**

**Model : Pin AAcle 900F**

**Serial No. : PFBS22080801**

### PinAAcle 900F Preventive Maintenance (PM)

Company Name:	Eastern Thai Consulting		
Address (Instrument Location):	683 Moo 11 Nong Kham, Sri Racha, Chonburi 20230		
Serial Number:	PFBS22080801	PM Number:	2/2
Customer Name (if applicable):	K.Thamonwan	Telephone Number:	096-8761232
Customer Support Engineer Name:	Prasit	Service Order Number:	WO-06379055
Date PM Performed: (DD-MMM-YYYY)	20 OCT 2025	Next PM Due Date: (DD-MMM-YYYY)	20 APR 2026
Standard Labor Hours to Complete PM :		5 hours	

Part Number	Release	Publication Date	
09370145 Rev.9	A	January 2018	

#### Scope

The purpose of this PM is to ensure the continued functionality of the PinAAcle 900F by inspecting and replacing any worn or damaged parts. This service should only be performed by a trained representative of PerkinElmer.

The customer should save their method before the PM begins.

#### General Instructions:

The customer must provide the engineer operational data to demonstrate recent instrument performance prior to starting the PM.

Always check with the customer before making any changes that may affect the customer's analysis or calibration, including a current back-up of system software and/or data files.

The completed document should be signed by an authorized PerkinElmer and customer representative and left with the customer.

Update the PM sticker and instrument logbook as required.

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### Component List

Component / Specific Model	Serial #	Configuration Notes
PinAAcle 900F	PFBS22080801	Syngistix Ver 5.0.1.2029

### Parts Lists

Parts Included with the PM		
Part Number (if applicable)	Description	Quantity
B0501696	Fan Filters	N/A
N3160156	O-Ring Kits for Sampling Introduction ( Stainless Steels Nebulizer)	N/A
N3160157	O-Ring Kits for Sampling Introduction ( Plastic Nebulizer)	N/A
N9301714	Replacement Acetylene Filter Cartridge	N/A
TH001022	Replacement Air Filter Cartridge	N/A

Additional Reagents and Standards Required for PM				
Part Number (if applicable)	Description	Quality	Batch/Lot #	Expired Date (MM/YY)
N9300183	1000 mg/L Copper Standard	AR	27-156CUY1	SEP-2026

Additional Reagents and Standards Required for PM (Customer Support Solution)				
Part Number (if applicable)	Description	Quantity	Batch/Lot #	Expiration Date (MM/YY)
N/A	DI Water	250 ml.	AR	AR
N/A	0.5% HNO <sub>3</sub>	250 ml.	AR	AR

#### Additional Tools Required for PM

Part Number (If applicable)	Description	Quantity	Serial #
N1013000	0.2A Neutral density filter	1	MG0-704
N1013002	1.0A Neutral density filter	1	MG2-891
03030997	System 2 EDL Driver	1	030309-97E
N3050605	As System 2 EDL	1	17986
N3050121	Cu Lumina HCL	1	000003793D12
N3050109	Ba Lumina HCL	1	041123-010120
N3050139	K Lumina HCL	1	000003788E1D
N3050152	Ni Lumina HCL	1	

#### Procedure Checklist

Use (✓) to check off those steps in the checklist that have been completed.

##### 1. General:

- ☒ Review the instrument performance with the customer and document any recent problems.
- ☒ Inspect the customer log book and make any appropriate PM entries.
- ☒ Perform general inspection of system for cleanliness.

##### 2. PC Instrument Software:

- ☒ Instrument Software user files/databases archived, packed, and/or deleted as needed.

##### 3. Mechanical:

- ☒ Inspect and clean all fans and filters. Replace filters if necessary
- ☒ Inspect all gas lines for leaks and/or wear. Replace if needed.
- ☒ Clean exterior of the instrument.
- ☒ Inspect the burner head, burner chamber, and nebulizer. Clean if needed as stated in the Hardware Guide.
- ☒ Check burner head dimensions with the feeler gauge as stated in the Hardware Guide in the Maintenance chapter section on cleaning the burner head and checking sloth width. Replace if out of specification
- ☒ Check the condition of the end cap, burner head, and nebulizer O-rings. Replace if necessary.
- ☒ Check the drain system for signs of wear. Replace worn or damaged parts.
- ☒ Visually check for proper flame conditions when igniting the Air-C2H2 and N2O-C2H2 flames (if applicable).

##### 4. Electrical:

- ☒ Inspect PC boards. Clean if necessary.
- ☒ Carefully check all internal and external cable connections.
- ☒ Check instrument firmware revisions upgrade to current levels (if necessary)
- ☒ Run Diagnostics Test within the Advanced function of the Spectrometer page. Check the results in the service log folder in the Spectrometer BM Log Viewer.

##### 5. Optics:

- ☒ Inspect and clean the sample compartment windows, if needed.
- ☒ Inspect optics. Clean or replace if necessary,

##### 6. Gasses:

- ☒ Verify that the Gasses supplied to the instrument are within the pressure and purity specifications found in the PinAAcle 900 Series Pre-installation Checklist SDB.
- ☒ Verify that the acetylene filter and air filter element is dry. Replace if necessary.

## 7. Flame Interlock Check:

Description: Check to ensure that all safety interlocks are closed.

Parameter	Specification	Test Results	Pass/Fail
Flame Sensor	Air/C <sub>2</sub> H <sub>2</sub> Flame correctly shuts down	Active	Passed
Drain Sensor	Air/C <sub>2</sub> H <sub>2</sub> Flame correctly shuts down	Active	Passed
Nebulizer Sensor	Air/C <sub>2</sub> H <sub>2</sub> Flame correctly shuts down	Active	Passed
C <sub>2</sub> H <sub>2</sub> Pressure Sensor	Air/C <sub>2</sub> H <sub>2</sub> Flame correctly shuts down	Active	Passed
Air Pressure Sensor	Air/C <sub>2</sub> H <sub>2</sub> Flame correctly shuts down	Active	Passed
Burner Head Sensor	Choosing Nitrous Oxide as the oxidant should trigger an interlock shuts down	Active	Passed

## 8. After PM Performance tests:

### 8.1 Detector Linearity with Barium

Description: Ensures that the detector is linear in the Visible Range.

Parameter	Specification	Certificate Value at 553.6 nm (Abs.)	Test Results	Pass/Fail
1.0 A ND Filter	± 5% from Cert.	0.9995	0.9641	Passed
0.2 A ND Filter	± 5% from Cert.	0.1886	0.1755	Passed

### 8.2 Baseline Noise at 1.0 Absorbance with Barium

Description: Ensures that a high absorbance will not produce excessive noise.

Parameter	Specification	Results	Pass/Fail
Standard Deviation	≤ 0.010	0.0013	Passed

### 8.3 AA Baseline Noise with Copper

Description: Check baseline noise.

Parameter	Specification	Results	Pass/Fail
Standard Deviation	≤ 0.001	0.0001	Passed

**COPY**

### 8.4 D<sub>2</sub> Background Compensation with Copper

Description: Verifies the instruments ability to compensate for Background absorption.

Parameter	Specification	Results	Pass/Fail
Standard Deviation	≤ 0.010	0.0021	Passed

### 8.5 AA-BG Baseline Noise with Copper

Description: Ensures that background correction does not produce excessive noise.

Parameter	Specification	Results	Pass/Fail
Standard Deviation	≤ 0.005	0.0002	Passed

### 8.6 AA-BG Baseline Noise with Arsenic

Description: Ensures that background correction does not produce excessive noise at a low wavelength.

Parameter	Specification	Results	Pass/Fail
Standard Deviation	≤ 0.005	0.0002	Passed

### 8.7 Flame Sensitivity

Description: Instrument Sensitivity checked against Copper standard.

Standard Copper Sensitivity	Specification	Results (Abs.)	Pass/Fail
5 mg/L Sensitivity SS Neb (if applicable)	> 0.250 Abs.	N/A	Not Applicable
2 mg/L Sensitivity HS Neb (if applicable)	> 0.250 Abs.	0.3218	Passed

## 10. Review:

- ☒ Review with the customer PM work performed.
- ☒ Review with the customer routine maintenance procedures.
- ☒ Discuss recommended customer supplied materials to have on hand.
- ☒ Attach PM sticker.

**COPY**

## Additional Comments

### Additional Comments Regarding the PM

## Review

*The preventive maintenance checks and if applicable performance tests for PinAAcle 900F have been completed.*

*This PinAAcle 900F Passes ☒ Fails ☐ the preventive maintenance.*

### Review of Preventive Maintenance:

Authorized PerkinElmer Representative:

Rasit

Date:

20 Oct 2025

(DD-MMM-YYYY)

Authorized Customer Representative:

00000000

Date:

20 OCT 2025

(DD-MMM-YYYY)

**COPY**

**AUTOCLAVE**

**Model : FLS-1000**

**Serial No. : 55169083**

NSC-TISI-TIS17025  
CALIBRATION 0152

Page 1 of 2

## CERTIFICATE OF CALIBRATION

Certificate No. : 25-118068

Sample Code : 25-51697-004

Customer : EASTERN THAI CONSULTING 1992 CO., LTD.

683 Moo 11, Sukhapiarn 8 Rd., Nongkham,  
Sriracha, Chonburi 20230Location of Calibration : EASTERN THAI CONSULTING 1992 CO., LTD.  
(Autoclave Room)

Equipment : Autoclave

Manufacturer : TOMY

Model : FLS-1000

Serial No. : 55169083

ID No. : LABE 43/2

Date of Receipt : 25 June 2025

Date of Calibration : 25 June 2025

## Condition of Calibration

1. Environment
- 1.1 Ambient temperature : Maximum 32.0 °C ; Minimum 29.7 °C
- 1.2 Relative humidity : Maximum 68.1 % ; Minimum 65.2 %
- 1.3 Line voltage supplied : Maximum 222.3 VAC ; Minimum 219.3 VAC

## 2. Calibration method

The calibration use in-house method; WI-CL-025 based on BS 2646-1: 2021

## 3. Reference standard instrument

Instrument	Model	ID No.	Certificate No.	Due Date
3.1 Temperature Data Logger	HiTemp 140	LB-TEM-25	25-034993	12 March 2026
3.2 Temperature Data Logger	HiTemp 140	LB-TEM-26	25-034994	12 March 2026
3.3 Temperature Data Logger	HiTemp 140	LB-TEM-27	25-034995	12 March 2026

## 4. This certificate is traceable to the international system of unit (SI Unit).

The measurement is traceable to Asia Medical and Agricultural Laboratory and Research Center Public Company Limited.

## 5. This result of calibration was found accurate as shown on date and place of calibration only.

## 6. Condition of calibration item : Normal

Calibrated by : Mr. Pattanapong Pulngern  
Scientist

Approved by

(Mr. Somchai Neampunt)

Signed for Director

Issue date : 26 June 2025

The uncertainties are for a confidence probability of approximately 95%.

The calibration result is applied only to the above calibrated item and was found accurate as shown on date and place of calibration only.

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Phlabphla, Wang Thonglang, Bangkok 10310  
FM-CL-114TEL 02-516-2422  
FAX 02-516-6949  
Rev 01CONTACT@AMARC.CO.TH  
WWW.AMARC.CO.TH  
Effective Date: 15/10/21

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NSC-TISI-TIS17025  
CALIBRATION 0152

Page 2 of 2

## REPORT OF CALIBRATION

Certificate No. : 25-118068

Sample Code : 25-51697-004

## Results of Calibration

Resolution : 1 °C

## 1. Reporting of Temperature

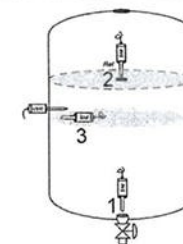
Calibration point (°C)	UUC* setting (°C)	UUC* reading		Measured Temperature at each positions (°C)			Uncertainty ± (°C)	Coverage factor k
		Temperature (°C)	Pressure ( MPa )	# 1	# 2 <sup>Ref</sup>	# 3		
121	121	122	0.11	121.75	121.76	121.77	0.63	2.00

## 2. Characterization results

Calibration Point (°C)	Stability ± (°C)	Uniformity (°C)	Overall Variation (°C)
121	0.03	0.03	0.06

## Notes

1. UUC\* = Unit Under Calibration
2. The quoted uncertainty includes "Stability of chamber and loading effect in chamber at 20% of uniformity".
3. Uniformity - the maximum difference of measured temperatures at any sensors and the measured temperature at the reference location which are observed at the same time.
4. Stability - one-half of the greatest maximum difference of measured temperatures at any one sensor.
5. Overall variation - the difference of the maximum and the minimum measured temperatures throughout observation time.
6. UUC\* reading - the average reading of indicating device that forms the integral part of the autoclave.
7. Calibration results without adjustment.

Figure: Example of sensor  
installation Positions

- Standard 1 - In the chamber drain, within 100 mm.
- Standard 2 - In the upper half of the chamber.
- Standard 3 - Attached to the load temperature probe, within 15 mm.

The result expanded uncertainty of measurement  $U$  is stated as the standard uncertainty of measurement multiplied by the coverage factor  $k$ , which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with UKAS M3003

- End of Report -

**COPY**

361 Soi Ladprao 122, Ladprao Road,  
Phlabphla, Wang Thonglang, Bangkok 10310  
FM-CL-010TEL 02-516-2422  
FAX 02-516-6949  
Rev 09CONTACT@AMARC.CO.TH  
WWW.AMARC.CO.TH  
Effective Date: 15/10/21

**BAROMETER**

**Serial No. : N/A[S41020124]**



# CALIBRATION LABORATORY Co., LTD.

2/10-11,14,55 Soi Prasert Manukit 29 Yaek 4, Prasert Manukit Rd., Ladphrao, Bangkok 10230  
Tel: 02-578-0353-4 Fax: 02-578-2672 www.cal-laboratory.com E-mail: sale@cal-laboratory.com



## CERTIFICATE OF CALIBRATION

### FOR

NOMENCLATURE : BAROMETER  
MANUFACTURER : BARJO  
MODEL / TYPE : N/A  
SERIAL NO. : N/A[S41020124]  
CLID. NO. : 212500828  
JOB CONTROL NO. : 250507051351  
CALIBRATION SERVICE : ☒ IN-LABORATORY ☐ ON-SITE

CUSTOMER : EASTERN THAI CONSULTING 1992 CO., LTD.  
683 MOO 11, SUKHAPIBARN 8 RD,  
NONGKHAM, SRIRACHA, CHONBURI 20230

DATE OF RECEIVED : 07 May 2025

DATE OF ISSUED : 09 May 2025

The report of calibration shall not be reproduced except in full without approval of the Calibration Laboratory Co., Ltd.

Calibrated By : Sittipong Pimdee  
Calibration Engineer

Approved By : Mongkol Yotsoontorn  
Authorized Signatory  
09 May 2025



This Calibration Certificate documents the traceability to national standards, which realize the units of measurement according to the International System of Units (SI)

Certificate No. Q25051351

F3-011-05/12-23



# CALIBRATION LABORATORY Co., LTD.

2/10-11,14,55 Soi Prasert Manukit 29 Yaek 4, Prasert Manukit Rd., Ladphrao, Bangkok 10230  
Tel: 02-578-0353-4 Fax: 02-578-2672 www.cal-laboratory.com E-mail: sale@cal-laboratory.com



## REPORT OF CALIBRATION

### FOR

NOMENCLATURE : BAROMETER  
MANUFACTURER : BARJO  
MODEL / TYPE : N/A  
SERIAL NO. : N/A[S41020124]  
DATE OF CALIBRATION : 08 May 2025

#### ENVIRONMENT CONDITIONS :

Temperature :  $(23 \pm 2) ^\circ\text{C}$

Relative Humidity :  $(55 \pm 10) \% \text{RH}$

#### PROCEDURE USED :

This instrument was calibrated under procedure No. CLC-CPPP-08 according to DKD-R 6-1 as calibration guidelines.

The calibration was performed by direct measurement with Reference Pressure Monitor which maintained by the Calibration Laboratory Co., Ltd.

#### REFERENCE STANDARD USED :

Reference Pressure Monitor, Fluke Model RPM3 S/N. 829.

#### TRACEABILITY :

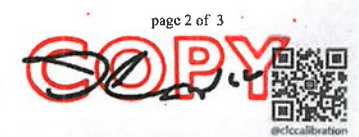
The measurements are traceable to International System of Units (SI), through National Institute of Metrology (Thailand).  
Certificate No. MP-0245-24, Due Date 11 November 2025.

#### UNCERTAINTY :

The reported uncertainty is based on a standard uncertainty multiplied by coverage factor of  $k = 2$ . It has been evaluated according to the "Calibration of Pressure Gauges (DKD-R 6-1)" which provides a level of confidence approximately 95%.

Certificate No. Q25051351

F3-011-05/12-23





# CALIBRATION LABORATORY CO., LTD.

2/10-11,14,55 Soi Prasert Manukit 29 Yaek 4, Prasert Manukit Rd., Ladphrao, Bangkok 10230  
Tel. 02-570-0353-4 Fax 02-578-2672 www.cal laboratory.com E-mail: snie@cal laboratory.com



**CONDITION OF CALIBRATION ITEM : RECEIVED IN GOOD OPERATIONAL CONDITION**

**MEASUREMENT RESULTS : ( X ) without adjustment ( ) adjustment**

The DUC was exercised by applying a known pressure from its zero to full scale 1 times. Then 2 series of known gauge pressure were applied. The STD reading were recorded and the means value were reported in the table below.

## CALIBRATION DATA

### CORRECTION OF PRESSURE

DUC Test point ( hPa )	STD Reading ( hPa )		Correction ( hPa )	
	Up	Down	Up	Down
990	990.7	990.7	+0.7	+0.7
1000	1000.7	1000.8	+0.7	+0.8
1010	1010.8	1010.8	+0.8	+0.8
1020	1020.8	1020.9	+0.8	+0.9
1030	1030.9	1030.9	+0.9	+0.9

Uncertainty of measurement  $\pm 0.7$  hPa

Transmitting fluid : Air.

Note. The Scope of Accredited ANAB Certificate No. ACDM-2814 Version 015 Page 44 of 68

**This report is valid for the above stated instrument/s only.**

### End of Certificate ###

Certificate No. Q25051351

F3-011-05/12-23

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@clccalibration

**BOD INCUBATOR**

**Model : LABE 19/3**

## CERTIFICATE OF CALIBRATION

Page 1 of 3

Certificate No. : 25-118065

Sample Code : 25-51697-001

Customer : EASTERN THAI CONSULTING 1992 CO., LTD.  
683 Moo 11, Sukhapibarn 8 Rd., Nongkham,  
Sriracha, Chonburi 20230

Location of Calibration : EASTERN THAI CONSULTING 1992 CO., LTD.  
(Laboratory)

Equipment : Temperature controlled enclosures (Incubator)

Manufacturer : พิกัด เครื่องเย็น Model : N/A

Serial No. : S43020027 ID No. : LABE 19/3

Date of Receipt : 25 June 2025 Date of Calibration : 25 June 2025

## Condition of Calibration

1. Environment
- |                           |   |         |           |   |         |           |
|---------------------------|---|---------|-----------|---|---------|-----------|
| 1.1 Ambient temperature   | : | Maximum | 34.6 °C   | : | Minimum | 32.2 °C   |
| 1.2 Relative humidity     | : | Maximum | 64.0 %    | : | Minimum | 58.7 %    |
| 1.3 Line voltage supplied | : | Maximum | 224.5 VAC | : | Minimum | 223.8 VAC |

## 2. Calibration method

TLAS-G-20: Guidelines for calibration and checks of temperature controlled enclosures.

## 3. Reference standard instrument

Instrument	ID No.	Certificate No.	Due Date
Data Acquisition With Sensor (RTD-P1100)	LB-DA-08 (RTD-411 to RTD-419)	25-082913	18 May 2026

## 4. This certificate is traceable to the international system of unit (SI Unit).

The measurement is traceable to Asia Medical and Agricultural Laboratory and Research Center Public Company Limited.

## 5. This result of calibration was found accurate as shown on date and place of calibration only.

## 6. Condition of calibration item : Normal

Calibrated by

Mr. Pattanapong Pulngern  
Scientist

Approved by

(Mr. Somchai Neampunt)  
Signed for Director

Issue date

26 June 2025

The uncertainties are for a confidence probability of approximately 95%.

The calibration result is applied only to the above calibrated item and was found accurate as shown on date and place of calibration only.

This Certificate is issued in accordance with the conditions of accreditation granted by the Thai Laboratory Accreditation scheme which has assessed the measurement capability of the laboratory and its traceability to recognized national standards and to the unit of measurement realized at the corresponding national standards laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the Asia Medical and Agricultural Laboratory and Research Center Public Company Limited (AMARC).

## REPORT OF CALIBRATION

Page 2 of 3

Certificate No. : 25-118065

Sample Code : 25-51697-001

## Results of Calibration

Resolution : 0.1 °C

## 1. Reporting of Temperature

Calibration point (°C)	UUC* setting (°C)	UUC* reading (°C)	Measured temperature at each positions (°C)									Uncertainty ± (°C)	Coverage factor k
			# 1	# 2	# 3	# 4	# 5	# 6	# 7	# 8	# 9 <sup>ref</sup>		
20	20.0	20.0	20.61	20.42	19.97	19.90	20.29	20.47	20.25	19.96	20.18	0.24	2.00

## 2. Characterization results

Calibration point (°C)	Stability ± (°C)	Uniformity (°C)	Overall variation (°C)
20	0.09	0.46	0.89

## Notes

- UUC\* = Unit Under Calibration



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NSC-TISI-TIS17025  
CALIBRATION 0152

Page 3 of 3

## REPORT OF CALIBRATION

Certificate No. : 25-118065

Sample Code : 25-51697-001

## Results of Calibration

## Notes

## 1. Sensor installation locations

1.1 All sensors at any corners or walls should be positioned  
5 cm (a x b x c) from the wall.

1.2 The reference sensor is preferably located of the geometric center  
of the chamber.

## 2. Interior dimensions approx of chamber :

W = 70 cm ; D = 55 cm ; H = 140 cm

## 3. Air valve or fresh air level : Off

## 4. Fan level : Open

5. The quoted uncertainty includes "Stability of chamber and loading effect  
in chamber at 20% of uniformity".6. Uniformity - the maximum difference of measured temperatures at any sensors and the measured temperature at the reference  
location which are observed at the same time.

## 7. Stability - one-half of the greatest maximum difference of measured temperatures at any one sensor.

## 8. Overall variation - the difference of the maximum and the minimum measured temperatures throughout observation time.

## 9. UUC\* reading - the average reading of indicating device that forms the integral part of the enclosure.

## 10. Calibration results without adjustment.

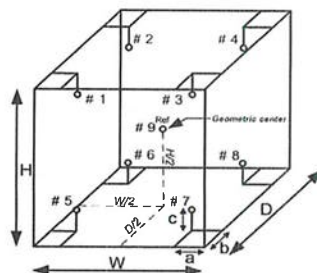


Figure: Example of sensor  
installation Positions

The result expanded uncertainty of measurement  $U$  is stated as the standard uncertainty of measurement multiplied by the coverage factor  $k$ , which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with UKAS M3003.

- End of Report -

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**BOD INCUBATOR**

**Model : LABE 19/5**



Page 1 of 3

## CERTIFICATE OF CALIBRATION

Certificate No. : 25-042561

Sample Code : 25-18090-002

Customer : EASTERN THAI CONSULTING 1992 CO., LTD.  
683 Moo 11, Sukhapibarn 8 Rd., Nongkham,  
Sriracha, Chonburi 20230

Location of Calibration : EASTERN THAI CONSULTING 1992 CO., LTD.  
(Laboratory)

Equipment : Temperature controlled enclosures (Incubator)

Manufacturer : Lovibond Model : TC 445 S

Serial No. : 0520/005227 ID No. : LABE 19/5

Date of Receipt : 20 March 2025 Date of Calibration : 20 March 2025

## Condition of Calibration

1. Environment
- 1.1 Ambient temperature : Maximum 29.9 °C ; Minimum 27.5 °C
- 1.2 Relative humidity : Maximum 51.9 % ; Minimum 43.4 %
- 1.3 Line voltage supplied : Maximum 239.4 VAC ; Minimum 232.8 VAC

## 2. Calibration method

TLAS-G-20: Guidelines for calibration and checks of temperature controlled enclosures.

## 3. Reference standard instrument

Instrument	ID No.	Certificate No.	Due Date
Data Acquisition With Sensor (RTD-P100)	LB-DA-11 (RTD-148 to RTD-155, RTD-227)	24-040190	03 April 2025

## 4. This certificate is traceable to the international system of unit (SI Unit).

The measurement is traceable to Asia Medical and Agricultural Laboratory and Research Center Public Company Limited.

## 5. This result of calibration was found accurate as shown on date and place of calibration only.

## 6. Condition of calibration item : Normal

Calibrated by Mr. Pattanapong Pulngern  
Scientist

Approved by

(Mr. Somchai Neampunt)

Signed for Director

Issue date 24 March 2025

The uncertainties are for a confidence probability of approximately 95%.

The calibration result is applied only to the above calibrated item and was found accurate as shown on date and place of calibration.

This Certificate is issued in accordance with the conditions of accreditation granted by the Thai Laboratory Accreditation scheme which has assessed the measurement capability of the laboratory and its traceability to recognized national standards and to the unit of measurement realized at the corresponding national standards laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the Asia Medical and Agricultural Laboratory and Research Center Public Company Limited (AMARC).



Page 2 of 3

## REPORT OF CALIBRATION

Certificate No. : 25-042561

Sample Code : 25-18090-002

## Results of Calibration

Resolution : 0.1 °C

## 1. Reporting of Temperature

Calibration point (°C)	UUC* setting (°C)	UUC* reading (°C)	Measured temperature at each positions (°C)										Uncertainty ± (°C)	Coverage factor k
			#1	#2	#3	#4	#5	#6	#7	#8	#9 <sup>ref</sup>			
20	20.5	20.5	19.91	19.78	19.82	19.86	19.78	19.85	19.93	19.63	19.79		0.38	2.00

## 2. Characterization results

Calibration point (°C)	Stability ± (°C)	Uniformity (°C)	Overall variation (°C)
20	0.28	0.25	0.83

## Notes

- UUC\* = Unit Under Calibration



NSC-TISI-TISI17025  
CALIBRATION 0152

Page 3 of 3

## REPORT OF CALIBRATION

Certificate No. : 25-042561

Sample Code : 25-18090-002

### Results of Calibration

#### Notes

1. Sensor installation locations
  - 1.1 All sensors at any corners or walls should be positioned 5 cm (a x b x c) from the wall.
  - 1.2 The reference sensor is preferably located of the geometric center of the chamber.
2. Interior dimensions approx of chamber :  
W = 60 cm ; D = 56 cm ; H = 146 cm
3. Air valve or fresh air level : Off
4. Fan level : Open
5. The quoted uncertainty includes\* Stability of chamber and loading effect in chamber at 20% of uniformity\*.
6. Uniformity - the maximum difference of measured temperatures at any sensors and the measured temperature at the reference location which are observed at the same time.
7. Stability - one-half of the greatest maximum difference of measured temperatures at any one sensor.
8. Overall variation - the difference of the maximum and the minimum measured temperatures throughout observation time.
9. UUC\* reading - the average reading of indicating device that forms the integral part of the enclosure.
10. Calibration results without adjustment.

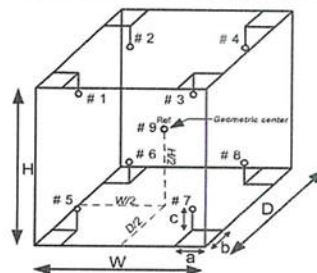


Figure: Example of sensor  
installation Positions

The result expanded uncertainty of measurement  $U$  is stated as the standard uncertainty of measurement multiplied by the coverage factor  $k$ , which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with UKAS M3003

- End of Report -

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**DO**

**Model : YSI 5000**

**Serial No. : 18E101961**



CERT.No., HS-W041G

Harikul Science Co.,Ltd.  
694 Soi Ratchadaniwet 24, Pracharatbampnen,  
Samsaennok, Huaikhwang, Bangkok 10310  
Tel: 0-2274-2456 Fax: 0-2274-2443  
Email: info@harikul.com www.harikul.com  
Certificate of Calibration

Calibration Date : 3 Jul 25

Submitted by : Eastern Thai Consulting 1992 Company Limited  
683 Moo.11 Sukaphibal8 Rd., Nongkharn, Sriracha,  
Chonburi 20230

Model : YSI 5000

S/N : 18E101961

Probe : YSI 5010

S/N : 18D100709

ID NO. : -

Air Temp ref : S/N. F8065C26

Barometric ref : S/N. F8065C26

Water Temp ref : -

ID NO. HS001

Technician : Kittipong M.

Avg Room Temp : 20 °C

Avg Water Temp : 20 °C

Air Pressure : 760.00 mmHg

Salinity : 0 ppt

#### Calibration Details

Calibration Point	100% air sat. (@20 °C, DO = 9.09 mg/l)	(status)	(status)
Measurement 1 (mg/l)	9.08	(PASS)	-
Measurement 2 (mg/l)	9.08	(PASS)	-
Measurement 3 (mg/l)	9.08	(PASS)	-
Measurement 4 (mg/l)	9.08	(PASS)	-
Measurement 5 (mg/l)	9.08	(PASS)	-
Measurement 6 (mg/l)	9.08	(PASS)	-
Measurement 7 (mg/l)	9.08	(PASS)	-
Measurement 8 (mg/l)	9.08	(PASS)	-
Measurement 9 (mg/l)	9.08	(PASS)	-
Measurement 10 (mg/l)	9.08	(PASS)	-

Mean Measurement	9.08	mg/l	-	-
Inaccuracy	0.01	mg/l	-	-

Overall Status (PASS)

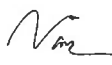
#### Manufacturer Specification

Accuracy = +/- 0.02 mg/l

- 1) This certificate is issued based on the result that are found as shown on date and place of test only.
- 2) The calibration procedure followed in accordance with Harikul Science Co., Ltd.
- 3) This result shall not be used for advertising purpose.

  
Technician Signature  
(Kittipong Maekwong)

**COPY**

  
Laboratory Manager  
(Natenapha Pisatkunchon)

**Hot Air Oven**

**Model : UM 400**

**Serial No. : 900982**

## CERTIFICATE OF CALIBRATION

Certificate No. : 24-164692

Sample Code : 24-67405-002

Customer : EASTERN THAI CONSULTING 1992 CO., LTD.  
683 Moo 11, Sukhapibarni 8 Rd, Nongkham,  
Sriracha, Chonburi 20230

Location of Calibration : EASTERN THAI CONSULTING 1992 CO., LTD.  
(Hot Lab)

Equipment : Temperature controlled enclosures (Hot air oven)

Manufacturer : Memmert Model : UM 400

Serial No. : 900982 ID No. : LABE 17/1

Date of Receipt : 19 December 2024 Date of Calibration : 19 December 2024

## Condition of Calibration

1. Environment
- |                           |           |           |           |           |
|---------------------------|-----------|-----------|-----------|-----------|
| 1.1 Ambient temperature   | : Maximum | 32.1 °C   | : Minimum | 30.4 °C   |
| 1.2 Relative humidity     | : Maximum | 48.9 %    | : Minimum | 42.4 %    |
| 1.3 Line voltage supplied | : Maximum | 226.3 VAC | : Minimum | 221.0 VAC |

## 2. Calibration method

TLAS-G-20: Guidelines for calibration and checks of temperature controlled enclosures.

## 3. Reference standard instrument

Instrument	ID No.	Certificate No.	Due Date
Data Acquisition With Sensor (RTD-Pt100)	LB-DA-11 (RTD-148 to RTD-155, RTD-227)	24-040190	03 April 2025

## 4. This certificate is traceable to the international system of unit (SI Unit).

The measurement is traceable to Asia Medical and Agricultural Laboratory and Research Center Public Company Limited.

## 5. This result of calibration was found accurate as shown on date and place of calibration only.

## 6. Condition of calibration item : Normal

Calibrated by Mr. Nophanon Anusak  
Scientist

Approved by

(Mr. Somchai Neampunt)

Signed for Director

Issue date 20 December 2024

The uncertainties are for a confidence probability of approximately 95%.

The calibration result is applied only to the above calibrated item and was found accurate as shown on date and place of calibration only.

This Certificate is issued in accordance with the conditions of accreditation granted by the Thai Laboratory Accreditation scheme which has assessed the measurement capability of the laboratory and its traceability to recognized national standards and to the unit of measurement realized at the corresponding national standards laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the Asia Medical and Agricultural Laboratory and Research Center Public Company Limited (AMARC).

## REPORT OF CALIBRATION

Certificate No. : 24-164692

Sample Code : 24-67405-002

## Results of Calibration

Resolution : 0.1 °C

## 1. Reporting of Temperature

Calibration point (°C)	UUC* setting (°C)	UUC* reading (°C)	Measured temperature at each positions (°C)									Uncertainty ± (°C)	Coverage factor <i>k</i>
			# 1	# 2	# 3	# 4	# 5	# 6	# 7	# 8	# 9 <sup>ref</sup>		
85	85.0	85.0	85.33	85.28	84.83	85.01	85.15	85.18	85.32	85.12	85.23	0.25	2.00

## 2. Characterization results

Calibration point (°C)	Stability ± (°C)	Uniformity (°C)	Overall variation (°C)
85	0.10	0.43	0.69

## Notes

- UUC\* = Unit Under Calibration

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## REPORT OF CALIBRATION

Page 3 of 3

Certificate No. : 24-164692

Sample Code : 24-67405-002

### Results of Calibration

#### Notes

1. Sensor installation locations
  - 1.1 All sensors at any corners or walls should be positioned 5 cm (a x b x c) from the wall.
  - 1.2 The reference sensor is preferably located of the geometric center of the chamber.
2. Interior dimensions approx of chamber :  
W = 40 cm ; D = 28 cm ; H = 39 cm
3. Air valve or fresh air level : Off
4. Fan level : Open
5. The quoted uncertainty includes "Stability of chamber and loading effect in chamber at 20% of uniformity".
6. Uniformity - the maximum difference of measured temperatures at any sensors and the measured temperature at the reference location which are observed at the same time.
7. Stability - one-half of the greatest maximum difference of measured temperatures at any one sensor.
8. Overall variation - the difference of the maximum and the minimum measured temperatures throughout observation time.
9. UUC\* reading - the average reading of indicating device that forms the integral part of the enclosure.
10. Calibration results without adjustment.

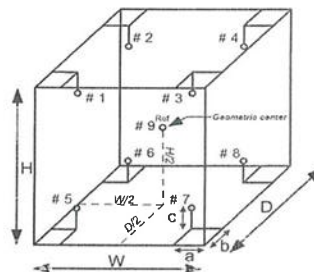


Figure: Example of sensor  
installation Positions

The result expanded uncertainty of measurement  $U$  is stated as the standard uncertainty of measurement multiplied by the coverage factor  $k$ , which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with UKAS M3003

- End of Report -


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**ICP-OES/Avio550**

**Serial No. : M81S221010**

### ICP-OES/Avio500 Preventive Maintenance (PM)

Company Name:	Eastern Thai Consulting 1992 Co.,Ltd		
Address (Instrument Location):	683 Moo 11, Nong Kham Subdistrict, Si Racha District, Chonburi		
Serial Number:	M81S221010	PM Number:	1 of 2
Customer Name (if applicable):	Channarong	Telephone Number:	0968761232
Service Engineer Name:	Khwanchai	Service Order Number:	WO-03149107
Date PM Performed: (DD-MMM-YYYY)	22-Apr-2025	Next PM Due Date: (DD-MMM-YYYY)	22-Oct-2025
Standard Labor Hours to Complete PM :		4 hours	

Part Number	Release	Publication Date	
TH09370188 Rev.1	B	July 2020	

#### Scope

The purpose of this PM is to ensure the continued functionality of the PerkinElmer / Avio500 by inspecting and replacing any worn or damaged parts. This service should only be performed by a trained representative of PerkinElmer. The customer should save their method before the PM begins.

#### General Instructions:

The customer must provide the engineer operational data to demonstrate recent instrument performance prior to starting the PM.

Always check with the customer before making any changes that may affect the customer's analysis or calibration, including a current back-up of system software and/or data files. The completed document should be signed by an authorized PerkinElmer and customer representative and left with the customer. Update the PM sticker and instrument logbook as required.

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### Component List

Component / Specific Model	Serial #	Configuration Notes

### Parts Lists

Parts Included with the PM		
Part Number (if applicable)	Description	Quantity
09995098	Air Filter-Spectrometer	1
N077520	Air Filter-RF Generator	1
09992731	Axial Window	1
B0810377	Radial Window	1
N0770438	O-ring kit, injector support adapter	1
N0780437	O-ring kit, torch	1

Additional Reagents and Standards Required for PM				
Part Number (if applicable)	Description	Quality	Batch/Lot #	Expired Date (MM/YY)
N0691579	Multi-Element Standard	AR	62-162CRX1	Dec-25
N9300221	DL Standard diluted 100 X	AR	61-190CRY1	Aug-25
N0582152	Wave Cal Solution	AR	63-059CRX1	Oct-25
N9302946	VIS Wavecal Solution	AR	61-167CRT1	Dec-25

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## Procedure Checklist

Use (✓) to check off those steps in the checklist that have been completed.

### 1. General:

- ☒ Ask customer about unit's performance since last visit.
- ☒ Check incoming AC line voltage under load for proper levels and grounding.
- ☒ Is the instrument operational? If not, please comment.

### 2. Mechanical:

- ☒ Inspect and clean all fans and filters.
- ☒ Inspect and replace torch components and necessary.

Torch Components Replaced: ☒ Yes ☐ No

- ☒ Inspect all tubing for signs of cracking or leaking and replace as necessary.

Tubing Replaced: ☐ Yes ☒ No

- ☒ Inspect the peristaltic pump for proper operation.
- ☒ Check and adjust if necessary, the external nitrogen, argon shear gas and water supply pressures.
- ☒ Check and adjust if necessary, the internal nitrogen, main argon, torch argon and shear gas pressures.

Regulator	Measured Pressure	Set Pressure
Nitrogen		NA (calibrated in Factory)
Main Argon	76	76 psig
Torch Argon	67	67 psig
Shear Gas	65	65 psig
Water	35	35 psig

- ☒ Check shear gas nozzle for blockages and proper, uniform flow.
- ☒ Inspect nitrogen Hi/Low purge and shear gas solenoids for proper function.
- ☒ Inspect the function of all spectrometer motors. Drive the motors from the Spectrometer DCM. (slits, XY motor)
- ☒ Inspect the function of the pneumatic shutter for proper operation.
- ☒ Perform preventative maintenance on the chiller as required. Make the customer aware of the importance of maintaining the chiller fluid level and filter replacement.
- ☒ Drain air compressor surge tank.
- ☒ Clean exterior of instrument.
- ☒ Visually inspect all PC boards for cleanliness and signs of corrosion.

**COPY**

### 3. Electronical

- ☒ Check all RF generator and spectrometer power supply voltages.
- ☒ Run instrument diagnostic checks from the appropriate Device Control Module.

#### RF Generator:

- ☒ Check the RF generator status screens.
- ☒ Check the function of all interlocks.

#### Spectrometer:

- ☒ Check the spectrometer status screens. Ensure Ready mode with no fetal errors.
- ☒ Check the spectrometer optical tub temperatures (top, bottom, fin, optical base).
- ☒ Check detector temperatures.
- ☒ Check TEC voltages (6.5VDC)

### 4. Optical:

- ☒ Clean or replace the axial and radial view windows as necessary.
- Axial Window Replaced: ☒ Yes ☐ No  
Radial Window Replaced: ☒ Yes ☐ No

### 5. PM Performance Tests:

- ☒ Perform View Align.

#### Test Spectral Resolution:

- ☒ Measure the spectrometers ability to separate two adjacent wavelengths.

Parameter	Specification	Test Result	Pass/Fail
As 193.696 - Resolution	≤0.007	0.00530	Passed
Ni 231.604 - Resolution	≤0.008	0.00730	Passed
Ni 341.476 - Resolution	≤0.012	0.00893	Passed
La 408.672 - Resolution	≤0.020	0.01603	Passed
Ba 455.403 - Resolution	≤0.025	0.02038	Passed

#### Test Precision:

- ☒ Test for reproducibility of a set of measurement.

Parameter	Specification	Test Result	Pass/Fail
As 193.696	%RSD ≤ 1 %	0.32	Passed
Zn 213.856	%RSD ≤ 1 %	0.18	Passed
Mn 257.610	%RSD ≤ 1 %	0.21	Passed
La 379.478	%RSD ≤ 1 %	0.13	Passed
Ba 455.403	%RSD ≤ 1 %	0.15	Passed
Ba 493.408	%RSD ≤ 1 %	0.20	Passed

**COPY**

☒ Run an Axial & Radial BEC according to the A&T spec.

**Test Axial BEC Cd:**

Method "BEC-XL" For Samples "IB (2%HNO3)" and "IS (N930-0221/100)", record intensities.

Calculated BEC:  $BEC = (IB * Conc\ of\ Std) / (IS - IB)$ . Where Conc of Std = 500 PPB

Element	Conc.	IB	IS	
Cd 226	500	1199.8	209735	
IB*Conc	IS-IB	BEC	Spec	Pass/Fail
599900	208535.2	2.88	<150 PPB	Passed

**Test Radial BEC Mn:**

Method "BEC-RL" For Samples "IB (2%HNO3)" and "IS (N069-1579)", record intensities.

Calculated BEC:  $BEC = (IB * Conc\ of\ Std) / (IS - IB)$ . Where Conc of Std = 1,000 PPB

Element	Conc.	IB	IS	
Mn 257	1,000	653.2	217211.6	
IB*Conc	IS-IB	BEC	Spec	Pass/Fail
653200	216558.4	3.02	<45 PPB	Passed

**6. Review:**

- ☒ Review with the customer PM work performed.
- ☒ Discuss recommended customer supplied materials to have on hand.
- ☒ Attach PM sticker.

**COPY**

## Additional Comments

### Additional Comments Regarding the PM

- Use with Sample introduction AQ for PM test

## Review

*The preventive maintenance checks and if applicable performance tests for ICP-OES/Avio500 have been completed.*

*This ICP-OES/Avio500 Passes ☒ Fails ☐ the preventive maintenance.*

### Review of Preventive Maintenance:

Authorized PerkinElmer Representative:

KL.S

Date:

22-Apr-2025

(DD-MMM-YYYY)

Authorized Customer Representative:

Date:

22-Apr-2025

(DD-MMM-YYYY)


**COPY**

**ICP-OES/Avio550**

**Serial No. : M81S2210101**

### ICP-OES/Avio550 Preventive Maintenance (PM)

Company Name:	Eastern Thai Consulting 1992 Cl.,Ltd.		
Address (Instrument Location):	683 Moo 11 Sukapibal 8 Rd. Nong Kham, Si Racha, Chonburi 20230		
Serial Number:	M8152210101	PM Number:	2 of 2
Customer Name (if applicable):		Telephone Number:	
Service Engineer Name:	Khwanchai	Service Order Number:	WO-06379056
Date PM Performed: (DD-MMM-YYYY)	20-Oct-2025	Next PM Due Date: (DD-MMM-YYYY)	20-Apr-2026
Standard Labor Hours to Complete PM :		4 hours	

Part Number	Release	Publication Date	
TH09370188 Rev.2	B	July 2020	

#### Scope

The purpose of this PM is to ensure the continued functionality of the PerkinElmer / Avio550 by inspecting and replacing any worn or damaged parts. This service should only be performed by a trained representative of PerkinElmer. The customer should save their method before the PM begins.

#### General Instructions:

The customer must provide the engineer operational data to demonstrate recent instrument performance prior to starting the PM.

Always check with the customer before making any changes that may affect the customer's analysis or calibration, including a current back-up of system software and/or data files. The completed document should be signed by an authorized PerkinElmer and customer representative and left with the customer. Update the PM sticker and instrument logbook as required.

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PerkinElmer shall not be liable for incidental or consequential damages in connection with the furnishing or use of this document.

### Component List

Component / Specific Model	Serial #	Configuration Notes
NA	NA	NA

### Parts Lists

Parts Included with the PM		
Part Number (if applicable)	Description	Quantity
09995098	Air Filter-Spectrometer	N/A
N077520	Air Filter-RF Generator	N/A
09992731	Axial Window	N/A
B0810377	Radial Window	N/A
N0770438	O-ring kit, injector support adapter	N/A
N0780437	O-ring kit, torch	N/A

Additional Reagents and Standards Required for PM				
Part Number (if applicable)	Description	Quality	Batch/Lot #	Expiry Date (MM/YY)
N0691579	Muti-Element Standard	AR	64-247CRX1	11/2026
N9300221	DL Standard diluted 100 X	AR	65-009CRY1	11/2026
N0582152	Wave Cal Solution	AR	64-241CRX1	07/2026
N9302946	VIS Wavecal Solution	AR	62-183CRT1	08/2026

## Procedure Checklist

Use (✓) to check off those steps in the checklist that have been completed.

### 1. General:

- ☒ Ask customer about unit's performance since last visit.
- ☒ Check incoming AC line voltage under load for proper levels and grounding.
- ☒ Is the instrument operational? if not, please comment.

### 2. Mechanical:

- ☒ Inspect and clean all fans and filters.
- ☒ Inspect and replace torch components and necessary.

Torch Components Replaced: ☐ Yes ☒ No

- ☐ Inspect all tubing for signs of cracking or leaking and replace as necessary.

Tubing Replaced: ☐ Yes ☒ No

- ☒ Inspect the peristaltic pump for proper operation.
- ☒ Check and adjust if necessary, the external nitrogen, argon shear gas and water supply pressures.
- ☒ Check and adjust if necessary, the internal nitrogen, main argon, torch argon and shear gas pressures.

Regulator	Measured Pressure	Set Pressure
Nitrogen	NA	NA (callbrated In Factory)
Main Argon	76	76 psig
Torch Argon	67	67 psig
Shear Gas	65	65 psig
Water	35	35 psig

- ☒ Check shear gas nozzle for blockages and proper, uniform flow.
- ☒ Inspect nitrogen Hi/Low purge and shear gas solenoids for proper function.
- ☒ Inspect the function of all spectrometer motors. Drive the motors from the Spectrometer DCM. (slits, XY motor)
- ☒ Inspect the function of the pneumatic shutter for proper operation.
- ☒ Perform preventative maintenance on the chiller as required. Make the customer aware of the importance of maintaining the chiller fluid level and filter replacement.
- ☒ Drain air compressor surge tank.
- ☒ Clean exterior of instrument.
- ☒ Visually inspect all PC boards for cleanliness and signs of corrosion.

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### 3. Electronical

- ☒ Check all RF generator and spectrometer power supply voltages.
- ☒ Run instrument diagnostic checks from the appropriate Device Control Module.

#### RF Generator:

- ☒ Check the RF generator status screens.
- ☒ Check the function of all interlocks.

#### Spectrometer:

- ☒ Check the spectrometer status screens. Ensure Ready mode with no fetal errors.
- ☒ Check the spectrometer optical tub temperatures (top, bottom, fin, optical base).
- ☒ Check detector temperatures.
- ☒ Check TEC voltages (6.5VDC)

### 4. Optical:

- ☒ Clean or replace the axial and radial view windows as necessary.
- Axial Window Replaced: ☐ Yes ☒ No  
Radial Window Replaced: ☐ Yes ☒ No

### 5. PM Performance Tests:

- ☒ Perform View Align.

#### Test Spectral Resolution:

- ☒ Measure the spectrometers ability to separate two adjacent wavelengths.

Parameter	Specification	Test Result	Pass/Fail
As 193.696 - Resolution	≤0.007	0.00531	Passed
Ni 231.604 - Resolution	≤0.008	0.00716	Passed
Ni 341.476 - Resolution	≤0.012	0.00891	Passed
La 408.672 - Resolution	≤0.020	0.01629	Passed
Ba 455.403 - Resolution	≤0.025	0.02144	Passed

#### Test Precision:

- ☒ Test for reproducibility of a set of measurement.

Parameter	Specification	Test Result	Pass/Fail
As 193.696	%RSD ≤ 1 %	0.34	Passed
Zn 213.856	%RSD ≤ 1 %	0.38	Passed
Mn 257.610	%RSD ≤ 1 %	0.28	Passed
La 379.478	%RSD ≤ 1 %	0.24	Passed
Ba 455.403	%RSD ≤ 1 %	0.26	Passed
Ba 493.408	%RSD ≤ 1 %	0.28	Passed

**COPY**

- ☒ Run an Axial & Radial BEC according to the A&T spec.

**Test Axial BEC Cd:**

Method "BEC-XL" For Samples "IB (2%HNO3)" and "IS (N930-0221/100)", record intensities.

Calculated BEC:  $BEC = (IB * Conc\ of\ Std) / (IS - IB)$ . Where Conc of Std = 500 PPB

Element	Conc.	IB	IS	
<b>Cd 226</b>	500	1687.2	359486.8	
IB*Conc	IS-IB	BEC	Spec	Pass/Fail
843600	357799.6	2.36	<150 PPB	Passed

**Test Radial BEC Mn:**

Method "BEC-RL" For Samples "IB (2%HNO3)" and "IS (N069-1579)", record intensities.

Calculated BEC:  $BEC = (IB * Conc\ of\ Std) / (IS - IB)$ . Where Conc of Std = 1,000 PPB

Element	Conc.	IB	IS	
<b>Mn 257</b>	1,000	1744.4	255911.4	
IB*Conc	IS-IB	BEC	Spec	Pass/Fail
1744400	254167	6.86	<45 PPB	Passed

**6. Review:**

- ☒ Review with the customer PM work performed.  
☒ Discuss recommended customer supplied materials to have on hand.  
☒ Attach PM sticker.

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**Additional Comments**

**Additional Comments Regarding the PM**

None

**Review**

*The preventive maintenance checks and if applicable performance tests for ICP-OES/Avio550 have been completed.*

*This ICP-OES/Avio550 Passes ☒ Fails ☐ the preventive maintenance.*

**Review of Preventive Maintenance:**

Authorized PerkinElmer Representative: <i>KLS.</i>	Date: 20-Oct-2025 (DD-MMM-YYYY)
Authorized Customer Representative: <i>601225516</i>	Date: 20-Oct-2025 (DD-MMM-YYYY)

**COPY**

**LIQUID IN GLASS THERMOMETER**

**Model / Type : 0-100 °C**

**Serial No. : 43560**



# CALIBRATION LABORATORY Co.,LTD.

2/10-11,14,55 Soi Prasert Manukit 29 Yaek 4, Prasert Manukit Rd., Ladphrao, Bangkok 10230  
Tel. 02-578-0353-4 Fax: 02-578-2672 www.cal-laboratory.com E-mail: sale@cal-laboratory.com



## CERTIFICATE OF CALIBRATION

### FOR

NOMENCLATURE : LIQUID IN GLASS THERMOMETER  
MANUFACTURER : AA PRECISION  
MODEL / TYPE : 0-100 °C  
SERIAL NO. : 43560[LABE 16/1]  
CLID. NO. : 232403905  
JOB CONTROL NO. : 241031116258  
CALIBRATION SERVICE : ☒ IN-LABORATORY ☐ ON-SITE

CUSTOMER : EASTERN THAI CONSULTING 1992 CO., LTD.  
683 MOO 11, SUKHAPIBARN 8 RD,  
NONGKHAM, SRIRACHA, CHONBURI 20230

DATE OF RECEIVED : 31 October 2024

DATE OF ISSUED : 05 November 2024

The report of calibration shall not be reproduced except in full without approval of the Calibration Laboratory Co., Ltd.

Calibrated By : Pimsiri Hemtanon  
Calibration Engineer

Approved By : Mongkol Yotsoontorn  
Authorized Signatory  
05 November 2024



This Calibration Certificate documents the traceability to national standards, which realize the units of measurement according to the International System of Units (SI)

Certificate No. Q24116258

F3-011-05/12-23

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page 1 of 3



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Tel. 02-578-0353-4 Fax: 02-578-2672 www.cal-laboratory.com E-mail: sale@cal-laboratory.com



## REPORT OF CALIBRATION

### FOR

NOMENCLATURE : LIQUID IN GLASS THERMOMETER  
MANUFACTURER : AA PRECISION  
MODEL / TYPE : 0-100 °C  
SERIAL NO. : 43560[LABE 16/1]  
DATE OF CALIBRATION : 04 November 2024

#### ENVIRONMENT CONDITIONS :

Temperature :  $(23 \pm 2) ^\circ\text{C}$

Relative Humidity :  $(55 \pm 10) \% \text{ RH}$

#### PROCEDURE USED :

This instrument was calibrated under procedure No. CLC-CPH-02 based on ASTM E 77-07 as calibration guidelines.  
The calibration was performed by comparison with Calibration Bath, Precision Thermometer and IPRT which maintained by the Calibration Laboratory Co., Ltd.

#### REFERENCE STANDARD USED :

1. Calibration Bath, Kambic Model OB-22/2 ULT, OB-22/2 S/N, 17115653, 17115654.
2. Precision Thermometer, ASL Model F200-A-8 S/N, 014433/03 with IPRT S/N, L0193A-1-1, PO106346-1-18.

#### TRACEABILITY :

1. The measurements are traceable to International System of Units (SI), through Calibration Laboratory Co., Ltd. Certificate No. Q23136342, Q23126517. Due Date 20 December 2024, 20 November 2024.
2. The measurements are traceable to International System of Units (SI), through Thailand Institute of Scientific and Technological Research (TISTR) and National Institute of Metrology (Thailand). Certificate No. PSL-T 0203/67, TT-0136-23, TT-0110-24. Due Date 07 December 2024, 12 December 2024, 06 August 2025.

#### UNCERTAINTY :

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor  $k = 2.00$  which for a normal distribution corresponds to a coverage probability of approximately 95 %.  
It has been evaluated according to the "Evaluation of the Uncertainty of Measurement in Calibration (ISA-402 M-2023)".

Certificate No. Q24116258

F3-011-05/12-23

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page 2 of 3



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Tel. 02-578-0353-4 Fax: 02-578-2672 www.cal-laboratory.com E-mail:sale@cal-laboratory.com



CONDITION OF CALIBRATION ITEM : RECEIVED IN GOOD OPERATIONAL CONDITION

MEASUREMENT RESULTS : ( X ) without adjustment ( ) adjustment

The DUC Reading were recorded and the means value were reported of four times measurement in the table below.

### CALIBRATION DATA

#### CORRECTION OF TEMPERATURE

STD Reading ( °C )	DUC Reading ( °C )	Correction ( °C )	Uncertainty $\pm$ ( °C )
0.039	0.00	+0.039	0.065
25.003	25.00	+0.003	
50.008	50.00	+0.008	
100.013	100.00	+0.013	

Range : 0 °C to 100 °C

Graduation : 0.1 °C

Immersion Type : Total Immersion

Correction of Reference Temperature ( 0 °C ) = 0.039 °C

Note. The Scope of Accredited ANAB Certificate No. ACDM-2814 Version 012 Page 56 of 67

This report is valid for the above stated instrument/s only.

### End of Certificate ###

Certificate No. Q24116258

F3-011-05/12-23

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page 3 of 3



@dcalibration

**LIQUID IN GLASS THERMOMETER**

**Model / Type : 0-100 °C**

**Serial No. : 43560**



CLC  
Accredited  
ISO/IEC 17025

## CALIBRATION LABORATORY CO., LTD.

2/10-11,14,55 Soi Prasert Manukit 29 Yaek 4, Prasert Manukit Rd., Ladphrao, Bangkok 10230  
Tel. 02-578-0353-4 Fax: 02-578-2672 www.cal-laboratory.com E-mail:sale@cal-laboratory.com



### CERTIFICATE OF CALIBRATION

#### FOR

NOMENCLATURE : LIQUID IN GLASS THERMOMETER  
MANUFACTURER : AA PRECISION  
MODEL / TYPE : 0-100 °C  
SERIAL NO. : 43560[LABE 16/1]  
CLID. NO. : 232403905  
JOB CONTROL NO. : 251115135334  
CALIBRATION SERVICE : ☒ IN-LABORATORY ☐ ON-SITE

CUSTOMER : EASTERN THAI CONSULTING 1992 CO., LTD.  
683 MOO 11, SUKHAPIBARN 8 RD,  
NONGKHAM, SRIRACHA, CHONBURI 20230

DATE OF RECEIVED : 15 November 2025

DATE OF ISSUED : 18 November 2025

The report of calibration shall not be reproduced except in full without approval of the Calibration Laboratory Co., Ltd.

Calibrated By : Pimsiri Hemtanon  
Calibration Engineer

Approved By : Mongkol Yotsoontorn  
Authorized Signatory  
18 November 2025



This Calibration Certificate documents the traceability to national standards, which realize the units of measurement according to the International System of Units (SI)

Certificate No. Q25135334

F3-011-05/12-23

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ISO/IEC 17025

## CALIBRATION LABORATORY CO., LTD.

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Tel. 02-578-0353-4 Fax: 02-578-2672 www.cal-laboratory.com E-mail:sale@cal-laboratory.com



### REPORT OF CALIBRATION

#### FOR

NOMENCLATURE : LIQUID IN GLASS THERMOMETER  
MANUFACTURER : AA PRECISION  
MODEL / TYPE : 0-100 °C  
SERIAL NO. : 43560[LABE 16/1]  
DATE OF CALIBRATION : 17 November 2025

#### ENVIRONMENT CONDITIONS :

Temperature :  $(23 \pm 2) ^\circ\text{C}$

Relative Humidity :  $(55 \pm 10) \%$

#### PROCEDURE USED :

This instrument was calibrated under procedure No. CLC-CPTH-02 based on ASTM E 77-07 as calibration guidelines. The calibration was performed by comparison with Calibration Bath, Precision Thermometer and IPRT which maintained by the Calibration Laboratory Co., Ltd.

#### REFERENCE STANDARD USED :

1. Calibration Bath, Kambic Model OB-22/2 ULT,OB-22/2 S/N. 17115653,17115654.
2. Precision Thermometer, ASL Model F200-A-8 S/N. 014433/03 with IPRT S/N. L0193A-1-1,PO106346-1-13.

#### TRACEABILITY :

1. The measurements are traceable to International System of Units (SI), through Calibration Laboratory Co., Ltd. Certificate No. Q24120999,Q25124610. Due Date 26 November 2025,07 November 2026.
2. The measurements are traceable to International System of Units (SI), through Thailand Institute of Scientific and Technological Research (TISTR) and National Institute of Metrology (Thailand). Certificate No. PSL-T 0177/68,TT-0169-24,TT-1008-25. Due Date 10 February 2026,11 December 2025,04 March 2026.

#### UNCERTAINTY :

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor  $k = 2$  which for a normal distribution corresponds to a coverage probability of approximately 95 %. It has been evaluated according to the "Evaluation of the Uncertainty of Measurement in Calibration (EA-4/02 M:2022)"

Certificate No. Q25135334

F3-011-05/12-23

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## CALIBRATION LABORATORY Co., LTD.

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Tel. 02-578-0353-4 Fax: 02-578-2672 www.cal-laboratory.com E-mail:sale@cal-laboratory.com



**CONDITION OF CALIBRATION ITEM : RECEIVED IN GOOD OPERATIONAL CONDITION**

**MEASUREMENT RESULTS : ( X ) without adjustment ( ) adjustment**

The DUC Reading were recorded and the means value were reported of four times measurement in the table below.

### CALIBRATION DATA

#### **CORRECTION OF TEMPERATURE**

STD Reading ( °C )	DUC Reading ( °C )	Correction ( °C )	Uncertainty $\pm$ ( °C )
0.01	0.00	+0.01	0.06
25.02	25.00	+0.02	
50.03	50.00	+0.03	
100.01	100.00	+0.01	

Range : 0 °C to 100 °C

Graduation : 0.1 °C

Immersion Type : Total Immersion.

Correction of Reference Temperature ( 0 °C ) = 0.00 °C

Note. The Scope of Accredited ANAB Certificate No. ACDM-2814 Version 016 Page 60 of 73

**This report is valid for the above stated instrument/s only.**

### End of Certificate ###

Certificate No. Q25135334

F3-011-05/12-23

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**pH Meter**

**Model : SevenCompact S220**

**Serial No. : B835349235**

Certificate Number CCP-0403-25**Calibration Certificate**  
**SevenCompact™ pH/Ion Meter S220****Customer**Company EASTERN THAI CONSULTING 1992 CO., LTD.Address 683 Moo 11, Sukhaphiban 8 Rd., Nong KhamSrirachaCHONBURI 20230Customer ID number 301608441Customer representative คุณ ศิริกรณ นาคฉันท**Instrument**

Type	<u>SevenCompact™ S220</u>	Instrument Serial Number	<u>B835349235</u>
Internal Identification	<u>LASE 11/6</u>	Firmware version	<u>1.20.06</u>

**Technical specifications**

Measuring Range	<u>-1999.9 ... 1999.9 mV</u>	<u>-2.000 ... 20.000 pH</u>
Resolution	<u>0.1 mV</u>	<u>0.001 pH</u>
Limit of Error	<u>± 0.2 mV</u>	<u>± 0.002 pH</u>

Temperature range MTC -30.0 ... 130.0 °CTemperature range ATC -5.0 ... 130.0 °CResolution 0.1 °CLimit of Error ± 0.1 °C**Procedure Statement**

METTLER TOLEDO Certification SOP (Doc. No. ME-30027577B) will be used as referring documentation to adjust and certify the instrument indicated in the "Type" and "Serial number" section. The measurement results of this certification were obtained at ambient conditions.

**COPY**Certificate Number CCP-0403-25**Certification Tools**

Certified digital voltmeter	Manufacturer	<u>KEYSIGHT TECHNOLOGIES</u>
	Type	<u>34461A</u>
	Control No.	<u>ANA143</u>

Serial number	<u>MY60036967</u>
Certificate number	<u>E1U2401054</u>
Due date	<u>March 10, 2025</u>

Certified Temperature Resistors	Manufacturer	<u>METTLER-TOLEDO</u>
	Type	<u>51302410</u>
	Control No.	<u>ANA114</u>

Serial number	<u>A275</u>
Certificate number	<u>73757</u>
Due date	<u>February 12, 2026</u>

Designation	Nominal value	Certified value
NTC 30 kΩ, 0 °C	94.980 kΩ	94.9730 kΩ
NTC 30 kΩ, 25 °C	30.000 kΩ	29.9950 kΩ
NTC 30 kΩ, 50 °C	10.969 kΩ	10.9704 kΩ
NTC 30 kΩ, 75 °C	4.528 kΩ	4.5275 kΩ
NTC 30 kΩ, 100 °C	2.070 kΩ	2.0714 kΩ
PT1000, 0 °C	1.000 kΩ	1.0001 kΩ
PT1000, 25 °C	1.0974 kΩ	1.0975 kΩ
PT1000, 50 °C	1.1940 kΩ	1.1942 kΩ
PT1000, 75 °C	1.2899 kΩ	1.2900 kΩ
PT1000, 100 °C	1.3851 kΩ	1.3851 kΩ

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# METTLER TOLEDO

Certificate Number **CCP-0403-25**

## Certification Measurements

pH/mV Sensor Input	Designation	Certified value	Measured value	Max. Tolerance	Passed / Failed
	-1900 mV	-1900.0 mV	-1899.98 mV	0.2 mV	Passed
	-1000 mV	-1000.0 mV	-1000.00 mV	0.2 mV	Passed
	-500 mV	-500.0 mV	-499.98 mV	0.2 mV	Passed
	-180 mV	-180.0 mV	-180.00 mV	0.2 mV	Passed
	0 mV	0.0 mV	0.01 mV	0.2 mV	Passed
	180 mV	180.0 mV	179.98 mV	0.2 mV	Passed
	500 mV	500.0 mV	499.90 mV	0.2 mV	Passed
	1000 mV	1000.0 mV	1000.00 mV	0.2 mV	Passed
	1900 mV	1900.0 mV	1899.99 mV	0.2 mV	Passed

pH/mV Sensor Input at high Impedance	Designation	Measured low imp.	Measured high imp.	Max. Tolerance	Passed / Failed
	1900 mV	1900.0 mV	1899.8 mV	0.6 mV	Passed

Temperature Sensor Input	Designation	Nominal value	Measured value	Max. Tolerance	Passed / Failed
	NTC 30 kΩ, 0 °C	0.0 °C	0.0 °C	0.1 °C	Passed
	NTC 30 kΩ, 25 °C	25.0 °C	25.0 °C	0.1 °C	Passed
	NTC 30 kΩ, 50 °C	50.0 °C	50.0 °C	0.1 °C	Passed
	NTC 30 kΩ, 75 °C	75.0 °C	74.9 °C	0.1 °C	Passed
	NTC 30 kΩ, 100 °C	100.0 °C	100.0 °C	0.1 °C	Passed
	Pt1000, 0 °C	0.0 °C	0.1 °C	0.1 °C	Passed
	Pt1000, 25 °C	25.0 °C	25.0 °C	0.1 °C	Passed
	Pt1000, 50 °C	50.0 °C	50.0 °C	0.1 °C	Passed
	Pt1000, 75 °C	75.0 °C	74.9 °C	0.1 °C	Passed
	Pt1000, 100 °C	100.0 °C	99.9 °C	0.1 °C	Passed

## Summary of Certification

Certification of instrument

**Passed**

The instrument referred to in this certificate has fulfilled the criteria of the certification. This is indicated by the notation Passed in the column above.

Remarks - Test high Impedance at 1900.0 mV, Results : 1899.8 mV

Difference = 0.005% Within MPE (0.033%)

Certification of the Instrument was performed by

Name Khomsan Pralaung Function Service

Place Mettler-Toledo (Thailand) Ltd.

Calibration Date: 29-Jan-2025

Signature

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Mettler-Toledo (Thailand) Limited

# METTLER TOLEDO

## Performance Test

Attachment to Certificate No. CCP-0403-25

### pH Electrode

Type: InLab Expert Pro-ISM S/N: 2463982

### Certified standards used

Standard 1:	Type: pH Buffer	Manufacturer: METTLER TOLEDO	Exp. date: 3-Dec-2026
	Nominal value: pH ( 25.00 °C):	4.01	Lot No.: 1J338E
Standard 2:	Type: pH Buffer	Manufacturer: METTLER TOLEDO	Exp. date: 27-Nov-2026
	Nominal value: pH ( 25.00 °C):	7.00	Lot No.: 1J331B
Standard 3:	Type: pH Buffer	Manufacturer: METTLER TOLEDO	Exp. date: 11-Jan-2026
	Nominal value: pH ( 25.00 °C):	10.00	Lot No.: 1K011B
Standard 4:	Type: Redox Solution	Manufacturer: METTLER TOLEDO	Exp. date: -
	Nominal value: pH ( 25.00 °C):	-	Lot No.: -

### Adjustment

Set Calibration Buffer	B1 (25 °C) 1.68, 4.01, 7.00, 10.01					
Select Calibration Mode	3-Point calibration		2-Point calibration		2-Point calibration	
Segment	°C	pH	°C	pH	°C	pH
3-Point Calibration						
Cal 1	ATC	25.5	7.00	ATC		
Cal 2	ATC	25.5	4.00	ATC		
Offset (mV)	-27.2					
Slope % (or mV/pH)	95.9					
Cal 3	ATC	25.5	10.01			
Offset (mV)	-27.2					
Slope % (or mV/pH)	97.4					

### Measurements

Resolution: 2 Decimal places

As Found				As Left			
Buffer Values	Measured	Difference	Buffer Values	Measured	Difference		
pH	°C	pH	pH	°C	pH	pH	
4.01	25.3	ATC	4.02	0.01	4.01	25.3	ATC
7.00	25.2	ATC	6.98	-0.02	7.00	25.2	ATC
9.99	25.3	ATC	10.11	0.12	9.99	25.2	ATC

Redox Measurement Result = - mV

Note: The difference result of calibrated electrode should be within +/- 0.05 pH

Remarks: N/A

Place: Laboratory Calibration Date: 29-Jan-2025

Service Specialist: Khomsan Pralaung

Signature: Khomsan

**STANDARD WEIGHT 50 g**

Certificate No. : 24-062445  
Sample Code : 24-25551-001

## CERTIFICATE OF CALIBRATION

Customer : EASTERN THAI CONSULTING 1992 CO., LTD.  
683 Moo 11, Sukhapibarn 8 Rd., Nongkham,  
Sriracha, Chonburi 20230

Location of Calibration : Asia Medical and Agricultural Laboratory and Research Center Public Company Limited  
(Calibration Laboratory)

Equipment : Standard Weight 50 g

Manufacturer : METTLER TOLEDO

Class : F1

Serial No. : N/A

ID No. : LABE 10/1

Date of Receipt : 23 May 2024

Date of Calibration : 03 June 2024

Calibrated by Mr. Somwang Sangdee  
Scientist

Approved by ( Mr. Somchai Neampunt )  
Signed for Director

Issue date 04 June 2024

The uncertainties are for a confidence probability of approximately 95%.

The calibration result is applied only to the above calibrated item and was found accurate as shown on date and place of calibration only.

This Certificate is issued in accordance with the conditions of accreditation granted by the Thai Laboratory Accreditation scheme which has assessed the measurement capability of the laboratory and its traceability to recognized national standards and to the unit of measurement realized at the corresponding national standards laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the Asia Medical and Agricultural Laboratory and Research Center Public Company Limited (AMARC).

Certificate No. : 24-062445  
Sample Code : 24-25551-001

## REPORT OF CALIBRATION

Equipment : Standard Weight 50 g

Manufacturer : METTLER TOLEDO

Class : F1

Serial No. : N/A

ID No. : LABE 10/1

Result of Calibration : ☒ Without adjustment ☐ Adjustment

Conventional value of the result of weighing in air. For a weight taken at a reference temperature ( $t_{ref}$ ) of 20°C, the conventional mass is the mass of a reference weight of a density ( $\rho_{ref}$ ) of 8000 kg.m<sup>-3</sup> which it balances in air of a reference density ( $\rho_0$ ) of 1.2 kg.m<sup>-3</sup>

Description	Deviation (mg)	Conventional Mass	Expanded Uncertainty (mg)	Maximum Permissible Error ± (mg)	ID No.
50 g	-0.343	49.999657 g	0.10	0.30	LABE 10/1

The result expanded uncertainty of measurement  $U$  is stated as the standard uncertainty of measurement multiplied by the coverage factor  $k = 2.0$ , which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with UKAS M3003

Certificate No. : 24-062445  
Sample Code : 24-25551-001

Page 3 of 3

## REPORT OF CALIBRATION

### Condition of Calibration

1. Ambient Conditions : Temperature  $20^{\circ}\text{C} \pm 1.5^{\circ}\text{C}$ , Relative humidity  $50\% \pm 10\%$  and air density  $1.19 \text{ kg/m}^3$
2. Calibration Method : Direct comparison weighing according to OIML R111-1 : 2004(E)
3. Reference standard instrument

Instrument	Class	ID No.	Certificate No.	Due Date
1) Standard Weight 1 mg to 1 kg	E2	LB-WE-83	24-001894	11 January 2025

4. This certification is traceable to the International System of Unit maintained at : -

Asia Medical and Agricultural Laboratory and Research Center Public Company Limited

( Instrument number 1).

5. Condition of Calibration item: Normal

### 6. Description of Calibrated Item :

Type and Nominal Value :	Standard Weight 50 g
Shape :	Cylindrical weight with knob
Material :	Stainless steel
Case :	Wooden Box
Comments :	Recalibration

- End of Report -



**STANDARD WEIGHT 100 g**

Certificate No. : 24-079772  
Sample Code : 24-31841-002

## CERTIFICATE OF CALIBRATION

Customer : EASTERN THAI CONSULTING 1992 CO., LTD.  
683 Moo 11, Sukhapibarn 8 Rd., NongKham,  
Sriracha, Chonburi 20230

Location of Calibration : Asia Medical and Agricultural Laboratory and Research Center Public Company Limited  
(Calibration Laboratory)

Equipment : Standard Weight 100 g

Manufacturer : N/A

Class : N/A

Serial No. : N/A

ID No. : LABE 10/2

Date of Receipt : 25 June 2024

Date of Calibration : 30 June 2024

Calibrated by Mr. Nawa Sisuwan Approved by ( Mr. Somchai Neampunt )  
Scientist Signed for Director

Issue date 03 July 2024

The uncertainties are for a confidence probability of approximately 95%.

The calibration result is applied only to the above calibrated item and was found accurate as shown on date and place of calibration only.

This Certificate is issued in accordance with the conditions of accreditation granted by the Thai Laboratory Accreditation scheme which has assessed the measurement capability of the laboratory and its traceability to recognized national standards and to the unit of measurement realized at the corresponding national standards laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the Asia Medical and Agricultural Laboratory and Research Center Public Company Limited (AMARC).

Certificate No. : 24-079772  
Sample Code : 24-31841-002

## REPORT OF CALIBRATION

Equipment : Standard Weight 100 g

Manufacturer : N/A

Class : N/A

Serial No. : N/A

ID No. : LABE 10/2

Result of Calibration : ☒ Without adjustment ☐ Adjustment

Conventional value of the result of weighing in air. For a weight taken at a reference temperature ( $t_{ref}$ ) of 20°C, the conventional mass is the mass of a reference weight of a density ( $\rho_{ref}$ ) of 8000 kg.m<sup>-3</sup> which it balances in air of a reference density ( $\rho_0$ ) of 1.2 kg.m<sup>-3</sup>

Description	Deviation	Conventional Mass	Expanded Uncertainty	Maximum Permissible Error	ID No.
	(mg)		(mg)	± (mg)	
100 g	-0.173	99.999827 g	0.16	0.50	LABE 10/2

The result expanded uncertainty of measurement  $U$  is stated as the standard uncertainty of measurement multiplied by the coverage factor  $k = 2.0$ , which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with UKAS M3003

Certificate No. : 24-079772

Sample Code : 24-31841-002

Page 3 of 3

## REPORT OF CALIBRATION

## Condition of Calibration

1. Ambient Conditions : Temperature  $20^{\circ}\text{C} \pm 1.5^{\circ}\text{C}$ , Relative humidity  $50\% \pm 10\%$  and air density  $1.19 \text{ kg/m}^3$ 

2. Calibration Method : WI-CL-007 base on OIML R 111-1 : 2004(E)

3. Reference standard instrument

Instrument	Class	ID No.	Certificate No.	Due Date
1) Standard Weight 1 mg to 1 kg	E2	LB-WE-83	24-001894	11 January 2025

4. This certification is traceable to the International System of Unit maintained at : -

Asia Medical and Agricultural Laboratory and Research Center Public Company Limited

( Instrument number 1).

5. Condition of Calibration item: Normal

## 6. Description of Calibrated Item :

Type and Nominal Value :	Standard Weight 100 g
Shape :	Cylindrical weight with knob
Material :	Stainless steel
Case :	Wooden Box
Comments :	Recalibration

- End of Report -



COPY

**STANDARD WEIGHT 50 g**

Certificate No. : 24-079773  
Sample Code : 24-31841-003

## CERTIFICATE OF CALIBRATION

Customer : EASTERN THAI CONSULTING 1992 CO., LTD.  
683 Moo 11, Sukhapibarn 8 Rd., NongKham,  
Sriracha, Chonburi 20230

Location of Calibration : Asia Medical and Agricultural Laboratory and Research Center Public Company Limited  
(Calibration Laboratory)

Equipment : Standard Weight 50 g

Manufacturer : N/A

Class : N/A

Serial No. : N/A

ID No. : LABE 10/4

Date of Receipt : 25 June 2024

Date of Calibration : 30 June 2024

Calibrated by Mr. Nawa Sisuwan Approved by ( Mr. Somchai Neampunt )  
Scientist Signed for Director

Issue date 03 July 2024

The uncertainties are for a confidence probability of approximately 95%.

The calibration result is applied only to the above calibrated item and was found accurate as shown on date and place of calibration.

This Certificate is issued in accordance with the conditions of accreditation granted by the Thai Laboratory Accreditation scheme which has assessed the measurement capability of the laboratory and its traceability to recognized national standards and to the unit of measurement realized at the corresponding national standards laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the Asia Medical and Agricultural Laboratory and Research Center Public Company Limited (AMARC).

Certificate No. : 24-079773  
Sample Code : 24-31841-003

## REPORT OF CALIBRATION

Equipment : Standard Weight 50 g

Manufacturer : N/A

Class : N/A

Serial No. : N/A

ID No. : LABE 10/4

Result of Calibration : ☒ Without adjustment ☐ Adjustment

Conventional value of the result of weighing in air. For a weight taken at a reference temperature ( $t_{ref}$ ) of 20°C, the conventional mass is the mass of a reference weight of a density ( $\rho_{ref}$ ) of 8000 kg.m<sup>-3</sup> which it balances in air of a reference density ( $\rho_0$ ) of 1.2 kg.m<sup>-3</sup>

Description	Deviation	Conventional Mass	Expanded Uncertainty	Maximum Permissible Error	ID No.
	(mg)		(mg)	± (mg)	
50 g	-0.176	49.999824 g	0.10	0.30	LABE 10/4

The result expanded uncertainty of measurement  $U$  is stated as the standard uncertainty of measurement multiplied by the coverage factor  $k = 2.0$ , which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with UKAS M3003



Certificate No. : 24-079773

Sample Code : 24-31841-003

## REPORT OF CALIBRATION

## Condition of Calibration

1. Ambient Conditions : Temperature  $20^{\circ}\text{C} \pm 1.5^{\circ}\text{C}$ , Relative humidity  $50\% \pm 10\%$  and air density  $1.19 \text{ kg/m}^3$
2. Calibration Method : WI-CL-007 base on OIML R 111-1 : 2004(E)
3. Reference standard instrument

Instrument	Class	ID No.	Certificate No.	Due Date
1) Standard Weight 1 mg to 1 kg	E2	LB-WE-83	24-001894	11 January 2025

4. This certification is traceable to the International System of Unit maintained at : -

Asia Medical and Agricultural Laboratory and Research Center Public Company Limited

( Instrument number 1).

5. Condition of Calibration item: Normal

## 6. Description of Calibrated Item :

Type and Nominal Value :	Standard Weight 50 g
Shape :	Cylindrical weight with knob
Material :	Stainless steel
Case :	Wooden Box
Comments :	Recalibration

- End of Report -

**THERMO-HYGROMETER**

**Model : 608-H1**

**Serial No. : 45106737**

## CERTIFICATE OF CALIBRATION

Page 1 of 2

Certificate No. : 25-090091

Sample Code : 25-39161-001

Customer : EASTERN THAI CONSULTING 1992 CO., LTD.

683 Moo 11, Sukhaphibarn 8 Rd., Nongkham,

Sriracha, Chonburi 20230

Location of Calibration : Asia Medical and Agricultural Laboratory and Research Center Public Company Limited  
(Calibration laboratory)

Equipment : Digital thermo-hygrometer

Manufacturer : testo

Model : 608-H1

Serial No. : 45106737

ID No. : LABE 09/7

Date of Receipt : 21 May 2025

Date of Calibration : 23 May 2025

## Condition of Calibration

1. Environment
- 1.1 Ambient temperature : 23.0 °C ± 3.0 °C
- 1.2 Relative humidity : 55.0 % ± 15.0 %

## 2. Calibration method

- 2.1 In-house method: WI-CL-045 By comparison with thermometer standard / chilled mirror hygrometer in controlled chamber.
- 2.2 The calibration by comparison unit under calibration (UUC) to the thermometer standard / chilled mirror hygrometer in a chamber at the controlled temperature / relative humidity.

## 3. Reference standard instrument

Instrument	Model	ID No.	Certificate No.	Due Date
3.1 Chilled Mirror	Optidew 401	LB-DP-03 & LB-DP-03 (DP)	TH-0122-24	25 September 2025
3.2 Digital Thermometer	Optidew 401	LB-DP-03 & LB-DP-03 (Temp.)	24-138856	28 October 2025
3.3 Digital Thermometer	34972A	LB-DA-07 with RTD-89	24-106857	21 August 2025

## 4. This certificate is traceable to the international system of unit (SI Unit).

- 4.1 Instrument No. 3.1 through National Institute of Metrology (Thailand).
- 4.2 Instrument No. 3.2 and 3.3 through Asia Medical and Agricultural Laboratory and Research Center Public Company Limited.

## 5. This result of calibration was found accurate as shown on date and place of calibration only.

## 6. Condition of calibration item : Normal

Calibrated by

Miss Pornsuda Lohabal

Approved by

(Mr. Somchai Neampunt)

Scientist

Signed for Director

Issue date

26 May 2025

The uncertainties are for a confidence probability of approximately 95%.

The calibration result is applied only to the above calibrated item and was found accurate as shown on date and place of calibration only.

This Certificate is issued in accordance with the conditions of accreditation granted by the Thai Laboratory Accreditation scheme which has assessed the measurement capability of the laboratory and its traceability to recognized national standards and to the unit of measurement realized at the corresponding national standards laboratory. This certificate may not be reproduced other than in full except with the prior written approval of the Asia Medical and Agricultural Laboratory and Research Center Public Company Limited (AMARC).

361 Soi Ladprao 122, Ladprao Road,  
Phlabphla, Wang Thonglang, Bangkok 10310  
FM-CL-0114

TEL 02-516-2422  
FAX 02-516-6949  
Rev 01

CONTACT@AMARC.CO.TH  
WWW.AMARC.CO.TH  
Effective Date: 15/10/21

## REPORT OF CALIBRATION

Page 2 of 2

Certificate No. : 25-090091

Sample Code : 25-39161-001

## Results of Calibration

## Temperature measurement

Resolution : 0.1 °C

Range : 0 °C to 50 °C

Calibration point °C	Average of standard reading		Unit under calibration		uncertainty °C
	Controlled humidity %RH	Temperature °C	Average reading °C	Correction value °C	
20	50	20.01	20.2	- 0.19	± 0.39
25	50	25.01	25.0	+ 0.01	± 0.39
30	50	30.01	30.0	+ 0.01	± 0.39

## Humidity measurement

Resolution : 0.1 %RH

Range : 10 %RH to 95 %RH

Calibration point %RH	Average of standard reading		Unit under calibration		uncertainty %RH
	Air temperature °C	Calculated humidity %RH	Average reading %RH	Correction value %RH	
45	25.02	45.10	50.2	- 5.10	± 1.3
60	25.02	60.15	65.2	- 5.05	± 1.5
75	25.02	75.01	82.1	- 7.09	± 1.7

## Notes

- Calibration results without adjustment.

The result expanded uncertainty of measurement  $U$  is stated as the standard uncertainty of measurement multiplied by the coverage factor  $k=2.00$ , which for a normal distribution corresponds to a coverage probability of approximately 95%. This standard uncertainty of measurement has been determined in accordance with UKAS M3003.

- End of Report -

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Phlabphla, Wang Thonglang, Bangkok 10310  
FM-CL-0114

TEL 02-516-2422  
FAX 02-516-6949  
Rev 01

CONTACT@AMARC.CO.TH  
WWW.AMARC.CO.TH  
Effective Date: 15/10/21

**TURBIDITY METER**

**Model : H 188703-02**

**Serial No. : H0083335**



## Hanna Instruments (Thailand) Ltd.

410/67-68 Soi Ratchadapisek 24, Ratchadapisek Rd., Samsen-nok,  
Huaykwang, Bangkok 10310 Tel: 0-2541-4199 Fax: 0-2541-4198


Certificate No. : HIT-2509-0292

Page : 1 of 2

### CERTIFICATE OF ANALYSIS

**Equipment :** Turbidity Meter  
**Meter Model :** HI88703-02 **Serial No. :** H0083335  
**Manufacturer :** Hanna Instruments  
**Made in :** Romania  
**Condition As-Received :** Used Product  
**Reference :** RI:250303  
**Customer name :** Eastern Thai Consulting 1992 Co., Ltd.  
683 Moo. 11, Sukhaphiban 8 Rd., Nongkham, Sriracha,  
Chonburi 20230  
**Received date :** 20 February 2025  
**Calibrate date :** 24 February 2025  
**Issue date :** 24 February 2025  
**Ambient Temperature :** ( 25 ± 2 ) °C  
**Relative Humidity :** ( 50 ± 15 ) % RH  
**Calibrated Location :** Hanna Instruments (Thailand) Ltd.

**Calibrated by :** ☒ Mr. Pichit Petthong  
☐ Mr. Channarong Soinak  
☐ Mr. Wasu Kulsai

**Approved by :**   
Mr. Anan Suwanchaisakul  
Authorized Signatory



This certificate was certified only for the instrument we calibrated.

This result of calibration was found accurate on date and place of calibration only.

\*\* This certificate may not be reproduced other than in full, except with the prior written \*\*

approval of the head of Hanna Instrument (Thailand)



Certificate No. : HIT-2509-0292

Page : 2 of 2

### Condition of this result of analysis

### Turbidity standard calibration set :

**Product code:** HI98703-11 **Lot No.:** SC0430/24

Standard Cuvette	Target Value (NTU)	Mean Lot value (NTU)	Lot Number	Best used before
HI98703-1	<0.10	0.04	8295	October 2026
HI98703-2	15.0 ± 0.3	15.0	8306	October 2026
HI98703-3	100 ± 2	100	8309	October 2026
HI98703-4	750 ± 10	750	8310	October 2026

### Method of Standardization

This quality product is standardized using Turbidity meter with is calibration ratio nephelometric method (90°), ratio of scatter and transmitted light adaptation of the USEPA Method 108.1 and standard method 2130B as the following details below :

### Result of analysis :

Turbidity Standard (NTU)	Reading (NTU)	Error (NTU)
<0.10	0.07	-
15.0 ± 0.3	15.0	0.0
100 ± 2	101	1
750 ± 10	748	-2

\*\* End of certificate \*\*

**COPY**

**UV/VIS SPECTROPHOTOMETER**

**Model : UV-1800**

**Serial No. : A11635101643 CD**

# Certificate of Calibration

Number of Page(s) 1 of 3

**Certificate No.** BSCC-UV-153/25  
**Equipment** UV/Vis Spectrophotometer  
**Model** UV-1800  
**Manufacturer** Shimadzu  
**Serial No.** A11635101643 CD  
**ID No.** LABC 03/2  
**Date of receipt** 21 April 2025  
**Date of calibration** 21 April 2025  
**Date of issue** 25 April 2025

**Customer name** Eastern Thai Consulting 1992 Co., Ltd.

**Address** 683 Moo 11, Sukkaphibarn 8 Rd., Nongkham, Sriracha, Chonburi 20230

**Temperature** (24.7-26.8) °C (On site)  
**Humidity** (36.9-46.2) %RH (On site)

**Equipment condition** Good Operation

**Calibration Location** Analysis Department

**Calibration Procedure** In-house method WI-UV-702-01 based on ASTM E275-01

**Traceability** Wavelength Accuracy is traceable to certificate No. 114485 and 114511  
Photometric Accuracy is traceable to certificate No. 119612 and 114653  
Stray Light is traceable to certificate No. 114484  
The above certificate are traceable to SI unit through Sarna Scientific Ltd.  
(UKAS accredited calibration laboratory NO. 0659)

**Calibrated by** Mr.Phongpak Sonbunchu

Approved by



**Mr. Panhaphong Phanmekakul**  
Technical Manager

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The above results are valid exclusively for the calibrated item(s) as mention in this report / certificate.  
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# Certificate of Calibration

**Certificate No.** BSCC-UV-153/25

Number of Page(s) 2 of 3

## Calibration Results:

### 1.Wavelength Accuracy

Certified Wavelength (nm)	UUC (nm)	Error (nm)	Uncertainty (±nm)
287.71	287.70	-0.01	0.18
445.82	445.87	0.05	0.18
536.52	536.52	0.00	0.18
741.02	741.05	0.03	0.18
879.41	879.33	-0.08	0.18

### 2.Photometric Accuracy (UV)

Wavelength (nm)	Certified Absorbance (A)	UUC (A)	Error (A)	Uncertainty (±A)
235	0.0000	-0.0001	-0.0001	0.0075
	0.7404	0.7416	0.0012	0.0075
257	CNR	CNR	CNR	CNR
	CNR	CNR	CNR	CNR
313	CNR	CNR	CNR	CNR
	CNR	CNR	CNR	CNR
350	0.0000	0.0000	0.0000	0.0075
	0.6397	0.6398	0.0001	0.0075

\*CNR = Customer not request

**COPY**

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except in full, without written approval of the Bara Scientific Co., Ltd.



**Bara Scientific Co., Ltd.**  
968 U Chu Liang Building Floor7 Rama4 Road  
Silom Bangkok Bangkok Thailand 10500  
Tel : 02-6324300 Fax : 02-6375496-7  
www.barascientific.com



# Certificate of Calibration

Certificate No. BSCC-UV-153/25

Number of Page(s) 3 of 3

## Calibration Results:

### 3. Photometric Accuracy (Visible)

Wavelength (nm)	Certified Absorbance (A)	UUC (A)	Error (A)	Uncertainty ( $\pm A$ )
420.0	0.0000	0.0001	0.0001	0.0042
	0.5733	0.5712	-0.0021	0.0042
	0.7113	0.7097	-0.0016	0.0042
	1.0164	1.0150	-0.0014	0.0042
440.0	0.0000	0.0000	0.0000	0.0042
	0.5581	0.5559	-0.0022	0.0042
	0.6996	0.6975	-0.0021	0.0042
	1.0000	0.9984	-0.0016	0.0042
465.0	CNR	CNR	CNR	CNR
	CNR	CNR	CNR	CNR
	CNR	CNR	CNR	CNR
	CNR	CNR	CNR	CNR
546.1	0.0000	0.0000	0.0000	0.0042
	0.5217	0.5202	-0.0015	0.0042
	0.6970	0.6947	-0.0023	0.0042
	0.9982	0.9969	-0.0013	0.0042
590.0	CNR	CNR	CNR	CNR
	CNR	CNR	CNR	CNR
	CNR	CNR	CNR	CNR
	CNR	CNR	CNR	CNR
635.0	0.0000	0.0000	0.0000	0.0042
	0.5630	0.5620	-0.0010	0.0042
	0.7615	0.7594	-0.0021	0.0042
	1.0953	1.0943	-0.0010	0.0042

\*CNR = Customer not request

### 4. Stray Light\*

Standard cut-off wavelength (nm)	Unit Under Calibration(UUC)		
	Wavelength (nm)	Transmission (%T)	Absorbance (A)
201.10 $\pm$ 0.11nm	200.85	0.9740	2.0116

The Stray light transmission reference is less than 1.0%T and Stray light absorbance reference is greater than 2.00A

\*Stray Light not NSC-ONSC Accredited.

The measurement uncertainty is base on a standard uncertainty multiplied by a coverage factor k=2 providing a level of confidence of approximately 95%.

\*\*\*End of Certificate\*\*\*

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ภาคผนวกที่ 6

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เอกสาร Detection Limit ของรายการทดสอบ

การตรวจวิเคราะห์คุณภาพอากาศ (Air Quality Analysis)

(ประเภทตัวอย่าง : อากาศในบรรยากาศโดยทั่วไป - Ambient Air Quality)									
Items	Parameter	Method	Reference Method / Analytical Technique	Air Volume	Sampling Rate / Period	LOQ / Range	Unit	Decimal point	Remark
เกณฑ์ปฏิบัติการมาตรฐาน									
1	Sulfur Dioxide (SO <sub>2</sub> )	UV Fluorescence Method	U.S. EPA EQSA-0292-084 / Sulfur Dioxide Analyzer	-	24 hrs (1 hr avg.)	0.001 - 10	ppm	3	
2	Nitrogen Dioxide (NO <sub>2</sub> )	Chemiluminescence Method	U.S. EPA RFCA-0995-108 / Nitrogen Dioxide	-	24 hrs (1 hr avg.)	0.001 - 10	ppm	3	
3	Carbon Monoxide (CO)	Non-Dispersive Infrared Photometric Method	U.S. EPA 40 CFR Part 50 Appendix C / Carbon	-	24 hrs (8 hr avg.)	0.1 - 100	ppm	1	
4	Ozone (O <sub>3</sub> )	UV Fluorescence Method	U.S. EPA 40 CFR Part 50 Appendix D / Ozone	-	24 hrs (1 hr avg.)	0.001 - 10	ppm	3	
5	Sound (Leq, Lmin, Lmax, Ldn, Lp)	Integrated Sound Level Method	ISO 1996-1 / Sound Level meter	-	24 hrs (1 hr avg.)	40 - 140	dB (A)	1	
6	Wind Speed & Wind Direction	Wind Speed & Wind Direction Sensor	ASTM D 4480-93 / WS/WD Equipment	-	-	-	-	-	Wind speed & Wind direction
ส่วนงานทดสอบพื้นฐาน									
1	Total Particulate Matter (TSP)	Gravimetric Method	U.S. EPA Method Part 50 / Gravimetric Method	-	-	-	mg / m <sup>3</sup> ppm	2	
2	PM10	Gravimetric Method	U.S. EPA Method Part 50 / Gravimetric Method	-	-	-	mg / m <sup>3</sup> ppm	2	
3	PM2.5	Gravimetric Method	U.S. EPA Method Part 50 / Gravimetric Method	-	-	200	mg / m <sup>3</sup>	-	
ส่วนงานห้องวิเคราะห์ทดสอบ									
1	Ammonia (NH <sub>3</sub> )	Impingement Absorption, Colorimetric Method	APHA 401 / Spectrophotometer	288 L	0.2 L/min (24 hrs)	0.01	mg / m <sup>3</sup>	2	
2	Sulfur Dioxide (SO <sub>2</sub> )	Pararosaniline Method	U.S. EPA 40 CFR Part 50 Appendix A / Spectrophotometer	288 L	0.2 L/min (24 hrs)	0.01	mg / m <sup>3</sup>	2	
3	Aluminum (Al)	Filtration, ICP-OES Method	U.S. EPA Method IO-3.4 / High Volume - ICP-OES	1,590 – 2,447 m <sup>3</sup>	39-60 ft <sup>3</sup> /min (24 hrs)	0.002	ug / m3	3	Advantage MFS Cat. No. GA55 8 x 10 "
4	Antimony (Sb)	Filtration, ICP-OES Method	U.S. EPA Method IO-3.4 / High Volume - ICP-OES	1,590 – 2,447 m <sup>3</sup>	39-60 ft <sup>3</sup> /min (24 hrs)	0.009	ug / m3	3	Advantage MFS Cat. No. GA55 8 x 10 "
5	Arsenic (As)	Filtration, ICP-OES Method	U.S. EPA Method IO-3.4 / High Volume - ICP-OES	1,590 – 2,447 m <sup>3</sup>	39-60 ft <sup>3</sup> /min (24 hrs)	0.009	ug / m3	3	Advantage MFS Cat. No. GA55 8 x 10 "
6	Barium (Ba)	Filtration, ICP-OES Method	U.S. EPA Method IO-3.4 / High Volume - ICP-OES	1,590 – 2,447 m <sup>3</sup>	39-60 ft <sup>3</sup> /min (24 hrs)	0.002	ug / m3	3	Advantage MFS Cat. No. GA55 8 x 10 "
7	Cadmium (Cd)	Filtration, ICP-OES Method	U.S. EPA Method IO-3.4 / High Volume - ICP-OES	1,590 – 2,447 m <sup>3</sup>	39-60 ft <sup>3</sup> /min (24 hrs)	0.002	ug / m3	3	Advantage MFS Cat. No. GA55 8 x 10 "
8	Calcium (Ca)	Filtration, ICP-OES Method	U.S. EPA Method IO-3.4 / High Volume - ICP-OES	1,590 – 2,447 m <sup>3</sup>	39-60 ft <sup>3</sup> /min (24 hrs)	0.090	ug / m3	3	Advantage MFS Cat. No. GA55 8 x 10 "
9	Chromium (Cr)	Filtration, ICP-OES Method	U.S. EPA Method IO-3.4 / High Volume - ICP-OES	1,590 – 2,447 m <sup>3</sup>	39-60 ft <sup>3</sup> /min (24 hrs)	0.002	ug / m3	3	Advantage MFS Cat. No. GA55 8 x 10 "

Items	Parameter	Method	Reference Method / Analytical Technique	Air Volume	Sampling Rate / Period	LOQ / Range	Unit	Decimal point	Remark
10	Copper (Cu)	Filtration, ICP-OES Method	U.S. EPA Method IO-3.4 / High Volume - ICP-OES	1,590 – 2,447 m <sup>3</sup>	39-60 ft <sup>3</sup> /min (24 hrs)	0.002	ug / m3	3	Advantage MFS Cat. No. GA55 8 x 10 "
11	Iron (Fe)	Filtration, ICP-OES Method	U.S. EPA Method IO-3.4 / High Volume - ICP-OES	1,590 – 2,447 m <sup>3</sup>	39-60 ft <sup>3</sup> /min (24 hrs)	0.002	ug / m3	3	Advantage MFS Cat. No. GA55 8 x 10 "
12	Lead (Pb)	Filtration, ICP-OES Method	U.S. EPA Method IO-3.4 / High Volume - ICP-OES	1,590 – 2,447 m <sup>3</sup>	39-60 ft <sup>3</sup> /min (24 hrs)	0.002	ug / m3	3	Advantage MFS Cat. No. GA55 8 x 10 "
13	Magnesium (Mg)	Filtration, ICP-OES Method	U.S. EPA Method IO-3.4 / High Volume - ICP-OES	1,590 – 2,447 m <sup>3</sup>	39-60 ft <sup>3</sup> /min (24 hrs)	0.090	ug / m3	3	Advantage MFS Cat. No. GA55 8 x 10 "
14	Manganese (Mn)	Filtration, ICP-OES Method	U.S. EPA Method IO-3.4 / High Volume - ICP-OES	1,590 – 2,447 m <sup>3</sup>	39-60 ft <sup>3</sup> /min (24 hrs)	0.002	ug / m3	3	Advantage MFS Cat. No. GA55 8 x 10 "
15	Mercury (Hg)	Filtration, AAS Method	U.S. EPA Method IO-3.4 / High Volume - AAS	1,590 – 2,447 m <sup>3</sup>	39-60 ft <sup>3</sup> /min (24 hrs)	0.0001	ug / m3	4	Advantage MFS Cat. No. GA55 8 x 10 "
16	Nickel (Ni)	Filtration, ICP-OES Method	U.S. EPA Method IO-3.4 / High Volume - ICP-OES	1,590 – 2,447 m <sup>3</sup>	39-60 ft <sup>3</sup> /min (24 hrs)	0.002	ug / m3	3	Advantage MFS Cat. No. GA55 8 x 10 "
17	Potassium (K)	Filtration, ICP-OES Method	U.S. EPA Method IO-3.4 / High Volume - ICP-OES	1,590 – 2,447 m <sup>3</sup>	39-60 ft <sup>3</sup> /min (24 hrs)	0.090	ug / m3	3	Advantage MFS Cat. No. GA55 8 x 10 "
18	Sodium (Na)	Filtration, ICP-OES Method	U.S. EPA Method IO-3.4 / High Volume - ICP-OES	1,590 – 2,447 m <sup>3</sup>	39-60 ft <sup>3</sup> /min (24 hrs)	0.090	ug / m3	3	Advantage MFS Cat. No. GA55 8 x 10 "
19	Tin (Sn)	Filtration, ICP-OES Method	U.S. EPA Method IO-3.4 / High Volume - ICP-OES	1,590 – 2,447 m <sup>3</sup>	39-60 ft <sup>3</sup> /min (24 hrs)	0.009	ug / m3	3	Advantage MFS Cat. No. GA55 8 x 10 "
20	Titanium (Ti)	Filtration, ICP-OES Method	U.S. EPA Method IO-3.4 / High Volume - ICP-OES	1,590 – 2,447 m <sup>3</sup>	39-60 ft <sup>3</sup> /min (24 hrs)	0.002	ug / m3	3	Advantage MFS Cat. No. GA55 8 x 10 "
21	Vanadium (V)	Filtration, ICP-OES Method	U.S. EPA Method IO-3.4 / High Volume - ICP-OES	1,590 – 2,447 m <sup>3</sup>	39-60 ft <sup>3</sup> /min (24 hrs)	0.002	ug / m3	3	Advantage MFS Cat. No. GA55 8 x 10 "
22	Zinc (Zn)	Filtration, ICP-OES Method	U.S. EPA Method IO-3.4 / High Volume - ICP-OES	1,590 – 2,447 m <sup>3</sup>	39-60 ft <sup>3</sup> /min (24 hrs)	0.002	ug / m3	3	Advantage MFS Cat. No. GA55 8 x 10 "
23	Selenium (Se)	Filtration, ICP-OES Method	U.S. EPA Method IO-3.4 / High Volume - ICP-OES	1,590 – 2,447 m <sup>3</sup>	39-60 ft <sup>3</sup> /min (24 hrs)	0.009	ug / m3	3	Advantage MFS Cat. No. GA55 8 x 10 "
24	Acetone	Sorbent Adsorption, GC Method	ASTM D 3687-95 / GC-FID	144 L	0.10 L/min (24 hrs)	0.14 0.06	mg / m <sup>3</sup> ppm	2	SKC Cat. No. ST 226-01
25	Benzene	Sorbent Adsorption, GC Method	ASTM D 3687-95 / GC-FID	144 L	0.10 L/min (24 hrs)	0.12 0.04	mg / m <sup>3</sup> ppm	2	SKC Cat. No. ST 226-02
26	Cyclohexanone	Sorbent Adsorption, GC Method	ASTM D 3687-95 / GC-FID	144 L	0.10 L/min (24 hrs)	0.16 0.04	mg / m <sup>3</sup> ppm	2	SKC Cat. No. ST 226-04

Items	Parameter	Method	Reference Method / Analytical Technique	Air Volume	Sampling Rate / Period	LOQ / Range	Unit	Decimal point	Remark
27	Ethanol (Ethyl alcohol)	Sorbent Adsorption, GC Method	ASTM D 3687-95 / GC-FID	288 L	0.10 L/min (24 hrs)	0.14 0.07	mg / m <sup>3</sup> ppm	2	SKC Cat. No. ST 226-05
28	Ethylacetate	Sorbent Adsorption, GC Method	ASTM D 3687-95 / GC-FID	144 L	0.10 L/min (24 hrs)	0.32 0.09	mg / m <sup>3</sup> ppm	2	SKC Cat. No. ST 226-06
29	Ethylbenzene	Sorbent Adsorption, GC Method	ASTM D 3687-95 / GC-FID	144 L	0.10 L/min (24 hrs)	0.15 0.03	mg / m <sup>3</sup> ppm	2	SKC Cat. No. ST 226-07
30	Hexane	Sorbent Adsorption, GC Method	ASTM D 3687-95 / GC-FID	144 L	0.10 L/min (24 hrs)	0.32 0.09	mg / m <sup>3</sup> ppm	2	SKC Cat. No. ST 226-08
31	Isopropanol (Isopropyl alcohol) ; IPA	Sorbent Adsorption, GC Method	ASTM D 3687-95 / GC-FID	288 L	0.10 L/min (24 hrs)	0.14 0.06	mg / m <sup>3</sup> ppm	2	SKC Cat. No. ST 226-09
32	Methanol (Methyl alcohol)	Sorbent Adsorption, GC Method	ASTM D 3687-95 / GC-FID	144 L	0.10 L/min (24 hrs)	0.07 0.05	mg / m <sup>3</sup> ppm	2	SKC Cat. No. ST 226-10
33	Methyl Ethyl Ketone (MEK)	Sorbent Adsorption, GC Method	ASTM D 3687-95 / GC-FID	144 L	0.10 L/min (24 hrs)	0.14 0.05	mg / m <sup>3</sup> ppm	2	SKC Cat. No. ST 226-11
34	Styrene	Sorbent Adsorption, GC Method	ASTM D 3687-95 / GC-FID	144 L	0.10 L/min (24 hrs)	0.16 0.04	mg / m <sup>3</sup> ppm	2	SKC Cat. No. ST 226-12
35	Toluene	Sorbent Adsorption, GC Method	ASTM D 3687-95 / GC-FID	144 L	0.10 L/min (24 hrs)	0.15 0.04	mg / m <sup>3</sup> ppm	2	SKC Cat. No. ST 226-13
36	Xylene	Sorbent Adsorption, GC Method	ASTM D 3687-95 / GC-FID	144 L	0.10 L/min (24 hrs)	0.15 0.03	mg / m <sup>3</sup> ppm	2	SKC Cat. No. ST 226-14
37	Methylcyclohexane	Sorbent Adsorption, GC Method	NIOSH 1500 (P.1-8) / PS pump / GC-FID	2-23 L	0.10 L/min (1 hr)	0.32 0.08	mg / m <sup>3</sup> ppm	2	SKC Cat. No. ST 226-01
38	Methyl acetate	Sorbent Adsorption, GC Method	NIOSH 1458 (P.1-8) / PS pump / GC-FID	0.2-10 L	0.10 L/min (1 hr)	0.61 0.20	mg / m <sup>3</sup> ppm	2	SKC Cat. No. ST 226-01
39	Diethyl Ether or Ethyl Ether	Sorbent Adsorption, GC Method	NIOSH 1610 (P.1-4) / PS pump / GC-FID	0.25-3 L	0.01-0.20 L/min (1 hr)	0.12 0.04	mg / m <sup>3</sup> ppm	2	SKC Cat. No. ST 226-01
40	Methyl tert-Butyl Ether (MTBE)	Sorbent Adsorption, GC Method	NIOSH 1615 (P.1-4) / PS pump / GC-FID	2-96 L	0.01-0.20 L/min (1 hr)	0.13 0.04	mg / m <sup>3</sup> ppm	2	SKC Cat. No. ST 226-01
41	Dichloromethane	Sorbent Adsorption, GC Method	NIOSH 1005 (P.1-4) / PS pump / GC-FID	0.5-2.5 L	0.01-0.20 L/min (1 hr)	0.23 0.07	mg / m <sup>3</sup> ppm	2	SKC Cat. No. ST 226-01
42	1-Butanol /n-butyl alcohol	Sorbent Adsorption, GC Method	NIOSH 1401 (P.1-4) / PS pump / GC-FID	2-10 L	0.01-0.20 L/min (1 hr)	0.17 0.06	mg / m <sup>3</sup> ppm	2	SKC Cat. No. ST 226-01
43	2-Butanol /sec-butyl alcohol	Sorbent Adsorption, GC Method	NIOSH 1401 (P.1-4) / PS pump / GC-FID	2-10 L	0.01-0.20 L/min (1 hr)	0.17 0.06	mg / m <sup>3</sup> ppm	2	SKC Cat. No. ST 226-01

Items	Parameter	Method	Reference Method / Analytical Technique	Air Volume	Sampling Rate / Period	LOQ / Range	Unit	Decimal point	Remark
44	Isobutyl alcohol (IBA)	Sorbent Adsorption, GC Method	NIOSH 1401 (P.1-4) / PS pump / GC-FID	2-10 L	0.01-0.20 L/min (1 hr)	0.17 0.06	mg / m <sup>3</sup> ppm	2	SKC Cat. No. ST 226-01
45	Methyl Isobutyl Ketone (MIBK)	Sorbent Adsorption, GC Method	OSHA 1004(P.1-27) / PS pump / GC-FID	0.25-12L	0.10 L/min (1 hr)	0.14 0.03	mg / m <sup>3</sup> ppm	2	SKC Cat. No. ST 226-01
46	Ketones	Sorbent Adsorption, GC Method	NIOSH 2555 (P.1-5) / PS pump / GC-FID	0.5-10L	0.01-0.20 L/min (1 hr)	0.14 0.06	mg / m <sup>3</sup> ppm	2	SKC Cat. No. ST 226-01
47	n-Butyl acetate	Sorbent Adsorption, GC Method	NIOSH 1450 (P.1-6) / PS pump / GC-FID	1-10L	0.01-0.20 L/min (1 hr)	0.38 0.08	mg / m <sup>3</sup> ppm	2	SKC Cat. No. ST 226-01
48	n-Pentane	Sorbent Adsorption, GC Method	NIOSH 1500 (P.1-8) / PS pump / GC-FID	-	0.01-0.20 L/min (1 hr)	0.11 0.04	mg / m <sup>3</sup> ppm	2	SKC Cat. No. ST 226-01
49	Chloroform	Sorbent Adsorption, GC Method	NIOSH 1003 (P.1-7) / PS pump / GC-FID	1-50L	0.01-0.20 L/min (1 hr)	0.21 0.04	mg / m <sup>3</sup> ppm	2	SKC Cat. No. ST 226-01
50	Chlorobenzene	Sorbent Adsorption, GC Method	NIOSH 1003 (P.1-7) / PS pump / GC-FID	1.5-40L	0.01-0.20 L/min (1 hr)	0.19 0.04	mg / m <sup>3</sup> ppm	2	SKC Cat. No. ST 226-01
51	Formaldehyde	Sorbent Adsorption, GC Method	NIOSH 2541 (P.1-5) / PS pump / GC-FID	1-36L	0.01-0.10 L/min (1 hr)	0.01 0.01	mg / m <sup>3</sup> ppm	2	SKC Cat. No. 226-118
52	Hydrogen chloric	Sorbent Adsorption, IC Method	OSHA ID-174SG / PS pump / IC	1-7.5 L	0.20 L/min (24 hr)	0.015 0.010	mg / m <sup>3</sup> ppm	3	SKC Cat. No. 226-10-03
53	Hydrogen Bromide	Sorbent Adsorption, IC Method	OSHA ID165SG / PS pump / IC	1-96 L	0.20 L/min (24 hr)	0.033 0.010	mg / m <sup>3</sup> ppm	3	SKC Cat. No. 226-10-03
54	Sulfuric Acid	Sorbent Adsorption, IC Method	OSHA ID165SG / PS pump / IC NIOSH 7908 / PS pump / IC	1-96 L	0.20 L/min (24 hr)	0.040 0.010	mg / m <sup>3</sup> ppm	3	SKC Cat. No. 226-10-03 Filter (PTFE)
55	Phosphoric Acid	Sorbent Adsorption, IC Method	OSHA ID165SG / PS pump / IC NIOSH 7908 / PS pump / IC	1-96 L	0.20 L/min (24 hr)	0.040 0.010	mg / m <sup>3</sup> ppm	3	SKC Cat. No. 226-10-03 Filter (PTFE)
56	Nitric	Sorbent Adsorption, IC Method	OSHA ID165SG / PS pump / IC	1-96 L	0.20 L/min (24 hr)	0.026 0.010	mg / m <sup>3</sup> ppm	3	SKC Cat. No. 226-10-03
57	Chlorine	Sorbent Adsorption, IC Method	OSHA ID-202 / PS pump / IC	14 L	0.20 L/min (24 hr)	0.029 0.010	mg / m <sup>3</sup> ppm	3	0.02% KI in Buffer solution
58	Ammonia (NH <sub>3</sub> )	Sorbent Adsorption, IC Method	NIOSH 6016 / PS pump / IC	12 L	200 L/min (120min)	0.200 0.280	mg / m <sup>3</sup> ppm	3	SKC Cat. No. 226-10-06
59	Hydrogen fluoride	Sorbent Adsorption, IC Method	OSHA ID165SG / PS pump / IC	60 L	200 L/min (60min)	0.008 0.010	mg / m <sup>3</sup> ppm	3	SKC Cat. No. 226-10-03

เอกสารอ้างอิง

- 1. Method of Air Sampling and Analysis, APHA Intersociety Committee, 2017
- 2. NIOSH Manual of Analytical Methods (NMAM)
- 3. Code of Federal Regulation, U.S. EPA. , 40 CFR Part 50, Part 60, 2000
- 4. Occupational Health and Safety Management System(OSHA) Analytical Methods Manuel
- 5. International Standard Organization, ISO 11204:1995
- 6. Compendium of Methods for Determination of Inorganic Compound in Ambient Air, U.S. EPA. , 1999
- 7. Annual Book of ASTM Standard, Section 11, 2001

การตรวจวิเคราะห์คุณภาพอากาศ (Air Quality Analysis)

(ประเภทตัวอย่าง : อากาศในปล่องระบาย - Stack Air Quality)

ตารางที่ 1 สรุปข้อกำหนดการเก็บตัวอย่างและความสามารถในการทดสอบตัวอย่างของห้องปฏิบัติการ [ตามที่ขึ้นทะเบียนกับกรมโรงงานอุตสาหกรรม](#)  
(ประเภทตัวอย่าง : อากาศในปล่องระบาย - Stack Air Quality)

Items	Parameter	Method	Reference Method / Analytical Technique	Air Volume	Sampling Rate / Period	LOQ / Range	Unit	Decimal point	Remark
เทคนิคปฏิบัติการภาคสนาม									
1	Smoke density (Opacity)	Ringelmann' s method	U.S. EPA Method 9 / Ringelmann' s Chart	-	-	-	%	2	
2	Oxide of Nitrogen	Chemiluminescence Method	U.S. EPA Method 7E / Nitrogen dioxide Analyzer	-	-	0.1 - 100	ppm	1	ใช้ Dilution Probe ร่วมในการตรวจวัด
3	Sulfur Dioxide	UV Fluorescence Method	U.S. EPA Method 6C / Sulfur dioxide Analyzer	-	-	0.4 - 100	ppm	1	ใช้ Dilution Probe ร่วมในการตรวจวัด
4	Carbon Monoxide	Bag,Non-Dispersive Infrared Method	U.S. EPA method 10 / Carbon monoxide analyzer	-	-	0.1 - 100	ppm	1	ใช้ Dilution Probe ร่วมในการตรวจวัด
ส่วนงานทดสอบพื้นฐาน									
1	Hydrogen Sulfide (H <sub>2</sub> S)	Absorption, Iodometric Method	U.S. EPA Method 11 / Iodometric			8.0 6.0	mg / m <sup>3</sup> ppm	1	
2	Sulfur Dioxide (SO <sub>2</sub> )	Absorption Barium Thorin Titrimetric Method	U.S. EPA Method 6 / Titration	0.03 m <sup>3</sup>	Isokinetic (30 min)	3.4 1.3	mg / m <sup>3</sup> ppm	1	
3	Sulfuric acid (H <sub>2</sub> SO <sub>4</sub> )	Isokinetic, Barium Thorin Titrimetric Method	U.S. EPA Method 8 / Titration	0.9 m <sup>3</sup>	Isokinetic (30 min)	0.05 0.01	mg / m <sup>3</sup> ppm	2	
4	Total Particulate Matter (TSP)	Isokinetic, Sampling / Gravimetric Method	U.S. EPA Method 5 / Gravimetric Method	-	-	0.1	mg / m <sup>3</sup>	1	
ส่วนงานเครื่องมือทดสอบ									
1	Oxide of Nitrogen (Nitrogen Dioxide ;	Chemical Absorption, Colorimetric Method	U.S. EPA Method 7 / Spectrophotometer	2.0 L	Non-Isokinetic (30 min)	2.0 1.0	mg / m <sup>3</sup> ppm	1	
2	Xylene	Sorbent Adsorption, Gas Chromatography Method	US. EPA Method 18 / GC-FID	0.21 m <sup>3</sup>	0.7 L/min (30 min)	2.05 0.47	mg / m <sup>3</sup> ppm	2	SKC Cat. No. 226-09
3	Vanadium (V)	Isokinetic, Sampling,Digestion,ICP-OES Method	U.S. EPA Method 29 / ICP-OES	0.9 m <sup>3</sup>	Isokinetic (30 min)	0.005	mg / m <sup>3</sup>	3	Advantage MFS Cat No. GC5090 MM
4	Tin (Sn)	Isokinetic, Sampling,Digestion,ICP-OES Method	U.S. EPA Method 29 / ICP-OES	0.9 m <sup>3</sup>	Isokinetic (30 min)	0.010	mg / m <sup>3</sup>	3	Advantage MFS Cat No. GC5090 MM
5	Selenium (Se)	Isokinetic, Sampling,Digestion,ICP-OES Method	U.S. EPA Method 29 / ICP-OES	0.9 m <sup>3</sup>	Isokinetic (30 min)	0.010	mg / m <sup>3</sup>	3	Advantage MFS Cat No. GC5090 MM
6	Antimony (Sb)	Isokinetic, Sampling,Digestion,ICP-OES Method	U.S. EPA Method 29 / ICP-AES	0.9 m <sup>3</sup>	Isokinetic (30 min)	0.010	mg / m <sup>3</sup>	3	Advantage MFS Cat No. GC5090 MM

Items	Parameter	Method	Reference Method / Analytical Technique	Air Volume	Sampling Rate / Period	LOQ / Range	Unit	Decimal point	Remark
7	Arsenic (As)	Isokinetic, Sampling,Digestion,ICP-OES Method	U.S. EPA Method 29 / ICP-AES	0.9 m <sup>3</sup>	Isokinetic (30 min)	0.010	mg / m <sup>3</sup>	3	Advantage MFS Cat No. GC5090 MM
8	Cadmium (Cd)	Isokinetic, Sampling,Digestion,ICP-OES Method	U.S. EPA Method 29 / ICP-AES	0.9 m <sup>3</sup>	Isokinetic (30 min)	0.005	mg / m <sup>3</sup>	3	Advantage MFS Cat No. GC5090 MM
9	Chromium (Cr)	Isokinetic, Sampling,Digestion,ICP-OES Method	U.S. EPA Method 29 / ICP-AES	0.9 m <sup>3</sup>	Isokinetic (30 min)	0.005	mg / m <sup>3</sup>	3	Advantage MFS Cat No. GC5090 MM
10	Copper (Cu)	Isokinetic, Sampling,Digestion,ICP-OES Method	U.S. EPA Method 29 / ICP-AES	0.9 m <sup>3</sup>	Isokinetic (30 min)	0.005	mg / m <sup>3</sup>	3	Advantage MFS Cat No. GC5090 MM
11	Cobalt (Co)	Isokinetic, Sampling,Digestion,ICP-OES Method	U.S. EPA Method 29 / ICP-AES	0.9 m <sup>3</sup>	Isokinetic (30 min)	0.005	mg / m <sup>3</sup>	3	Advantage MFS Cat No. GC5090 MM
12	Lead and Inorganic Lead (Pb)	Isokinetic, Sampling,Digestion,ICP-OES Method	U.S. EPA Method 29 / ICP-AES	0.9 m <sup>3</sup>	Isokinetic (30 min)	0.005	mg / m <sup>3</sup>	3	Advantage MFS Cat No. GC5090 MM
13	Manganese (Mn)	Isokinetic, Sampling,Digestion,ICP-OES Method	U.S. EPA Method 29 / ICP-AES	0.9 m <sup>3</sup>	Isokinetic (30 min)	0.005	mg / m <sup>3</sup>	3	Advantage MFS Cat No. GC5090 MM
14	Nickel (Ni)	Isokinetic, Sampling,Digestion,ICP-OES Method	U.S. EPA Method 29 / ICP-AES	0.9 m <sup>3</sup>	Isokinetic (30 min)	0.005	mg / m <sup>3</sup>	3	Advantage MFS Cat No. GC5090 MM
15	Mercury (Hg)	Isokinetic, Sampling,Cold Vapor Technique-AAS Method	U.S. EPA Method 101 / AAS	0.053 m3	Isokinetic (1.5 L/min)	0.0001	mg / m <sup>3</sup>	4	Advantage MFS Cat No. GC5090 MM

การตรวจวิเคราะห์คุณภาพอากาศ (Air Quality Analysis)

ประเภทตัวอย่าง : อากาศในปล่องระบาย - Stack Air Quality

ตารางที่ 2 สรุปข้อกำหนดการเก็บตัวอย่างและความสามารถในการทดสอบตัวอย่างของห้องปฏิบัติการ **ที่ไม่ได้ขึ้นทะเบียนกับกรมโรงงานอุตสาหกรรม**

(ประเภทตัวอย่าง : อากาศในปล่องระบาย - Stack Air Quality)

Items	Parameter	Method	Reference Method / Analytical Technique	Air Volume	Sampling Rate / Period	LOQ / Range	Unit	Decimal point	Remark
เทคนิคปฏิบัติการภาคสนาม									
1	Sampling and Traverse point	U.S. EPA Recommend (Method 1)	U.S. EPA Method 1 / Calculation	-	-	-	-	-	
2	Velocity and Volumetric Flow rate		U.S. EPA Method 2 / Calculation	-	-	-	-	-	
3	Oxygen	Electrochemical Sensor	Modified U.S. EPA 3 / Electrochemical Sensor	-	-	0-20.9	%	1	
4	Moisture Content		U.S. EPA Method 4 / Calculation	-	-	-	-	2	
5	Carbon dioxide (CO <sub>2</sub> )	Electrochemical Sensor	Modified U.S. EPA 3 / Electrochemical Sensor	-	-	0-20.9	%	2	
ส่วนงานทดสอบพื้นฐาน									
1	PM10,PM2.5	Isokinetic, Sampling / Gravimetric Method	U.S. EPA Method 201A / Gravimetric Method	-	-	0.1	mg / m <sup>3</sup>	1	
ส่วนงานเครื่องมือทดสอบ									
1	Aluminium (Al)	Isokinetic, Sampling,Digestion,ICP-OES Method	U.S. EPA Method 29 / ICP-AES	0.9 m <sup>3</sup>	Isokinetic (30 min)	0.005	mg / m <sup>3</sup>	3	Advantage MFS Cat No. GC5090 MM
2	Barium (Ba)	Isokinetic, Sampling,Digestion,ICP-OES Method	U.S. EPA Method 29 / ICP-AES	0.9 m <sup>3</sup>	Isokinetic (30 min)	0.005	mg / m <sup>3</sup>	3	Advantage MFS Cat No. GC5090 MM
3	Calcium (Ca)	Isokinetic, Sampling,Digestion,ICP-OES Method	U.S. EPA Method 29 / ICP-AES	0.9 m <sup>3</sup>	Isokinetic (30 min)	0.100	mg / m <sup>3</sup>	3	Advantage MFS Cat No. GC5090 MM
4	Iron (Fe)	Isokinetic, Sampling,Digestion,ICP-OES Method	U.S. EPA Method 29 / ICP-AES	0.9 m <sup>3</sup>	Isokinetic (30 min)	0.005	mg / m <sup>3</sup>	3	Advantage MFS Cat No. GC5090 MM
5	Magnesium (Mg)	Isokinetic, Sampling,Digestion,ICP-OES Method	U.S. EPA Method 29 / ICP-AES	0.9 m <sup>3</sup>	Isokinetic (30 min)	0.100	mg / m <sup>3</sup>	3	Advantage MFS Cat No. GC5090 MM
6	Beryllium (Be)	Isokinetic, Sampling,Digestion,ICP-OES Method	U.S. EPA Method 29 / ICP-AES	0.9 m <sup>3</sup>	Isokinetic (30 min)	0.005	mg / m <sup>3</sup>	3	Advantage MFS Cat No. GC5090 MM
7	Silver (Ag)	Isokinetic, Sampling,Digestion,ICP-OES Method	U.S. EPA Method 29 / ICP-AES	0.9 m <sup>3</sup>	Isokinetic (30 min)	0.005	mg / m <sup>3</sup>	3	Advantage MFS Cat No. GC5090 MM

Items	Parameter	Method	Reference Method / Analytical Technique	Air Volume	Sampling Rate / Period	LOQ / Range	Unit	Decimal point	Remark
8	Sodium (Na)	Isokinetic, Sampling,Digestion,ICP-OES Method	U.S. EPA Method 29 / ICP-AES	0.9 m <sup>3</sup>	Isokinetic (30 min)	0.100	mg / m <sup>3</sup>	3	Advantage MFS Cat No. GC5090 MM
9	Zinc (Zn)	Isokinetic, Sampling,Digestion,ICP-OES Method	U.S. EPA Method 29 / ICP-AES	0.9 m <sup>3</sup>	Isokinetic (30 min)	0.005	mg / m <sup>3</sup>	3	Advantage MFS Cat No. GC5090 MM
10	Acetone	Sorbent Adsorption, Gas Chromatography Method	US. EPA Method 18 / GC-FID	0.21 m <sup>3</sup>	0.7 L/min (30 min)	1.88 0.79	mg / m <sup>3</sup> ppm	2	SKC Cat. No. 226-09
11	Benzene	Sorbent Adsorption, Gas Chromatography Method	US. EPA Method 18 / GC-FID	0.21 m <sup>3</sup>	0.7 L/min (30 min)	1.68 0.52	mg / m <sup>3</sup> ppm	2	SKC Cat. No. 226-09
12	Cyclohexanone	Sorbent Adsorption, Gas Chromatography Method	US. EPA Method 18 / GC-FID	0.21 m <sup>3</sup>	0.7 L/min (30 min)	2.26 0.56	mg / m <sup>3</sup> ppm	2	SKC Cat. No. 226-09
13	Ethanol (Ethyl alcohol)	Sorbent Adsorption, Gas Chromatography Method	US. EPA Method 18 / GC-FID	0.21 m <sup>3</sup>	0.7 L/min (30 min)	1.88 1.00	mg / m <sup>3</sup> ppm	2	SKC Cat. No. 226-09
14	Ethylbenzene	Sorbent Adsorption, Gas Chromatography Method	US. EPA Method 18 / GC-FID	0.21 m <sup>3</sup>	0.7 L/min (30 min)	2.07 0.48	mg / m <sup>3</sup> ppm	2	SKC Cat. No. 226-09
15	Ethylacetate	Sorbent Adsorption, Gas Chromatography Method	US. EPA Method 18 / GC-FID	0.21 m <sup>3</sup>	0.7 L/min (30 min)	4.32 1.20	mg / m <sup>3</sup> ppm	2	SKC Cat. No. 226-09
16	Hexane	Sorbent Adsorption, Gas Chromatography Method	US. EPA Method 18 / GC-FID	0.21 m <sup>3</sup>	0.7 L/min (30 min)	4.23 1.20	mg / m <sup>3</sup> ppm	2	SKC Cat. No. 226-09
17	Isopropanol (Isopropyl alcohol); IPA	Sorbent Adsorption, Gas Chromatography Method	US. EPA Method 18 / GC-FID	0.21 m <sup>3</sup>	0.7 L/min (30 min)	1.87 0.76	mg / m <sup>3</sup> ppm	2	SKC Cat. No. 226-09
18	Methanol (Methyl alcohol)	Sorbent Adsorption, Gas Chromatography Method	US. EPA Method 18 / GC-FID	0.21 m <sup>3</sup>	0.7 L/min (30 min)	0.94 0.72	mg / m <sup>3</sup> ppm	2	SKC Cat. No. 226-09
19	Methyl Ethyl Ketone (MEK)	Sorbent Adsorption, Gas Chromatography Method	US. EPA Method 18 / GC-FID	0.21 m <sup>3</sup>	0.7 L/min (30 min)	1.92 0.65	mg / m <sup>3</sup> ppm	2	SKC Cat. No. 226-09
20	Styrene	Sorbent Adsorption, Gas Chromatography Method	US. EPA Method 18 / GC-FID	0.21 m <sup>3</sup>	0.7 L/min (30 min)	2.16 0.51	mg / m <sup>3</sup> ppm	2	SKC Cat. No. 226-09
21	Toluene	Sorbent Adsorption, Gas Chromatography Method	US. EPA Method 18 / GC-FID	0.21 m <sup>3</sup>	0.7 L/min (30 min)	2.07 0.55	mg / m <sup>3</sup> ppm	2	SKC Cat. No. 226-09

Items	Parameter	Method	Reference Method / Analytical Technique	Air Volume	Sampling Rate / Period	LOQ / Range	Unit	Decimal point	Remark
22	Methylcyclohexane	Sorbent Adsorption, Gas Chromatography Method	U.S.EPA Method18/SKC.Guide/ GC-FID	2-23 L	0.10 L/min (1 hr)	4.02 1.00	mg / m <sup>3</sup> ppm	2	SKC Cat. No. ST 226-09
23	Diethyl Ether or Ethyl Ether	Sorbent Adsorption, Gas Chromatography Method	U.S.EPA Method18/SKC.Guide/ GC-FID	0.25-3 L	0.01-0.20 L/min (1 hr)	11.88 3.92	mg / m <sup>3</sup> ppm	2	SKC Cat. No. ST 226-09
24	Methyl tert-Butyl Ether (MTBE)	Sorbent Adsorption, Gas Chromatography Method	U.S.EPA Method18/SKC.Guide/ GC-FID	2-96 L	0.01-0.20 L/min (1 hr)	3.08 0.86	mg / m <sup>3</sup> ppm	2	SKC Cat. No. ST 226-09
25	Dichloromethane	Sorbent Adsorption, Gas Chromatography Method	U.S.EPA Method18/SKC.Guide/ GC-FID	0.5-2.5 L	0.01-0.20 L/min (1 hr)	3.16 0.91	mg / m <sup>3</sup> ppm	2	SKC Cat. No. ST 226-09
26	1-Butanol /n-butyl alcohol	Sorbent Adsorption, Gas Chromatography Method	U.S.EPA Method18/SKC.Guide/ GC-FID	2-10 L	0.01-0.20 L/min (1 hr)	2.31 0.76	mg / m <sup>3</sup> ppm	2	SKC Cat. No. ST 226-09
27	2-Butanol /sec-butyl alcohol	Sorbent Adsorption, Gas Chromatography Method	U.S.EPA Method18/SKC.Guide/ GC-FID	2-10 L	0.01-0.20 L/min (1 hr)	2.31 0.76	mg / m <sup>3</sup> ppm	2	SKC Cat. No. ST 226-09
28	Isobutyl alcohol (IBA)	Sorbent Adsorption, Gas Chromatography Method	U.S.EPA Method18/SKC.Guide/ GC-FID	2-10 L	0.01-0.20 L/min (1 hr)	2.29 0.76	mg / m <sup>3</sup> ppm	2	SKC Cat. No. ST 226-09
29	Thallium (Tl)	Isokinetic, Sampling,Digestion,ICP-OES Method	U.S. EPA Method 29 / ICP-AES	0.9 m <sup>3</sup>	Isokinetic (30 min)	0.010	mg / m <sup>3</sup>	3	Advantage MFS Cat No. GC5090 MM
30	Ketones	Sorbent Adsorption, Gas Chromatography Method	NIOSH2555 (P.1-5) / PS pump / GC-FID	21 L	0.70 L/min (1 hr)	1.88 0.79	mg / m <sup>3</sup> ppm	2	SKC Cat. No. 226-09
31	n-Heptane	Sorbent Adsorption, Gas Chromatography Method	NIOSH1500 (P.1-8) / PS pump / GC-FID	21 L	0.70 L/min (1 hr)	3.89 0.95	mg / m <sup>3</sup> ppm	2	SKC Cat. No. 226-09
32	n-Butyl acetate	Sorbent Adsorption, Gas Chromatography Method	NIOSH 1450(P.1-6) / PS pump / GC-FID	21 L	0.70 L/min (1 hr)	4.75 1.00	mg / m <sup>3</sup> ppm	2	SKC Cat. No. 226-09
33	n-Pentane	Sorbent Adsorption, Gas Chromatography Method	NIOSH 1506(P.1-8) / PS pump / GC-FID	21 L	0.70 L/min (1 hr)	1.50 0.51	mg / m <sup>3</sup> ppm	2	SKC Cat. No. 226-09
34	Chloroform	Sorbent Adsorption, Gas Chromatography Method	NIOSH1003 (P.1-7) / PS pump / GC-FID	21 L	0.70 L/min (1 hr)	2.82 0.58	mg / m <sup>3</sup> ppm	2	SKC Cat. No. 226-09
35	Chlorobenzene	Sorbent Adsorption, Gas Chromatography Method	NIOSH1003 (P.1-7) / PS pump / GC-FID	21 L	0.70 L/min (1 hr)	2.64 0.57	mg / m <sup>3</sup> ppm	2	SKC Cat. No. 226-09

Items	Parameter	Method	Reference Method / Analytical Technique	Air Volume	Sampling Rate / Period	LOQ / Range	Unit	Decimal point	Remark
36	Formaldehyde	Sorbent Adsorption, Gas Chromatography Method	NIOSH2541 (P.1-5) / PS pump / GC-FID	21 L	0.70 L/min (1 hr)	0.31 0.25	mg / m <sup>3</sup> ppm	2	SKC Cat. No. 226-118
37	Hydrogen chloride	Sorbent Adsorption, IC Method	EPA Method 26A /IC	0.12 m <sup>3</sup>	1 L/min (30 min)	0.015 0.010	mg / m <sup>3</sup> ppm	3	0.1 N H2SO4 / 0.1 N NaOH
38	Hydrogen fluoride	Sorbent Adsorption, IC Method	EPA Method 26A /IC	0.12 m <sup>3</sup>	1 L/min (30 min)	0.012 0.015	mg / m <sup>3</sup> ppm	3	0.1 N H2SO4 / 0.1 N NaOH
39	Nitric	Sorbent Adsorption, IC Method	EPA Method 26A /IC	0.029 m <sup>3</sup>	1 L/min (30 min)	0.026 0.010	mg / m <sup>3</sup> ppm	3	0.1 N H2SO4 / 0.1 N NaOH
40	Chlorine	Sorbent Adsorption, IC Method	EPA Method 26A /IC	0.12 m <sup>3</sup>	1 L/min (30 min)	0.029 0.010	mg / m <sup>3</sup> ppm	3	Milli-Q Water
41	Molybdenum (Mo)	Isokinetic, Sampling,Digestion,ICP-OES Method	U.S. EPA Method 29 / ICP-AES	0.9 m <sup>3</sup>	Isokinetic (30 min)	0.005	mg / m <sup>3</sup>	3	Advantage MFS Cat No. GC5090 MM
42	Titanium (Ti)	Isokinetic, Sampling,Digestion,ICP-OES Method	U.S. EPA Method 29 / ICP-AES	0.9 m <sup>3</sup>	Isokinetic (30 min)	0.005	mg / m <sup>3</sup>	3	Advantage MFS Cat No. GC5090 MM
43	Boron (B)	Isokinetic, Sampling,Digestion,ICP-OES Method	U.S. EPA Method 29 / ICP-AES	0.9 m <sup>3</sup>	Isokinetic (30 min)	0.005	mg / m <sup>3</sup>	3	Advantage MFS Cat No. GC5090 MM
44	Silicon (Si)	Isokinetic, Sampling,Digestion,ICP-OES Method	U.S. EPA Method 29 / ICP-AES	0.9 m <sup>3</sup>	Isokinetic (30 min)	0.005	mg / m <sup>3</sup>	3	Advantage MFS Cat No. GC5090 MM
45	Potassium (K)	Isokinetic, Sampling,Digestion,ICP-OES Method	U.S. EPA Method 29 / ICP-AES	0.9 m <sup>3</sup>	Isokinetic (30 min)	0.100	mg / m <sup>3</sup>	3	Advantage MFS Cat No. GC5090 MM
46	Phosphorus (P)	Isokinetic, Sampling,Digestion,ICP-OES Method	U.S. EPA Method 29 / ICP-AES	0.9 m <sup>3</sup>	Isokinetic (30 min)	0.100	mg / m <sup>3</sup>	3	Advantage MFS Cat No. GC5090 MM

เอกสารอ้างอิง

1. Method of Air Sampling and Analysis, APHA Intersociety Committee, 2017
2. NIOSH Manual of Analytical Methods (NMAM)
3. Code of Federal Regulation, U.S. EPA. , 40 CFR Part 50, Part 60, 2000
4. Occupational Health and Safety Management System(OSHA) Analytical Methods Manual
5. International Standard Organization, ISO 11204:1995
6. Compendium of Methods for Determination of Inorganic Compound in Ambient Air, U.S. EPA. , 1999
7. Annual Book of ASTM Standard, Section 11, 2001

การตรวจวิเคราะห์คุณภาพอากาศ (Air Quality Analysis)

(ประเภทตัวอย่าง : อากาศในบริเวณการทำงาน - Workplace Air Quality)										
Items	Parameter	Sampling/Method	Reference Method / Analytical Technique	Air Volume	Sampling Rate / Period	LOQ / Range	Unit	Decimal point	Remark	Heavy Metal (TWA)
แผนกปฏิบัติการภาคสนาม										
1	Illumination	Lux Meter	JIS C 1906 / Lux meter		-	0-5000	lux	-		
2	Sound (Leq, Lmin, Lmax, Ldn, Lp)	Integrated Sound Level Method	ISO 11202 / Sound Level Meter		-	40 - 140	dB (A)	1		
3	Noise Octave band	Integrated Sound Level Method	AS/NZS 4476 1997 / Sound Level Meter		-	40 - 140	dB (A)	1	1/3 Octave band หรือ 1/1 Octave band	
4	Noise dose	Integrated Sound Level Method	BS6402 / Noise Dosimeter		-	0 - 9999	% Dose	2		
5	Carbon Monoxide (CO)	Non-Dispersive Infrared Photometric Method	U.S. EPA 10 (P.1-5)/ Carbon Monoxide Analyzer		-	0.1 - 100	ppm	1		
6	Ozone (O <sub>3</sub> )	UV Fluorescence Method	U.S. EPA method / Ozone Analyzer		-	0.1 - 100	ppm	2		
7	Heat Stress	WBGT Method	ACGIH / Grove + DI + Thermometer / calculation	-	-	0 - 100	oC	2		
ส่วนงานทดสอบพื้นฐาน										
1	Total Dust (TD)	Filtration, Gravimetric Method	NIOSH 0500 (P.1-3) / PS pump / Gravimetric	7-133 L	2 L/min (1 hr)	0.8	mg / m <sup>3</sup>	1	SKC Cat No. 225-8-01	
2	Respirable Dust (RD)	Cyclone - Filtration, Gravimetric Method	NIOSH 0600 (P.1-3) / PS pump cyclone / Gravimetric	20-400 L	1.70 L/min (1 hr)	0.5	mg / m <sup>3</sup>	1	SKC Cat No. 225-8-01	
3	NaOH	Acid-Base Titrimetric Method	NIOSH 7401(P.1-4) / PS pump / Titration	70-1000 L	1-4 L/min	0.4	mg / m <sup>3</sup>	1	SKC Cat No. 225-17-01	
4	KOH	Acid-Base Titrimetric Method	NIOSH 7401(P.1-4) / PS pump / Titration	70-1000 L	1-4 L/min	0.6	mg / m <sup>3</sup>	1	SKC Cat No. 225-17-01	
5	LiOH	Acid-Base Titrimetric Method	NIOSH 7401(P.1-4) / PS pump / Titration	70-1000 L	1-4 L/min	0.2	mg / m <sup>3</sup>	1	SKC Cat No. 225-17-01	
ส่วนงานเครื่องมือทดสอบ										
1	Ammonia	Impingement Absorption - Colorimetric Method	Modified NIOSH 6015(P.1-7) / Spectrophotometer	0.1-96 L	1 L/min (1 hr)	0.01	mg / m <sup>3</sup>	2		
2	Nitrogen Dioxide	Impingement Absorption, Spectrophotometer Method	APHA 817(P.1-3) / Spectrophotometer	7.5 - 10 L	0.5 L/min (15-20 min)	0.01	ppm	2		
3	Sulfur Dioxide	Impingement Absorption, Titrimetric Method	APHA 823(P.1-3) / Titration	26 L	0.21 L/min (2 hrs)	0.30 0.11	mg / m <sup>3</sup> ppm	2		
4	P,P'-diphenylmethane diisocyanate(MDI) (MDI)	Impingement Absorption, Spectrophotometer Method	APHA 831(P.1-3) / Spectrophotometer	20 L	1 L/min (20 min)	0.002	ppm	2		
5	Aluminum (Al)	Filtration, ICP-OES Method	NIOSH 7300(P.1-8) / PS pump / ICP-OES	5-100 L	2 L/min (1 hr)	0.004	mg / m <sup>3</sup>	3	SKC Cat No. 225-5	0.001
6	Antimony (Sb)	Filtration, ICP-OES Method	NIOSH 7300(P.1-8) / PS pump / ICP-OES	50-2000 L	2 L/min (1 hr)	0.021	mg / m <sup>3</sup>	3	SKC Cat No. 225-5	0.003

Items	Parameter	Sampling/Method	Reference Method / Analytical Technique	Air Volume	Sampling Rate / Period	LOQ / Range	Unit	Decimal point	Remark	Heavy Metal (TWA)
7	Arsenic & Compound (as As)	Filtration, ICP-OES Method	NIOSH 7300(P.1-8) / PS pump / ICP-OES	5-2000 L	2 L/min (1 hr)	0.021	mg / m <sup>3</sup>	3	SKC Cat No. 225-5	0.003
8	Barium (Ba)	Filtration, ICP-OES Method	NIOSH 7300(P.1-8) / PS pump / ICP-OES	50-2000 L	2 L/min (1 hr)	0.004	mg / m <sup>3</sup>	3	SKC Cat No. 225-5	0.001
9	Cadmium & Compounds (as Cd)	Filtration, ICP-OES Method	NIOSH 7300(P.1-8) / PS pump / ICP-OES	25-1500 L	2 L/min (1 hr)	0.004	mg / m <sup>3</sup>	3	SKC Cat No. 225-5	0.001
10	Calcium & Compounds (as Ca)	Filtration, ICP-OES Method	NIOSH 7300(P.1-8) / PS pump / ICP-OES	20-400 L	2 L/min (1 hr)	0.208	mg / m <sup>3</sup>	3	SKC Cat No. 225-5	0.026
11	Chromium & Compounds (as Cr)	Filtration, ICP-OES Method	NIOSH 7300(P.1-8) / PS pump / ICP-OES	5-1000 L	2 L/min (1 hr)	0.004	mg / m <sup>3</sup>	3	SKC Cat No. 225-5	0.001
12	Copper (Cu) (Dust & Fume)	Filtration, ICP-OES Method	NIOSH 7300(P.1-8) / PS pump / ICP-OES	50-1500 L	2 L/min (1 hr)	0.004	mg / m <sup>3</sup>	3	SKC Cat No. 225-5	0.001
13	Iron & Compounds (as Fe)	Filtration, ICP-OES Method	NIOSH 7300(P.1-8) / PS pump / ICP-OES	5-1000 L	2 L/min (1 hr)	0.004	mg / m <sup>3</sup>	3	SKC Cat No. 225-5	0.001
14	Lead (Pb)	Filtration, ICP-OES Method	NIOSH 7300(P.1-8) / PS pump / ICP-OES	50-2000 L	2 L/min (1 hr)	0.004	mg / m <sup>3</sup>	3	SKC Cat No. 225-5	0.001
15	Magnesium (Mg)	Filtration, ICP-OES Method	NIOSH 7300(P.1-8) / PS pump / ICP-OES	6-67 L	2 L/min (1 hr)	0.208	mg / m <sup>3</sup>	3	SKC Cat No. 225-5	0.026
16	Manganese (Mn)	Filtration, ICP-OES Method	NIOSH 6009(P.1-8) / PS pump / ICP-OES	5-200 L	2 L/min (1 hr)	0.004	mg / m <sup>3</sup>	3	SKC Cat No. 225-5	0.001
17	Mercury (Hg)	Filtration - AAS Method	NIOSH 6009(P.1-5) / PS pump / AAS	2 – 100 L	0.2 L/min (1 hr)	0.021	ug / m <sup>3</sup>	3	SKC Cat No. 225-5	0.003
18	Nickel & Compounds (as Ni)	Filtration, ICP-OES Method	NIOSH 7300(P.1-8) / PS pump / ICP-OES	5-1000 L	2 L/min (1 hr)	0.004	mg / m <sup>3</sup>	3	SKC Cat No. 225-5	0.001
19	Selenium (Se)	Filtration, ICP-OES Method	NIOSH 7300(P.1-8) / PS pump / ICP-OES	13-2000 L	2 L/min (1 hr)	0.021	mg / m <sup>3</sup>	3	SKC Cat No. 225-5	0.003
20	Silver (Ag)	Filtration, ICP-OES Method	NIOSH 7300(P.1-8) / PS pump / ICP-OES	250-2000 L	2 L/min (2-17 hr)	0.010	mg / m <sup>3</sup>	3	SKC Cat No. 225-5	0.001
21	Sodium (Na)	Filtration, ICP-OES Method	NIOSH 7300(P.1-8) / PS pump / ICP-OES	13-2000 L	2 L/min (1 hr)	0.208	mg / m <sup>3</sup>	3	SKC Cat No. 225-5	0.026
22	Tin (Sn)	Filtration, ICP-OES Method	NIOSH 7300(P.1-8) / PS pump / ICP-OES	5-1000 L	2 L/min (1 hr)	0.021	mg / m <sup>3</sup>	3	SKC Cat No. 225-5	0.003
23	Titanium (Ti)	Filtration, ICP-OES Method	NIOSH 7300(P.1-8) / PS pump / ICP-OES	5-1000 L	2 L/min (1 hr)	0.004	mg / m <sup>3</sup>	3	SKC Cat No. 225-5	0.001

Items	Parameter	Sampling/Method	Reference Method / Analytical Technique	Air Volume	Sampling Rate / Period	LOQ / Range	Unit	Decimal point	Remark	Heavy Metal (TWA)
24	Vanadium (V)	Filtration, ICP-OES Method	NIOSH 7300(P.1-8) / PS pump / ICP-OES	5-2000 L	2 L/min (1 hr)	0.004	mg / m <sup>3</sup>	3	SKC Cat No. 225-5	0.001
25	Zinc & Compounds (Zn)	Filtration, ICP-OES Method	NIOSH 7300(P.1-8) / PS pump / ICP-OES	5-2000 L	2 L/min (1 hr)	0.004	mg / m <sup>3</sup>	3	SKC Cat No. 225-5	0.001
26	Acetone	Sorbent Adsorption, GC Method	NIOSH 1300 (P.1-5) / PS pump / GC-FID	0.5-3 L	0.10 L/min (30 min)	13.17 5.54	mg / m <sup>3</sup> ppm	2	SKC Cat. No. ST 226-01	
27	Benzene	Sorbent Adsorption, GC Method	NIOSH 1501(P.1-7) / PS pump / GC-FID	5-30 L	0.10 L/min (1 hr)	2.93 0.92	mg / m <sup>3</sup> ppm	2	SKC Cat. No. ST 226-01	
28	Cyclohexanone	Sorbent Adsorption, GC Method	NIOSH 1300(P.1-5) / PS pump / GC-FID	1-10 L	0.10 L/min (1 hr)	3.96 0.99	mg / m <sup>3</sup> ppm	2	SKC Cat. No. ST 226-01	
29	Ethanol (Ethyl alcohol)	Sorbent Adsorption, GC Method	NIOSH 1400(P.1-4) / PS pump / GC-FID	12 L	0.10 L/min (1 hr)	3.29 1.75	mg / m <sup>3</sup> ppm	2	SKC Cat. No. ST 226-01	
30	Ethylacetate	Sorbent Adsorption, GC Method	NIOSH 1457 (P.1-4) / PS pump / GC-FID	0.1-10 L	0.10 L/min (1 hr)	7.21 2.00	mg / m <sup>3</sup> ppm	2	SKC Cat. No. ST 226-01	
31	Ethylbenzene	Sorbent Adsorption, GC Method	NIOSH 1501 (P.1-7) / PS pump / GC-FID	1-24 L	0.10 L/min (1 hr)	3.63 0.83	mg / m <sup>3</sup> ppm	2	SKC Cat. No. ST 226-01	
32	Hexane	Sorbent Adsorption, GC Method	NIOSH 1500(P.1-8) / PS pump / GC-FID	4 L	0.10 L/min (1 hr)	7.05 2.00	mg / m <sup>3</sup> ppm	2	SKC Cat. No. ST 226-01	
33	Isopropanol (Isopropyl alcohol) ; IPA	Sorbent Adsorption, GC Method	NIOSH 1400(P.1-4) / PS pump / GC-FID	12 L	0.10 L/min (1 hr)	3.28 1.33	mg / m <sup>3</sup> ppm	2	SKC Cat. No. ST 226-01	
34	Methanol (Methyl alcohol)	Sorbent Adsorption, GC Method	OSHA 91(P.1-10) / PS pump / GC-FID	1-5 L	0.10 L/min (30 min)	3.96 3.02	mg / m <sup>3</sup> ppm	2	SKC Cat. No. ST 226-82	
35	Methyl Ethyl Ketone (MEK)	Sorbent Adsorption, GC Method	OSHA 1004(P.1-27) / PS pump / GC-FID	0.25-12L	0.10 L/min (1 hr)	3.35 1.14	mg / m <sup>3</sup> ppm	2	SKC Cat. No. ST 226-	
36	Methyl Isobutyl Ketone (MIBK)	Sorbent Adsorption, GC Method	OSHA 1004(P.1-27) / PS pump / GC-FID	0.25-12L	0.10 L/min (1 hr)	3.34 0.81	mg / m <sup>3</sup> ppm	2	SKC Cat. No. ST 226-01	
37	Styrene	Sorbent Adsorption, GC Method	NIOSH 1501 (P.1-7) / PS pump / GC-FID	1-24 L	0.10 L/min (1 hr)	3.78 0.89	mg / m <sup>3</sup> ppm	2	SKC Cat. No. ST 226-01	
38	Toluene	Sorbent Adsorption, GC Method	NIOSH 1501 (P.1-7) / PS pump / GC-FID	1-8 L	0.10 L/min (1 hr)	3.63 0.96	mg / m <sup>3</sup> ppm	2	SKC Cat. No. ST 226-01	
39	Xylene	Sorbent Adsorption, GC Method	NIOSH 1501 (P.1-7) / PS pump / GC-FID	2-23 L	0.10 L/min (1 hr)	3.58 0.83	mg / m <sup>3</sup> ppm	2	SKC Cat. No. ST 226-01	
40	Cumene	Sorbent Adsorption, GC Method	NIOSH 1501 (P.1-7) / PS pump / GC-FID	2-23 L	0.10 L/min (1 hr)	3.60 0.73	mg / m <sup>3</sup> ppm	2	SKC Cat. No. ST 226-01	

Items	Parameter	Sampling/Method	Reference Method / Analytical Technique	Air Volume	Sampling Rate / Period	LOQ / Range	Unit	Decimal point	Remark	Heavy Metal (TWA)
41	Methycyclohexane	Sorbent Adsorption, GC Method	NIOSH 1500 (P.1-8) / PS pump / GC-FID	2-23 L	0.10 L/min (1 hr)	7.23 1.80	mg / m <sup>3</sup> ppm	2	SKC Cat. No. ST 226-01	
42	Methyl acetate	Sorbent Adsorption, GC Method	NIOSH 1458 (P.1-8) / PS pump / GC-FID	0.2-10 L	0.10 L/min (1 hr)	9.09 3.00	mg / m <sup>3</sup> ppm	2	SKC Cat. No. ST 226-01	
43	Diethyl Ether or Ethyl Ether	Sorbent Adsorption, GC Method	NIOSH 1610 (P.1-4) / PS pump / GC-FID	0.25-3 L	0.01-0.20 L/min (1 hr)	11.88 3.92	mg / m <sup>3</sup> ppm	2	SKC Cat. No. ST 226-01	
44	Methyl tert-Butyl Ether (MTBE)	Sorbent Adsorption, GC Method	NIOSH 1615 (P.1-4) / PS pump / GC-FID	2-96 L	0.01-0.20 L/min (1 hr)	3.08 0.86	mg / m <sup>3</sup> ppm	2	SKC Cat. No. ST 226-01	
45	Dichloromethane or Methylene chloride	Sorbent Adsorption, GC Method	NIOSH 1005 (P.1-4) / PS pump / GC-FID	0.5-2.5 L	0.01-0.20 L/min (1 hr)	22.1 6.36	mg / m <sup>3</sup> ppm	2	SKC Cat. No. ST 226-01	
46	1-Butanol /n-butyl alcohol	Sorbent Adsorption, GC Method	NIOSH 1401 (P.1-4) / PS pump / GC-FID	2-10 L	0.01-0.20 L/min (1 hr)	4.86 1.60	mg / m <sup>3</sup> ppm	2	SKC Cat. No. ST 226-01	
47	2-Butanol /sec-butyl alcohol	Sorbent Adsorption, GC Method	NIOSH 1401 (P.1-4) / PS pump / GC-FID	2-10 L	0.01-0.20 L/min (1 hr)	4.86 1.60	mg / m <sup>3</sup> ppm	2	SKC Cat. No. ST 226-01	
48	Isobutyl alcohol (IBA)	Sorbent Adsorption, GC Method	NIOSH 1401 (P.1-4) / PS pump / GC-FID	2-10 L	0.01-0.20 L/min (1 hr)	4.81 1.59	mg / m <sup>3</sup> ppm	2	SKC Cat. No. ST 226-01	
49	Beryllium (Be)	Filtration, ICP-OES Method	NIOSH 7300(P.1-8) / PS pump / ICP-OES	1250-2000 L	2 L/min (1 hr)	0.004	mg / m <sup>3</sup>	3	SKC Cat No. 225-5	0.001
50	Cobalt (Co)	Filtration, ICP-OES Method	NIOSH 7300(P.1-8) / PS pump / ICP-OES	25-2000 L	2 L/min (1 hr)	0.004	mg / m <sup>3</sup>	3	SKC Cat No. 225-5	0.001
51	Molybdenum (Mo)	Filtration, ICP-OES Method	NIOSH 7300(P.1-8) / PS pump / ICP-OES	5-67 L	2 L/min (1 hr)	0.004	mg / m <sup>3</sup>	3	SKC Cat No. 225-5	0.001
52	Thallium (Tl)	Filtration, ICP-OES Method	NIOSH 7300(P.1-8) / PS pump / ICP-OES	25-2000 L	2 L/min (1 hr)	0.021	mg / m <sup>3</sup>	3	SKC Cat No. 225-5	0.003
53	Silicon (Si)	Filtration, ICP-OES Method	NIOSH 7300(P.1-8) / PS pump / ICP-OES	5-1000 L	2 L/min (1 hr)	0.010	mg / m <sup>3</sup>	3	SKC Cat No. 225-5	0.001
54	Potassium (K)	Filtration, ICP-OES Method	NIOSH 7300(P.1-8) / PS pump / ICP-OES	5-1000 L	2 L/min (1 hr)	0.208	mg / m <sup>3</sup>	3	SKC Cat No. 225-5	0.026
55	Ketones	Sorbent Adsorption, GC Method	NIOSH 2555 (P.1-5) / PS pump / GC-FID	0.5-3.0 L	0.01-0.20 L/min (1 hr)	13.17 5.54	mg / m <sup>3</sup> ppm	2	SKC Cat. No. 226-01	
56	n-Heptane	Sorbent Adsorption, GC Method	NIOSH 1500 (P.1-8) / PS pump / GC-FID	-	0.01-0.20 L/min (1 hr)	6.97 1.70	mg / m <sup>3</sup> ppm	2	SKC Cat. No. 226-01	
57	n-Butyl acetate	Sorbent Adsorption, GC Method	NIOSH 1450(P.1-6) / PS pump / GC-FID	1-10 L	0.01-0.20 L/min (1 hr)	8.55 1.80	mg / m <sup>3</sup> ppm	2	SKC Cat. No. 226-01	

Items	Parameter	Sampling/Method	Reference Method / Analytical Technique	Air Volume	Sampling Rate / Period	LOQ / Range	Unit	Decimal point	Remark	Heavy Metal (TWA)
58	n-Pentane	Sorbent Adsorption, GC Method	NIOSH 1500(P.1-8) / PS pump / GC-FID	-	0.01-0.20 L/min (1 hr)	2.63 0.89	mg / m <sup>3</sup> ppm	2	SKC Cat. No. 226-01	
59	Chloroform	Sorbent Adsorption, GC Method	NIOSH 1003 (P.1-7) / PS pump / GC-FID	1-50 L	0.01-0.20 L/min (1 hr)	4.93 1.01	mg / m <sup>3</sup> ppm	2	SKC Cat. No. 226-01	
60	Chlorobenzene	Sorbent Adsorption, GC Method	NIOSH 1003 (P.1-7) / PS pump / GC-FID	1.5-40L	0.01-0.20 L/min (1 hr)	4.63 1.00	mg / m <sup>3</sup> ppm	2	SKC Cat. No. 226-01	
61	Formaldehyde	Sorbent Adsorption, GC Method	NIOSH 2541 (P.1-5) / PS pump / GC-FID	1-36L	0.01-0.10 L/min (1 hr)	0.12 0.10	mg / m <sup>3</sup> ppm	2	SKC Cat. No. 226-118 ปัสสาวะ DL:1/2/24	
62	Hydrogen chloride	Sorbent Adsorption, IC Method	OSHA ID-174SG / PS pump / IC	100 L	500 L/min (15 min)	0.015 0.010	mg / m <sup>3</sup> ppm	3	SKC Cat. No. 226-10-03	
63	Hydrogen Bromide	Sorbent Adsorption, IC Method	OSHA ID165SG / PS pump / IC	100 L	200 L/min (60min)	0.033 0.010	mg / m <sup>3</sup> ppm	3	SKC Cat. No. 226-10-03	
64	Sulfuric Acid	Sorbent Adsorption, IC Method	OSHA ID165SG / PS pump / IC NIOSH 7908 / PS pump / IC	100 L	200 L/min (60min)	0.040 0.010	mg / m <sup>3</sup> ppm	3	SKC Cat. No. 226-10-03 Filter (PTFE)	
65	Phosphoric Acid	Sorbent Adsorption, IC Method	OSHA ID165SG / PS pump / IC NIOSH 7908 / PS pump / IC	100 L	200 L/min (60min)	0.040 0.010	mg / m <sup>3</sup> ppm	3	SKC Cat. No. 226-10-03 Filter (PTFE)	
66	Ammonia (NH <sub>3</sub> )	Sorbent Adsorption, IC Method	NIOSH 6016 / PS pump / IC	12 L	200 L/min (120min)	0.200 0.280	mg / m <sup>3</sup> ppm	3	SKC Cat. No. 226-10-06	
67	Nitric	Sorbent Adsorption, IC Method	OSHA ID165SG / PS pump / IC	100 L	200 L/min (60min)	0.026 0.010	mg / m <sup>3</sup> ppm	3	SKC Cat. No. 226-10-03	
68	Chlorine	Sorbent Adsorption, IC Method	OSHA ID-202 / PS pump / IC	60 L	200 L/min (60min)	0.029 0.010	mg / m <sup>3</sup> ppm	3	0.02% KI in Buffer	
69	Hydrogen fluoride	Sorbent Adsorption, IC Method	OSHA ID165SG / PS pump / IC	60 L	200 L/min (60min)	0.008 0.010	mg / m <sup>3</sup> ppm	3	SKC Cat. No. 226-10-03	
70	Phosphorus (P)	Filtration, ICP-OES Method	NIOSH 7300(P.1-8) / PS pump / ICP-OES	5-1000 L	2 L/min (1 hr)	0.208	mg / m <sup>3</sup>	3	SKC Cat No. 225-5	0.026
71	Boron (B)	Filtration, ICP-OES Method	NIOSH 7300(P.1-8) / PS pump / ICP-OES	5-1000 L	2 L/min (1 hr)	0.010	mg / m <sup>3</sup>	3	SKC Cat No. 225-5	0.001

เอกสารอ้างอิง

- Method of Air Sampling and Analysis, APHA Intersociety Committee, 1997
- NIOSH Manual of Analytical Method, 4<sup>th</sup> Edition, 1994
- Code of Federal Regulation, U.S. EPA., 40 CFR Part 50, Part 60, 2000
- OSHA Analytical Methods Manual, 2<sup>nd</sup> Edition, U.S. Department of Labor, 1992
- International Standard Organization, ISO 11204:1995
- Compendium of Methods for Determination of Inorganic Compound in Ambient Air, U.S. EPA., 1999
- Annual Book of ASTM Standard, Section 11, 2001

การตรวจวิเคราะห์คุณภาพน้ำ – ภาคตะกอน (Water – Solid wastes Quality Analysis)

ตารางที่ 1 สรุปข้อกำหนดการเก็บตัวอย่างและความสามารถในการทดสอบตัวอย่างของห้องปฏิบัติการ ตามที่ขึ้นทะเบียนกับกรมโรงงานอุตสาหกรรม  
(ประเภทตัวอย่าง : น้ำเสีย(ขึ้นทะเบียนกรมโรงงานฯ), น้ำ,น้ำเพื่ออุปโภค, น้ำประปา, น้ำผิวดิน, น้ำบาดาล และน้ำทะเล))

ส่วนงาน : ส่วนงานทดสอบพื้นฐาน

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point	Remark
1.1	Biochemical Oxygen Demand (BOD <sub>5</sub> )	5-Day BOD Test, Membrane Electrode Method	Standard Method part 5210 B, 4500-O G / DO meter	Plastic	1000	-	2.0	mg/l	1	
1.2	Biochemical Oxygen Demand (BOD <sub>5</sub> )	5-Day BOD Test, Azide Modification Method	Standard Method part 5210 B, 4500-O C / Titration	Plastic	1000	-	2.0	mg/l	1	
2.1	Chemical Oxygen Demand (COD)	In-house Method	Standard Method part 5220 C / Titration	Plastic	100	-	40	mg/l as O <sub>2</sub>	0	
2.2	Chemical Oxygen Demand (COD)	Titrimetric, Closed Reflux Method	Standard Method part 5220 C / Titration	Plastic	100	-	40	mg/l as O <sub>2</sub>	0	
3	Free Chlorine	Iodometric Method	Standard Method part 4500-B / Titration	Plastic	100	-	0.50	mg/l	2	
4	Total Dissolved Solids (TDS)	Dried at 180 °C	Standard Method part 2540 C / Gravimetric	Plastic	200	-	25	mg/l	0	
5.1	Grease&Oil	In-house Method	Standard Method part 5520 B / Gravimetric	Glass	1000	-	3.0	mg/l	1	
5.2	Grease&Oil	Partition Gavimetric Method	Standard Method part 5520 B / Gravimetric	Glass	1001	-	3.0	mg/l	1	
6	Sulfide (S <sub>2</sub> )	ZnS Precipitation ,Iodometric Method	Standard Method part 4500-S <sup>2-</sup> F / Titration	BOD bottle	300	-	0.50	mg/l as H <sub>2</sub> S	2	
7	pH	Electrometric Method	Standard Method part 4500 H <sup>+</sup> / pH meter	Plastic	50	-	3.0-12.0	-	1	

8	Total Suspended Solids (TSS)	Dried at 103-105 °C	Standard Method part 2540 D / Grvimetric	Plastic	1000	-	5	mg/l	0	
9	Temperature	Laboratory and Field Method	Standard Method part 2550 B / Thermometer	at field		-	1	°C	0	
10	Total Kjeldahl Nitrogen (TKN)	Macro-Kjeldahl Method	Standard Method part 4500-N <sub>org</sub> / Titration	Plastic	500	-	5	mg/l as NH <sub>3</sub> -N	0	
11	Hydrogen Sulfide (H <sub>2</sub> S)	ZnS Precipitation ,Iodometric Method	Standard Method part 4500-S <sup>2-</sup> F / Titration	BOD bottle	300	-	0.53	mg/l as H <sub>2</sub> S	2	

## การตรวจวิเคราะห์คุณภาพน้ำ – ภาคตะกอน (Water – Solid wastes Quality Analysis)

ตารางที่ 3 สรุปข้อกำหนดการเก็บตัวอย่างและความสามารถในการทดสอบตัวอย่างของห้องปฏิบัติการ ที่ไม่ได้ขึ้นทะเบียนกับกรมโรงงานอุตสาหกรรม

(ประเภทตัวอย่าง : น้ำ, น้ำเสีย, น้ำเพื่ออุปโภค, น้ำประปา, น้ำผิวดิน, น้ำบาดาล และน้ำทะเล)

ส่วนงาน : ส่วนงานทดสอบพื้นฐาน

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point	Remark
1	Acidity	Titration Method	Standard Method part 2310 B / Titration	Plastic	50	-	20.00	mg/l as CaCO <sub>3</sub>	1	
2	M-Alkalinity	Titration Method	Standard Method part 2320 B / Titration	Plastic	50	-	20.00	mg/l as CaCO <sub>3</sub>	1	
3	P-Alkalinity	Titration Method	Standard Method part 2320 B / Titration	Plastic	50	-	20.00	mg/l as CaCO <sub>3</sub>	1	
4	Ammonia Nitrogen (NH <sub>3</sub> -N)	Distillation and Titrimetric Method	Standard Method part 4500-NH <sub>3</sub> <sup>+</sup> / Titration	Plastic	500		2	mg/l as NH <sub>3</sub> -N	1	
5	Calcium Hardness	EDTA Titrimetric Method	Standard method part 3500-Ca B/ Titration	Plastic	100	-	3.0	mg/l as CaCO <sub>3</sub>	1	
6	Chloride (Cl <sup>-</sup> )	Argentometric Method	Standard Method part 4500-Cl <sup>-</sup> B / Titration	Plastic	50	-	5.0	mg/l as Cl <sup>-</sup>	1	
7	Chlorine (Residual)	DPD Colorimetric Method	Standard Method part 4500-Cl <sup>-</sup> G / Test kit	Plastic	500	-	0.1	mg/l as Cl <sub>2</sub>	1	
8	Chlorine (Total)	DPD Colorimetric Method	Modified Standard Method part 4500-Cl <sup>-</sup> G / Test kit	Plastic	500	-	0.1	mg/l as Cl <sub>2</sub>	1	
9	Fixed Solids (FS)	Dried at 550 °C	Standard Method part 2540 E / Gravimetric	Plastic	200	-	30.0	mg/l	1	
10	Hardness	EDTA Titrimetric Method	Standard Method part 2340 C / Titration	Plastic	100	-	6.0	mg/l as CaCO <sub>3</sub>	1	
11	Magnesium (Mg)	Calculation Method	Standard Method part 3500-Mg / Calculation	Plastic	100	-	0.70	mg/l as Mg	1	
12	Magnesium Hardness	Calculation Method	Standard Method part 3500-Mg / Calculation	Plastic	100	-	3.0	mg/l as CaCO <sub>3</sub>	1	

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point	Remark
13	Mix Liquor Suspended Solids (MLSS)	Dried at 103-105 °C	Standard Method part 2540 C / Gravimetric	Plastic	200	-	5	mg/l	1	
14	Mix Liquor Volatile Suspended Solids (MLVSS)	Dried at 550 °C	Standard Method part 2540 E / Gravimetric	Plastic	200	-	5	mg/l	1	
15	Organic Nitrogen	Macro-Kjeldahl Method	Standard Method part 4500-N <sub>org</sub> <sup>-</sup> / Titration	Plastic	500	-	5	mg/l as NH <sub>3</sub> -N	1	Org-N = TKN-(Ammonia-N)
17	Conductivity	Laboratory Method	Standard Method part 2510 B	Plastic	200	-	0.1	us/cm	ห้ล็กหน่วย 2 ตำแหน่ง/หลักสิบ 1ตำแหน่ง	อ่านจากเครื่อง
18	Salinity	Electrical Conductivity Method	Standard Method part 2520 B / Conductivity meter	Plastic	100	-	0.01	ppt	ห้ล็กหน่วย 2 ตำแหน่ง/หลักสิบ 1ตำแหน่ง	อ่านจากเครื่อง
19	Sludge Volume Index (SV <sub>30</sub> )	Volumetric Method	Standard Method part 2540 F / Volumetric	Plastic	1000	-	0.1	ml/l	1	
20	Sulfite	Titrimetric Method	Standard Method part 4500-SO <sub>3</sub> <sup>2-</sup> B / Titration	Plastic	200	-	2.00	mg/l as SO <sub>3</sub> <sup>2-</sup>	2	
21	Total Dissolved Solids (TDS)	Dried at 103-105 °C	Modified Standard Method part 2540 B / Gravimetric	Plastic	200	-	25	mg/l	0	
22	Turbidity	Nephelometric Method	Standard Method part 2130 B / Turbidity meter	Plastic	50	0.01	0.01	NTU	ห้ล็กหน่วย 2 ตำแหน่ง/หลักสิบ 1ตำแหน่ง	NTU=FTU=ซีลิตาตอล
23	Volatile Fatty Acid	Titrimetric Method	คู่มือวิเคราะห์น้ำเสีย สมาคมวิศวกรรมสิ่งแวดล้อมแห่งประเทศไทย / Titration	Plastic	200	-	1.00	mg/l	1	
24	Volatile Solids (VS)	Dried at 550 °C	Standard Method part 2540 E / Gravimetric	Plastic	200		3.0	mg/l	1	
25	Volatile Suspended Solids (VSS)	Dried at 550 °C	Standard Method part 2540 E / Gravimetric	Plastic	200		3.0	mg/l	1	
26	Dissolved Oxygen(DO)	Azide Modification	Standard Method part 4500-O C/Titration	Plastic	300	-	0.3	mg/l	1	

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point	Remark
	จำนวนจุลินทรีย์									
1	Benthos	Counting Chamber Method	Standard Method part 10500 B / Counting	ถุงดำ	-	-	-	ind/m <sup>2</sup>	0	รายงานค่าสุด =Not found
2	Escherichia Coli Bacteria (E.coli)	MPN Test	Standard Method part 9221 F / Fluorogenic Substrate , MPN	Glass	250	-	-	MPN:100 ml	ตามตาราง MPN-	รายงานค่าสุด 1.1 (น้ำดื่ม) / 1.8 (น้ำ)
3	Total Coliform	MPN Test	Standard Method part 9221 B / Fermentation Technique , MPN	Glass	250	-	-	MPN:100 ml	ตามตาราง MPN-	รายงานค่าสุด 1.1 (น้ำดื่ม) / 1.8 (น้ำ)
4	Thermotolerant coliforms (Fecal Coliform)	MPN Test	Standard Method part 9221 E /Thermolarent Coliform , MPN	Glass	250	-	-	MPN:100 ml	ตามตาราง MPN-	รายงานค่าสุด 1.1 (น้ำดื่ม) / 1.8 (น้ำ)
5	Heterotrophic Bacteria (Total Bacteria)	Heterotrophic plate count (Standard Plate Count Method)	Standard Method part 9215 B / Pour plate	Glass	250	1	1	Colonies/cm <sup>3</sup>	0	*Heterotrophic plate count = Standard plate Count
6	Phytoplankton	Counting Chamber Method	Standard Method part 10200 F / Counting	Plstic	-	-	-	Cell / l	0	รายงานค่าสุด =Not found
7	Zooplankton	Counting Chamber Method	Standard Method part 10200 G / Counting	Plastic	-	-	-	ind./l	0	รายงานค่าสุด =Not found
8	S.Aureus	Enrichment	Standard Method part 9213 B	Glass	1000	-	-	-	รายงาน พบ/ไม่พบ	รายงานค่าสุด =Not found
9	Salmonella sp.	Membrane Filter	Standard Method part 9260 B	Glass	1000	-	-	-	รายงาน พบ/ไม่พบ	รายงานค่าสุด =Not found
10	Clostridium perfringens	Comperndium 2003,Chapter 34	Comperndium 2003,Chapter 34	Glass	1000	-	-	-	รายงาน พบ/ไม่พบ	รายงานค่าสุด =Not found

การตรวจวิเคราะห์คุณภาพน้ำ – ภาคตะกอน (Water – Solid wastes Quality Analysis)

ตารางที่ 8 สรุปข้อกำหนดการเก็บตัวอย่างและความสามารถในการทดสอบตัวอย่างของห้องปฏิบัติการ ตามที่ขึ้นทะเบียนกับกรมโรงงานอุตสาหกรรม

(ประเภทตัวอย่าง : ดิน )

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (g)	MDL	LOQ	Unit	Decimal point	Remark
1	Arsenic (As)	Digestion,ICP-OES Method	US EPA SW 846 Method 3050B / ICP-OES	Plastic	500	2.50	5.00	mg/kg as As	2	
2	Antimony (Sb)	Digestion,ICP-OES Method	US EPA SW 846 Method 3050B / ICP-OES	Plastic	500	2.50	5.00	mg/kg as Sb	2	
3	Barium (Ba)	Digestion,ICP-OES Method	US EPA SW 846 Method 3050B / ICP-OES	Plastic	500	0.50	1.00	mg/kg as Ba	2	
4	Beryllium (Be)	Digestion,ICP-OES Method	US EPA SW 846 Method 3050B / ICP-OES	Plastic	500	0.50	1.00	mg/kg as Be	2	
5	Cadmium (Cd)	Digestion,ICP-OES Method	US EPA SW 846 Method 3050B / ICP-OES	Plastic	500	0.10	0.15	mg/kg as Cd	2	
6	Chromium (Cr)	Digestion,ICP-OES Method	US EPA SW 846 Method 3050B / ICP-OES	Plastic	500	0.50	1.00	mg/kg as Cr	2	
7	Hexavalent Chromium (Cr <sup>6+</sup> )	Digestion,Colorimetric Method	US EPA SW 846 Method 3060A,7196A / Spectrophotometer	Plastic	500	0.40	2.00	mg/kg as Cr	3	
8	Lead (Pb)	Digestion,ICP-OES Method	US EPA SW 846 Method 3050B / ICP-OES	Plastic	500	0.50	1.00	mg/kg as Pb	2	
9	Manganese (Mn)	Digestion,ICP-OES Method	US EPA SW 846 Method 3050B / ICP-OES	Plastic	500	0.50	1.00	mg/kg as Mn	2	
10	Mercury (Hg)	Digestion,Cold Vapor Technique-AAS Method	US EPA SW 846 Method 7471B / AAS	Plastic	500	0.10	0.20	mg/kg as Hg	4	
11	Nickel (Ni)	Digestion,ICP-OES Method	US EPA SW 846 Method 3050B / ICP-OES	Plastic	500	0.50	1.00	mg/kg as Ni	2	
12	Selenium (Se)	Digestion,ICP-OES Method	US EPA SW 846 Method 3050B / ICP-OES	Plastic	500	2.50	5.00	mg/kg as Se	2	
13	Silver (Ag)	Digestion,ICP-OES Method	US EPA SW 846 Method 3050B / ICP-OES	Plastic	500	1.00	2.50	mg/kg as Ag	2	

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (g)	MDL	LOQ	Unit	Decimal point	Remark
14	Trivalent Chromium (Cr <sup>3+</sup> )	Digestion,ICP-OES; Filtration,Colorimetric Method,Calculation	US EPA SW 846 Method 3060A,7196A / Spectrophotometer	Plastic	500	0.40	2.00	mg/k as Cr	3	
15	Vanadium (V)	Digestion,ICP-OES Method	US EPA SW 846 Method 3050B / ICP-OES	Plastic	500	0.50	1.00	mg/kg as V	2	
16	Zinc (Zn)	Digestion,ICP-OES Method	US EPA SW 846 Method 3050B / ICP-OES	Plastic	500	0.50	1.00	mg/kg as Zn	2	
17	Volatile organic compounds;VOC			Glass	50					
1	- Acetone	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
2	- Benzene	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
3	- Bromodichloromethane	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
4	- Bromoform	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
5	- Butanol	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
6	- Carbon disulfide	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
7	- Carbon tetrachloride	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
8	- Chlorobenzene	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
9	- Chlorodibromomethane	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
10	- Chloroform	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
11	- 1,2-Dichlorobenzene	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (g)	MDL	LOQ	Unit	Decimal point	Remark
12	- 1,3-Dichlorobenzene	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
13	- 1,4-Dichlorobenzene	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
14	- 1,1-Dichloroethane	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
15	- 1,2-Dichloroethane	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
16	- 1,1-Dichloroethylene	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
17	- cis-1,2-Dichloroethylene	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
18	- trans-1,2-Dichloroethylene	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
19	- 1,2-Dichloropropane	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
20	- 1,3-Dichloropropane	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
21	- Ethylbenzene	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
22	- n-Hexane	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.010	0.010	mg/kg	3	
23	- Methylene Chloride or Dichloromethane	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
24	- Methyl tert-butyl ether	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
25	- Naphthalene	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
26	- Nitrobenzene	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (g)	MDL	LOQ	Unit	Decimal point	Remark
27	- Styrene	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
28	- 1,1,2,2-Tetrachloroethane	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
29	- Tetrachloroethylene	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
30	- Toluene	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
31	- 1,2,4-Trichlorobenzene	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
32	- 1,1,1-Trichloroethane	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
33	- 1,1,2-Trichloroethane	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
34	- Trichloroethylene	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
35	- 1,3,5-Trimethylbenzene	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
36	- Vinyl acetate	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
37	- Vinyl Chloride	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
38	- m-Xylene	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
39	- o-Xylene	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
40	- p-Xylene	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	
41	- Xylene Total	Purge-and-Trap / GC-MS	US EPA SW 846 Method 5035A and 8260D	Glass	50	0.005	0.010	mg/kg	3	

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (g)	MDL	LOQ	Unit	Decimal point	Remark
18	Semivolatile organic compounds #1			Glass	2500					
1	Acenaphthene	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.250	mg/kg	3	
2	Anthracene	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.500	mg/kg	3	
3	Benz[a]anthracene	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.250	mg/kg	3	
4	Benzo[b]fluoranthene	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.250	mg/kg	3	
5	Benzo[k]fluoranthene	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.250	mg/kg	3	
6	Benzo[a]pyrene	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.500	mg/kg	3	
7	Benzo[ghi]perylene	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.250	mg/kg	3	
8	Bis(2-chloroethyl) ether	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.250	mg/kg	3	
9	Bis(2-ethylhexyl) phthalate	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.500	mg/kg	3	
10	Butyl benzyl phthalate	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.250	mg/kg	3	
11	Carbazole	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.250	mg/kg	3	
12	p-Chloroaniline	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.500	1.250	mg/kg	3	
13	2-Chlorophenol	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.250	mg/kg	3	
14	Chrysene	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.250	mg/kg	3	

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (g)	MDL	LOQ	Unit	Decimal point	Remark
15	Dibenz[a,h]anthracene	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.250	mg/kg	3	
16	Di-n-butyl phthalate	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.250	mg/kg	3	
17	2,4-Dichlorophenol	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.500	mg/kg	3	
18	Diethyl Phthalate	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.250	mg/kg	3	
19	2,4-Dimethylphenol	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.500	mg/kg	3	
20	2,4-Dinitrotoluene	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.500	mg/kg	3	
21	2,6-Dinitrotoluene	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.500	mg/kg	3	
22	Di-n-octyl phthalate	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.500	mg/kg	3	
23	Fluoranthene	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.250	mg/kg	3	
24	Fluorene	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.250	mg/kg	3	
25	Hexachlorobenzene	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.250	mg/kg	3	
26	Hexachloro-1,3-butadiene	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.250	mg/kg	3	
27	Hexachlorocyclopentadiene	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.250	mg/kg	3	
28	Hexachloroethane	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.250	mg/kg	3	
29	Indeno[1,2,3-cd]pyrene	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.500	mg/kg	3	

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (g)	MDL	LOQ	Unit	Decimal point	Remark
30	Isophorone	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.250	mg/kg	3	
31	2-Methylphenol (o-Cresol)	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.500	mg/kg	3	
32	2-Methylnaphthalene	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.250	mg/kg	3	
33	N-Nitrosodi-n-propylamine	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.250	mg/kg	3	
34	Phenanthrene	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.250	mg/kg	3	
35	Phenol	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.250	mg/kg	3	
36	Pyrene	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.250	mg/kg	3	
37	2,4,5-Trichlorophenol	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.500	mg/kg	3	
38	2,4,6-Trichlorophenol	Ultrasonic Extraction / GC-MS	US EPA SW 846 Method 3550C and 8270E	Glass	2500	0.125	0.500	mg/kg	3	

การตรวจวิเคราะห์คุณภาพน้ำ – ภาคตะกอน (Water – Solid wastes Quality Analysis)

ตารางที่ 7 สรุปข้อกำหนดการเก็บตัวอย่างและความสามารถในการทดสอบตัวอย่างของห้องปฏิบัติการ ตามที่ขึ้นทะเบียนกับกรมโรงงานอุตสาหกรรม

(ประเภทตัวอย่าง : ภาคตะกอน ตามประกาศเรื่องสิ่งปฏิกูลที่ไม่ใช่แล้ว และ ดิน )

ส่วนงาน : ส่วนงานเครื่องมือทดสอบ

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (g)	MDL	LOQ	Unit	Decimal point	Remark
1	Antimony (Sb)	Waste Extraction , ICP-OES Method	SW 846 Method 3050B / ICP-OES	Plastic	500	0.05	0.10	mg/l as Sb	2	
		Digestion,ICP-OES Method				2.50	5.00	mg/kg as Sb		
2	Arsenic (As)	Waste Extraction , ICP-OES Method	SW 846 Method 3050B / ICP-OES	Plastic	500	0.05	0.10	mg/l as As	2	
		Digestion,ICP-OES Method				2.50	5.00	mg/kg as As		
3	Barium (Ba)	Waste Extraction , ICP-OES Method	SW 846 Method 3050B / ICP-OES	Plastic	500	0.01	0.02	mg/l as Ba	2	
		Digestion,ICP-OES Method				0.50	1.00	mg/kg as Ba		
4	Beryllium (Be)	Waste Extraction , ICP-OES Method	SW 846 Method 3050B / ICP-OES	Plastic	500	0.01	0.02	mg/l as Be	2	
		Digestion,ICP-OES Method				0.50	1.00	mg/kg as Be		
5	Cadmium (Cd)	Waste Extraction , ICP-OES Method	SW 846 Method 3050B / ICP-OES	Plastic	500	0.01	0.02	mg/l as Cd	2	
		Digestion,ICP-OES Method				0.10	0.15	mg/kg as Cd		
6	Chromium (Cr)	Waste Extraction , ICP-OES Method	SW 846 Method 3050B / ICP-OES	Plastic	500	0.01	0.02	mg/l as Cr	2	
		Digestion,ICP-OES Method				0.50	1.00	mg/kg as Cr		
7	Cobalt (Co)	Waste Extraction , ICP-OES Method	SW 846 Method 3050B / ICP-OES	Plastic	500	0.01	0.02	mg/l as Co	2	
		Digestion,ICP-OES Method				0.50	1.00	mg/kg as Co		
8	Copper (Cu)	Waste Extraction , ICP-OES Method	SW 846 Method 3050B / ICP-OES	Plastic	500	0.01	0.02	mg/l as Cu	2	
		Digestion,ICP-OES Method				0.50	1.00	mg/kg as Cu		

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (g)	MDL	LOQ	Unit	Decimal point	Remark
9	Hexavalent Chromium (Cr <sup>6+</sup> )	Colorimetric Method/ Spectrophotometer	SW 846 Method 3060A,7196A / Spectrophotometer	Plastic	500	0.003	0.050	mg/l as Cr	3	
		Alkaline Digestion,Colorimetric Method/				0.40	2.00	mg/kg as Cr	2	
10	Lead (Pb)	Waste Extraction , ICP-OES Method	SW 846 Method 3050B / ICP-OES	Plastic	500	0.01	0.02	mg/l as Pb	2	
		Digestion,ICP-OES Method				0.50	1.00	mg/kg as Pb		
11	Mercury (Hg)	Waste Extraction , ICP-OES Method	SW 846 Method 7471B / AAS	Plastic	500	0.0005	0.0010	mg/l as Hg	4	
		Digestion,Cold Vapor Technique-AAS Method				0.10	0.20	mg/kg as Hg	2	
12	Molybdenum (Mo)	Waste Extraction , ICP-OES Method	SW 846 Method 3050B / ICP-OES	Plastic	500	0.01	0.02	mg/l as Mo	2	
		Digestion,ICP-OES Method				0.50	1.00	mg/kg as Mo		
13	Nickel (Ni)	Waste Extraction , ICP-OES Method	SW 846 Method 3050B / ICP-OES	Plastic	500	0.01	0.02	mg/l as Ni	2	
		Digestion,ICP-OES Method				0.50	1.00	mg/kg as Ni		
14	Selenium (Se)	Waste Extraction , ICP-OES Method	SW 846 Method 3050B / ICP-OES	Plastic	500	0.05	0.10	mg/l as Se	2	
		Digestion,ICP-OES Method				2.50	5.00	mg/kg as Se		
15	Silver (Ag)	Waste Extraction , ICP-OES Method	SW 846 Method 3050B / ICP-OES	Plastic	500	0.02	0.05	mg/l as Ag	2	
		Digestion,ICP-OES Method				1.00	2.50	mg/kg as Ag		
16	Thallium (Tl)	Waste Extraction , ICP-OES Method	SW 846 Method 3050B / ICP-OES	Plastic	500	0.05	0.10	mg/l as V	2	
		Digestion,ICP-OES Method				2.50	5.00	mg/kg as V		
17	Vanadium (V)	Waste Extraction , ICP-OES Method	SW 846 Method 3050B / ICP-OES	Plastic	500	0.01	0.02	mg/l as V	2	
		Digestion,ICP-OES Method				0.50	1.00	mg/kg as V		
18	Zinc (Zn)	Waste Extraction , ICP-OES Method	SW 846 Method 3050B / ICP-OES	Plastic	500	0.01	0.02	mg/l as Zn	2	
		Digestion,ICP-OES Method				0.50	1.00	mg/kg as Zn		

การตรวจวิเคราะห์คุณภาพน้ำ – ภาคตะกอน (Water – Solid wastes Quality Analysis)

ตารางที่ 5 สรุปข้อกำหนดการเก็บตัวอย่างและความสามารถในการทดสอบตัวอย่างของห้องปฏิบัติการ ตามที่ขึ้นทะเบียนกับกรมโรงงานอุตสาหกรรม

(ประเภทตัวอย่าง : น้ำได้ดิน )

ส่วนงาน : ส่วนงานเครื่องมือทดสอบ

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point
1	Antimony (Sb)	Digestion, Inductively Coupled Plasma Method	Standard Method part3030F and 3120 B / ICP-OES	Plastic	500	0.05	0.10	mg/l as Sb	2
2	Arsenic (As)	Continuous Hydride Generation-ICP-OES Method	Standard Method part3030F and 3120 B / ICP-OES	Plastic	500	0.0010	0.0020	mg/l as As	4
3	Arsenic (As)	Continuous Hydride Generation /Atomic Absorption Spectrometric Method	Standard Method Part 3114 B and 3114 C / AAS	Plastic	500	0.0005	0.0020	mg/l as As	4
4	Barium (Ba)	Digestion, Inductively Coupled Plasma Method	Standard Method part3030F and 3120 B / ICP-OES	Plastic	500	0.02	0.03	mg/l as Ba	2
5	Beryllium (Be)	Digestion, Inductively Coupled Plasma Method	Standard Method part3030F and 3120 B / ICP-OES	Plastic	500	0.005	0.01	mg/l as Be	2
6	Cadmium (Cd)	Digestion, Inductively Coupled Plasma Method	Standard Method part3030F and 3120 B / ICP-OES	Plastic	500	0.002	0.003	mg/l as Cd	3
7	Chromium (Cr)	Digestion, Inductively Coupled Plasma Method	Standard Method part3030F and 3120 B / ICP-OES	Plastic	500	0.02	0.03	mg/l as Cr	2
8	Cyanide (CN <sup>-</sup> )	Distillation, Colorimetric Method	Standard Method part 4500 CN <sup>-</sup> C,E/ Spectrophotometer	Plastic	500	0.008	0.020	mg/l	3
9	Chromium Hexavalence (Cr <sup>6+</sup> )	Filtration,Colorimetric Method	Standard Method part 3500-Cr B/ Spectrophotometer	Plastic	500	0.003	0.050	mg/l as Cr <sup>6+</sup>	3
10	Lead (Pb)	Digestion, Inductively Coupled Plasma Method	Standard Method part3030F and 3120 B / ICP-OES	Plastic	500	0.005	0.010	mg/l as Pb	3
11	Manganese (Mn)	Digestion, Inductively Coupled Plasma Method	Standard Method part3030F and 3120 B / ICP-OES	Plastic	500	0.02	0.03	mg/l as Mn	2
12	Mercury (Hg)	Digestion, Cold Vapor Atomic Absorption Spectrometric Method	Standard Method part 3112 B / AAS	Plastic	500	0.0005	0.0010	mg/l as Hg	4

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point
13	Nickel (Ni)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F and 3120 B / ICP-OES	Plastic	500	0.01	0.02	mg/l as Ni	2
14	Phenols	Distillation, Direct Photometric Method	Standard Method part 5530 D / Spectrophotometer	Plastic	500	0.002	0.005	mg/l	3
15	Silver (Ag)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F and 3120 B / ICP-OES	Plastic	500	0.02	0.05	mg/l as Ag	2
16	Trivalent Chromium (Cr <sup>3+</sup> )	Digestion,Direct Aspiration-AAS Method; Filtration,Colorimetric Method;Calculation	Standard Method part 3500-Cr B & part 3111B /AAS	Plastic	500	0.05	0.10	mg/l	2
17	Trivalent Chromium (Cr <sup>3+</sup> )	Digestion,ICP-OES Method; Filtration,Colorimetric Method;Calculation	Standard Method part 3500-Cr B & part 3120B / ICP-OES	Plastic	500	0.02	0.03	mg/l	2
18	Vanadium (V)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F and 3120 B / ICP-OES	Plastic	500	0.01	0.02	mg/l as V	2
19	Zinc (Zn)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F and 3120 B / ICP-OES	Plastic	500	0.02	0.03	mg/l as Zn	2
20	Selenium (Se)	Digestion, Hydride Generation /Atomic Absorption Spectrometric Method	Standard Method part 3030F , 3114 B and 3114C	Plastic	500	0.0005	0.0020	mg/l	4
21	Volatile organic compounds,VOC#1	Purge-and-Trap /GC-MS	Standard Method part 6200B	Glass	40 *4				
1	- Benzene					0.00025	0.00050	mg/l	5
2	- Bromodichloromethane					0.00050	0.00050	mg/l	5
3	- Bromoform					0.00050	0.00050	mg/l	5
4	- Carbon tetrachloride					0.00025	0.00025	mg/l	5
5	- Chlorobenzene					0.00025	0.00050	mg/l	5
6	- Chlorodibromomethane					0.00050	0.00100	mg/l	5
7	- 1,2-Dichlorobenzene					0.00025	0.00050	mg/l	5
8	- 1,3-Dichlorobenzene					0.00025	0.00025	mg/l	5

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point
9	- 1,4-Dichlorobenzene					0.00025	0.00025	mg/l	5
10	- 1,1-Dichloroethane					0.00025	0.00025	mg/l	5
11	- 1,2-Dichloroethane					0.00025	0.00050	mg/l	5
12	- 1,1-Dichloroethylene					0.00025	0.00050	mg/l	5
13	- cis-1,2-Dichloroethylene					0.00050	0.00050	mg/l	5
14	- trans-1,2-Dichloroethylene					0.00025	0.00050	mg/l	5
15	- 1,2-Dichloropropane					0.00025	0.00050	mg/l	5
16	- 1,3-Dichloropropane					0.00025	0.00050	mg/l	5
17	- Ethylbenzene					0.00025	0.00050	mg/l	5
18	- Methyl tert-butyl ether					0.00025	0.00050	mg/l	5
19	- Naphthalene					0.00025	0.00100	mg/l	5
20	- Nitrobenzene					0.00025	0.00025	mg/l	5
21	- Styrene					0.00050	0.00100	mg/l	5
22	- 1,1,2,2-Tetrachloroethane					0.00050	0.00050	mg/l	5
23	- Tetrachloroethylene					0.00025	0.00050	mg/l	5
24	- Toluene					0.00025	0.00050	mg/l	5
25	- 1,2,4-Trichlorobenzene					0.00025	0.00050	mg/l	5
26	- 1,1,1-Trichloroethane					0.00025	0.00025	mg/l	5
27	- 1,1,2-Trichloroethane					0.00025	0.00050	mg/l	5
28	- Trichloroethylene					0.00025	0.00050	mg/l	5

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point
29	- 1,3,5-Trimethylbenzene					0.00025	0.00100	mg/l	5
30	- Vinyl acetate					0.00050	0.00100	mg/l	5
31	- Vinyl Chloride					0.00025	0.00025	mg/l	5
32	- m-Xylene					0.00025	0.00100	mg/l	5
33	- o-Xylene					0.00025	0.00100	mg/l	5
34	- p-Xylene					0.00025	0.00100	mg/l	5
35	- Xylene Total					0.00025	0.00100	mg/l	5
22	Volatile organic compounds,VOC#2	Purge-and-Trap / GC-MS Method	Standard Method part 6200B	Glass	40 *4				
1	- Acetone					0.00100	0.00100	mg/l	5
2	- Butanol					0.00100	0.00100	mg/l	5
3	- Carbon disulfide					0.00200	0.00500	mg/l	5
4	- Chloroform					0.00100	0.00200	mg/l	5
5	- n-Hexane					0.00100	0.00200	mg/l	5
6	- Dichloromethane					0.00200	0.00200	mg/l	5
23	Semivolatile organic compounds #1	Liquid-Liquid Extraction / GC-MS	Standard Method part 6410B	Glass	2500				
1	Acenaphthene					0.0005	0.0010	mg/l	4
2	Anthracene					0.0005	0.0010	mg/l	4
3	Benz[a]anthracene					0.0005	0.0010	mg/l	4
4	Benzo[b]fluoranthene					0.0005	0.0010	mg/l	4
5	Benzo[k]fluoranthene					0.0005	0.0010	mg/l	4

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point
6	Benzo[a]pyrene					0.0005	0.0001	mg/l	4
7	Benzo[ghi]perylene					0.0005	0.0010	mg/l	4
8	Bis(2-chloroethyl) ether					0.0005	0.0100	mg/l	4
9	Bis(2-ethylhexyl) phthalate					0.0005	0.0010	mg/l	4
10	Butyl benzyl phthalate					0.0005	0.0010	mg/l	4
11	Carbazole					0.0005	0.0010	mg/l	4
12	p-Chloroaniline					0.0005	0.0100	mg/l	4
13	2-Chlorophenol					0.0005	0.0010	mg/l	4
14	Chrysene					0.0005	0.0010	mg/l	4
15	Dibenz[a,h]anthracene					0.0005	0.0010	mg/l	4
16	Di-n-butyl phthalate					0.0005	0.0100	mg/l	4
17	2,4-Dichlorophenol					0.0005	0.0010	mg/l	4
18	Diethyl Phthalate					0.0005	0.0010	mg/l	4
19	2,4-Dimethylphenol					0.0005	0.0010	mg/l	4
20	2,4-Dinitrotoluene					0.0005	0.0010	mg/l	4
21	2,6-Dinitrotoluene					0.0005	0.0010	mg/l	4
22	Di-n-octyl phthalate					0.0005	0.0010	mg/l	4
23	Fluoranthene					0.0005	0.0010	mg/l	4
24	Fluorene					0.0005	0.0010	mg/l	4
25	Hexachlorobenzene					0.0005	0.0010	mg/l	4

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point
26	Hexachloro-1,3-butadiene					0.0005	0.0010	mg/l	4
27	Hexachlorocyclopentadiene					0.0005	0.0100	mg/l	4
28	Hexachloroethane					0.0005	0.0010	mg/l	4
29	Indeno[1,2,3-cd]pyrene					0.0005	0.0010	mg/l	4
30	Isophorone					0.0005	0.0010	mg/l	4
31	2-Methylphenol (o-Cresol)					0.0005	0.0010	mg/l	4
32	2-Methylnaphthalene					0.0005	0.0010	mg/l	4
33	N-Nitrosodi-n-propylamine					0.0005	0.0010	mg/l	4
34	Phenanthrene					0.0005	0.0010	mg/l	4
35	Phenol					0.0005	0.0010	mg/l	4
36	Pyrene					0.0005	0.0010	mg/l	4
37	2,4,5-Trichlorophenol					0.0005	0.0010	mg/l	4
38	2,4,6-Trichlorophenol					0.0005	0.0010	mg/l	4
24	Semivolatile organic compounds #2	Liquid-Liquid Extraction / GC-MS	Standard Method part 6410B	Glass	2500	0.030	0.050	µg/l	3
1	Aldrin					0.030	0.050	µg/l	3
2	Chlordane					0.030	0.050	µg/l	3
3	DDD					0.030	0.050	µg/l	3
4	DDE					0.030	0.050	µg/l	3
5	DDT					0.030	0.050	µg/l	3

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point
6	Dieldrin					0.030	0.050	µg/l	3
7	Endosulfan					0.030	0.050	µg/l	3
8	Endrin					0.050	0.100	µg/l	3
9	Heptachlor					0.030	0.050	µg/l	3
10	Heptachlor epoxide					0.030	0.050	µg/l	3
11	alpha - BHC					0.020	0.050	µg/l	3
12	beta - BHC					0.030	0.050	µg/l	3
13	gamma - BHC					0.030	0.050	µg/l	3
14	Methoxychlor					0.030	0.050	µg/l	3

#### การตรวจวิเคราะห์คุณภาพน้ำ – ภาคตะกอน (Water – Solid wastes Quality Analysis)

ตารางที่ 4 สรุปข้อกำหนดการเก็บตัวอย่างและความสามารถในการทดสอบตัวอย่างของห้องปฏิบัติการ **ตามที่ขึ้นทะเบียนกับกรมโรงงานอุตสาหกรรม**

(ประเภทตัวอย่าง : น้ำเสีย(ขึ้นทะเบียนกรมโรงงานฯ), น้ำ,น้ำเพื่ออุปโภค, น้ำประปา, น้ำผิวดิน, น้ำบาดาล และน้ำทะเล )

ส่วนงาน : ส่วนงานเครื่องมือทดสอบ

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point	Remark
1	Arsenic (As)	Continuous Hydride Generation-AAS Method	APHA Method Part 3114 B / AAS	Plastic	500	0.0005	0.0020	mg/l as As	4	น้ำทะเล MDL/LOQ = 1.00/2.00 ug/l
2	Barium (Ba)	Digestion,ICP-OES Method	APHA Method part3030F and 3120 B / ICP-OES	Plastic	500	0.02	0.03	mg/l as Ba	2	น้ำทะเล MDL/LOQ = 20/30 ug/l
3	Cadmium (Cd)	Digestion,ICP-OES Method	APHA Method part3030F and 3120 B / ICP-OES	Plastic	500	0.02	0.03	mg/l as Cd	2	น้ำทะเล MDL/LOQ = 20/30 ug/l น้ำดื่ม MDL/LOQ = 0.002/0.003 mg/l
4	Chromium (Cr)	Digestion,ICP-OES Method	APHA Method part3030F and 3120 B / ICP-OES	Plastic	500	0.02	0.03	mg/l as Cr	2	น้ำทะเล MDL/LOQ = 20/30 ug/l
5	Color	ADMI Weighted-Ordinate Spectrophotometer Method	APHA Method part 2120 F / Spectrophotometer	Plastic	500	10	20	ADMI	0	
6	Chromium Hexavalence (Cr <sup>6+</sup> )	Filtration,Colorimetric Method	APHA Method part 3500-Cr B / Spectrophotometer	Plastic	500	0.003	0.050	mg/l as Cr <sup>6+</sup>	3	น้ำทะเล MDL/LOQ = 3.00/50.0 ug/l
7	Copper (Cu)	Digestion,ICP-OES Method	APHA Method part3030F and 3120 B / ICP-OES	Plastic	500	0.02	0.03	mg/l as Cu	2	น้ำทะเล MDL/LOQ = 20/30 ug/l
8	Cyanide (CN <sup>-</sup> )	Distillation, Colorimetric Method	APHA Method part 4500 CN <sup>-</sup> C,E/ Spectrophotometer	Plastic	500	0.008	0.020	mg/l	3	น้ำทะเล MDL/LOQ = 8/20 ug/l
9	Formaldehyde	Distillation, Colorimetric Method	คู่มือวิเคราะห์น้ำเสีย,สมาคมวิศวกรรมสิ่งแวดล้อมแห่งประเทศไทย	Plastic	100	0.20	0.50	mg/l	2	
10	Lead (Pb)	Digestion,ICP-OES Method	APHA Method part3030F and 3120 B / ICP-OES	Plastic	500	0.02	0.03	mg/l as Pb	2	น้ำทะเล MDL/LOQ = 20/30 ug/l น้ำดื่ม MDL/LOQ = 0.005/0.010 mg/l

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point	Remark
11	Manganese (Mn)	Digestion,ICP-OES Method	APHA Method part3030F and 3120 B / ICP-OES	Plastic	500	0.02	0.03	mg/l as Mn	2	ไม่พบ MDL/LOQ = 20/30 ug/l
12	Mercury (Hg)	Cold Vapor Atomic Absorption Spectrometric Method(SM:3112B)	APHA Method part 3112 B / AAS	Plastic	500	0.0005	0.0010	mg/l as Hg	4	
13	Nickel (Ni)	Digestion,ICP-OES Method	APHA Method part3030F and 3120 B / ICP-OES	Plastic	500	0.02	0.03	mg/l as Ni	2	ไม่พบ MDL/LOQ = 20/30 ug/l
14	Phenols	Distillation, Direct Photometric Method	APHA Method part 5530 D / Spectrophotometer	Plastic	500	0.002	0.005	mg/l	3	
15	Trivalent Chromium (Cr <sup>3+</sup> )	Digestion,Direct Aspiration-AAS Method; Filtration,Colorimetric Method;Calculation	APHA Method part 3500-Cr B & part 3111B /AAS	Plastic	500	0.05	0.10	mg/l	2	
16	Trivalent Chromium (Cr <sup>3+</sup> )	Digestion,ICP-OES Method; Filtration,Colorimetric Method;Calculation	APHA Method part 3500-Cr B & part 3120B / ICP-OES	Plastic	500	0.02	0.03	mg/l	2	
17	Zinc (Zn)	Digestion,ICP-OES Method	APHA Method part3030F and 3120 B / ICP-OES	Plastic	500	0.02	0.03	mg/l as Zn	2	ไม่พบ MDL/LOQ = 20/30 ug/l
18	Free Chlorine	DPD Colorimetric Method	APHA Method part 4500 Cl G/ Spectrophotometer	Plastic	500	0.03	0.05	mg/l	2	
19	Selenium (Se)	Continuos,Hydride Generation/AAS	APHA Method part3030F , 3114 B and 3114C	Plastic	500	0.0005	0.0020	mg/l	4	
20	สารกำจัดศัตรูพืชและสัตว์ (Pesticide) :	Liquid-Liquid Extraction Gas Chromatography	APHA Method part 6630B/GC and APHA Method part 6410B/GC-MS	Glass	2500	0.03	0.05	ug/l	2	
	- alpha - BHC					0.03	0.05	ug/l	2	
	- beta - BHC					0.03	0.05	ug/l	2	

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point	Remark
	- gamma - BHC	Liquid-Liquid Extraction Gas Chromatography	APHA Method part 6630B/GC and APHA Method part 6410B/GC-MS	Glass	2500	0.03	0.05	ug/l	2	
	- delta - BHC					0.03	0.05	ug/l	2	
	- Heptachlor					0.03	0.05	ug/l	2	
	- Aldrin					0.03	0.05	ug/l	2	
	- Heptachlor epoxide					0.03	0.05	ug/l	2	
	- Endosulfan I					0.03	0.05	ug/l	2	
	- p,p - DDE					0.03	0.05	ug/l	2	
	- Dieldrin					0.03	0.05	ug/l	2	
	- Endrin ketone					0.03	0.05	ug/l	2	
	- Endosulfan II					0.03	0.05	ug/l	2	
	- p,p - DDD					0.03	0.05	ug/l	2	
	- Endrin Aldehyde					0.03	0.05	ug/l	2	

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point	Remark
	- Endosulfan Sulfate	Liquid-Liquid Extraction Gas Chromatography	APHA Method part 6630B/GC and APHA Method part 6410B/GC-MS	Glass	2500	0.03	0.05	ug/l	2	
	- trans Chlordane					0.03	0.05	ug/l	2	
	- cis Chlordane					0.03	0.05	ug/l	2	
	- DDT	Liquid-Liquid Extraction Gas Chromatography	APHA Method part 6410B/GC-MS	Glass	2500	0.03	0.05	ug/l	2	
	- Endrin					0.05	0.10	ug/l	2	
	- Methoxychlor					0.03	0.05	ug/l	2	

**การตรวจวิเคราะห์คุณภาพน้ำ – ภาคตะกอน (Water – Solid wastes Quality Analysis)**

ตารางที่ 6 สรุปข้อกำหนดการเก็บตัวอย่างและความสามารถในการทดสอบตัวอย่างของห้องปฏิบัติการ ที่มิได้ขึ้นทะเบียนกับกรมโรงงานอุตสาหกรรม

(ประเภทตัวอย่าง : น้ำ, น้ำเสีย, น้ำใต้ดิน, น้ำเพื่ออุปโภค, น้ำประปา, น้ำผิวดิน, น้ำบาดาล และน้ำทะเล)

ส่วนงาน : ส่วนงานเครื่องมือทดสอบ

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point	Remark
1	Antimony (Sb)	Digestion, ICP-OES Method	Standard Method part 3030F, 3120 B / ICP-OES	Plastic	500	0.05	0.10	mg/l as Sb	2	
2	Aluminium (Al)	Digestion, ICP-OES Method	Standard Method part 3030F, 3120 B / ICP-OES	Plastic	500	0.05	0.10	mg/l as Al	2	
3	Boron (B)	Digestion, ICP-OES Method	Standard Method part 3030F, 3120 B / ICP-OES	Plastic	500	0.01	0.02	mg/l as B	2	
4	Calcium (Ca)	Digestion, ICP-OES Method	Standard Method part 3030F, 3120 B / ICP-OES	Plastic	500	0.50	1.00	mg/l as Ca	2	
5	Cadmium (Cd)	Digestion, ICP-OES Method	Standard Method part 3030F, 3120 B / ICP-OES	Plastic	500	0.002	0.003	mg/l as Cd	3	ค่าต่ำ
6	Cobalt (Co)	Digestion, ICP-OES Method	Standard Method part 3030F, 3120 B / ICP-OES	Plastic	500	0.01	0.02	mg/l as Co	2	
7	Color	Spectrophotometric Method	Standard Method part 2120 C / Spectrophotometer	Plastic	500	0.50	1.00	Pt-Co	2	
8	Iron (Fe)	Digestion, ICP-OES Method	Standard Method part 3030F, 3120 B / ICP-OES	Plastic	500	0.02	0.03	mg/l as Fe	2	
9	Lead (Pb)	Digestion, ICP-OES Method	Standard Method part 3030F, 3120 B / ICP-OES	Plastic	500	0.005	0.010	mg/l as Pb	3	ค่าต่ำ
10	Magnesium (Mg)	Digestion, ICP-OES Method	Standard Method part 3030F, 3120 B / ICP-OES	Plastic	500	0.50	1.00	mg/l as Mg	2	
11	Molybdenum (Mo)	Digestion, ICP-OES Method	Standard Method part 3030F, 3120 B / ICP-OES	Plastic	500	0.01	0.02	mg/l as Mo	2	
12	Nitrite (NO <sub>2</sub> <sup>-</sup> )	Colorimetric Method	Standard Method part 4500-NO <sub>2</sub> <sup>-</sup> B / Spectrophotometer	Plastic	500	0.003	0.030	mg/l as NO <sub>2</sub> <sup>-</sup>	3	
13	Nitrite-Nitrogen (NO <sub>2</sub> <sup>-</sup> -N)	Colorimetric Method	Standard Method part 4500-NO <sub>2</sub> <sup>-</sup> B / Spectrophotometer	Plastic	500	0.001	0.010	mg/l as NO <sub>2</sub> <sup>-</sup> -N	3	
14	Nitrate (NO <sub>3</sub> <sup>-</sup> )	Colorimetric Method	Standard Method part 4500-NO <sub>3</sub> <sup>-</sup> B / Spectrophotometer	Plastic	500	0.09	0.44	mg/l as NO <sub>3</sub> <sup>-</sup>	2	

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point	Remark
15	Nitrate-Nitrogen (NO <sub>3</sub> <sup>-</sup> )	Colorimetric Method	Standard Method part 4500-NO <sub>3</sub> <sup>-</sup> B / Spectrophotometer	Plastic	500	0.02	0.10	mg/l as NO <sub>3</sub> <sup>-</sup> -N	2	
16	Potassium (K)	Direct Aspiration-AAS Method	Standard Method part 3111 B / AAS	Plastic	500	0.008	0.025	mg/l as K	3	
17	Potassium (K)	Digestion,ICP-OES Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.50	1.00	mg/l as K	2	
18	Selenium (Se)	Digestion,ICP-OES Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.05	0.10	mg/l as Se	2	
19	Silica (SiO <sub>2</sub> )	Molybdosilicate Method	Standard Method part 4500-SiO <sub>2</sub> C / Spectrophotometer	Plastic	500	1.00	2.00	mg/l as SiO <sub>2</sub>	2	
20	Silicon (Si)	Digestion,ICP-OES Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.02	0.05	mg/l as Si	2	
21	Silver (Ag)	Digestion,ICP-OES Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.02	0.05	mg/l as Ag	2	
22	Sodium (Na)	Direct Aspiration-AAS Method	Standard Method part 3111 B / AAS	Plastic	500	0.005	0.050	mg/l as Na	3	
23	Sodium (Na)	Digestion,ICP-OES Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.50	1.00	mg/l as Na	2	
24	Sodium Absorption Ratio (SAR)	Calculation,Digestion,ICP-OES Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.50	1.00	-	2	
25	Strontium (Sr)	Digestion,ICP-OES Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.01	0.02	mg/l as Sr	2	
26	Tin (Sn)	Digestion,ICP-OES Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.05	0.10	mg/l as Sn	2	
27	Titanium (Ti)	Digestion,ICP-OES Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.01	0.02	mg/l as Ti	2	
28	Thallium (Tl)	Digestion,ICP-OES Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.05	0.10	mg/l as Tl	2	
29	Vanadium (V)	Digestion,ICP-OES Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.01	0.02	mg/l as V	2	
30	Phosphate (PO <sub>4</sub> <sup>3-</sup> )	Ascorbic Acid Method	Standard Method part 4500-PO <sub>4</sub> <sup>3-</sup> B/ Spectrophotometer	Plastic	500	0.03	0.46	mg/l as P	2	

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point	Remark
31	Phosphorus (P)	Ascorbic Acid Method	Standard Method part 4500-P B/ Spectrophotometer	Plastic	500	0.05	0.15	mg/l as PO <sub>4</sub> <sup>3-</sup>	2	
32	Sulfate (SO <sub>4</sub> <sup>2-</sup> )	Turbidimetric Method	Standard Method part 4500-SO <sub>4</sub> <sup>2-</sup> E/ Spectrophotometer	Plastic	500	1.50	5.00	mg/l as SO <sub>4</sub> <sup>2-</sup>	2	
33	Surfactant	Anionic Surfactants as MBAS	Standard Method Part 5540 C / Spectrophotometer	Plastic	500	0.35	0.40	mg/l as MBAS	2	
34	Surfactant (LAS)	Anionic Surfactants as MBAS	Standard Method Part 5540 C / Spectrophotometer	Plastic	1000	0.08	0.10	mg/l as MBAS	2	น้ำดื่ม
35	Fluoride (F <sup>-</sup> )	Ion-Selective Electrode Method	Standard Method part 4500-F <sup>-</sup> C/ Spectrophotometer	Plastic	100	0.20	0.50	mg/l as F <sup>-</sup>	2	
36	Gold (Au)	Digestion,ICP-OES Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.02	0.05	mg/l as Au	2	
37	Phosphorus (P)	Digestion,ICP-OES Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.50	1.00	mg/l as P	2	
38	Chlorine (Residual)	Spectrophotometric Method	Standard Method part 4500-Cl G / Spectrophotometer	Plastic	500	0.03	0.05	mg/l as Cl <sub>2</sub>	2	

การตรวจวิเคราะห์คุณภาพน้ำ – ภาคตะกอน (Water – Solid wastes Quality Analysis)

ตารางที่ 1 สรุปข้อกำหนดการเก็บตัวอย่างและความสามารถในการทดสอบตัวอย่างของอุปกรณ์การ ตรวจที่ขึ้นทะเบียนกรมโรงงานอุตสาหกรรม

(ประเภทตัวอย่าง : น้ำเสีย(ขึ้นทะเบียนกรมโรงงานฯ), น้ำ,น้ำเพื่ออุปโภค, น้ำประปา, น้ำผิวดิน, น้ำบาดาล และน้ำทะเล)

ส่วนงาน : ส่วนงานทดสอบพื้นฐาน

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point	Remark
1.1	Biochemical Oxygen Demand (BOD <sub>5</sub> )	5-Day BOD Test, Membrane Electrode Method	Standard Method part 5210 B, 4500-O G / DO meter	Plastic	1000	-	2.0	mg/l	1	
1.2	Biochemical Oxygen Demand (BOD <sub>5</sub> )	5-Day BOD Test, Azide Modification Method	Standard Method part 5210 B, 4500-O C / Titration	Plastic	1000	-	2.0	mg/l	1	
2.1	Chemical Oxygen Demand (COD)	In-house Method	Standard Method part 5220 C / Titration	Plastic	100	-	40	mg/l as O <sub>2</sub>	0	
2.2	Chemical Oxygen Demand (COD)	Titrimetric, Closed Reflux Method	Standard Method part 5220 C / Titration	Plastic	100	-	40	mg/l as O <sub>2</sub>	0	
3	Free Chlorine	Iodometric Method	Standard Method part 4500-B / Titration	Plastic	100	-	0.50	mg/l	2	
4	Total Dissolved Solids (TDS)	Dried at 180 °C	Standard Method part 2540 C / Gravimetric	Plastic	200	-	25	mg/l	0	
5.1	Grease&Oil	In-house Method	Standard Method part 5520 B / Gravimetric	Glass	1000	-	3.0	mg/l	1	
5.2	Grease&Oil	Partition Gavimetric Method	Standard Method part 5520 B / Gravimetric	Glass	1001	-	3.0	mg/l	1	
6	Sulfide (S <sub>2</sub> )	ZnS Precipitation ,Iodometric Method	Standard Method part 4500-S <sup>2</sup> F / Titration	BOD bottle	300	-	0.50	mg/l as H <sub>2</sub> S	2	
7	pH	Electrometric Method	Standard Method part 4500 H <sup>+</sup> / pH meter	Plastic	50	-	3.0-12.0	-	1	
8	Total Suspended Solids (TSS)	Dried at 103-105 °C	Standard Method part 2540 D / Grvimetric	Plastic	1000	-	5	mg/l	0	

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point	Remark
9	Temperature	Laboratory and Field Method	Standard Method part 2550 B / Thermometer	at field		-	1	°C	0	
10	Total Kjeldahl Nitrogen (TKN)	Macro-Kjeldahl Method	Standard Method part 4500-N <sub>org</sub> / Titration	Plastic	500	-	5	mg/l as NH <sub>3</sub> -N	0	
11	Hydrogen Sulfide (H2S)	ZnS Precipitation ,Iodometric Method	Standard Method part 4500-S <sup>2</sup> F / Titration	BOD bottle	300	-	0.53	mg/l as H <sub>2</sub> S	2	

การตรวจวิเคราะห์คุณภาพน้ำ – การทดสอบ (Water – Solid wastes Quality Analysis)

ตารางที่ 3 ตารางข้อกำหนดการเก็บตัวอย่างและความสามารถในการทดสอบตัวอย่างของห้องปฏิบัติการ ที่ไม่ได้ขึ้นทะเบียนกับกรมโรงงานอุตสาหกรรม  
(ประเภทตัวอย่าง : น้ำ, น้ำเสีย, น้ำเพื่ออุปโภค, น้ำประปา, น้ำผิวดิน, น้ำบาดาล และน้ำทะเล)

ส่วนรวม : ส่วนรวมทดสอบพื้นฐาน

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point	Remark
1	Acidity	Titration Method	Standard Method part 2310 B / Titration	Plastic	50	-	20.00	mg/l as CaCO <sub>3</sub>	1	
2	M-Alkalinity	Titration Method	Standard Method part 2320 B / Titration	Plastic	50	-	20.00	mg/l as CaCO <sub>3</sub>	1	
3	P-Alkalinity	Titration Method	Standard Method part 2320 B / Titration	Plastic	50	-	20.00	mg/l as CaCO <sub>3</sub>	1	
4	Ammonia Nitrogen (NH <sub>3</sub> -N)	Distillation and Titrimetric Method	Standard Method part 4500-NH <sub>3</sub> <sup>+</sup> / Titration	Plastic	500		2	mg/l as NH <sub>3</sub> -N	1	
5	Calcium Hardness	EDTA Titrimetric Method	Standard method part 3500-Ca B/ Titration	Plastic	100	-	3.0	mg/l as CaCO <sub>3</sub>	1	
6	Chloride (Cl <sup>-</sup> )	Argentometric Method	Standard Method part 4500-Cl <sup>-</sup> B / Titration	Plastic	50	-	5.0	mg/l as Cl <sup>-</sup>	1	
7	Chlorine (Residual)	DPD Colorimetric Method	Standard Method part 4500-Cl G / Test kit	Plastic	500	-	0.1	mg/l as Cl <sub>2</sub>	1	
8	Chlorine (Total)	DPD Colorimetric Method	Modified Standard Method part 4500-Cl G / Test kit	Plastic	500	-	0.1	mg/l as Cl <sub>2</sub>	1	
9	Fixed Solids (FS)	Dried at 550 °C	Standard Method part 2540 E / Gravimetric	Plastic	200	-	30.0	mg/l	1	
10	Hardness	EDTA Titrimetric Method	Standard Method part 2340 C / Titration	Plastic	100	-	6.0	mg/l as CaCO <sub>3</sub>	1	
11	Magnesium (Mg)	Calculation Method	Standard Method part 3500-Mg / Calculation	Plastic	100	-	0.70	mg/l as Mg	1	
12	Magnesium Hardness	Calculation Method	Standard Method part 3500-Mg / Calculation	Plastic	100	-	3.0	mg/l as CaCO <sub>3</sub>	1	
13	Mix Liquor Suspended Solids (MLSS)	Dried at 103-105 °C	Standard Method part 2540 C / Gravimetric	Plastic	200	-	5	mg/l	1	
14	Mix Liquor Volatile Suspended Solids (MLVSS)	Dried at 550 °C	Standard Method part 2540 E / Gravimetric	Plastic	200	-	5	mg/l	1	

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point	Remark
15	Organic Nitrogen	Macro-Kjeldahl Method	Standard Method part 4500-N <sub>org</sub> / Titration	Plastic	500	-	5	mg/l as NH <sub>3</sub> -N	1	Org-N = TKCN-(Ammonia-N)
17	Conductivity	Laboratory Method	Standard Method part 2510 B	Plastic	200	-	0.1	us/cm	หลักหน่วย 2 ส่วนทศนิยมหลัก	อ่านจากเครื่อง
18	Salinity	Electrical Conductivity Method	Standard Method part 2520 B / Conductivity meter	Plastic	100	-	0.01	ppt	หลักหน่วย 2 ส่วนทศนิยมหลัก	อ่านจากเครื่อง
19	Sludge Volume Index (SV <sub>30</sub> )	Volumetric Method	Standard Method part 2540 F / Volumetric	Plastic	1000	-	0.1	ml/l	1	
20	Sulfite	Titrimetric Method	Standard Method part 4500-SO <sub>3</sub> <sup>2-</sup> B / Titration	Plastic	200	-	2.00	mg/l as SO <sub>3</sub> <sup>2-</sup>	2	
21	Total Dissolved Solids (TDS)	Dried at 103-105 °C	Modified Standard Method part 2540 B / Gravimetric	Plastic	200	-	25	mg/l	0	
22	Turbidity	Nephelometric Method	Standard Method part 2130 B / Turbidity meter	Plastic	50	0.01	0.01	NTU	หลักหน่วย 2 ส่วนทศนิยมหลัก	NTU=FTU=ซีทีเอกเซล
23	Volatile Fatty Acid	Titrimetric Method	คู่มือวิเคราะห์น้ำเสีย ตามทศวิธีกรมส่งเสริมการเกษตรแห่งประเทศไทย / Titration	Plastic	200	-	1.00	mg/l	1	
24	Volatile Solids (VS)	Dried at 550 °C	Standard Method part 2540 E / Gravimetric	Plastic	200		3.0	mg/l	1	
25	Volatile Suspended Solids (VSS)	Dried at 550 °C	Standard Method part 2540 E / Gravimetric	Plastic	200		3.0	mg/l	1	
26	Dissolved Oxygen(DO)	Azide Modification	Standard Method part 4500-O C/Titration	Plastic	300	-	0.3	mg/l	1	
	ส่วนรวมจุลชีววิทยา									
1	Benthos	Counting Chamber Method	Standard Method part 10500 B / Counting	จานดำ	-	-	-	ind/m <sup>2</sup>	0	รายงานค่าสูงสุด =Not found
2	Escherichia Coli Bacteria (E.coli)	MPN Test	Standard Method part 9221 F / Fluorogenic Substrate , MPN	Glass	250	-	-	MPN:100 ml	ตามตาราง MPN-	รายงานค่าสูงสุด 1.1 (น้ำดื่ม) / 1.8 (น้ำ)
3	Total Coliform	MPN Test	Standard Method part 9221 B / Fermentation Technique , MPN	Glass	250	-	-	MPN:100 ml	ตามตาราง MPN-	รายงานค่าสูงสุด 1.1 (น้ำดื่ม) / 1.8 (น้ำ)

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point	Remark
4	Thermotolerant coliforms (Fecal Coliform)	MPN Test	Standard Method part 9221 E / Thermolerant Coliform , MPN	Glass	250	-	-	MPN/100 ml	จำนวน MPN-	วิธีหาค่า = 1.1 (น้ำดื่ม) / 1.8 (น้ำ)
5	Heterotrophic Bacteria (Total Bacteria)	Heterotrophic plate count (Standard Plate Count Method)	Standard Method part 9215 B / Pour plate	Glass	250	1	1	Colonies/cm <sup>3</sup>	0	*Heterotrophic plate count = Standard plate Count
6	Phytoplankton	Counting Chamber Method	Standard Method part 10200 F / Counting	Plstic	-	-	-	Cell / l	0	วิธีหาค่า =Not found
7	Zooplankton	Counting Chamber Method	Standard Method part 10200 G / Counting	Plastic	-	-	-	md./l	0	วิธีหาค่า =Not found
8	S.Aureus	Enrichment	Standard Method part 9213 B	Glass	1000	-	-	-	วิธีหาค่า พว/ไมพบ	วิธีหาค่า =Not found
9	Salmonella sp.	Membrane Filter	Standard Method part 9260 B	Glass	1000	-	-	-	วิธีหาค่า พว/ไมพบ	วิธีหาค่า =Not found
10	Clostridium perfringens	Comperndium 2003,Chapter 34	Comperndium 2003,Chapter 34	Glass	1000	-	-	-	วิธีหาค่า พว/ไมพบ	วิธีหาค่า =Not found

การตรวจวิเคราะห์คุณภาพน้ำ – การทดสอบ (Water – Solid wastes Quality Analysis)

ตารางที่ 4. สรุปข้อมูลการตรวจวิเคราะห์ค่าความเข้มข้นในการทดสอบตัวอย่างของข้อมูลที่มีการ เกินขีดจำกัดที่อนุญาตให้ยอมรับได้

(ประเภทตัวอย่าง : น้ำดื่ม น้ำประปา, น้ำดื่ม, น้ำประปา, น้ำดื่ม, น้ำประปา และน้ำดื่ม)

ตัวแปร : ส่วนเกินที่อนุญาต

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point	Remark
1	Arsenic (As)	Continuous Hydride Generation /Atomic Absorption Spectrometric Method	Standard Method Part 3114 B and 3114C / AAS	Plastic	500	0.0005	0.0020	mg/l as As	4	วิธีหาค่า MDL/LOQ = 1.00/2.00 ug/l
2	Barium (Ba)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F and 3120 B / ICP-OES	Plastic	500	0.001	0.03	mg/l as Ba	2	วิธีหาค่า MDL/LOQ = 1/30 ug/l
3	Cadmium (Cd)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F and 3120 B / ICP-OES	Plastic	500	0.001	0.03	mg/l as Cd	2	วิธีหาค่า MDL/LOQ = 1/30 ug/l
4	Chromium (Cr)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F and 3120 B / ICP-OES	Plastic	500	0.002	0.03	mg/l as Cr	2	วิธีหาค่า MDL/LOQ = 2/30 ug/l
5	Color	ADMI Weighted-Ordinate Spectrophotometer Method	Standard Method part 2120 F / Spectrophotometer	Plastic	500	10	20	ADMI	0	
6	Chromium Hexavalence (Cr <sup>6+</sup> )	Filtration,Colorimetric Method	Standard Method part 3500-Cr B / Spectrophotometer	Plastic	500	0.003	0.050	mg/l as Cr <sup>6+</sup>	3	วิธีหาค่า MDL/LOQ = 3.00/50.0 ug/l
7	Copper (Cu)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F and 3120 B / ICP-OES	Plastic	500	0.001	0.03	mg/l as Cu	2	วิธีหาค่า MDL/LOQ = 1/30 ug/l
8	Cyanide (CN <sup>-</sup> )	Distillation, Colorimetric Method	Standard Method part 4500 CN- C/E/ Spectrophotometer	Plastic	500	0.008	0.020	mg/l	3	วิธีหาค่า MDL/LOQ = 8/20 ug/l
9	Formaldehyde	Distillation, Colorimetric Method	วิธีหาค่า = น้ำดื่ม, น้ำประปา, น้ำดื่ม, น้ำประปา, น้ำดื่ม, น้ำประปา	Plastic	100	0.20	0.50	mg/l	2	
10	Lead (Pb)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F and 3120 B / ICP-OES	Plastic	500	0.002	0.03	mg/l as Pb	2	วิธีหาค่า MDL/LOQ = 2/30 ug/l
11	Manganese (Mn)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F and 3120 B / ICP-OES	Plastic	500	0.0005	0.03	mg/l as Mn	2	วิธีหาค่า MDL/LOQ = 0.0017/0.010 mg/l
12	Mercury (Hg)	Digestion, Cold Vapor Atomic Absorption Spectrometric Method	Standard Method part 3112 B / AAS	Plastic	500	0.0005	0.0010	mg/l as Hg	4	วิธีหาค่า MDL/LOQ = 20/30 ug/l
13	Nickel (Ni)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F and 3120 B / ICP-OES	Plastic	500	0.001	0.03	mg/l as Ni	2	วิธีหาค่า MDL/LOQ = 1/30 ug/l
14	Phenols	Distillation, Direct Photometric Method	Standard Method part 5530 D / Spectrophotometer	Plastic	500	0.002	0.005	mg/l	3	
15	Trivalent Chromium (Cr <sup>3+</sup> )	Digestion,Direct Aspiration-AAS Method, Filtration,Colorimetric Method,Calculation	Standard Method part 3500-Cr B and part 3111B /AAS	Plastic	500	0.05	0.10	mg/l	2	
16	Trivalent Chromium (Cr <sup>3+</sup> )	Digestion,ICP-OES Method; Filtration,Colorimetric Method;Calculation	Standard Method part 3500-Cr B and part 3120B / ICP-OES	Plastic	500	0.002	0.03	mg/l	2	

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point	Remark
17	Zinc (Zn)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F and 3120 B / ICP-OES	Plastic	500	0.005	0.03	mg/l as Zn	2	มีหน่วย MDL/LOQ = 5/30 ug/l
18	Free Chlorine	DPD Colorimetric Method	Standard Method part 4500 Cl G / Spectrophotometer	Plastic	500	0.03	0.05	mg/l	2	
19	Selenium (Se)	Digestion, Hydride Generation /Atomic Absorption Spectrometric Method	Standard Method part 3030F , 3114 B and 3114C / AAS	Plastic	500	0.0005	0.0020	mg/l	4	
20	สารกำจัดวัชพืชและเชื้อรา (Pesticide) :	Liquid-Liquid Extraction Gas Chromatography	Standard Method part 6630B/GC and Standard Method part 6410B/GC-MS	Glass	2500	0.03	0.05	ug/l	2	
	- alpha - BHC					0.02	0.05	ug/l	2	
	- beta - BHC					0.03	0.05	ug/l	2	
	- gamma - BHC					0.03	0.05	ug/l	2	
	- delta - BHC					0.03	0.05	ug/l	2	
	- Heptachlor					0.03	0.05	ug/l	2	
	- Aldrin					0.03	0.05	ug/l	2	
	- Heptachlor epoxide					0.03	0.05	ug/l	2	
	- Endosulfan I					0.03	0.05	ug/l	2	
	- p,p - DDE					0.03	0.05	ug/l	2	
	- Dieldrin					0.03	0.05	ug/l	2	
	- Endrin ketone					0.03	0.05	ug/l	2	
	- Endosulfan II					0.03	0.05	ug/l	2	
	- p,p - DDD					0.03	0.05	ug/l	2	
	- Endrin Alddehyde					0.03	0.05	ug/l	2	

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point	Remark
	- Endosulfan Sulfate					0.03	0.05	ug/l	2	
	- trans Chlordane					0.03	0.05	ug/l	2	
	- cis Chlordane					0.03	0.05	ug/l	2	
	- DDT		Standard Method part 6410B/GC-MS			0.03	0.05	ug/l	2	
	- Endrin					0.05	0.10	ug/l	2	
	- Methoxychlor					0.03	0.05	ug/l	2	

การตรวจวิเคราะห์คุณภาพน้ำ – ภาคตะกอน (Water – Solid wastes Quality Analysis)

ตารางที่ 6 สรุปข้อมูลการเป็นอันตรายและสามารถนำมาทำการทดสอบด้วยวิธีของกรมปศุสัตว์ ซึ่งเป็นวิธีที่ครอบคลุมกับวิธีมาตรฐาน  
(ประเภทตัวอย่าง : น้ำ, น้ำเสีย, น้ำใต้ดิน, น้ำทิ้งอุปโภค, น้ำประปา, น้ำผิวดิน, น้ำบึง, น้ำบาดาล และน้ำทะเล)

ส่วนประกอบ : ส่วนประกอบของตะกอน

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point	Remark
1	Antimony (Sb)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.05	0.10	mg/l as Sb	2	
2	Aluminium (Al)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.022	0.10	mg/l as Al	2	
3	Boron (B)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.01	0.02	mg/l as B	2	
4	Calcium (Ca)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.50	1.00	mg/l as Ca	2	
5	Cadmium (Cd)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.0001	0.003	mg/l as Cd	3	มีกลิ่น
6	Cobalt (Co)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.01	0.02	mg/l as Co	2	
7	Color	Spectrophotometric Method	Standard Method part 2120 C / Spectrophotometer	Plastic	500	0.50	1.00	Pt-Co	2	
8	Iron (Fe)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.002	0.03	mg/l as Fe	2	
9	Lead (Pb)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.0017	0.010	mg/l as Pb	3	มีกลิ่น
10	Magnesium (Mg)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.50	1.00	mg/l as Mg	2	
11	Molybdenum (Mo)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.002	0.02	mg/l as Mo	2	
12	Nitrite (NO <sub>2</sub> <sup>-</sup> )	Colorimetric Method	Standard Method part 4500-NO <sub>2</sub> <sup>-</sup> B / Spectrophotometer	Plastic	500	0.003	0.030	mg/l as NO <sub>2</sub> <sup>-</sup>	3	
13	Nitrite-Nitrogen (NO <sub>2</sub> <sup>-</sup> -N)	Colorimetric Method	Standard Method part 4500-NO <sub>2</sub> <sup>-</sup> B / Spectrophotometer	Plastic	500	0.001	0.010	mg/l as NO <sub>2</sub> <sup>-</sup> -N	3	
14	Nitrate (NO <sub>3</sub> <sup>-</sup> )	Colorimetric Method	Standard Method part 4500-NO <sub>3</sub> <sup>-</sup> B / Spectrophotometer	Plastic	500	0.09	0.44	mg/l as NO <sub>3</sub> <sup>-</sup>	2	
15	Nitrate-Nitrogen (NO <sub>3</sub> <sup>-</sup> -N)	Colorimetric Method	Standard Method part 4500-NO <sub>3</sub> <sup>-</sup> B / Spectrophotometer	Plastic	500	0.02	0.10	mg/l as NO <sub>3</sub> <sup>-</sup> -N	2	
16	Potassium (K)	Direct Aspiration-AAS Method	Standard Method part 3111 B / AAS	Plastic	500	0.008	0.025	mg/l as K	3	
17	Potassium (K)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.50	1.00	mg/l as K	2	
18	Selenium (Se)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.05	0.10	mg/l as Se	2	
19	Silica (SiO <sub>2</sub> )	Molybdosulfate Method	Standard Method part 4500-SiO <sub>2</sub> C / Spectrophotometer	Plastic	500	1.00	2.00	mg/l as SiO <sub>2</sub>	2	
20	Silicon (Si)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.02	0.05	mg/l as Si	2	
21	Silver (Ag)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.0004	0.05	mg/l as Ag	2	

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point	Remark
22	Sodium (Na)	Direct Aspiration-AAS Method	Standard Method part 3111 B / AAS	Plastic	500	0.005	0.050	mg/l as Na	3	
23	Sodium (Na)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.50	1.00	mg/l as Na	2	
24	Sodium Absorption Ratio (SAR)	Calculation,Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.50	1.00	-	2	
25	Strontium (Sr)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.01	0.02	mg/l as Sr	2	
26	Tin (Sn)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.05	0.10	mg/l as Sn	2	
27	Titanium (Ti)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.01	0.02	mg/l as Ti	2	
28	Thallium (Tl)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.05	0.10	mg/l as Tl	2	
29	Vanadium (V)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.01	0.02	mg/l as V	2	
30	Phosphate (PO <sub>4</sub> <sup>3-</sup> )	Ascorbic Acid Method	Standard Method part 4500-PO <sub>4</sub> <sup>3-</sup> BLE/ Spectrophotometer	Plastic	500	0.03	0.46	mg/l as P	2	
31	Phosphorus (P)	Ascorbic Acid Method	Standard Method part 4500-P BLE/ Spectrophotometer	Plastic	500	0.05	0.15	mg/l as P	2	
32	Sulfate (SO <sub>4</sub> <sup>2-</sup> )	Turbidimetric Method	Standard Method part 4500-SO <sub>4</sub> <sup>2-</sup> E/ Spectrophotometer	Plastic	500	1.50	5.00	mg/l as SO <sub>4</sub> <sup>2-</sup>	2	
33	Surfactant (LAS)	Anionic Surfactants as MBAS	Standard Method Part 5540 C / Spectrophotometer	Plastic	500	0.35	0.40	mg/l as MBAS	2	
34	Surfactant (LAS)	Anionic Surfactants as MBAS	Standard Method Part 5540 C / Spectrophotometer	Plastic	1000	0.08	0.10	mg/l as MBAS	2	มีกลิ่น
35	Fluoride (F <sup>-</sup> )	Ion-Selective Electrode Method	Standard Method part 4500-F- C/ Spectrophotometer	Plastic	100	0.20	0.50	mg/l as F <sup>-</sup>	2	
36	Gold (Au)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.02	0.05	mg/l as Au	2	
37	Phosphorus (P)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.50	1.00	mg/l as P	2	
38	Chlorine (Residual)	Spectrophotometric Method	Standard Method part 4500-Cl G / Spectrophotometer	Plastic	500	0.03	0.05	mg/l as Cl <sub>2</sub>	2	
39	Beryllium	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F,3120 B / ICP-OES	Plastic	500	0.01	0.02	mg/l as Be	2	
40	Nitrate (NO <sub>3</sub> <sup>-</sup> )	Ion Chromatography Method	Standard Method part 4110B / Ion Chromatography	Plastic	500	0.10	0.50	mg/l as NO <sub>3</sub> <sup>-</sup>	2	
41	Nitrate-Nitrogen (NO <sub>3</sub> <sup>-</sup> -N)	Ion Chromatography Method	Standard Method part 4110B / Ion Chromatography	Plastic	500	0.02	0.11	mg/l as NO <sub>3</sub> <sup>-</sup> -N	2	
42	Phenol	Liquid-Liquid Extraction / GC-MS	Standard Method part 6410B	Glass	2500	0.0001	0.0010	mg/l	4	มีกลิ่น
43	Phosphate - Phosphorus (PO <sub>4</sub> <sup>3-</sup> -P)	Ascorbic Acid Method	Standard Method part 4500-PO <sub>4</sub> <sup>3-</sup> BLE/ Spectrophotometer	Plastic	500	0.05	0.15	mg/l as P	2	มีทั้งMDL,LOQ = 50 /150 ug/l
44	Ammonia Nitrogen (NH <sub>3</sub> -N)	Distillation and Phenate Method	Standard Method part 4500-NH <sub>3</sub> -B, F. / Spectrophotometer	Plastic	500	0.05	0.10	mg/l as NH <sub>3</sub> -N	2	มีทั้งกลิ่น

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point	Remark
45	Ammonia (NH3)	Distillation and Phenate Method	Standard Method part 4500-NH3 -B, F. / Spectrophotometer	Plastic	500	0.06	0.12	mg/l as NH3	2	น้ำทิ้งคั้น

การตรวจวิเคราะห์คุณภาพน้ำ - ของเสีย (Water – Solid wastes Quality Analysis)

ตารางที่ ๕ สรุปใช้ค่ามาตรฐานกับตัวชี้วัดและค่ามาตรฐานในการทดสอบตัวชี้วัดของโรงงานผู้ถือกร **ตามดัชนีชี้วัดระดับความสะอาดของโรงงาน**

(ประเภทคำอ่าน : น้ำโด้คั้น )

ตัวอ่าน : ตัวอ่านของน้ำโด้คั้น

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point	Remark
1	Antimony (Sb)	Digestion, Inductively Coupled Plasma Method	Standard Method part3030F and 3120 B / ICP-OES	Plastic	500	0.05	0.10	mg/l as Sb	2	
2	Arsenic (As)	Continuous Hydride Generation-ICP-OES Method	Standard Method part3030F and 3120 B / ICP-OES	Plastic	500	0.0010	0.0020	mg/l as As	4	
3	Arsenic (As)	Continuous Hydride Generation /Atomic Absorption Spectrometric Method	Standard Method Part 3114 B and 3114 C / AAS	Plastic	500	0.0005	0.0020	mg/l as As	4	
4	Barium (Ba)	Digestion, Inductively Coupled Plasma Method	Standard Method part3030F and 3120 B / ICP-OES	Plastic	500	0.001	0.03	mg/l as Ba	2	
5	Beryllium (Be)	Digestion, Inductively Coupled Plasma Method	Standard Method part3030F and 3120 B / ICP-OES	Plastic	500	0.005	0.01	mg/l as Be	2	
6	Cadmium (Cd)	Digestion, Inductively Coupled Plasma Method	Standard Method part3030F and 3120 B / ICP-OES	Plastic	500	0.0001	0.003	mg/l as Cd	3	
7	Chromium (Cr)	Digestion, Inductively Coupled Plasma Method	Standard Method part3030F and 3120 B / ICP-OES	Plastic	500	0.002	0.03	mg/l as Cr	2	
8	Cyanide (CN <sup>-</sup> )	Distillation, Colorimetric Method	Standard Method part 4500 CN <sup>-</sup> C,E/ Spectrophotometer	Plastic	500	0.008	0.020	mg/l	3	
9	Chromium Hexavalence (Cr <sup>6+</sup> )	Filtration,Colorimetric Method	Standard Method part 3500-Cr B/ Spectrophotometer	Plastic	500	0.003	0.050	mg/l as Cr <sup>6+</sup>	3	
10	Lead (Pb)	Digestion, Inductively Coupled Plasma Method	Standard Method part3030F and 3120 B / ICP-OES	Plastic	500	0.0017	0.010	mg/l as Pb	3	
11	Manganese (Mn)	Digestion, Inductively Coupled Plasma Method	Standard Method part3030F and 3120 B / ICP-OES	Plastic	500	0.0005	0.03	mg/l as Mn	2	
12	Mercury (Hg)	Digestion, Cold Vapor Atomic Absorption Spectrometric Method	Standard Method part 3112 B / AAS	Plastic	500	0.0005	0.0010	mg/l as Hg	4	
13	Nickel (Ni)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F and 3120 B / ICP-OES	Plastic	500	0.001	0.02	mg/l as Ni	2	ถ้าใช้ DL ตามมาตรฐานฉบับใหม่
14	Phenole	Distillation, Direct Photometric Method	Standard Method part 5530 D / Spectrophotometer	Plastic	500	0.002	0.005	mg/l	3	
15	Silver (Ag)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F and 3120 B / ICP-OES	Plastic	500	0.0004	0.05	mg/l as Ag	2	
16	Trivalent Chromium (Cr <sup>3+</sup> )	Digestion,Direct Aspiration-AAS Method; Filtration,Colorimetric Method;Calculation	Standard Method part 3500-Cr B & part 3111B /AAS	Plastic	500	0.05	0.10	mg/l	2	
17	Trivalent Chromium (Cr <sup>3+</sup> )	Digestion,ICP-OES Method; Filtration,Colorimetric Method;Calculation	Standard Method part 3500-Cr B and part 3120B / ICP-OES	Plastic	500	0.002	0.03	mg/l	2	
18	Vanadium (V)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F and 3120 B / ICP-OES	Plastic	500	0.01	0.02	mg/l as V	2	
19	Zinc (Zn)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F and 3120 B / ICP-OES	Plastic	500	0.005	0.03	mg/l as Zn	2	

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point	Remark
20	Selenium (Se)	Digestion, Hydride Generation /Atomic Absorption Spectrometric Method	Standard Method part 3030F , 3114 B and 3114C	Plastic	500	0.0005	0.0020	mg/l	4	เพิ่มพูน 1 ม.ร. 2565
21	Volatile organic compounds,VOC#1	Purge-and-Trap /GC-MS	Standard Method part 6200B	Glass	40 *4					
1	- Benzene					0.00025	0.00050	mg/l	5	
2	- Bromodichloromethane					0.00050	0.00050	mg/l	5	
3	- Bromoform					0.00050	0.00050	mg/l	5	
4	- Carbon tetrachloride					0.00025	0.00025	mg/l	5	
5	- Chlorobenzene					0.00025	0.00050	mg/l	5	
6	- Chlorodibromomethane					0.00050	0.00100	mg/l	5	
7	- 1,2-Dichlorobenzene					0.00025	0.00050	mg/l	5	
8	- 1,3-Dichlorobenzene					0.00025	0.00025	mg/l	5	
9	- 1,4-Dichlorobenzene					0.00025	0.00025	mg/l	5	
10	- 1,1-Dichloroethane					0.00025	0.00025	mg/l	5	
11	- 1,2-Dichloroethane					0.00025	0.00050	mg/l	5	
12	- 1,1-Dichloroethylene					0.00025	0.00050	mg/l	5	
13	- cis-1,2-Dichloroethylene					0.00050	0.00050	mg/l	5	
14	- trans-1,2-Dichloroethylene					0.00025	0.00050	mg/l	5	
15	- 1,2-Dichloropropane					0.00025	0.00050	mg/l	5	
16	- 1,3-Dichloropropane					0.00025	0.00050	mg/l	5	
17	- Ethylbenzene					0.00025	0.00050	mg/l	5	
18	- Methyl tert-butyl ether					0.00025	0.00050	mg/l	5	
19	- Naphthalene					0.00025	0.00100	mg/l	5	
20	- Nitrobenzene					0.00025	0.00025	mg/l	5	
21	- Styrene					0.00050	0.00100	mg/l	5	
22	- 1,1,2,2-Tetrachloroethane					0.00050	0.00050	mg/l	5	
23	- Tetrachloroethylene					0.00025	0.00050	mg/l	5	
24	- Toluene					0.00025	0.00050	mg/l	5	
25	- 1,2,4-Trichlorobenzene					0.00025	0.00050	mg/l	5	
26	- 1,1,1-Trichloroethane					0.00025	0.00025	mg/l	5	

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point	Remark
27	- 1,1,2-Trichloroethane					0.00025	0.00050	mg/l	5	
28	- Trichloroethylene					0.00025	0.00050	mg/l	5	
29	- 1,3,5-Trimethylbenzene					0.00025	0.00100	mg/l	5	
30	- Vinyl acetate					0.00050	0.00100	mg/l	5	
31	- Vinyl Chloride					0.00025	0.00025	mg/l	5	
32	- m-Xylene					0.00025	0.00100	mg/l	5	
33	- o-Xylene					0.00025	0.00100	mg/l	5	
34	- p-Xylene					0.00025	0.00100	mg/l	5	
35	- Xylene Total					0.00025	0.00100	mg/l	5	
22	Volatile organic compounds,VOC#2	Purge-and-Trap / GC-MS Method	Standard Method part 6200B	Glass	40 *4					
1	- Acetone					0.00100	0.00100	mg/l	5	
2	- Butanol					0.00100	0.00100	mg/l	5	
3	- Carbon disulfide					0.00200	0.00500	mg/l	5	
4	- Chloroform					0.00100	0.00200	mg/l	5	
5	- n-Hexane					0.00100	0.00200	mg/l	5	
6	- Dichloromethane					0.00200	0.00200	mg/l	5	
23	Semivolatile organic compounds #1	Liquid-Liquid Extraction / GC-MS	Standard Method part 6410B	Glass	2500					
1	- Acenaphthene					0.0005	0.0010	mg/l	4	
2	- Anthracene					0.0005	0.0010	mg/l	4	
3	- Benzo[a]anthracene					0.0005	0.0010	mg/l	4	
4	- Benzo[b]fluoranthene					0.0005	0.0010	mg/l	4	
5	- Benzo[k]fluoranthene					0.0005	0.0010	mg/l	4	
6	- Benzo[a]pyrene					0.00005	0.0001	mg/l	4	เพิ่ม DL ตามมาตรฐานใหม่
7	- Benzo[ghi]perylene					0.0005	0.0010	mg/l	4	
8	- Bis(2-chloroethyl) ether					0.0005	0.0100	mg/l	4	
9	- Bis(2-ethoxyethyl) phthalate					0.0005	0.0010	mg/l	4	
10	- Butyl benzyl phthalate					0.0005	0.0010	mg/l	4	
11	- Carbazole					0.0005	0.0010	mg/l	4	

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point	Remark
12	p-Chloroaniline					0.0005	0.0010	mg/l	4	
13	2-Chlorophenol					0.0005	0.0010	mg/l	4	
14	Chrysene					0.0005	0.0010	mg/l	4	
15	Dibenz(a,h)anthracene					0.0005	0.0010	mg/l	4	
16	Di-n-butyl phthalate					0.0005	0.0010	mg/l	4	
17	2,4-Dichlorophenol					0.0005	0.0010	mg/l	4	
18	Diethyl Phthalate					0.0005	0.0010	mg/l	4	
19	2,4-Dimethylphenol					0.0005	0.0010	mg/l	4	
20	2,4-Dinitrotoluene					0.0005	0.0010	mg/l	4	
21	2,6-Dinitrotoluene					0.0005	0.0010	mg/l	4	
22	Di-n-octyl phthalate					0.0005	0.0010	mg/l	4	
23	Fluoranthene					0.0005	0.0010	mg/l	4	
24	Fluorene					0.0005	0.0010	mg/l	4	
25	Hexachlorobenzene					0.0005	0.0010	mg/l	4	
26	Hexachloro-1,3-butadiene					0.0005	0.0010	mg/l	4	
27	Hexachlorocyclopentadiene					0.0005	0.0010	mg/l	4	
28	Hexachloroethane					0.0005	0.0010	mg/l	4	
29	Indene(1,2,3-cd)pyrene					0.0005	0.0010	mg/l	4	
30	Isophorene					0.0005	0.0010	mg/l	4	
31	2-Methylphenol (o-Cresol)					0.0005	0.0010	mg/l	4	
32	2-Methylnaphthalene					0.0005	0.0010	mg/l	4	
33	N-Nitrosodi-n-propylamine					0.0005	0.0010	mg/l	4	
34	Phenanthrene					0.0005	0.0010	mg/l	4	
35	Phenol					0.0005	0.0010	mg/l	4	
36	Pyrene					0.0005	0.0010	mg/l	4	
37	2,4,5-Trichlorophenol					0.0005	0.0010	mg/l	4	
38	2,4,6-Trichlorophenol					0.0005	0.0010	mg/l	4	

Items	Parameter	Method	Reference Method / Analytical Technique	Container	sample size (ml)	MDL	LOQ	Unit	Decimal point	Remark
24	Semi-volatile organic compounds #2	Liquid-Liquid Extraction / GC-MS	Standard Method part 6410B	Glass	2500	0.030	0.050	µg/l	3	
1	Aldrin					0.030	0.050	µg/l	3	
2	Chlordane					0.030	0.050	µg/l	3	
3	DOD					0.030	0.050	µg/l	3	
4	DDE					0.030	0.050	µg/l	3	
5	DOT					0.030	0.050	µg/l	3	
6	Dieldrin					0.030	0.050	µg/l	3	
7	Endosulfan					0.030	0.050	µg/l	3	
8	Endrin					0.050	0.100	µg/l	3	
9	Heptachlor					0.030	0.050	µg/l	3	
10	Heptachlor epoxide					0.030	0.050	µg/l	3	
11	alpha - BHC					0.020	0.050	µg/l	3	
12	Beta - BHC					0.030	0.050	µg/l	3	
13	gamma - BHC					0.030	0.050	µg/l	3	
14	Methoxychlor					0.030	0.050	µg/l	3	
26	Aluminium (Al)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F and 3120 B / ICP-OES	Plastic	500	0.022	0.3	mg/l as Al	2	
27	Copper (Cu)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F and 3120 B / ICP-OES	Plastic	500	0.001	0.03	mg/l as Cu	2	
28	Iron (Fe)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F and 3120 B / ICP-OES	Plastic	500	0.002	0.05	mg/l as Fe	2	
29	Molybdenum (Mo)	Digestion, Inductively Coupled Plasma Method	Standard Method part 3030F and 3120 B / ICP-OES	Plastic	500	0.002	0.02	mg/l as Mo	2	