

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 อำเภอบางพลาย 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

<p>ลงชื่อ..... (นายพิชญพงศ์ ณ บางช้าง) กรรมการผู้จัดการ บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)</p>	<p>บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน) มกราคม 2567 <b>MDX</b> PUBLIC COMPANY LIMITED</p>	<p>ลงชื่อ..... (นางสาวจันทรา เกิดมี) ผู้อำนวยการสิ่งแวดล้อม บริษัท วิชั่น อี คอนซัลแทนท์ จำกัด</p>	<p>หน้า 1/10</p>
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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	<p>1) ปฏิบัติตามมาตรการป้องกันและแก้ไขผลกระทบสิ่งแวดล้อม และมาตรการติดตามตรวจสอบผลกระทบสิ่งแวดล้อม ที่เสนอในรายงานการเปลี่ยนแปลงรายละเอียดโครงการในรายงานการประเมินผลกระทบสิ่งแวดล้อม โครงการนิคมอุตสาหกรรมเกตเวย์ ซิตี้ (ครั้งที่ 1) บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน) ตั้งอยู่ที่ตำบลหัวสำโรง อำเภอบางพลี จังหวัดฉะเชิงเทรา</p> <p>2) ในกรณีที่ผลการติดตามตรวจสอบผลกระทบสิ่งแวดล้อมมีแนวโน้มสูงขึ้นจากค่าที่ตรวจวัดได้ในช่วงดำเนินการปกติ หรือมีแนวโน้มเข้าใกล้ค่าควบคุมหรือค่ามาตรฐาน ให้โครงการตรวจสอบหาสาเหตุและเฝ้าระวัง เพื่อเตรียมความพร้อมในการแก้ไขปัญหาที่อาจเกิดขึ้น ทั้งนี้ ให้สรุปรายละเอียดดังกล่าวไว้ในรายงานผลการปฏิบัติตามมาตรการป้องกันและแก้ไขผลกระทบสิ่งแวดล้อม และมาตรการติดตามตรวจสอบผลกระทบสิ่งแวดล้อมให้ครบถ้วน</p> <p>3) ในกรณีที่ผลตรวจวัดมลพิษจากแหล่งกำเนิดของโครงการมีค่าเกินค่าควบคุมที่กำหนดไว้ให้โครงการทำการตรวจสอบหาสาเหตุ ทำการแก้ไข และทำการตรวจวัดซ้ำเพื่อยืนยันประสิทธิภาพในการแก้ไข พร้อมทั้งกำหนดมาตรการเพื่อป้องกันการเกิดปัญหาในลักษณะดังกล่าวให้ครบถ้วน</p> <p>4) เมื่อผลการติดตามตรวจสอบได้แสดงให้เห็นถึงปัญหาสิ่งแวดล้อม บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน) ต้องดำเนินการปรับปรุงแก้ไขปัญหาดังกล่าวโดยเร็ว และต้องปฏิบัติตามมาตรการป้องกันและแก้ไขผลกระทบสิ่งแวดล้อม และมาตรการติดตามตรวจสอบผลกระทบสิ่งแวดล้อมโดยเคร่งครัด เพื่อประโยชน์ในการพิจารณาความเหมาะสมของการกำหนดระยะเวลาในการติดตามตรวจสอบต่อไป</p> <p>5) หากเกิดเหตุการณ์ใด ๆ ก็ตามที่อาจก่อให้เกิดผลกระทบต่อคุณภาพสิ่งแวดล้อม บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน) ต้องแจ้งการนิคมอุตสาหกรรมแห่งประเทศไทย สำนักงานทรัพยากรธรรมชาติและสิ่งแวดล้อมจังหวัดฉะเชิงเทรา และสำนักงานนโยบายและแผนทรัพยากรธรรมชาติและสิ่งแวดล้อมทราบโดยเร็ว เพื่อหน่วยงานดังกล่าวจะได้ให้ความร่วมมือในการแก้ไขปัญหา</p>	<p>- พื้นที่โครงการ</p> <p>- พื้นที่โครงการ</p> <p>- พื้นที่โครงการ</p> <p>- พื้นที่โครงการ</p> <p>- พื้นที่โครงการ</p>	<p>- ตลอดช่วงดำเนินการ</p> <p>- ตลอดช่วงดำเนินการ</p> <p>- ตลอดช่วงดำเนินการ</p> <p>- ตลอดช่วงดำเนินการ</p> <p>- ตลอดช่วงดำเนินการ</p>	<p>- บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)</p> <p>- บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)</p> <p>- บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)</p> <p>- บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)</p> <p>- บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)</p>

<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><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 คอนซิลแทนท์ จำกัด</p>	<p>บริษัท วิชั่น อี คอนซิลแทนท์ จำกัด</p> <p><b>Vision E.</b></p>	<p>หน้า 2/10</p>
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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 ว่าด้วยหลักเกณฑ์การจัดทำรายงานประมวลผลการปฏิบัติและรายงานผลการปฏิบัติตามประมวลผลการปฏิบัติ 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>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 3/10</p>
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ตารางที่ 1 (ต่อ-2)

องค์ประกอบด้านสิ่งแวดล้อม	มาตรการป้องกันและแก้ไขผลกระทบต่อสิ่งแวดล้อม	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 ในพื้นที่สนามทนาการ 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>	หน้า 4/10
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ตารางที่ 1 (ต่อ-3)



องค์ประกอบด้านสิ่งแวดล้อม	มาตรการป้องกันและแก้ไขผลกระทบสิ่งแวดล้อม	สถานที่ดำเนินการ	ระยะเวลา	ผู้รับผิดชอบ
8. ผลกระทบต่อปริมาณน้ำใช้และการกำจัดขยะ	1) ทางนิคมอุตสาหกรรมได้เสนอจำนวนคนอยู่ในพื้นที่อาศัย / พาณิชยกรรม 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 และจัดหาถังเก็บเพื่อส่งไปกำจัดที่ศูนย์กำจัดกากอุตสาหกรรมของกระทรวงอุตสาหกรรม 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>(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 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>บริษัท วิชั่น อี คอนซัลแทนท์ จำกัด</p> <p>Vision E.</p>	<p>หน้า 5/10</p>
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ตารางที่ 1 (ต่อ-4)

องค์ประกอบด้านสิ่งแวดล้อม	มาตรการป้องกันและแก้ไขผลกระทบต่อสิ่งแวดล้อม	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) โรงงานทุกโรงงานต้องกรอกรายละเอียด เกี่ยวกับข้อมูลของโรงงานลงในแบบฟอร์ม	- พื้นที่โครงการ	- ตลอดช่วงดำเนินการ	- บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)




<p>ลงชื่อ.....            (นายพิษณุพงศ์ ณ บางช้าง)          กรรมการผู้จัดการ          บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)</p> <p><b>MDX</b> PUBLIC COMPANY LIMITED</p> <p>บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน) มกราคม 2567</p>	<p>ลงชื่อ.....            (นางสาวจันทรา เกิดมี)          ผู้อำนวยการสิ่งแวดล้อม          บริษัท วิชั่น อี คอนซัลแทนท์ จำกัด</p> <p><b>Vision E.</b> 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..... (นายพิชญพงศ์ ณ บางช้าง) กรรมการผู้จัดการ บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)	 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 <ul style="list-style-type: none"> <li>- Influent</li> <li>- Effluent</li> </ul>	- 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 <ul style="list-style-type: none"> <li>- บริเวณต้นน้ำของพื้นที่โครงการ 200 เมตร</li> <li>- บริเวณจุดระบายน้ำทิ้ง (จุดบรรจบท้ายอ่างเก็บน้ำ)</li> <li>- บริเวณฝายคลองวังด้วน</li> </ul>	- 3 ครั้ง/ปี	- บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)

ลงชื่อ.....  (นายพิชญพงศ์ ณ บางช้าง) กรรมการผู้จัดการ บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)	 มกราคม 2567	ลงชื่อ.....  (นางสาวจันทรา เกติมิ) 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 (NO <sub>3</sub> <sup>-</sup> ) - ปริมาณแอมโมเนียทั้งหมด (NH <sub>3</sub> )	- 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.....  (นายพิชญพงศ์ 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	<ul style="list-style-type: none"> <li>- สารหนู (As)</li> <li>- โครเมียมเฮกซะวาเลนต์ (Cr<sup>6+</sup>)</li> <li>- ตะกั่ว (Pb)</li> <li>- นิกเกิล (Ni)</li> </ul>	- Standard Method for The Examination of Water and Wastewater ของ APHA, AWWA and WEF 23 <sup>rd</sup> Edition, 2017	จำนวน 2 สถานี ได้แก่ <ul style="list-style-type: none"> <li>- ฝายหนองมะขาม</li> <li>- คลองวังด้วน</li> </ul>	- 1 ครั้ง/ปี	- บริษัท เอ็ม ดี เอ็กซ์ จำกัด (มหาชน)
5. สุขภาพอนามัย	- บันทึกอุบัติเหตุ และโรครายที่เกิดขึ้นในโรงงานอุตสาหกรรม	- 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)	 มกราคม 2567	ลงชื่อ.....  (นางสาวจันทรา เกตมี) 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. LA68-0112

Report No. 6708-0053

## TEST REPORT

CUSTOMER : MDX Public Co.,Ltd.

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

SAMPLE SOURCE : MDX Public Co.,Ltd.

SAMPLE POINT : ปล่องเตาเผาขยะ

SAMPLING DATE : 23/01/2025

SAMPLE NO. : 00114-00115

RECEIVED DATE : 27/01/2025

SAMPLING TIME : 09:20-10:00

TESTED DATE : 27-30/01/2025

REPORTED DATE : 06/02/2025

STACK DESCRIPTION<sup>®</sup>

Height	: 21.00 m	Type Of Process	: Combustion
Diameter	: 0.70 m	Type Of Fuel	: LPG
Temperature	: 160.00 °C	Operation Capacity	: 360 Kg/hr.
Air Velocity	: 7.80 m/s	Oxygen Content	: 17.68 %
Flow rate <sup>2</sup>	: 1.97 m <sup>3</sup> /s	Barometric Pressure	: 756.25 mmHg
Moisture Content	: 4.14 %	Atmospheric Temperature	: 30.00 °C

PARAMETER	TEST METHOD	TIME	RESULT <sup>2</sup>		STD <sup>1</sup>	UNIT
			17.68 % O <sub>2</sub>	7 % O <sub>2</sub>		
Total Suspended Particulate (TSP)	Isokinetic, Gravimetric (U.S. EPA Method 5)	09:20-10:00	0.9	3.9	400	mg/m <sup>3</sup>
Sulfur Dioxide (SO <sub>2</sub> )	Absorption, Barium-Thorin Titrimetric (U.S. EPA Method 6)	09:20-09:50	3.6	15.5	78.5	mg/m <sup>3</sup>
			1.4	6.0	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. Audomsub Jenjobjing (จ-003-จ-0009)

Examined By.....

(Miss Apiradee Chuen-arom)

(จ-003-ค-0007)

06/02/2025



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By.....

(Mr. Thongchai Boonsak)

(จ-003-ค-0012)

06/02/2025

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

COPY

Request No. ATR6801030

Report No. 6801-0539 - 6801-0541

## 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 : 30/01/2025 SAMPLE NO. : A68010539 - A68010541  
TESTED DATE : 30/01/2025-31/01/2025 REPORTED DATE : 06/02/2025

PARAMETER*	TEST METHOD	SAMPLING DATE	RESULT	STD <sup>/1</sup>	UNIT
Total Suspended Particulate (TSP)	Gravimetric Method	22-23/01/2025	0.171	0.33	mg/m <sup>3</sup>
		23-24/01/2025	0.177	0.33	mg/m <sup>3</sup>
		24-25/01/2025	0.162	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 not have License Registration of Department of Labour Protection and Welfare.

(Sampling By Mr. Seksan Pluemwong)



บริษัท อีสเทิร์นไทยคอนซัลติง 1992 จำกัด

Approved By .....

(Miss Thanatporn Klinsoon)

06/02/2025

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Request No. ATR6801030

Report No. 6801-0545 - 6801-0547

## 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 : บ้านเนินไร่  
 RECEIVED DATE : 30/01/2025 SAMPLE NO. : A68010545 - A68010547  
 TESTED DATE : 30/01/2025-31/01/2025 REPORTED DATE : 06/02/2025

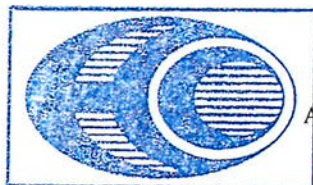
PARAMETER*	TEST METHOD	SAMPLING DATE	RESULT	STD <sup>1/</sup>	UNIT
Total Suspended Particulate (TSP)	Gravimetric Method	22-23/01/2025	0.180	0.33	mg/m <sup>3</sup>
		23-24/01/2025	0.189	0.33	mg/m <sup>3</sup>
		24-25/01/2025	0.172	0.33	mg/m <sup>3</sup>

## REMARK:

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

\* Parameter not have License Registration of Department of Labour Protection and Welfare.

(Sampling By Mr. Seksan Pluemwong)



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By .....

(Miss Thanatporn Klinsoon)

06/02/2025

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

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Request No. ATR6801030

Report No. 6801-0548 - 6801-0550

## 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 : บ้านแปลงยาวบน  
RECEIVED DATE : 30/01/2025 SAMPLE NO. : A68010548 - A68010550  
TESTED DATE : 30/01/2025-31/01/2025 REPORTED DATE : 06/02/2025

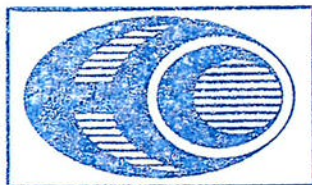
PARAMETER*	TEST METHOD	SAMPLING DATE	RESULT	STD <sup>1/</sup>	UNIT
Total Suspended Particulate (TSP)	Gravimetric Method	22-23/01/2025	0.170	0.33	mg/m <sup>3</sup>
		23-24/01/2025	0.172	0.33	mg/m <sup>3</sup>
		24-25/01/2025	0.144	0.33	mg/m <sup>3</sup>

## REMARK:

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

\* Parameter not have License Registration of Department of Labour Protection and Welfare.

(Sampling By Mr. Seksan Pluemwong)



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By 

(Miss Thanatporn Klinsohon)

06/02/2025

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Request No. ATR6801030

Report No. 6801-0542 - 6801-0544

## 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 : 30/01/2025 SAMPLE NO. : A68010542 - A68010544  
 TESTED DATE : 30/01/2025-31/01/2025 REPORTED DATE : 06/02/2025

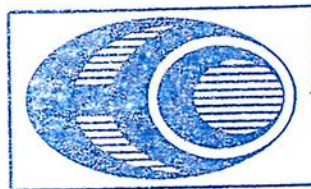
PARAMETER*	TEST METHOD	SAMPLING DATE	RESULT	STD <sup>1/</sup>	UNIT
Total Suspended Particulate (TSP)	Gravimetric Method	22-23/01/2025	0.121	0.33	mg/m <sup>3</sup>
		23-24/01/2025	0.148	0.33	mg/m <sup>3</sup>
		24-25/01/2025	0.142	0.33	mg/m <sup>3</sup>

## REMARK:

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

\* Parameter not have License Registration of Department of Labour Protection and Welfare.

(Sampling By Mr. Seksan Pluemwong)



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By

(Miss Thanatporn Klinsoon)

06/02/2025

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Request No. LA68-R0134

Report No. R6801-0691 - R6801-0693

## 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 T100 S/N 5700

SAMPLE NO. : 00705-00707  
 SAMPLING DATE : 22-25/01/2025  
 RECEIVED DATE : 25/01/2025  
 REPORTED DATE : 30/01/2025

TIME / DATE	22-23/01/2025	23-24/01/2025	24-25/01/2025	UNIT
10:00 - 11:00 <sup>/3</sup>	0.003	0.003	0.003	ppm
11:00 - 12:00	0.002	0.004	0.003	ppm
12:00 - 13:00	0.001	0.004	0.003	ppm
13:00 - 14:00	0.001	0.004	0.003	ppm
14:00 - 15:00	0.002	0.004	0.004	ppm
15:00 - 16:00	0.002	0.004	0.004	ppm
16:00 - 17:00	0.002	0.004	0.004	ppm
17:00 - 18:00	0.003	0.004	0.003	ppm
18:00 - 19:00	0.003	0.003	0.003	ppm
19:00 - 20:00	0.003	0.003	0.003	ppm
20:00 - 21:00	0.003	0.003	0.003	ppm
21:00 - 22:00	0.002	0.003	0.003	ppm
22:00 - 23:00	0.003	0.003	0.003	ppm
23:00 - 00:00	0.003	0.003	0.003	ppm
00:00 - 01:00	0.003	0.003	0.003	ppm
01:00 - 02:00	0.003	0.003	0.003	ppm
02:00 - 03:00	0.003	0.003	0.003	ppm
03:00 - 04:00	0.003	0.003	0.003	ppm
04:00 - 05:00	0.003	0.003	0.003	ppm
05:00 - 06:00	0.003	0.003	0.003	ppm
06:00 - 07:00	0.003	0.003	0.003	ppm
07:00 - 08:00	0.003	0.003	0.003	ppm
08:00 - 09:00	0.003	0.003	0.003	ppm
09:00 - 10:00	0.003	0.003	0.003	ppm
Maximum 1 hr.	0.003	0.004	0.004	ppm
Average 24 hr.	0.003	0.003	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. Apiwat Klangpetch)

Approved By.....

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

(MS. THANATPORN KLINSOPON)

30/01/2025

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Request No. LA68-R0134

Report No. R6801-0703 - R6801-0705

## 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 TI00 S/N 6458

SAMPLE NO. : 00717-00719  
SAMPLING DATE : 22-25/01/2025  
RECEIVED DATE : 25/01/2025  
REPORTED DATE : 30/01/2025

TIME / DATE	22-23/01/2025	23-24/01/2025	24-25/01/2025	UNIT
11:00 - 12:00 <sup>1/3</sup>	0.003	0.003	0.003	ppm
12:00 - 13:00	0.002	0.003	0.003	ppm
13:00 - 14:00	0.003	0.003	0.003	ppm
14:00 - 15:00	0.003	0.003	0.003	ppm
15:00 - 16:00	0.004	0.003	0.003	ppm
16:00 - 17:00	0.003	0.003	0.003	ppm
17:00 - 18:00	0.003	0.003	0.003	ppm
18:00 - 19:00	0.003	0.003	0.003	ppm
19:00 - 20:00	0.003	0.003	0.003	ppm
20:00 - 21:00	0.003	0.003	0.003	ppm
21:00 - 22:00	0.003	0.003	0.003	ppm
22:00 - 23:00	0.003	0.003	0.003	ppm
23:00 - 00:00	0.003	0.003	0.003	ppm
00:00 - 01:00	0.003	0.003	0.003	ppm
01:00 - 02:00	0.003	0.003	0.003	ppm
02:00 - 03:00	0.003	0.003	0.003	ppm
03:00 - 04:00	0.003	0.003	0.003	ppm
04:00 - 05:00	0.003	0.003	0.003	ppm
05:00 - 06:00	0.003	0.003	0.003	ppm
06:00 - 07:00	0.003	0.003	0.003	ppm
07:00 - 08:00	0.003	0.003	0.003	ppm
08:00 - 09:00	0.003	0.003	0.003	ppm
09:00 - 10:00	0.003	0.003	0.003	ppm
10:00 - 11:00	0.003	0.003	0.003	ppm
Maximum 1 hr.	0.004	0.003	0.003	ppm
Average 24 hr.	0.003	0.003	0.003	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 Registration of The Department of Industrial Works  
(Measurement By Mr. Apiwat Klangpetch)

Approved By.....

(MS. THANATPORN KLINSOPON)

30/01/2025

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

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Request No. LA68-R0134

Report No. R6801-0709 - R6801-0711

## 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. : 00723-00725  
SAMPLING DATE : 22-25/01/2025  
RECEIVED DATE : 25/01/2025  
REPORTED DATE : 30/01/2025

TIME / DATE	22-23/01/2025	23-24/01/2025	24-25/01/2025	UNIT
12:00 - 13:00 <sup>3</sup>	0.001	0.002	0.001	ppm
13:00 - 14:00	<0.001	0.002	0.001	ppm
14:00 - 15:00	0.001	0.002	0.001	ppm
15:00 - 16:00	0.001	0.002	0.001	ppm
16:00 - 17:00	0.001	0.001	0.001	ppm
17:00 - 18:00	0.001	0.002	0.001	ppm
18:00 - 19:00	0.001	0.002	0.001	ppm
19:00 - 20:00	0.002	0.002	0.001	ppm
20:00 - 21:00	0.002	0.001	0.001	ppm
21:00 - 22:00	0.001	0.001	0.001	ppm
22:00 - 23:00	0.001	0.001	0.001	ppm
23:00 - 00:00	0.001	0.001	0.001	ppm
00:00 - 01:00	0.002	0.001	0.001	ppm
01:00 - 02:00	0.002	0.001	0.001	ppm
02:00 - 03:00	0.002	0.001	0.001	ppm
03:00 - 04:00	0.002	0.001	0.001	ppm
04:00 - 05:00	0.002	0.001	0.001	ppm
05:00 - 06:00	0.002	0.001	0.001	ppm
06:00 - 07:00	0.002	0.001	0.001	ppm
07:00 - 08:00	0.002	0.001	0.001	ppm
08:00 - 09:00	0.002	0.001	0.001	ppm
09:00 - 10:00	0.001	0.001	0.001	ppm
10:00 - 11:00	0.001	0.001	0.001	ppm
11:00 - 12:00	0.001	0.001	0.001	ppm
Maximum 1 hr.	0.002	0.002	0.001	ppm
Average 24 hr.	0.001	0.001	0.001	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. Apiwat Klangpetch)

Approved By.....

(MS. THANATPORN KLINSOPON)

30/01/2025

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

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Request No. LA68-R0134

Report No. R6801-0697 - R6801-0699

## 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 T100 S/N 5701

SAMPLE NO. : 00711-00713  
SAMPLING DATE : 22-25/01/2025  
RECEIVED DATE : 25/01/2025  
REPORTED DATE : 30/01/2025

TIME / DATE	22-23/01/2025	23-24/01/2025	24-25/01/2025	UNIT
10:00 - 11:00 <sup>3</sup>	0.002	0.004	0.006	ppm
11:00 - 12:00	0.002	0.004	0.003	ppm
12:00 - 13:00	0.003	0.007	0.003	ppm
13:00 - 14:00	0.004	0.005	0.006	ppm
14:00 - 15:00	0.005	0.005	0.004	ppm
15:00 - 16:00	0.007	0.004	0.005	ppm
16:00 - 17:00	0.003	0.004	0.005	ppm
17:00 - 18:00	0.007	0.002	0.003	ppm
18:00 - 19:00	0.007	0.002	0.003	ppm
19:00 - 20:00	0.006	0.002	0.003	ppm
20:00 - 21:00	0.003	0.003	0.003	ppm
21:00 - 22:00	0.001	0.001	0.003	ppm
22:00 - 23:00	0.001	0.001	0.003	ppm
23:00 - 00:00	0.002	0.003	0.002	ppm
00:00 - 01:00	0.001	0.003	0.002	ppm
01:00 - 02:00	0.002	0.001	0.001	ppm
02:00 - 03:00	0.002	0.002	0.002	ppm
03:00 - 04:00	0.001	0.001	0.002	ppm
04:00 - 05:00	0.003	0.001	0.001	ppm
05:00 - 06:00	0.003	0.004	0.004	ppm
06:00 - 07:00	0.004	0.006	0.005	ppm
07:00 - 08:00	0.006	0.003	0.004	ppm
08:00 - 09:00	0.006	0.006	0.003	ppm
09:00 - 10:00	0.004	0.006	0.003	ppm
Maximum 1 hr.	0.007	0.007	0.006	ppm
Average 24 hr.	0.003	0.003	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. Apiwat Klangpetch)

Approved By.....

(MS. THANATPORN KLINSOPON)

30/01/2025

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

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Request No. LA68-R0134

Report No. R6801-0694 - R6801-0696

## 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 7875

SAMPLE NO. : 00708-00710  
 SAMPLING DATE : 22-25/01/2025  
 RECEIVED DATE : 25/01/2025  
 REPORTED DATE : 30/01/2025

TIME / DATE	22-23/01/2025	23-24/01/2025	24-25/01/2025	UNIT
10:00 - 11:00 <sup>/2</sup>	0.003	0.018	0.043	ppm
11:00 - 12:00	0.007	0.014	0.024	ppm
12:00 - 13:00	0.007	0.009	0.010	ppm
13:00 - 14:00	0.005	0.008	0.010	ppm
14:00 - 15:00	0.004	0.008	0.007	ppm
15:00 - 16:00	0.004	0.007	0.006	ppm
16:00 - 17:00	0.005	0.006	0.006	ppm
17:00 - 18:00	0.005	0.006	0.007	ppm
18:00 - 19:00	0.008	0.010	0.010	ppm
19:00 - 20:00	0.011	0.018	0.024	ppm
20:00 - 21:00	0.025	0.015	0.021	ppm
21:00 - 22:00	0.024	0.015	0.022	ppm
22:00 - 23:00	0.044	0.018	0.048	ppm
23:00 - 00:00	0.044	0.036	0.039	ppm
00:00 - 01:00	0.038	0.039	0.035	ppm
01:00 - 02:00	0.035	0.032	0.035	ppm
02:00 - 03:00	0.029	0.028	0.028	ppm
03:00 - 04:00	0.024	0.025	0.021	ppm
04:00 - 05:00	0.021	0.022	0.015	ppm
05:00 - 06:00	0.019	0.020	0.015	ppm
06:00 - 07:00	0.027	0.022	0.019	ppm
07:00 - 08:00	0.025	0.022	0.020	ppm
08:00 - 09:00	0.035	0.025	0.031	ppm
09:00 - 10:00	0.025	0.034	0.032	ppm
Maximum 1 hr.	0.044	0.039	0.048	ppm
Average 24 hr.	0.020	0.019	0.022	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. Apiwat Klangpetch)

Approved By

(MS. THANATPORN KLINSOPON)

30/01/2025

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

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Request No. LA68-R0134

Report No. R6801-0706 - R6801-0708

## 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 6758

SAMPLE NO. : 00720-00722  
SAMPLING DATE : 22-25/01/2025  
RECEIVED DATE : 25/01/2025  
REPORTED DATE : 30/01/2025

TIME / DATE	22-23/01/2025	23-24/01/2025	24-25/01/2025	UNIT
11:00 - 12:00 <sup>/2</sup>	0.003	0.014	0.022	ppm
12:00 - 13:00	0.003	0.010	0.012	ppm
13:00 - 14:00	0.006	0.011	0.012	ppm
14:00 - 15:00	0.005	0.012	0.010	ppm
15:00 - 16:00	0.005	0.013	0.008	ppm
16:00 - 17:00	0.007	0.011	0.009	ppm
17:00 - 18:00	0.009	0.011	0.013	ppm
18:00 - 19:00	0.012	0.015	0.022	ppm
19:00 - 20:00	0.030	0.032	0.026	ppm
20:00 - 21:00	0.030	0.027	0.021	ppm
21:00 - 22:00	0.025	0.018	0.030	ppm
22:00 - 23:00	0.030	0.019	0.024	ppm
23:00 - 00:00	0.026	0.024	0.024	ppm
00:00 - 01:00	0.024	0.022	0.018	ppm
01:00 - 02:00	0.018	0.021	0.013	ppm
02:00 - 03:00	0.021	0.018	0.014	ppm
03:00 - 04:00	0.018	0.018	0.025	ppm
04:00 - 05:00	0.014	0.015	0.026	ppm
05:00 - 06:00	0.013	0.019	0.026	ppm
06:00 - 07:00	0.017	0.017	0.020	ppm
07:00 - 08:00	0.028	0.020	0.021	ppm
08:00 - 09:00	0.026	0.025	0.022	ppm
09:00 - 10:00	0.013	0.018	0.015	ppm
10:00 - 11:00	0.011	0.015	0.011	ppm
Maximum 1 hr.	0.030	0.032	0.030	ppm
Average 24 hr.	0.016	0.018	0.018	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. Apiwat Klangpetch)

Approved By.....

บริษัท อีสเทิร์นไทยคอนซัลติง 1992 จำกัด

(MS. THANATPORN KLINSOPON)

30/01/2025

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Request No. LA68-R0134

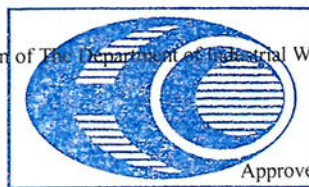
Report No. R6801-0712 - R6801-0714

## 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 8727

SAMPLE NO. : 00726-00728  
 SAMPLING DATE : 22-25/01/2025  
 RECEIVED DATE : 25/01/2025  
 REPORTED DATE : 30/01/2025

TIME / DATE	22-23/01/2025	23-24/01/2025	24-25/01/2025	UNIT
12:00 - 13:00 <sup>2</sup>	0.002	0.005	0.009	ppm
13:00 - 14:00	0.002	0.004	0.007	ppm
14:00 - 15:00	0.002	0.003	0.006	ppm
15:00 - 16:00	0.002	0.003	0.006	ppm
16:00 - 17:00	0.002	0.005	0.006	ppm
17:00 - 18:00	0.004	0.005	0.006	ppm
18:00 - 19:00	0.007	0.009	0.010	ppm
19:00 - 20:00	0.014	0.013	0.012	ppm
20:00 - 21:00	0.009	0.012	0.012	ppm
21:00 - 22:00	0.011	0.014	0.012	ppm
22:00 - 23:00	0.010	0.018	0.011	ppm
23:00 - 00:00	0.015	0.013	0.012	ppm
00:00 - 01:00	0.010	0.010	0.011	ppm
01:00 - 02:00	0.007	0.010	0.010	ppm
02:00 - 03:00	0.007	0.008	0.010	ppm
03:00 - 04:00	0.007	0.007	0.010	ppm
04:00 - 05:00	0.006	0.007	0.009	ppm
05:00 - 06:00	0.006	0.007	0.009	ppm
06:00 - 07:00	0.006	0.007	0.008	ppm
07:00 - 08:00	0.009	0.007	0.007	ppm
08:00 - 09:00	0.012	0.010	0.009	ppm
09:00 - 10:00	0.008	0.011	0.009	ppm
10:00 - 11:00	0.009	0.008	0.006	ppm
11:00 - 12:00	0.008	0.007	0.005	ppm
Maximum 1 hr.	0.015	0.018	0.012	ppm
Average 24 hr.	0.007	0.008	0.009	ppm
Standard (1 hr.) <sup>1/1</sup>	0.17	0.17	0.17	ppm

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

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

(MS. THANATPORN KLINSOPON)

30/01/2025

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

COPY



Request No. LA68-R0134

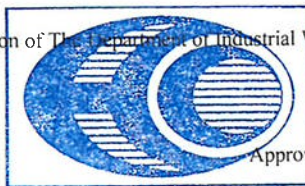
Report No. R6801-0700 - R6801-0702

## 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 7355

SAMPLE NO. : 00714-00716  
SAMPLING DATE : 22-25/01/2025  
RECEIVED DATE : 25/01/2025  
REPORTED DATE : 30/01/2025

TIME / DATE	22-23/01/2025	23-24/01/2025	24-25/01/2025	UNIT
10:00 - 11:00 <sup>/2</sup>	0.002	0.006	0.007	ppm
11:00 - 12:00	0.002	0.005	0.007	ppm
12:00 - 13:00	0.003	0.004	0.007	ppm
13:00 - 14:00	0.003	0.003	0.006	ppm
14:00 - 15:00	0.002	0.004	0.006	ppm
15:00 - 16:00	0.001	0.003	0.004	ppm
16:00 - 17:00	0.001	0.003	0.005	ppm
17:00 - 18:00	0.002	0.004	0.004	ppm
18:00 - 19:00	0.003	0.004	0.005	ppm
19:00 - 20:00	0.006	0.007	0.006	ppm
20:00 - 21:00	0.008	0.012	0.006	ppm
21:00 - 22:00	0.009	0.013	0.007	ppm
22:00 - 23:00	0.013	0.014	0.009	ppm
23:00 - 00:00	0.010	0.013	0.012	ppm
00:00 - 01:00	0.010	0.012	0.012	ppm
01:00 - 02:00	0.009	0.012	0.011	ppm
02:00 - 03:00	0.008	0.012	0.011	ppm
03:00 - 04:00	0.008	0.010	0.009	ppm
04:00 - 05:00	0.008	0.008	0.007	ppm
05:00 - 06:00	0.008	0.008	0.006	ppm
06:00 - 07:00	0.007	0.008	0.007	ppm
07:00 - 08:00	0.006	0.007	0.006	ppm
08:00 - 09:00	0.006	0.007	0.007	ppm
09:00 - 10:00	0.006	0.009	0.007	ppm
Maximum 1 hr.	0.013	0.014	0.012	ppm
Average 24 hr.	0.006	0.008	0.007	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. Apiwat Klangpetch)

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By.....

(MS. THANATPORN KLINSOPON)

30/01/2025

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

COPY

## Wind Speed &amp; Wind Direction

Request No. LA68-R0134

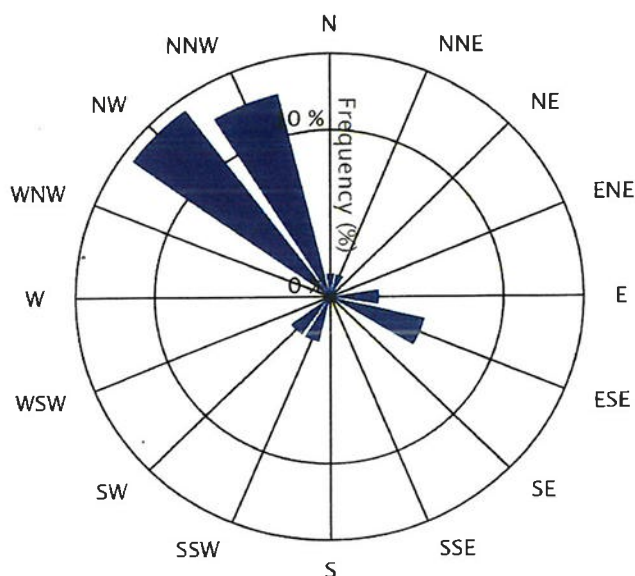
MDX Public Co., Ltd.

Sample No. 00735

Sampling Source : บ้านไผ่ล้อม

Sampling Date : January 22-25, 2024

Calm 56.9 %



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	1.4	0.0	0.0	0.0	0.0	0.0	1.4
NNE	1.4	0.0	0.0	0.0	0.0	0.0	1.4
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	2.8	0.0	0.0	0.0	0.0	0.0	2.8
ESE	5.6	0.0	0.0	0.0	0.0	0.0	5.6
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	2.8	0.0	0.0	0.0	0.0	0.0	2.8
SW	2.8	0.0	0.0	0.0	0.0	0.0	2.8
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	13.9	0.0	0.0	0.0	0.0	0.0	13.9
NNW	12.5	0.0	0.0	0.0	0.0	0.0	12.5
Total	43.1	0.0	0.0	0.0	0.0	0.0	

COPY

## Wind Speed &amp; Wind Direction

Request No. LA68-R0134

MDX Public Co., Ltd.

Sample No. 00735

Sampling Source : บ้านไผ่ล้อม

Sampling Date : January 22-25, 2024

Time	January 22-23, 2024		January 23-24, 2024		January 24-25, 2024	
	Wind Speed (m/s)	Wind Direction	Wind Speed (m/s)	Wind Direction	Wind Speed (m/s)	Wind Direction
10:00-11:00	0.9	ESE	0.0	-	0.0	-
11:00-12:00	1.3	ESE	0.4	NW	0.4	NNW
12:00-13:00	1.8	E	0.9	NNW	0.9	NW
13:00-14:00	1.3	E	0.9	NW	0.9	NW
14:00-15:00	0.9	NNE	1.3	NW	1.3	NNW
15:00-16:00	0.9	N	1.8	NNW	1.3	NNW
16:00-17:00	1.3	NNW	0.9	NW	0.9	NNW
17:00-18:00	0.9	NW	1.3	NW	0.9	NNW
18:00-19:00	0.4	NW	0.9	NW	0.4	NNW
19:00-20:00	0.0	-	0.0	-	0.4	SSW
20:00-21:00	0.4	SSW	0.9	SW	0.0	-
21:00-22:00	0.0	-	0.4	SW	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	0.4	ESE	0.0	-	0.4	ESE

COPY



## Wind Speed &amp; Wind Direction

Request No. LA68-R0134

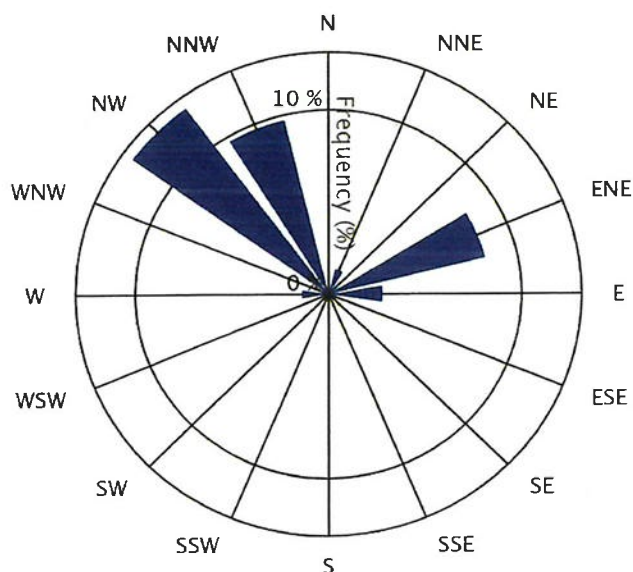
MDX Public Co., Ltd.

Sample No. 00737

Sampling Source : บ้านเนินไร่

Sampling Date : January 22-25, 2024

Calm 63.9 %


 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	1.4	0.0	0.0	0.0	0.0	0.0	1.4
NE	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENE	8.3	0.0	0.0	0.0	0.0	0.0	8.3
E	2.8	0.0	0.0	0.0	0.0	0.0	2.8
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	12.5	0.0	0.0	0.0	0.0	0.0	12.5
NNW	9.7	0.0	0.0	0.0	0.0	0.0	9.7
Total	36.1	0.0	0.0	0.0	0.0	0.0	

COPY

## Wind Speed &amp; Wind Direction

Request No. LA68-R0134

MDX Public Co., Ltd.

Sample No. 00737

Sampling Source : บ้านเนินไร่

Sampling Date : January 22-25, 2024

Time	January 22-23, 2024		January 23-24, 2024		January 24-25, 2024	
	Wind Speed (m/s)	Wind Direction	Wind Speed (m/s)	Wind Direction	Wind Speed (m/s)	Wind Direction
11:00-12:00	0.4	ENE	0.4	W	0.4	NW
12:00-13:00	1.3	E	0.9	NNE	0.4	NW
13:00-14:00	1.3	ENE	0.9	NW	0.9	NNW
14:00-15:00	0.9	ENE	0.9	NNW	0.9	NNW
15:00-16:00	0.9	ENE	0.9	NW	0.9	NW
16:00-17:00	0.4	NNW	0.9	NNW	0.4	NNW
17:00-18:00	0.4	NW	0.4	NW	0.4	NW
18:00-19:00	0.0	-	0.4	NNW	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	0.4	E	0.0	-	0.0	-
10:00-11:00	0.4	ENE	0.4	NW	0.4	ENE

COPY



## Wind Speed &amp; Wind Direction

Request No. LA68-R0134

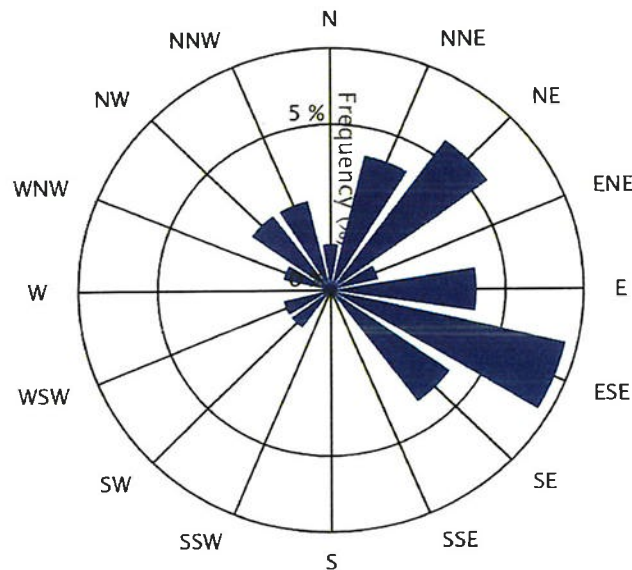
MDX Public Co., Ltd.

Sample No. 00738

Sampling Source : บ้านแปลงยาวบน

Sampling Date : January 22-25, 2024

Calm 62.5 %


 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	1.4	0.0	0.0	0.0	0.0	0.0	1.4
NNE	4.2	0.0	0.0	0.0	0.0	0.0	4.2
NE	5.6	0.0	0.0	0.0	0.0	0.0	5.6
ENE	1.4	0.0	0.0	0.0	0.0	0.0	1.4
E	4.2	0.0	0.0	0.0	0.0	0.0	4.2
ESE	6.9	0.0	0.0	0.0	0.0	0.0	6.9
SE	4.2	0.0	0.0	0.0	0.0	0.0	4.2
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	1.4	0.0	0.0	0.0	0.0	0.0	1.4
WSW	1.4	0.0	0.0	0.0	0.0	0.0	1.4
W	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WNW	1.4	0.0	0.0	0.0	0.0	0.0	1.4
NW	2.8	0.0	0.0	0.0	0.0	0.0	2.8
NNW	2.8	0.0	0.0	0.0	0.0	0.0	2.8
Total	37.5	0.0	0.0	0.0	0.0	0.0	

COPY



## Wind Speed &amp; Wind Direction

Request No. LA68-R0134

MDX Public Co., Ltd.

Sample No. 00738

Sampling Source : บ้านแปลงยาวบน

Sampling Date : January 22-25, 2024

Time	January 22-23, 2024		January 23-24, 2024		January 24-25, 2024	
	Wind Speed (m/s)	Wind Direction	Wind Speed (m/s)	Wind Direction	Wind Speed (m/s)	Wind Direction
12:00-13:00	1.3	ESE	0.9	ESE	0.4	NE
13:00-14:00	1.3	ESE	0.9	SE	0.9	WNW
14:00-15:00	0.9	E	0.9	ESE	0.9	NE
15:00-16:00	0.4	E	0.4	NNE	0.9	NNE
16:00-17:00	0.4	NE	0.9	NW	0.9	NNE
17:00-18:00	0.4	ESE	0.9	NW	0.4	N
18:00-19:00	0.4	NNW	0.4	NNW	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	0.4	SE	0.0	-	0.0	-
10:00-11:00	0.4	ENE	0.4	SE	0.4	SW
11:00-12:00	0.9	E	0.4	NE	0.4	WSW

COPY

## Wind Speed &amp; Wind Direction

Request No. LA68-R0134

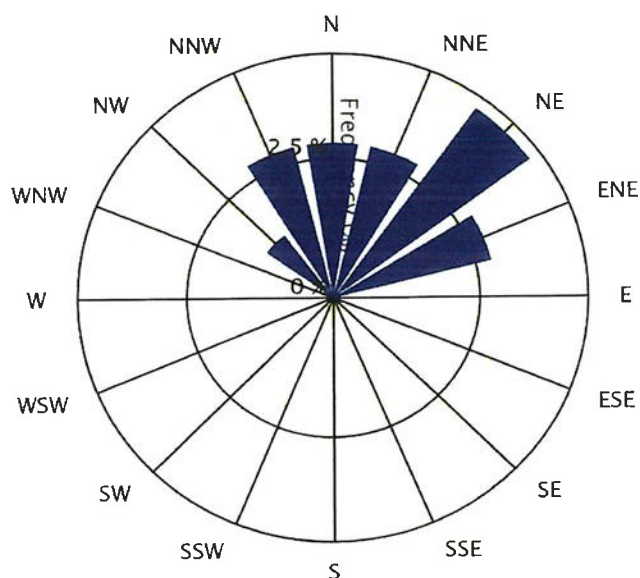
MDX Public Co., Ltd.

Sample No. 00736

Sampling Source : บ้านแปลงไม้แดง

Sampling Date : January 22-25, 2024

Calm 83.3 %



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	2.8	0.0	0.0	0.0	0.0	0.0	2.8
NNE	2.8	0.0	0.0	0.0	0.0	0.0	2.8
NE	4.2	0.0	0.0	0.0	0.0	0.0	4.2
ENE	2.8	0.0	0.0	0.0	0.0	0.0	2.8
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	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	1.4	0.0	0.0	0.0	0.0	0.0	1.4
NNW	2.8	0.0	0.0	0.0	0.0	0.0	2.8
Total	16.7	0.0	0.0	0.0	0.0	0.0	

COPY

## Wind Speed &amp; Wind Direction

Request No. LA68-R0134

MDX Public Co., Ltd.

Sample No. 00736

Sampling Source : บ้านแปลงไม้แดง

Sampling Date : January 22-25, 2024

Time	January 22-23, 2024		January 23-24, 2024		January 24-25, 2024	
	Wind Speed (m/s)	Wind Direction	Wind Speed (m/s)	Wind Direction	Wind Speed (m/s)	Wind Direction
10:00-11:00	0.0	-	0.0	-	0.0	-
11:00-12:00	0.0	-	0.4	ENE	0.4	NE
12:00-13:00	0.4	N	0.4	NW	0.4	NNW
13:00-14:00	0.4	ENE	0.4	NNE	0.4	N
14:00-15:00	0.4	NE	0.0	-	0.4	NE
15:00-16:00	0.0	-	0.0	-	0.0	-
16:00-17:00	0.0	-	0.0	-	0.4	NNW
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	-	0.4	NNE	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-R0134

Report No. R6801-0718 - R6801-0720

## 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 (สถานีควมเทียม)  
PARAMETER\* :  $L_{eq}$  1 hr.,  $L_{eq}$  24 hr. &  $L_{dn}$  SAMPLE NO. : 00732-00734  
DETERMINATION METHOD : ISO 1996-1:2016 MEASURING DATE : 22-25/01/2025  
INSTRUMENT : Integrated Sound Level Meter RECEIVED DATE : 25/01/2025  
S/N G301661 : Class 2 REPORTED DATE : 30/01/2025

TIME \ DATE	22-23/01/2025 ( $L_{eq}$ )	23-24/01/2025 ( $L_{eq}$ )	24-25/01/2025 ( $L_{eq}$ )	UNIT
11:00 - 12:00 <sup>1/3</sup>	54.5	54.0	53.5	dB(A)
12:00 - 13:00	54.8	54.9	53.4	dB(A)
13:00 - 14:00	56.4	55.0	49.1	dB(A)
14:00 - 15:00	55.5	53.6	50.6	dB(A)
15:00 - 16:00	55.9	56.0	52.4	dB(A)
16:00 - 17:00	57.3	56.6	55.3	dB(A)
17:00 - 18:00	57.8	56.7	52.8	dB(A)
18:00 - 19:00	56.5	55.9	52.9	dB(A)
19:00 - 20:00	56.7	56.6	54.5	dB(A)
20:00 - 21:00	54.3	54.6	54.9	dB(A)
21:00 - 22:00	54.6	53.9	50.0	dB(A)
22:00 - 23:00	54.4	53.9	49.9	dB(A)
23:00 - 00:00	55.9	55.3	54.4	dB(A)
00:00 - 01:00	55.3	55.5	53.6	dB(A)
01:00 - 02:00	55.2	55.3	48.6	dB(A)
02:00 - 03:00	53.2	53.2	48.3	dB(A)
03:00 - 04:00	52.9	54.3	50.5	dB(A)
04:00 - 05:00	55.0	55.4	54.4	dB(A)
05:00 - 06:00	56.2	55.2	55.0	dB(A)
06:00 - 07:00	56.9	56.8	53.2	dB(A)
07:00 - 08:00	59.6	59.0	57.2	dB(A)
08:00 - 09:00	56.6	54.9	54.1	dB(A)
09:00 - 10:00	55.9	52.4	49.5	dB(A)
10:00 - 11:00	53.6	50.0	50.4	dB(A)
$L_{eq}$ 24 hr.	55.9	55.3	53.1	dB(A)
$L_{dn}$	61.8	61.6	59.2	dB(A)
Standard	70 <sup>1/1,2</sup>	70 <sup>1/1,2</sup>	70 <sup>1/1,2</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. Apiwat Klangpetch)

Approved By.....

(MRS. WANPEN LHAOCHINDAWAT)

30/01/2025

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

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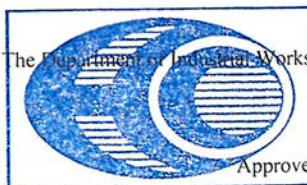
Request No. LA68-R0134

Report No. R6801-0715 - R6801-0717

## 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. &  $L_{dn}$  SAMPLE NO. : 00729-00731  
DETERMINATION METHOD : ISO 1996-1:2016 MEASURING DATE : 22-25/01/2025  
INSTRUMENT : Integrated Sound Level Meter RECEIVED DATE : 25/01/2025  
S/N G300957 : Class 2 REPORTED DATE : 30/01/2025

TIME \ DATE	22-23/01/2025 ( $L_{eq}$ )	23-24/01/2025 ( $L_{eq}$ )	24-25/01/2025 ( $L_{eq}$ )	UNIT
11:00 - 12:00 <sup>/3</sup>	45.9	44.0	44.4	dB(A)
12:00 - 13:00	46.0	42.1	44.9	dB(A)
13:00 - 14:00	40.8	47.0	45.3	dB(A)
14:00 - 15:00	41.9	42.2	45.5	dB(A)
15:00 - 16:00	42.3	43.4	46.6	dB(A)
16:00 - 17:00	42.6	43.8	44.0	dB(A)
17:00 - 18:00	44.7	46.1	46.6	dB(A)
18:00 - 19:00	49.9	51.2	52.5	dB(A)
19:00 - 20:00	48.9	49.7	51.8	dB(A)
20:00 - 21:00	47.2	47.5	49.2	dB(A)
21:00 - 22:00	45.1	45.2	46.7	dB(A)
22:00 - 23:00	46.4	45.2	46.0	dB(A)
23:00 - 00:00	43.2	43.4	52.4	dB(A)
00:00 - 01:00	42.3	44.1	48.4	dB(A)
01:00 - 02:00	46.4	44.0	42.4	dB(A)
02:00 - 03:00	45.5	42.6	48.6	dB(A)
03:00 - 04:00	45.8	41.6	52.9	dB(A)
04:00 - 05:00	47.0	42.4	46.3	dB(A)
05:00 - 06:00	51.3	47.1	48.5	dB(A)
06:00 - 07:00	49.7	48.2	49.7	dB(A)
07:00 - 08:00	48.3	49.4	51.7	dB(A)
08:00 - 09:00	50.9	48.0	48.0	dB(A)
09:00 - 10:00	54.9	45.3	45.4	dB(A)
10:00 - 11:00	50.1	45.3	45.4	dB(A)
$L_{eq}$ 24 hr.	48.0	46.2	48.6	dB(A)
$L_{dn}$	53.8	51.6	55.6	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. Apiwat Klangpetch)

Approved By.....

(MRS. WANPEN LHAOCHINDAWAT)

30/01/2025

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
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## Test Report

Request No : W6801195

Report No : 6801-1310

Customer : MDX Public Co.,Ltd.

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

Sampling Source : WWTP

Sample No : W 68010607

Sample Name : Influent

Sampling Date : 10/01/2025

Sampling By : ETC

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

Sampling Method : Composit

Received Date : 11/01/2025

Tested Date : 13/01/2025 - 22/01/2025

Reported Date : 24/01/2025

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)	33.8	≤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)	111	≤750
Copper	mg/L	Digestion, Inductively Coupled Plasma Method (SM:3030F, 3120B)	0.06	≤2

Physical Apperance : 1. Sample : yellow, lightly SS

2. Container : Normal [ PE 0.5 L (4 Bottle) , PE 1.8 L , PE 2.0 L, G 1.0 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. Sampling By Mr. Parkpoom Buasawad (จ-003-ค-0017)

Examined By : .....

(Miss Apiradee Chuen-arom)

(จ-003-ค-0007)

24/01/2025



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)

(จ-003-ค-0005)

24/01/2025

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## Test Report

Request No : W6801195

Report No : 6801-1310

Customer : MDX Public Co.,Ltd.

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

Sampling Source : WWTP

Sample No : W 68010607

Sample Name : Influent

Sampling Date : 10/01/2025

Sampling By : ETC

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

Sampling Method : Composit

Received Date : 11/01/2025

Tested Date : 13/01/2025 - 22/01/2025

Reported Date : 24/01/2025

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)	3.1	≤ 10
pH (on site)		Electrometric Method	7.4	5.5-9.0
Phenol	mg/L	Distillation, Direct Photometric Method (SM:5530B,D)	0.022	≤ 1
Temperature	°C	Laboratory and Field Method (SM:2550 B)	30	≤ 45

Physical Apperance : 1. Sample : ycllow, lightly SS

2. Container : Normal [ PE 0.5 L (4 Bottle) , PE 1.8 L , PE 2.0 L, G 1.0 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. Sampling By Mr. Parkpoom Buasawad (1-003-ค-0017)

Examined By : .....

(Miss Apiradee Chuen-arom)

(1-003-ค-0007)

24/01/2025



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)

(1-003-ค-0005)

24/01/2025

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## Test Report

Request No : W6801195

Report No : 6801-1310

Customer : MDX Public Co.,Ltd.

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

Sampling Source : WWTP

Sample No : W 68010607

Sample Name : Influent

Sampling Date : 10/01/2025

Sampling By : ETC

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

Sampling Method : Composit

Received Date : 11/01/2025

Tested Date : 13/01/2025 - 22/01/2025

Reported Date : 24/01/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Total Suspended Solids	mg/L	Dried at 103-105 degrec celsius (SM:2540D)	41	≤200

Physical Apperance : 1. Sample : yellow, lightly SS

2. Container : Normal [ PE 0.5 L(4 Bottle) , PE 1.8 L , PE 2.0 L, G 1.0 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. Sampling By Mr. Parkpoom Buasawad (จ-003-ก-0017)

Examined By : .....

(Miss Apiradee Chuen-arom)  
(จ-003-ก-0007)  
24/01/2025

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)  
(จ-003-ก-0005)  
24/01/2025REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
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## Test Report

Request No : W6801195

Report No : 6801-1310

Customer : MDX Public Co.,Ltd.

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

Sampling Source : WWTP

Sample No : W 68010607

Sample Name : Influent

Sampling Date : 10/01/2025

Sampling By : ETC

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

Sampling Method : Composit

Received Date : 11/01/2025

Tested Date : 13/01/2025 - 24/01/2025

Reported Date : 24/01/2025

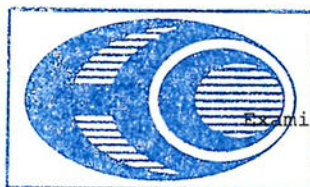
Parameter	Unit	Method	Result	Standard <sup>1</sup>
Flow Rate	m <sup>3</sup> /day	Calculation Method	5,966	-

Physical Apperance : 1. Sample : yellow, lightly SS

2. Container : Normal [ PE 0.5 L(4 Bottle) , PE 1.8 L , PE 2.0 L, G 1.0 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. Parkpoom Buasawad



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....

(Miss Apiradee Chuen-arom)

24/01/2025

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## Test Report

Request No : W6801195

Report No : 6801-1310

Customer : MDX Public Co.,Ltd.

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

Sampling Source : WWTP

Sample No : W 68010607

Sample Name : Influent

Sampling Date : 10/01/2025

Sampling By : ETC

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

Sampling Method : Composit

Received Date : 11/01/2025

Tested Date : 13/01/2025 - 24/01/2025

Reported Date : 25/01/2025

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 , PE 2.0 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 อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....

(Miss Apiradee Chuen-arom)

25/01/2025

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## Test Report

Request No : W6801203

Report No : 6801-0915

Customer : MDX Public Co.,Ltd.

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

Sampling Source : WWTP

Sample No : W 68010627

Sample Name : Influent

Sampling Date : 10/01/2025

Sampling By : ETC

Sampling Time : 3:05 PM

Sampling Method : Grab

Received Date : 11/01/2025

Tested Date : 17/01/2025

Reported Date : 21/01/2025

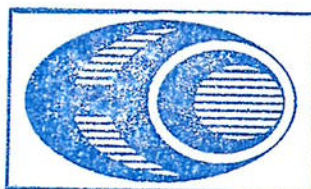
Parameter	Unit	Method	Result	Standard <sup>1</sup>
Coliform Bacteria	MPN:100 mL	MPN Test Method (SM:9221B)	>160,000	-

Physical Apperance : 1. Sample : yellow, turbid

2. Container : Normal [ G 0.25 L ]

Remark : 1. /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. Parkpoom Buasawad



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....

(Miss Apiradee Chuen-arom)

21/01/2025

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
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## Test Report

Request No : W6802183, W6802383

Report No : 6802-0934-1, 6802-1303

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

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

Sampling Source : WWTP\*\*

Sample No : W 68020559, W 68021107

Sample Name : Influent\*\*

Sampling Date : 06/02/2025, 17/02/2025\*\*

Sampling By : ETC\*\*

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

Sampling Method : Composit\*\*

Received Date : 07/02/2025, 18/02/2025

Tested Date : 07/02/2025 - 27/02/2025

Reported Date : 01/03/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Arsenic *	mg/L	Continuous Hydride Generation/AAS Method (SM:3114B)	0.0024	≤0.25
Biochemical Oxygen Demand #/2	mg/L	5-Day BOD Test, Membrane Electrode Method (SM:5210B)	29.7	≤500
Cadmium *	mg/L	Digestion,Inductively Coupled Plasma Method (SM:3030F, 3120B)	< 0.03	≤0.03
Chemical Oxygen Demand #/2	mg/L	Closed Reflux,Titrimetric Method (SM:5220C)	63	≤750
Copper *	mg/L	Digestion,Inductively Coupled Plasma Method (SM:3030F, 3120B)	0.11	≤2

Physical Apperance : 1. Sample : yellowish, lightly SS

2. Container : Normal [ PE 0.5 L(3 Bottle) , PE 1.8 L , G 1.0 L]

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

2. /2 Sample No. W68021107 : Sampling Date 17/02/2025 (9:10 AM-3:10 PM) : Tested Date 20/02/2025 - 22/02/2025

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

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

5. \* = Test Report/Sampling marked Not Accredited, Sampling By Mr. Supharerk Phatklang (๖-003-๓-0031)\*

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

Examined By : .....

(Miss Apiradee Chuen-arom)  
(๖-003-๓-0007)

01/03/2025

SUPPLEMENT TO TEST REPORT NO. 6802-0934



Approved By : .....

(Miss Nunnaphat Bakhuntod)  
(๖-003-๓-0005)

01/03/2025

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด  
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## Test Report

Request No : W6802183, W6802383

Report No : 6802-0934-1, 6802-1303

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

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

Sampling Source : WWTP\*\*

Sample No : W 68020559, W 68021107

Sample Name : Influent\*\*

Sampling Date : 06/02/2025, 17/02/2025\*\*

Sampling By : ETC\*\*

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

Sampling Method : Composit\*\*

Received Date : 07/02/2025, 18/02/2025

Tested Date : 07/02/2025 - 27/02/2025

Reported Date : 01/03/2025

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 */2	mg/L	Liquid-Liquid, Partition-Gravimetric Method (SM:5520B)	< 3.0	≤10
pH (on site) *		Electrometric Method	7.2	5.5-9.0
Phenol *	mg/L	Distillation, Direct Photometric Method (SM:5530B,D)	0.038	≤1
Temperature *	°C	Laboratory and Field Method (SM:2550 B)	32	≤45

Physical Apperance : 1. Sample : ycllowish, lightly SS

2. Container : Normal [ PE 0.5 L(3 Bottle) , PE 1.8 L , G 1.0 L]

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

2. /2 Sample No. W68021107 : Sampling Date 17/02/2025 (9:10 AM-3:10 PM) : Tested Date 20/02/2025 - 22/02/2025

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

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

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

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

Examined By : .....

(Miss Apiradee Chuen-arom)

(จ-003-ค-0007)

01/03/2025

SUPPLEMENT TO TEST REPORT NO. 6802-0934



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)

(จ-003-ค-0005)

01/03/2025

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
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## Test Report

Request No : W6802183, W6802383

Report No : 6802-0934-1, 6802-1303

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

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

Sampling Source : WWTP\*\*

Sample No : W 68020559, W 68021107

Sample Name : Influent\*\*

Sampling Date : 06/02/2025, 17/02/2025\*\*

Sampling By : ETC\*\*

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

Sampling Method : Composit\*\*

Received Date : 07/02/2025, 18/02/2025

Tested Date : 07/02/2025 - 27/02/2025

Reported Date : 01/03/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Total Suspended Solids #	mg/L	Dried at 103-105 degree celsius (SM:2540D)	68	≤200

Physical Apperance : 1. Sample : yellowish, lightly SS

2. Container : Normal [ PE 0.5 L(3 Bottle) , PE 1.8 L , G 1.0 L]

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

2. /2 Sample No. W68021107 : Sampling Date 17/02/2025 (9:10 AM-3:10 PM) : Tested Date 20/02/2025 - 22/02/2025

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

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

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

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

Examined By : .....

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

01/03/2025

SUPPLEMENT TO TEST REPORT NO. 6802-0934



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : .....

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

01/03/2025

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

## Test Report

Request No : W6802183

Report No : 6802-0934

Customer : MDX Public Co.,Ltd.

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

Sampling Source : WWTP

Sample No : W 68020559

Sample Name : Influent

Sampling Date : 06/02/2025

Sampling By : ETC

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

Sampling Method : Composit

Received Date : 07/02/2025

Tested Date : 07/02/2025 - 27/02/2025

Reported Date : 01/03/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Flow Rate	m <sup>3</sup> /day	Calculation Method	4,562	-

Physical Apperance : 1. Sample : yellowish, lightly SS

2. Container : Normal [ PE 0.5 L(3 Bottle) , PE 1.8 L , G 1.0 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. Supharek Phatklang



Examined By : .....

(Miss Apiradee Chuen-arom)

01/03/2025

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด  
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 WITHOUT THE WRITTEN APPROVAL LABORATORY

COPY



## Test Report

Request No : W6802186

Report No : 6802-0795

Customer : MDX Public Co.,Ltd.

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

Sampling Source : WWTP

Sample No : W 68020565

Sample Name : Influent

Sampling Date : 06/02/2025

Sampling By : ETC

Sampling Time : 3:10 PM

Sampling Method : Grab

Received Date : 07/02/2025

Tested Date : 14/02/2025

Reported Date : 17/02/2025

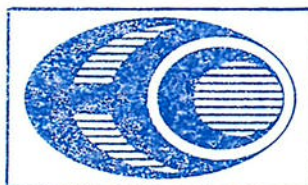
Parameter	Unit	Method	Result	Standard <sup>1</sup>
Coliform Bacteria	MPN:100 mL	MPN Test Method (SM:9221B)	>160,000	-

Physical Apperance : 1. Sample : yellow, turbid

2. Container : Normal [ G 0.25 L]

Remark : 1. /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. Supharerk Phatklang



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : 

(Miss Apiradee Chuen-arom)

17/02/2025

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 : W6802183

Report No : 6802 -0934

Customer : MDX Public Co.,Ltd.

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

Sampling Source : WWTP

Sample No : W 68020559

Sample Name : Influent

Sampling Date : 06/02/2025

Sampling By : ETC

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

Sampling Method : Composit

Received Date : 07/02/2025

Tested Date : 07/02/2025 - 27/02/2025

Reported Date : 01/03/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Cresol #	mg/L	Gas Chromatography	33.70	-

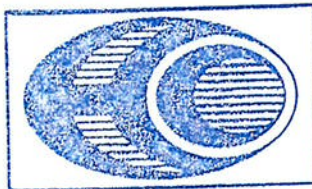
Physical Apperance : 1. Sample : yellowish, lightly SS

2. Container : Normal [ PE 0.5 L(3 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. Supharerk Phatklang



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....

(Miss Apiradee Chuen-arom)

01/03/2025

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WITHOUT THE WRITTEN APPROVAL LABORATORY

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## Test Report

Request No : W6803197

Report No : 6803-1310

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

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

Sampling Source : WWTP\*\*

Sample No : W 68030660

Sample Name : Influent\*\*

Sampling Date : 06/03/2025\*\*

Sampling By : ETC\*\*

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

Sampling Method : Composit\*\*

Received Date : 07/03/2025

Tested Date : 07/03/2025 - 18/03/2025

Reported Date : 22/03/2025

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)	11.8	≤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)	57	≤750
Copper *	mg/L	Digestion,Inductively Coupled Plasma Method (SM:3030F, 3120B)	0.05	≤2

Physical Apperance : 1. Sample : slightly - pink, 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. Songpon Phiwan (จ-003-ก-0016)\*

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

Examined By : .....

(Miss Apiradee Chuen-arom)

(จ-003-ก-0007)

22/03/2025



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)

(จ-003-ก-0005)

22/03/2025

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



## Test Report

Request No : W6803197

Report No : 6803-1310

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

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

Sampling Source : WWTP\*\*

Sample No : W 68030660

Sample Name : Influent\*\*

Sampling Date : 06/03/2025\*\*

Sampling By : ETC\*\*

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

Sampling Method : Composit\*\*

Received Date : 07/03/2025

Tested Date : 07/03/2025 - 18/03/2025

Reported Date : 22/03/2025

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	7.7	5.5-9.0
Phenol *	mg/L	Distillation, Direct Photometric Method (SM:5530B,D)	0.024	≤ 1
Temperature *	°C	Laboratory and Field Method (SM:2550 B)	32	≤ 45

Physical Appearance : 1. Sample : slightly - pink, 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.

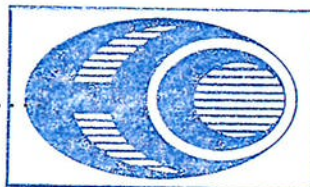
4. \* = Test Report/Sampling marked Not Accredited, Sampling By Mr. Songpon Phiwan (จ-003-ท-0016)\*

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

Examined By : .....

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

22/03/2025



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : .....

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

22/03/2025

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

## Test Report

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

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

Sampling Source : WWTP\*\*

Sample Name : Influent\*\*

Sampling By : ETC\*\*

Sampling Method : Composit\*\*

Tested Date : 07/03/2025 - 18/03/2025

Request No : W6803197

Report No : 6803-1310

Sample No : W 68030660

Sampling Date : 06/03/2025\*\*

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

Received Date : 07/03/2025

Reported Date : 22/03/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Total Suspended Solids #	mg/L	Dried at 103-105 degree celsius (SM:2540D)	20	≤200

Physical Apperance : 1. Sample : slightly - pink, 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. Songpon Phiwuan (จ-003-ค-0016)\*

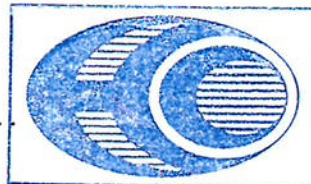
5. \*\* = These data are non laboratory data.

Examined By : .....

(Miss Apiradee Chuen-arom)

(จ-003-ค-0007)

22/03/2025



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)

(จ-003-ค-0005)

22/03/2025

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

## Test Report

Request No : W6803197

Report No : 6803-1310

Customer : MDX Public Co.,Ltd.

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

Sampling Source : WWTP

Sample No : W 68030660

Sample Name : Influent

Sampling Date : 06/03/2025

Sampling By : ETC

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

Sampling Method : Composit

Received Date : 07/03/2025

Tested Date : 07/03/2025 - 18/03/2025

Reported Date : 22/03/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Flow Rate	m <sup>3</sup> /day	Calculation Method	4,297	-

Physical Apperance : 1. Sample : slightly - pink, 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. 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)

22/03/2025

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
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## Test Report

Request No : W6803198

Report No : 6803-1137

Customer : MDX Public Co.,Ltd.

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

Sampling Source : WWTP

Sample No : W 68030664

Sample Name : Influent

Sampling Date : 06/03/2025

Sampling By : ETC

Sampling Time : 3:10 PM

Sampling Method : Grab

Received Date : 07/03/2025

Tested Date : 19/03/2025

Reported Date : 21/03/2025

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. /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 Miss Pornpinan Viriyakusolkul



Examined By : .....

(Miss Apiradee Chuen-arom)

21/03/2025

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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 : W6803197

Report No : 6803-1310

Customer : MDX Public Co.,Ltd.

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

Sampling Source : WWTP

Sample No : W 68030660

Sample Name : Influent

Sampling Date : 06/03/2025

Sampling By : ETC

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

Sampling Method : Composit

Received Date : 07/03/2025

Tested Date : 07/03/2025 - 26/03/2025

Reported Date : 02/04/2025

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

Physical Apperance : 1. Sample : slightly - pink, 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. Songpon Phiwuan



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....

(Miss Apiradee Chuen-arom)

02/04/2025

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

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## Test Report

Request No : W6804149

Report No : 6804-1464

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

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

Sampling Source : WWTP\*\*

Sample No : W 68040479

Sample Name : Influent\*\*

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

Sampling By : ETC\*\*

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

Sampling Method : Composit\*\*

Received Date : 05/04/2025

Tested Date : 05/04/2025 - 19/04/2025

Reported Date : 02/05/2025

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)	25.0	≤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)	93	≤750
Copper *	mg/L	Digestion,Inductively Coupled Plasma Method (SM:3030F, 3120B)	0.07	≤2

Physical Apperance : 1. Sample : slightly - white, lightly SS

2. Container : Normal [ PE 0.5 L [ 3 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 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)

02/05/2025



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)

(จ-003-ค-0005)

02/05/2025

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

Request No : W6804149

Report No : 6804-1464

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

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

Sampling Source : WWTP\*\*

Sample No : W 68040479

Sample Name : Influent\*\*

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

Sampling By : ETC\*\*

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

Sampling Method : Composit\*\*

Received Date : 05/04/2025

Tested Date : 05/04/2025 - 19/04/2025

Reported Date : 02/05/2025

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)	3.2	≤ 10
pH (on site) *		Electrometric Method	7.5	5.5-9.0
Phenol *	mg/L	Distillation, Direct Photometric Method (SM:5530B,D)	0.066	≤ 1
Temperature *	°C	Laboratory and Field Method (SM:2550 B)	36	≤ 45

Physical Apperance : 1. Sample : slightly - white, lightly SS

2. Container : Normal [ PE 0.5 L [ 3 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 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)\*

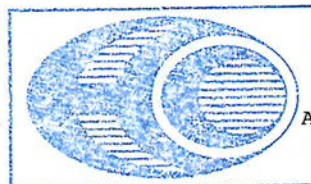
5. \*\* = These data are non laboratory data.

Examined By : .....

(Miss Apiradee Chuen-arom)

(จ-003-ท-0007)

02/05/2025



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)

(จ-003-ท-0005)

02/05/2025

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

## Test Report

Request No : W6804149

Report No : 6804-1464

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

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

Sampling Source : WWTP\*\*

Sample No : W 68040479

Sample Name : Influent\*\*

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

Sampling By : ETC\*\*

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

Sampling Method : Composit\*\*

Received Date : 29/04/2025

Tested Date : 05/04/2025 - 19/04/2025

Reported Date : 29/04/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Total Suspended Solids #	mg/L	Dried at 103-105 degree celsius (SM:2540D)	18	≤200

Physical Apperance : 1. Sample : slightly - white, lightly SS

2. Container : Normal [ PE 0.5 L [ 3 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 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)

02/05/2025



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)

(จ-003-ท-0005)

02/05/2025

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

## Test Report

Request No : W6804149

Report No : 6804-1464

Customer : MDX Public Co.,Ltd.

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

Sampling Source : WWTP

Sample No : W 68040479

Sample Name : Influent

Sampling Date : 04/04/2025

Sampling By : ETC

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

Sampling Method : Composit

Received Date : 05/04/2025

Tested Date : 05/04/2025 - 19/04/2025

Reported Date : 02/05/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Flow Rate	m <sup>3</sup> /day	Calculation Method	4,080	-

Physical Apperance : 1. Sample : slightly - white, lightly SS

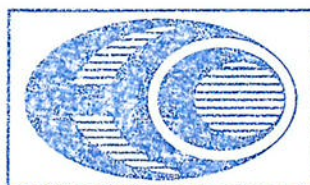
2. Container : Normal [ PE 0.5 L [ 3 Bottle], PE 1.0 L [ 2 Bottle ] , G 1.0 L ]

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

2. 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 อีสเทิร์นไทยคอนซัลติง 1992 จำกัด

Examined By : 

(Miss Apiradee Chuen-arom)

02/05/2025

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 : W6804151

Report No : 6804-0742

Customer : MDX Public Co.,Ltd.

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

Sampling Source : WWTP

Sample No : W 68040486

Sample Name : Influent

Sampling Date : 04/04/2025

Sampling By : ETC

Sampling Time : 3:00 PM

Sampling Method : Grab

Received Date : 05/04/2025

Tested Date : 10/04/2025

Reported Date : 18/04/2025

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

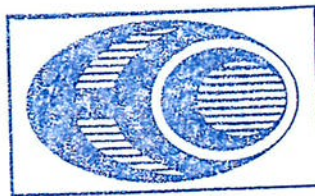
2. Container : Normal [ G 0.25 L ]

Remark : 1. /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. Parkpoom Buasawad



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : 

(Miss Apiradee Chuen-arom)

18/04/2025

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

## Test Report

Request No : W6804149

Report No : 6804-1464

Customer : MDX Public Co.,Ltd.

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

Sampling Source : WWTP

Sample No : W 68040479

Sample Name : Influent

Sampling Date : 04/04/2025

Sampling By : ETC

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

Sampling Method : Composit

Received Date : 05/04/2025

Tested Date : 05/04/2025 - 03/05/2025

Reported Date : 06/05/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Cresol #	mg/L	Gas Chromatography	25.39	-

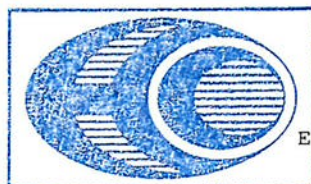
Physical Apperance : 1. Sample : slightly - white, lightly SS

2. Container : Normal [ PE 0.5 L [ 3 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. Parkpoom Buasawad



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....

(Miss Apiradee Chuen-arom)

06/05/2025

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

Request No : W6805038

Report No : 6805-0931

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

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

Sampling Source : WWTP\*\*

Sample No : W 68050108

Sample Name : Influent\*\*

Sampling Date : 02/05/2025\*\*

Sampling By : ETC\*\*

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

Sampling Method : Composit\*\*

Received Date : 03/05/2025

Tested Date : 03/05/2025 - 10/05/2025

Reported Date : 15/05/2025

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)	11.4	≤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)	51	≤750
Copper *	mg/L	Digestion,Inductively Coupled Plasma Method (SM:3030F, 3120B)	0.03	≤2

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. Songpon Phiwuan (จ-003-ค-0016)\*

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

Examined By : .....

(Miss Apiradee Chuen-arom)

(จ-003-ค-0007)

15/05/2025



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)

(จ-003-ค-0005)

15/05/2025

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

## Test Report

Request No : W6805038

Report No : 6805-0931

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

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

Sampling Source : WWTP\*\*

Sample No : W 68050108

Sample Name : Influent\*\*

Sampling Date : 02/05/2025\*\*

Sampling By : ETC\*\*

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

Sampling Method : Composit\*\*

Received Date : 03/05/2025

Tested Date : 03/05/2025 - 10/05/2025

Reported Date : 15/05/2025

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	7.5	5.5-9.0
Phenol *	mg/L	Distillation,Direct Photometric Method (SM:5530B,D)	0.108	≤1
Temperature *	°C	Laboratory and Field Method (SM:2550 B)	27	≤45

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.

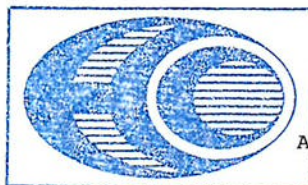
3. Miss Apiradee Chuen-arom is Section Head / Miss Nunnaphat Bakhuntod is Technical Management.

4. \* = Test Report/Sampling marked Not Accredited, Sampling By Mr. Songpon Phiwan (๓-๐๐3-๓-๐๐16)\*

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

Examined By : .....

(Miss Apiradee Chuen-arom)  
(๓-๐๐3-๓-๐๐๐7)  
15/05/2025



บริษัท อีสเทิร์นไทยคอนซัลติง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)  
(๓-๐๐3-๓-๐๐๐5)  
15/05/2025

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



## Test Report

Request No : W6805038

Report No : 6805-0931

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

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

Sampling Source : WWTP\*\*

Sample No : W 68050108

Sample Name : Influent\*\*

Sampling Date : 02/05/2025\*\*

Sampling By : ETC\*\*

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

Sampling Method : Composit\*\*

Received Date : 03/05/2025

Tested Date : 03/05/2025 - 10/05/2025

Reported Date : 15/05/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Total Suspended Solids #	mg/L	Dried at 103-105 degree celsius (SM:2540D)	9	≤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. Songpon Phiwuan (จ-003-ก-0016)\*

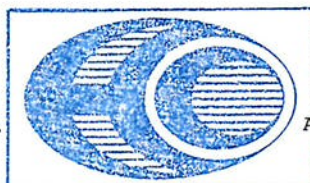
5. \*\* = These data are non laboratory data.

Examined By : .....

(Miss Apiradee Chuen-arom)

(จ-003-ค-0007)

15/05/2025



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)

(จ-003-ค-0005)

15/05/2025

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

## Test Report

Request No : W6805038

Report No : 6805 - 0931

Customer : MDX Public Co.,Ltd.

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

Sampling Source : WWTP

Sample No : W 68050108

Sample Name : Influent

Sampling Date : 02/05/2025

Sampling By : ETC

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

Sampling Method : Composit

Received Date : 03/05/2025

Tested Date : 03/05/2025 - 10/05/2025

Reported Date : 15/05/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Flow Rate	m <sup>3</sup> /day	Calculation Method	4,640	-

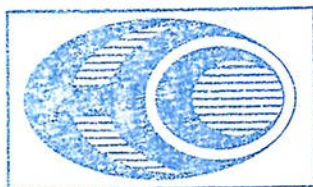
Physical Apperance : 1. Sample : yellow, lightly SS

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. /I 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)

15/05/2025

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 : W6805038

Report No : 6805-0931

Customer : MDX Public Co.,Ltd.

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

Sampling Source : WWTP

Sample No : W 68050108

Sample Name : Influent

Sampling Date : 02/05/2025

Sampling By : ETC

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

Sampling Method : Composit

Received Date : 03/05/2025

Tested Date : 03/05/2025 - 23/05/2025

Reported Date : 26/05/2025

Parameter	Unit	Method	Result	Standard/ <sup>1</sup>
Cresol #	mg/L	Gas Chromatography	1.18	-

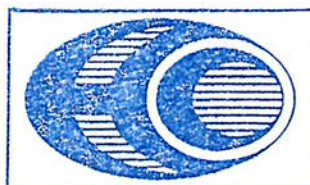
Physical Apperance : 1. Sample : yellow, lightly SS

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. /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)

26/05/2025

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

## Test Report

Request No : W6805039

Report No : 6805-0320

Customer : MDX Public Co.,Ltd.

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

Sampling Source : WWTP

Sample No : W 68050112

Sample Name : Influent

Sampling Date : 02/05/2025

Sampling By : ETC

Sampling Time : 3:10 PM

Sampling Method : Grab

Received Date : 03/05/2025

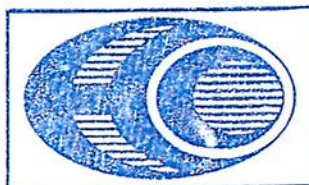
Tested Date : 07/05/2025

Reported Date : 09/05/2025

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. /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 Phiwuan



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....

(Miss Apiradee Chuen-arom)

09/05/2025

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

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## Test Report

Request No : W6806138

Report No : 6806-1254

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

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

Sampling Source : WWTP\*\*

Sample No : W 68060459

Sample Name : Influent\*\*

Sampling Date : 06/06/2025\*\*

Sampling By : ETC\*\*

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

Sampling Method : Composit\*\*

Received Date : 07/06/2025

Tested Date : 09/06/2025 - 17/06/2025

Reported Date : 21/06/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Arsenic *	mg/L	Continuous Hydride Generation/AAS Method (SM:3114B)	0.0034	≤0.25
Biochemical Oxygen Demand #	mg/L	5-Day BOD Test, Membrane Electrode Method (SM:5210B)	9.8	≤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)	61	≤750
Copper *	mg/L	Digestion, Inductively Coupled Plasma Method (SM:3030F, 3120B)	0.07	≤2

Physical Appearance : 1. Sample : yellowish, lightly SS

2. Container : Normal [ PE 0.5 L [ 3 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. Suspharerk Phatklang (จ-003-ก-0031)\*

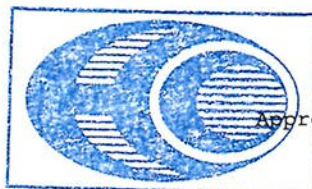
5. \*\* = These data are non laboratory data.

Examined By : .....

(Miss Apiradee Chuen-arom)

(จ-003-ก-0007)

21/06/2025



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)

(จ-003-ก-0005)

21/06/2025

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

## Test Report

Request No : W6806138

Report No : 6806-1254

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

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

Sampling Source : WWTP\*\*

Sample No : W 68060459

Sample Name : Influent\*\*

Sampling Date : 06/06/2025\*\*

Sampling By : ETC\*\*

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

Sampling Method : Composit\*\*

Received Date : 07/06/2025

Tested Date : 09/06/2025 - 17/06/2025

Reported Date : 21/06/2025

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)	0.039	≤ 1
Temperature *	°C	Laboratory and Field Method (SM:2550 B)	33	≤ 45

Physical Appearance : 1. Sample : yellowish, lightly SS

2. Container : Normal [ PE 0.5 L [ 3 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. Suspharerk Phatklang (จ-003-ก-0031)\*

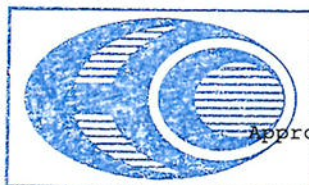
5. \*\* = These data are non laboratory data.

Examined By : .....

(Miss Apiradee Chuen-arom)

(จ-003-ก-0007)

21/06/2025



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)

(จ-003-ก-0005)

21/06/2025

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

## Test Report

Request No : W6806138

Report No : 6806-1254

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

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

Sampling Source : WWTP\*\*

Sample No : W 68060459

Sample Name : Influent\*\*

Sampling Date : 06/06/2025\*\*

Sampling By : ETC\*\*

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

Sampling Method : Composit\*\*

Received Date : 07/06/2025

Tested Date : 09/06/2025 - 17/06/2025

Reported Date : 21/06/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Total Suspended Solids #	mg/L	Dried at 103-105 degree celsius (SM:2540D)	29	≤200

Physical Apperance : 1. Sample : yellowish, lightly SS

2. Container : Normal [ PE 0.5 L [ 3 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. Suspharerk Phatklang (จ-003-ก-0031)\*

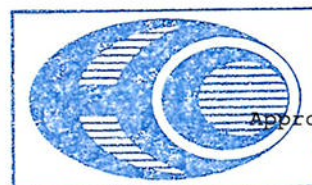
5. \*\* = These data are non laboratory data.

Examined By : .....

(Miss Apiradee Chuen-arom)

(จ-003-ก-0007)

21/06/2025



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)

(จ-003-ก-0005)

21/06/2025

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 : W6806138

Report No : 6806-1254

Customer : MDX Public Co.,Ltd.

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

Sampling Source : WWTP

Sample No : W 68060459

Sample Name : Influent

Sampling Date : 06/06/2025

Sampling By : ETC

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

Sampling Method : Composit

Received Date : 07/06/2025

Tested Date : 09/06/2025 - 25/06/2025

Reported Date : 21/06/2025

Parameter	Unit	Method	Result	Standard/ <sup>1</sup>
Flow Rate	m <sup>3</sup> /day	Calculation Method	5,185	-

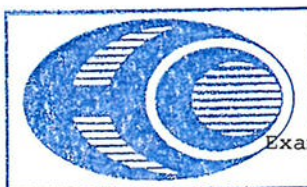
Physical Apperance : 1. Sample : yellowish, lightly SS

2. Container : Normal [ PE 0.5 L [ 3 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. Supharerk Phatklang



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....

(Miss Apiradee Chuen-arom)

21/06/2025

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 : W6806139

Report No : 6806-1201

Customer : MDX Public Co.,Ltd.

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

Sampling Source : WWTP

Sample No : W 68060463

Sample Name : Influent

Sampling Date : 06/06/2025

Sampling By : ETC

Sampling Time : 3:10 PM

Sampling Method : Grab

Received Date : 07/06/2025

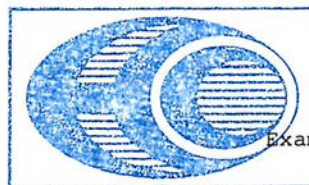
Tested Date : 18/06/2025

Reported Date : 21/06/2025

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. Supharerk Phatklang



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....

(Miss Apiradee Chuen-arom)

21/06/2025

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 : W6806138

Report No : 6806-1254

Customer : MDX Public Co.,Ltd.

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

Sampling Source : WWTP

Sample No : W 68060459

Sample Name : Influent

Sampling Date : 06/06/2025

Sampling By : ETC

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

Sampling Method : Composit

Received Date : 07/06/2025

Tested Date : 09/06/2025 - 25/06/2025

Reported Date : 26/06/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Cresol #	mg/L	Gas Chromatography	4.79	-

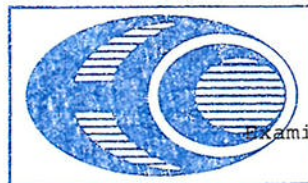
Physical Apperance : 1. Sample : yellowish, lightly SS

2. Container : Normal [ PE 0.5 L [ 3 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. Supharerk Phatklang



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....

(Miss Apiradee Chuen-arom)

26/06/2025

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 : W6801195

Report No : 6801-1311

Customer : MDX Public Co.,Ltd.

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

Sampling Source : WWTP

Sample No : W 68010608

Sample Name : Effluent

Sampling Date : 10/01/2025

Sampling By : ETC

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

Sampling Method : Composit

Received Date : 11/01/2025

Tested Date : 13/01/2025 - 22/01/2025

Reported Date : 24/01/2025

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
Cyanide	mg/L as HCN	Distillation, Colorimetric Method (SM:4500 CN- C, E)	< 0.020	≤ 0.2

Physical Apperance : 1. Sample : yellowish, lightly SS

2. Container : Normal [ PE 0.5 L(4 Bottle) , PE 1.8 L , PE 2.0 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. Sampling By Mr. Parkpoom Buasawad (ว-003-ค-0017)

Examined By : .....

(Miss Apiradee Chuen-arom)

(ว-003-ค-0007)

24/01/2025



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)

(ว-003-ค-0005)

24/01/2025

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

## Test Report

Request No : W6801195

Report No : 6801-1311

Customer : MDX Public Co.,Ltd.

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

Sampling Source : WWTP

Sample No : W 68010608

Sample Name : Effluent

Sampling Date : 10/01/2025

Sampling By : ETC

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

Sampling Method : Composit

Received Date : 11/01/2025

Tested Date : 13/01/2025 - 22/01/2025

Reported Date : 24/01/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Hexavalent Chromium	mg/L as Cr <sup>6+</sup>	Filtration, Colorimetric Method (SM:3500 -Cr B)	< 0.050	≤0.25
Lead	mg/L	Digestion, Inductively Coupled Plasma Method (SM:3030F, 3120B)	< 0.03	≤0.2
Magnesium	mg/L	Digestion, Inductively Coupled Plasma Method (SM:3030F, 3120B)	6.20	-
Manganese	mg/L	Digestion, Inductively Coupled Plasma Method (SM:3030F, 3120B)	0.13	≤5
Mercury	mg/L	Digestion, Cold -Vapor Atomic Absorption Spectrometric Method (SM:3112B)	< 0.0010	≤0.005


Physical Apperance : 1. Sample : ycllowish, lightly SS

2. Container : Normal [ PE 0.5 L(4 Bottle) , PE 1.8 L , PE 2.0 L , G 1.0 L ]

Remark : 1. /I 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. Sampling By Mr. Parkpoom Buasawad (ว-003-ค-0017)

Examined By : 


(Miss Apiradee Chuen-arom)

(ว-003-ค-0007)

24/01/2025



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : 

(Miss Nunnaphat Bakhuntod)

(ว-003-ค-0005)

24/01/2025

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



## Test Report

Request No : W6801195

Report No : 6801-1311

Customer : MDX Public Co.,Ltd.

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

Sampling Source : WWTP

Sample No : W 68010608

Sample Name : Effluent

Sampling Date : 10/01/2025

Sampling By : ETC

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

Sampling Method : Composit

Received Date : 11/01/2025

Tested Date : 13/01/2025 - 22/01/2025

Reported Date : 24/01/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Nickel	mg/L	Digestion, Inductively Coupled Plasma Method (SM:3030F, 3120B)	0.04	≤1
Oil and Grease	mg/L	Liquid-Liquid, Partition-Gravimetric Method (SM:5520B)	<3.0	≤5
pH (on site)		Electrometric Method	7.3	5.5-9.0
Phenol	mg/L	Distillation, Direct Photometric Method (SM:5530B,D)	0.016	≤1
Selenium	mg/L	Digestion, Hydride Generation/AAS Method (SM:3030F, 3114B&C)	<0.0020	≤0.02
Temperature	°C	Laboratory and Field Method (SM:2550 B)	29	≤40

Physical Appearance : 1. Sample : yellowish, lightly SS

2. Container : Normal [ PE 0.5 L(4 Bottle) , PE 1.8 L , PE 2.0 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. Sampling By Mr. Parkpoom Buasawad (ว-003-ค-0017)

Examined By : .....

(Miss Apiradee Chuen-arom)

(ว-003-ค-0007)

24/01/2025



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)

(ว-003-ค-0005)

24/01/2025

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

## Test Report

Request No : W6801195

Report No : 6801-1311

Customer : MDX Public Co.,Ltd.

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

Sampling Source : WWTP

Sample No : W 68010608

Sample Name : Effluent

Sampling Date : 10/01/2025

Sampling By : ETC

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

Sampling Method : Composit

Received Date : 11/01/2025

Tested Date : 13/01/2025 - 22/01/2025

Reported Date : 24/01/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
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)	5	≤50
Zinc	mg/L	Digestion,Inductively Coupled Plasma Method (SM:3030F, 3120B)	0.04	≤5

Physical Apperance : 1. Sample : ycllowish, lightly SS

2. Container : Normal [ PE 0.5 L(4 Bottle) , PE 1.8 L , PE 2.0 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. Sampling By Mr. Parkpoom Buasawad (จ-003-ค-0017)

Examined By : 

(Miss Apiradee Chuen-arom)

(จ-003-ค-0007)

24/01/2025



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : 

(Miss Nunnaphat Bakhuntod)

(จ-003-ค-0005)

24/01/2025

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
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## Test Report

Request No : W6801195

Report No : 6801-1311

Customer : MDX Public Co.,Ltd.

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

Sampling Source : WWTP

Sample No : W 68010608

Sample Name : Effluent

Sampling Date : 10/01/2025

Sampling By : ETC

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

Sampling Method : Composit

Received Date : 11/01/2025

Tested Date : 13/01/2025 - 22/01/2025

Reported Date : 24/01/2025

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	5,966	-
Iron	mg/L	Digestion,Inductively Coupled Plasma Method (SM:3030F, 3120B)	0.17	-
Nitrate	mg/L as NO <sub>3</sub> <sup>-</sup>	Cadmium Reduction Method (SM:4500 -NO <sub>3</sub> - E)	66.7	-
Silver	mg/L	Digestion,Inductively Coupled Plasma Method (SM:3030F, 3120B)	< 0.05	-

Physical Apperance : 1. Sample : yellowish, lightly SS

2. Container : Normal [ PE 0.5 L(4 Bottle) , PE 1.8 L , PE 2.0 L, G 1.0 L ]

Remark : 1. /I 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. SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.

4. Sampling By Mr. Parkpoom Buasawad



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....

(Miss Apiradee Chuen-arom)  
24/01/2025

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

**Test Report**

Request No : W6801203

Report No : 6801-0916

Customer : MDX Public Co.,Ltd.

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

Sampling Source : WWTP

Sample No : W 68010628

Sample Name : Effluent

Sampling Date : 10/01/2025

Sampling By : ETC

Sampling Time : 3:00 PM

Sampling Method : Grab

Received Date : 11/01/2025

Tested Date : 17/01/2025

Reported Date : 21/01/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Coliform Bacteria	MPN:100 mL	MPN Test Method (SM:9221B)	17	-

Physical Apperance : 1. Sample : yellow, lightly SS

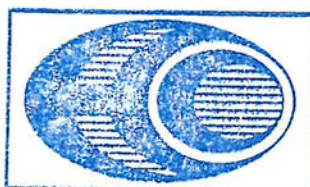
2. Container : Normal [ G 0.25 L ]

Remark : 1. /I 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. Parkpoom Buasawad



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....

(Miss Apiradee Chuen-arom)

21/01/2025

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 : W6801195

Report No : 6801-1311

Customer : MDX Public Co.,Ltd.

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

Sampling Source : WWTP

Sample No : W 68010608

Sample Name : Effluent

Sampling Date : 10/01/2025

Sampling By : ETC

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

Sampling Method : Composit

Received Date : 11/01/2025

Tested Date : 13/01/2025 - 24/01/2025

Reported Date : 25/01/2025

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

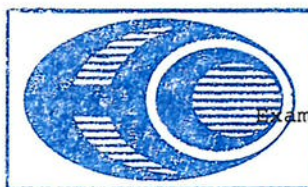
Physical Apperance : 1. Sample : yellowish, lightly SS

2. Container : Normal [ PE 0.5 L(4 Bottle) , PE 1.8 L , PE 2.0 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



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....

(Miss Apiradee Chuen-arom)

25/01/2025

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 : W6802183, W6802383

Report No : 6802-0935-1, 6802-1304

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

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

Sampling Source : WWTP\*\*

Sample No : W 68020560, W 68021108

Sample Name : Effluent\*\*

Sampling Date : 06/02/2025, 17/02/2025\*\*

Sampling By : ETC\*\*

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

Sampling Method : Composit\*\*

Received Date : 07/02/2025, 18/02/2025

Tested Date : 07/02/2025 - 27/02/2025

Reported Date : 01/03/2025

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 #/2	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 : yellowish, lightly SS

2. Container : Normal [ PE 0.5 L(3 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. /2 Sample No. W68021108 : Sampling Date 17/02/2025 (9:00 AM-3:00 PM) : Tested Date 18/02/2025 - 20/02/2025

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

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

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

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

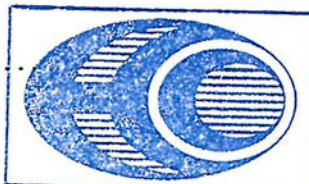
SUPPLEMENT TO TEST REPORT NO. 6802-0935

Examined By : .....

(Miss Apiradee Chuen-arom)

(จ-003-ท-0007)

01/03/2025



Approved By : .....

(Miss Nunnaphat Bakhuntod)

(จ-003-ท-0005)

01/03/2025

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

## Test Report

Request No : W6802183, W6802383

Report No : 6802-0935-1, 6802-1304

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

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

Sampling Source : WWTP\*\*

Sample No : W 68020560, W 68021108

Sample Name : Effluent\*\*

Sampling Date : 06/02/2025, 17/02/2025\*\*

Sampling By : ETC\*\*

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

Sampling Method : Composit\*\*

Received Date : 07/02/2025, 18/02/2025

Tested Date : 07/02/2025 - 27/02/2025

Reported Date : 01/03/2025

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)	0.08	≤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 Apperance : 1. Sample : yellowish, lightly SS

2. Container : Normal [ PE 0.5 L(3 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. /2 Sample No. W68021108 : Sampling Date 17/02/2025 (9:00 AM-3:00 PM) : Tested Date 18/02/2025 - 20/02/2025


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

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


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

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

SUPPLEMENT TO TEST REPORT NO. 6802-0935

Examined By :   
(Miss Apiradee Chuen-arom)  
(จ-003-ท-0007)  
01/03/2025



Approved By :   
(Miss Nunnaphat Bakhuntod)  
(จ-003-ท-0005)  
01/03/2025

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
THIS REPORT IS NOT VALID WITHOUT THE WRITTEN APPROVAL LABORATORY

## Test Report

Request No : W6802183, W6802383

Report No : 6802-0935-1, 6802-1304

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

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

Sampling Source : WWTP\*\*

Sample No : W 68020560, W 68021108

Sample Name : Effluent\*\*

Sampling Date : 06/02/2025, 17/02/2025\*\*

Sampling By : ETC\*\*

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

Sampling Method : Composit\*\*

Received Date : 07/02/2025, 18/02/2025

Tested Date : 07/02/2025 - 27/02/2025

Reported Date : 01/03/2025

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 : yellowish, lightly SS

2. Container : Normal [ PE 0.5 L(3 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. /2 Sample No. W68021108 : Sampling Date 17/02/2025 (9:00 AM-3:00 PM) : Tested Date 18/02/2025 - 20/02/2025

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

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

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

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

SUPPLEMENT TO TEST REPORT NO. 6802-0935

Examined By : .....

(Miss Apiradee Chuen-arom)

(จ-003-ก-0007)

01/03/2025



Approved By : .....

(Miss Nunnaphat Bakhuntod)

(จ-003-ก-0005)

01/03/2025

REPORTED THAT THIS REPORT IS FOR SUBMITTED SAMPLES ONLY  
THIS REPORT SHALL NOT REPRODUCED EXCEPT IN FULL  
WITHOUT THE WRITTEN APPROVAL LABORATORY



## Test Report

Request No : W6802183

Report No : 6802-0935

Customer : MDX Public Co.,Ltd.

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

Sampling Source : WWTP

Sample No : W 68020560

Sample Name : Effluent

Sampling Date : 06/02/2025

Sampling By : ETC

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

Sampling Method : Composit

Received Date : 07/02/2025

Tested Date : 07/02/2025 - 27/02/2025

Reported Date : 01/03/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Flow Rate	m <sup>3</sup> /day	Calculation Method	4,562	-

Physical Apperance : 1. Sample : yellowish, lightly SS

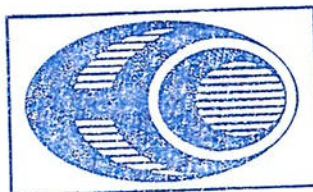
2. Container : Normal [ PE 0.5 L(3 Bottle) , PE 1.8 L , G 1.0 L ]

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

4. Sampling By Mr. Supharker Phatklang

Examined By : 

(Miss Apiradee Chuen-arom)

01/03/2025

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด  
 REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
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## Test Report

Request No : W6802183

Report No : 6802 -0935

Customer : MDX Public Co.,Ltd.

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

Sampling Source : WWTP

Sample No : W 68020560

Sample Name : Effluent

Sampling Date : 06/02/2025

Sampling By : ETC

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

Sampling Method : Composit

Received Date : 07/02/2025

Tested Date : 07/02/2025 - 27/02/2025

Reported Date : 01/03/2025

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

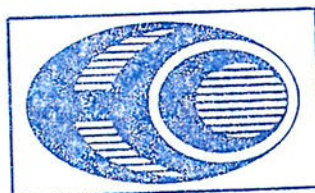
Physical Apperance : 1. Sample : yellowish, lightly SS

2. Container : Normal [ PE 0.5 L(3 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. Supharerk Phatklang



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....

(Miss Apiradee Chuen-arom)

01/03/2025

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

## Test Report

Request No : W6802186

Report No : 6802-0796

Customer : MDX Public Co.,Ltd.

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

Sampling Source : WWTP

Sample No : W 68020566

Sample Name : Effluent

Sampling Date : 06/02/2025

Sampling By : ETC

Sampling Time : 3:00 PM

Sampling Method : Grab

Received Date : 07/02/2025

Tested Date : 14/02/2025

Reported Date : 17/02/2025

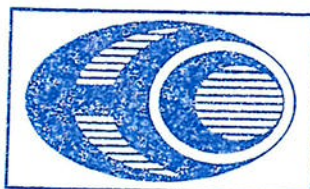
Parameter	Unit	Method	Result	Standard/ <sup>1</sup>
Coliform Bacteria	MPN:100 mL	MPN Test Method (SM:9221B)	4.5	-

Physical Apperance : 1. Sample : lightly SS

2. Container : Normal [ G 0.25 L]

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

- 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. Supharerk Phatklang



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....

(Miss Apiradee Chuen-arom)

17/02/2025

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

## Test Report

Request No : W6803197

Report No : 6803-1311

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

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

Sampling Source : WWTP\*\*

Sample No : W 68030661

Sample Name : Effluent\*\*

Sampling Date : 06/03/2025\*\*

Sampling By : ETC\*\*

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

Sampling Method : Composit\*\*

Received Date : 07/03/2025

Tested Date : 07/03/2025 - 18/03/2025

Reported Date : 22/03/2025

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)	2.5	≤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 : yellowish, 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. Songpon Phiwuan (จ-003-ท-0016)\*

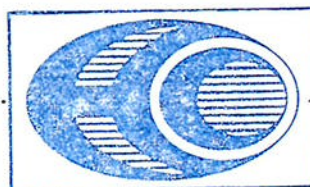
5. \*\* = These data are non laboratory data.

Examined By : .....

(Miss Apiradee Chuen-arom)

(จ-003-ท-0007)

22/03/2025



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)

(จ-003-ท-0005)

22/03/2025

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



## Test Report

Request No : W6803197

Report No : 6803-1311

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

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

Sampling Source : WWTP\*\*

Sample No : W 68030661

Sample Name : Effluent\*\*

Sampling Date : 06/03/2025\*\*

Sampling By : ETC\*\*

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

Sampling Method : Composit\*\*

Received Date : 07/03/2025

Tested Date : 07/03/2025 - 18/03/2025

Reported Date : 22/03/2025

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)	0.06	≤ 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)	0.015	≤ 1

Physical Appearance : 1. Sample : yellowish, 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. Songpon Phiwan (จ-003-ท-0016)\*

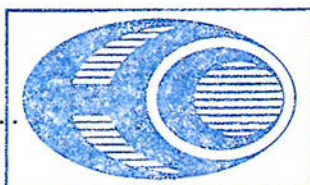
5. \*\* = These data are non laboratory data.

Examined By : .....

(Miss Apiradee Chuen-arom)

(จ-003-ท-0007)

22/03/2025



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)

(จ-003-ท-0005)

22/03/2025

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
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## Test Report

Request No : W6803197

Report No : 6803-1311

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

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

Sampling Source : WWTP\*\*

Sample No : W 68030661

Sample Name : Effluent\*\*

Sampling Date : 06/03/2025\*\*

Sampling By : ETC\*\*

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

Sampling Method : Composit\*\*

Received Date : 07/03/2025

Tested Date : 07/03/2025 - 18/03/2025

Reported Date : 22/03/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Temperature *	°C	Laboratory and Field Method (SM:2550 B)	31	≤40
Total Suspended Solids #	mg/L	Dried at 103-105 degree celsius (SM:2540D)	8	≤50
Zinc *	mg/L	Digestion, Inductively Coupled Plasma Method (SM:3030F, 3120B)	0.06	≤5

Physical Apperance : 1. Sample : yellowish, 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. Songpon Phiwuan (จ-003-ก-0016)\*

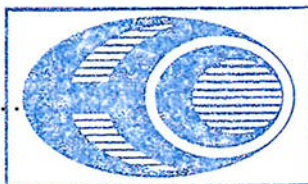
5. \*\* = These data are non laboratory data.

Examined By : .....

(Miss Apiradee Chuen-arom)

(จ-003-ก-0007)

22/03/2025



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)

(จ-003-ก-0005)

22/03/2025

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

Request No : W6803197

Report No : 6803-1311

Customer : MDX Public Co.,Ltd.

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

Sampling Source : WWTP

Sample No : W 68030661

Sample Name : Effluent

Sampling Date : 06/03/2025

Sampling By : ETC

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

Sampling Method : Composit

Received Date : 07/03/2025

Tested Date : 07/03/2025 - 18/03/2025

Reported Date : 22/03/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Flow Rate	m <sup>3</sup> /day	Calculation Method	4,297	-

Physical Apperance : 1. Sample : yellowish, 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)

- 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. Songpon Phiwan



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : 

(Miss Apiradee Chuen-arom)

22/03/2025

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 : W6803198

Report No : 6803-1138

Customer : MDX Public Co.,Ltd.

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

Sampling Source : WWTP

Sample No : W 68030665

Sample Name : Effluent

Sampling Date : 06/03/2025

Sampling By : ETC

Sampling Time : 3:00 PM

Sampling Method : Grab

Received Date : 07/03/2025

Tested Date : 19/03/2025

Reported Date : 21/03/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Coliform Bacteria	MPN:100 mL	MPN Test Method (SM:9221B)	790	-

Physical Apperance : 1. Sample : yellowish, lightly SS

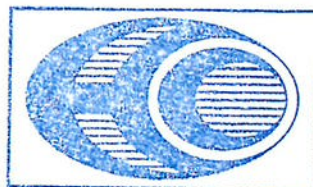
2. Container : Normal [ G 0.25 L ]

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 Miss Pornpinan Viriyakusolkul



บริษัท อีสเทิร์นไทยคอนซัลติง 1992 จำกัด

Examined By : 

(Miss Apiradee Chuen-arom)

21/03/2025

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





## Test Report

Request No : W6803197

Report No : 6803-1311

Customer : MDX Public Co.,Ltd.

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

Sampling Source : WWTP

Sample No : W 68030661

Sample Name : Effluent

Sampling Date : 06/03/2025

Sampling By : ETC

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

Sampling Method : Composit

Received Date : 07/03/2025

Tested Date : 07/03/2025 - 26/03/2025

Reported Date : 02/04/2025

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

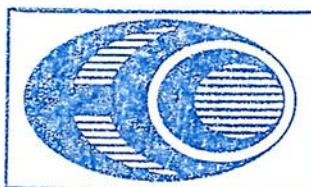
Physical Apperance : 1. Sample : yellowish, lightly SS

2. Container : Normal [ PE 0.5 L [ 4 Bottle], PE 1.0 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. Songpon Phiwuan



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : 

(Miss Apiradee Chuen-arom)

02/04/2025

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

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## Test Report

Request No : W6804149

Report No : 6804-1465

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

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

Sampling Source : WWTP\*\*

Sample No : W 68040480

Sample Name : Effluent\*\*

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

Sampling By : ETC\*\*

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

Sampling Method : Composit\*\*

Received Date : 05/04/2025

Tested Date : 05/04/2025 - 19/04/2025

Reported Date : 02/05/2025

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)	4.7	≤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)	42	≤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 : yellowish, lightly SS

2. Container : Normal [ PE 0.5 L [ 3 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 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)\*

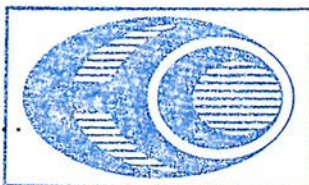
5. \*\* = These data are non laboratory data.

Examined By : .....

(Miss Apiradee Chuen-arom)

(จ-003-ท-0007)

02/05/2025



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)

(จ-003-ท-0005)

02/05/2025

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

## Test Report

Request No : W6804149

Report No : 6804-1465

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

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

Sampling Source : WWTP\*\*

Sample No : W 68040480

Sample Name : Effluent\*\*

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

Sampling By : ETC\*\*

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

Sampling Method : Composit\*\*

Received Date : 05/04/2025

Tested Date : 05/04/2025 - 19/04/2025

Reported Date : 02/05/2025

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)	0.09	≤ 1
Oil and Grease *	mg/L	Liquid-Liquid, Partition-Gravimetric Method (SM:5520B)	< 3.0	≤ 5
pH (on site) *		Electrometric Method	6.9	5.5-9.0
Phenol *	mg/L	Distillation, Direct Photometric Method (SM:5530B,D)	0.054	≤ 1

Physical Appearance : 1. Sample : yellowish, lightly SS

2. Container : Normal [ PE 0.5 L [ 3 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 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)\*

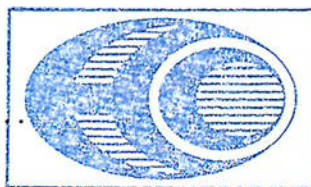
5. \*\* = These data are non laboratory data.

Examined By : 

(Miss Apiradee Chuen-arom)

(จ-003-ท-0007)

02/05/2025



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : 

(Miss Nunnaphat Bakhuntod)

(จ-003-ท-0005)

02/05/2025

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
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## Test Report

Request No : W6804149

Report No : 6804-1465

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

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

Sampling Source : WWTP\*\*

Sample No : W 68040480

Sample Name : Effluent\*\*

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

Sampling By : ETC\*\*

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

Sampling Method : Composit\*\*

Received Date : 05/04/2025

Tested Date : 05/04/2025 - 19/04/2025

Reported Date : 02/05/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Temperature *	°C	Laboratory and Field Method (SM:2550 B)	28	≤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 : yellowish, lightly SS

2. Container : Normal [ PE 0.5 L [ 3 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 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)\*

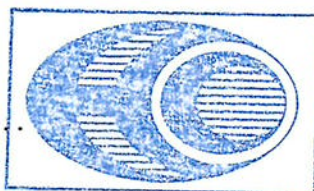
5. \*\* = These data are non laboratory data.

Examined By : .....

(Miss Apiradee Chuen-arom)

(จ-003-ท-0007)

02/05/2025



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)

(จ-003-ท-0005)

02/05/2025

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



## Test Report

Request No : W6804149

Report No : 6804-1465

Customer : MDX Public Co.,Ltd.

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

Sampling Source : WWTP

Sample No : W 68040480

Sample Name : Effluent

Sampling Date : 04/04/2025

Sampling By : ETC

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

Sampling Method : Composit

Received Date : 05/04/2025

Tested Date : 05/04/2025 - 19/04/2025

Reported Date : 02/05/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Flow Rate	m <sup>3</sup> /day	Calculation Method	4,080	-

Physical Apperance : 1. Sample : yellowish, lightly SS

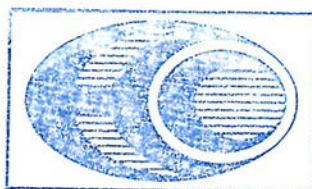
2. Container : Normal [ PE 0.5 L [ 3 Bottle], PE 1.0 L [ 2 Bottle ], G 1.0 L ]

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

2. 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

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

Page 1 of 1

Examined By : (Miss Apiradee Chuen-arom)  
02/05/2025

COPY

## Test Report

Request No : W6804151

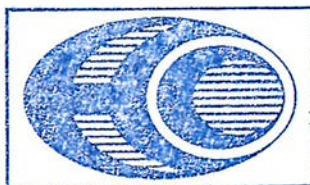
Report No : 6804-0743

Customer : MDX Public Co.,Ltd.  
Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110  
Sampling Source : WWTP Sample No : W 68040487  
Sample Name : Effluent Sampling Date : 04/04/2025  
Sampling By : ETC Sampling Time : 3:00 PM  
Sampling Method : Grab Received Date : 05/04/2025  
Tested Date : 10/04/2025 Reported Date : 18/04/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Coliform Bacteria	MPN:100 mL	MPN Test Method (SM:9221B)	2,100	-

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. Parkpoom Buasawad



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....

(Miss Apiradee Chuen-arom)  
18/04/2025

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 : W6804149

Report No : 6804-1465

Customer : MDX Public Co.,Ltd.

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

Sampling Source : WWTP

Sample No : W 68040480

Sample Name : Effluent

Sampling Date : 04/04/2025

Sampling By : ETC

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

Sampling Method : Composit

Received Date : 05/04/2025

Tested Date : 05/04/2025 - 03/05/2025

Reported Date : 06/05/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Cresol #	mg/L	Gas Chromatography	14.59	-

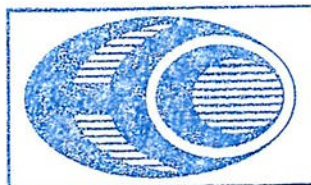
Physical Apperance : 1. Sample : yellowish, lightly SS

2. Container : Normal [ PE 0.5 L [ 3 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. Parkpoom Buasawad



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : 

(Miss Apiradee Chuen-arom)

06/05/2025

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

## Test Report

Request No : W6805038

Report No : 6805- 0932

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

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

Sampling Source : WWTP\*\*

Sample No : W 68050109

Sample Name : Effluent\*\*

Sampling Date : 02/05/2025\*\*

Sampling By : ETC\*\*

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

Sampling Method : Composit\*\*

Received Date : 03/05/2025

Tested Date : 03/05/2025 - 23/05/2025

Reported Date : 26/05/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Arsenic *	mg/L	Continuous Hydride Generation/AAS Method (SM:3114B)	< 0.0020	≤0.25
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 : yellowish, 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.

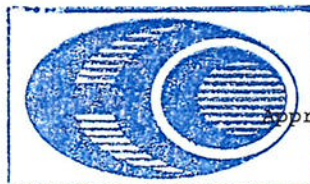
3. Miss Apiradee Chuen-arom is Section Head / Miss Nunnaphat Bakhuntod is Technical Management.

4. \* = Test Report/Sampling marked Not Accredited, Sampling By Mr. Songpon Phwiuan (๖-003-๓-๐๐16)\*

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

Examined By : .....

(Miss Apiradee Chuen-arom)  
(๖-003-๓-๐๐๐7)  
26/05/2025



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)  
(๖-003-๓-๐๐๐5)  
26/05/2025

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

Request No : W6805038

Report No : 6805- 0932

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

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

Sampling Source : WWTP\*\*

Sample No : W 68050109

Sample Name : Effluent\*\*

Sampling Date : 02/05/2025\*\*

Sampling By : ETC\*\*

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

Sampling Method : Composit\*\*

Received Date : 03/05/2025

Tested Date : 03/05/2025 - 23/05/2025

Reported Date : 26/05/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Biochemical Oxygen Demand #	mg/L	5-Day BOD Test, Membrane Electrode Method (SM:5210B)	12.0	≤20

Physical Apperance : 1. Sample : yellowish, 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.

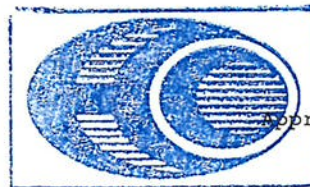
3. Miss Apiradee Chuen-arom is Section Head / Miss Nunnaphat Bakhuntod is Technical Management.

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

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

Examined By : .....

(Miss Apiradee Chuen-arom)  
(จ-003-ท-0007)  
26/05/2025



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)  
(จ-003-ท-0005)  
26/05/2025

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

Request No : W6805038

Report No : 6805- 0932

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

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

Sampling Source : WWTP\*\*

Sample No : W 68050109

Sample Name : Effluent\*\*

Sampling Date : 02/05/2025\*\*

Sampling By : ETC\*\*

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

Sampling Method : Composit\*\*

Received Date : 03/05/2025

Tested Date : 03/05/2025 - 23/05/2025

Reported Date : 26/05/2025

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	7.4	5.5-9.0
Phenol *	mg/L	Distillation,Direct Photometric Method (SM:5530B,D)	0.047	≤1

Physical Apperance : 1. Sample : yellowish, 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.

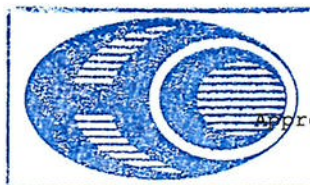
3. Miss Apiradee Chuen-arom is Section Head / Miss Nunnaphat Bakhuntod is Technical Management.

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

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

Examined By : .....

(Miss Apiradee Chuen-arom)  
(จ-003-ท-0007)  
26/05/2025



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)  
(จ-003-ท-0005)  
26/05/2025

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
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## Test Report

Request No : W6805038

Report No : 6805- 0932

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

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

Sampling Source : WWTP\*\*

Sample No : W 68050109

Sample Name : Effluent\*\*

Sampling Date : 02/05/2025\*\*

Sampling By : ETC\*\*

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

Sampling Method : Composit\*\*

Received Date : 03/05/2025

Tested Date : 03/05/2025 - 23/05/2025

Reported Date : 26/05/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Temperature *	°C	Laboratory and Field Method (SM:2550 B)	27	≤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)	8	≤50
Zinc *	mg/L	Digestion,Inductively Coupled Plasma Method (SM:3030F, 3120B)	0.05	≤5

Physical Apperance : 1. Sample : yellowish, 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. Songpon Phwiuan (จ-003-ก-0016)\*

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

Examined By : .....

(Miss Apiradee Chuen-arom)  
(จ-003-ก-0007)  
26/05/2025



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)  
(จ-003-ก-0005)  
26/05/2025

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
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## Test Report

Request No : W6805038

Report No : 6805 - 0932

Customer : MDX Public Co.,Ltd.

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

Sampling Source : WWTP

Sample No : W 68050109

Sample Name : Effluent

Sampling Date : 02/05/2025

Sampling By : ETC

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

Sampling Method : Composit

Received Date : 03/05/2025

Tested Date : 03/05/2025 - 23/05/2025

Reported Date : 26/05/2025

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	4,640	-
Nitrate	mg/L as NO <sub>3</sub> <sup>-</sup>	Cadmium Reduction Method (SM:4500 -NO <sub>3</sub> - E)	43.7	-

Physical Apperance : 1. Sample : yellowish, lightly SS

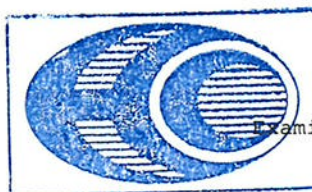
2. Container : Normal [ PE 0.5 L [ 4 Bottle], PE 1.0 L [ 2 Bottle ], PE 1.8 L, G 1.0 L ]

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

2. 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)  
26/05/2025REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
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WITHOUT THE WRITTEN APPROVAL LABORATORY

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**Test Report**

Request No : W6805038

Report No : 6805-0932

Customer : MDX Public Co.,Ltd.

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

Sampling Source : WWTP

Sample No : W 68050109

Sample Name : Effluent

Sampling Date : 02/05/2025

Sampling By : ETC

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

Sampling Method : Composit

Received Date : 03/05/2025

Tested Date : 03/05/2025 - 23/05/2025

Reported Date : 26/05/2025

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

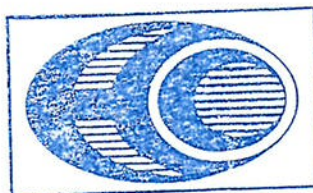
Physical Apperance : 1. Sample : yellowish, lightly SS

2. Container : Normal [ PE 0.5 L [ 4 Bottle], PE 1.0 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. Songpon Phiwuan



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : 

(Miss Apiradee Chuen-arom)

26/05/2025

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

## Test Report

Request No : W6805039

Report No : 6805-0321

Customer : MDX Public Co.,Ltd.

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

Sampling Source : WWTP

Sample No : W 68050113

Sample Name : Effluent

Sampling Date : 02/05/2025

Sampling By : ETC

Sampling Time : 3:00 PM

Sampling Method : Grab

Received Date : 03/05/2025

Tested Date : 07/05/2025

Reported Date : 09/05/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Coliform Bacteria	MPN:100 mL	MPN Test Method (SM:9221B)	790	-

Physical Apperance : 1. Sample : yellowish, lightly SS

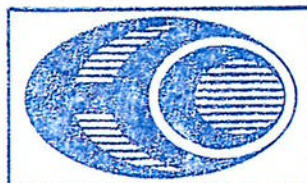
2. Container : Normal [ G 0.25 L ]

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)

09/05/2025

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

## Test Report

Request No : W6806138

Report No : 6806-1255

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

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

Sampling Source : WWTP\*\*

Sample No : W 68060460

Sample Name : Effluent\*\*

Sampling Date : 06/06/2025\*\*

Sampling By : ETC\*\*

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

Sampling Method : Composit\*\*

Received Date : 07/06/2025

Tested Date : 09/06/2025 - 17/06/2025

Reported Date : 21/06/2025

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)	2.1	≤ 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 : lightly SS

2. Container : Normal [ PE 0.5 L [ 3 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.

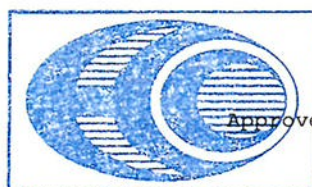
3. Miss Apiradee Chuen-arom is Section Head / Miss Nunnaphat Bakhuntod is Technical Management.

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

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

Examined By : .....

(Miss Apiradee Chuen-arom)  
(จ-003-ท-0007)  
21/06/2025



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)  
(จ-003-ท-0005)  
21/06/2025

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

## Test Report

Request No : W6806138

Report No : 6806-1255

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

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

Sampling Source : WWTP\*\*

Sample No : W 68060460

Sample Name : Effluent\*\*

Sampling Date : 06/06/2025\*\*

Sampling By : ETC\*\*

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

Sampling Method : Composit\*\*

Received Date : 07/06/2025

Tested Date : 09/06/2025 - 17/06/2025

Reported Date : 21/06/2025

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)	0.03	≤1
Oil and Grease *	mg/L	Liquid-Liquid, Partition-Gravimetric Method (SM:5520B)	< 3.0	≤5
pH (on site) *		Electrometric Method	6.9	5.5-9.0
Phenol *	mg/L	Distillation,Direct Photometric Method (SM:5530B,D)	0.008	≤1

Physical Apperance : 1. Sample : lightly SS

2. Container : Normal [ PE 0.5 L [ 3 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.

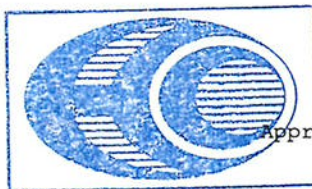
3. Miss Apiradee Chuen-arom is Section Head / Miss Nunnaphat Bakhuntod is Technical Management.

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

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

Examined By : .....

(Miss Apiradee Chuen-arom)  
(จ-003-ก-0007)  
21/06/2025



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)  
(จ-003-ก-0005)  
21/06/2025

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



## Test Report

Request No : W6806138

Report No : 6806-1255

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

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

Sampling Source : WWTP\*\*

Sample No : W 68060460

Sample Name : Effluent\*\*

Sampling Date : 06/06/2025\*\*

Sampling By : ETC\*\*

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

Sampling Method : Composit\*\*

Received Date : 07/06/2025

Tested Date : 09/06/2025 - 17/06/2025

Reported Date : 21/06/2025

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)	7	≤50
Zinc *	mg/L	Digestion, Inductively Coupled Plasma Method (SM:3030F, 3120B)	0.04	≤5

Physical Apperance : 1. Sample : lightly SS

2. Container : Normal [ PE 0.5 L [ 3 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. Supharerk Phatklang (จ-003-ท-0031)\*

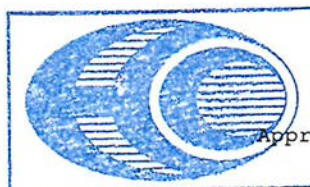
5. \*\* = These data are non laboratory data.

Examined By : .....

(Miss Apiradee Chuen-arom)

(จ-003-ท-0007)

21/06/2025



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : .....

(Miss Nunnaphat Bakhuntod)

(จ-003-ท-0005)

21/06/2025

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

## Test Report

Request No : W6806138

Report No : 6806- 1255

Customer : MDX Public Co.,Ltd.

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

Sampling Source : WWTP

Sample No : W 68060460

Sample Name : Effluent

Sampling Date : 06/06/2025

Sampling By : ETC

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

Sampling Method : Composit

Received Date : 07/06/2025

Tested Date : 09/06/2025 - 25/06/2025

Reported Date : 21/06/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Flow Rate	m <sup>3</sup> /day	Calculation Method	5,185	-

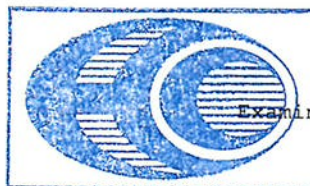
Physical Apperance : 1. Sample : lightly SS

2. Container : Normal [ PE 0.5 L [ 3 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. Supharerk Phatklang



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....

(Miss Apiradee Chuen-arom)

21/06/2025

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

## Test Report

Request No : W6806139

Report No : 6806-1202

Customer : MDX Public Co.,Ltd.

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

Sampling Source : WWTP

Sample No : W 68060464

Sample Name : Effluent

Sampling Date : 06/06/2025

Sampling By : ETC

Sampling Time : 3:00 PM

Sampling Method : Grab

Received Date : 07/06/2025

Tested Date : 18/06/2025

Reported Date : 21/06/2025

Parameter	Unit	Method	Result	Standard/ <sup>1</sup>
Coliform Bacteria	MPN:100 mL	MPN Test Method (SM:9221B)	17	-

Physical Apperance : 1. Sample : lightly SS

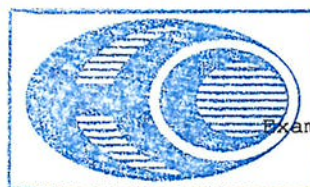
2. Container : Normal [ G 0.25 L ]

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)

21/06/2025

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
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## Test Report

Request No : W6806138

Report No : 6806-1255

Customer : MDX Public Co.,Ltd.

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

Sampling Source : WWTP

Sample No : W 68060460

Sample Name : Effluent

Sampling Date : 06/06/2025

Sampling By : ETC

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

Sampling Method : Composit

Received Date : 07/06/2025

Tested Date : 09/06/2025 - 25/06/2025

Reported Date : 26/06/2025

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

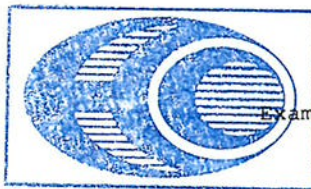
Physical Apperance : 1. Sample : lightly SS

2. Container : Normal [ PE 0.5 L [ 3 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. Supharerk Phatklang



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....

(Miss Apiradee Chuen-arom)

26/06/2025

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

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## Test Report

Request No : W6801199

Report No : 6801-0907

Customer : MDX Public Co.,Ltd.

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

Sampling Source : Surface Water

Sample No : W 68010617

Sample Name : ดินน้ำของพื้นที่โครงการ 200 เมตร

Sampling Date : 10/01/2025

Sampling By : ETC

Sampling Time : 11:20 AM

Sampling Method : Grab

Received Date : 11/01/2025

Tested Date : 13/01/2025 - 18/01/2025

Reported Date : 21/01/2025

Parameter	Unit	Method	Result	Standard <sup>2</sup>	Standard <sup>1</sup>
Arsenic	mg/L	Continuous Hydride Generation/AAS Method (SM:3114B)	0.0023	≤ 0.01	≤0.01
Biochemical Oxygen Demand	mg/L	5-Day BOD Test, Membrane Electrode Method (SM:5210B)	20.9	≤ 2	≤4
Dissolved Oxygen	mg/L	Membrane Electrode Method (SM:4500 -O G)	3.5	≥ 4	≥2
Fecal Coliform Bacteria	MPN:100 mL	MPN Test Method (SM:9221E)	230	≤ 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 : yellowish, lightly SS

2. Container : Normal [ PE 0.5 L [ 3 Bottle], PE 1.0 L, PE 2.0 L, G 1.0 L ]

Remark : 1. /1 Surface Water Quality Standards, Notification of the Environment Board No. 8, B.E. 2537 (1994), Class 4.

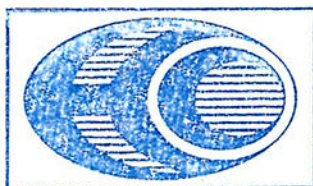
2. /2 Surface Water Quality Standards Notification of the Environment Board No. 8 BE. 2537 (1994) , Class 3

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

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

5. ท\*\*\* = อุณหภูมิของน้ำจะต้องไม่สูงกว่าอุณหภูมิตามธรรมชาติ เกิน 3 องศาเซลเซียส

6. Sampling By Mr. Parkpoom Buasawad



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....

(Miss Apiradee Chuen-arom)

21/01/2025

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 : W6801199

Report No : 6801-0907

Customer : MDX Public Co.,Ltd.

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

Sampling Source : Surface Water

Sample No : W 68010617

Sample Name : ดินน้ำของพื้นที่โครงการ 200 เมตร

Sampling Date : 10/01/2025

Sampling By : ETC

Sampling Time : 11:20 AM

Sampling Method : Grab

Received Date : 11/01/2025

Tested Date : 13/01/2025 - 18/01/2025

Reported Date : 21/01/2025

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)	< 0.44	≤ 5	-
Nitrogen (Nitrate)	mg/L as NO <sub>3</sub> <sup>-</sup> N	Cadmium Reduction Method (SM:4500 -NO3 -B)	< 0.10	≤ 5	≤ 5
Oil and Grease	mg/L	Liquid-Liquid, Partition-Gravimetric Method (SM:5520B)	< 3.0	-	-
pH (on site)		Electrometric Method	6.9	5.0-9.0	5.0-9.0
Temperature	°C	Laboratory and Field Method (SM:2550 B)	25	***	***
Total Suspended Solids	mg/L	Dried at 103-105 degree celsius (SM:2540D)	10	-	-

Physical Apperance : 1. Sample : yellowish, lightly SS

2. Container : Normal [ PE 0.5 L [ 3 Bottle], PE 1.0 L, PE 2.0 L, G 1.0 L ]

Remark : 1. /1 Surface Water Quality Standards, Notification of the Environment Board No. 8, B.E. 2537 (1994), Class 4.

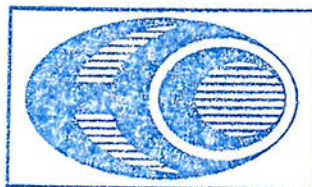
2. /2 Surface Water Quality Standards Notification of the Environment Board No. 8 BE. 2537 (1994) , Class 3

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

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

5. \*\*\* = อุณหภูมิของน้ำจะต้องไม่สูงกว่าอุณหภูมิตามธรรมชาติ เกิน 3 องศาเซลเซียส

6. Sampling By Mr. Parkpoorn Buasawad



บริษัท อีสเทิร์นไทยคอนซัลติง 1992 จำกัด

Examined By : .....

(Miss Apiradee Chuen-arom)

21/01/2025

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 : W6801199

Report No : 6801-0907

Customer : MDX Public Co.,Ltd.

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

Sampling Source : Surface Water

Sample No : W 68010617

Sample Name : ดินน้ำของพื้นที่โครงการ 200 เมตร

Sampling Date : 10/01/2025

Sampling By : ETC

Sampling Time : 11:20 AM

Sampling Method : Grab

Received Date : 11/01/2025

Tested Date : 13/01/2025 - 18/01/2025

Reported Date : 21/01/2025

Parameter	Unit	Method	Result	Standard <sup>2</sup>	Standard <sup>1</sup>
Ammonia Nitrogen #	mg/L	Spectrophotometer	0.30	≤ 0.5	≤ 0.5

Physical Apperance : 1. Sample : yellowish, lightly SS

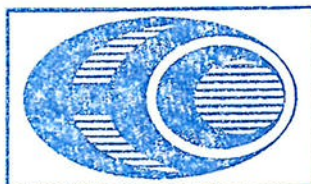
2. Container : Normal [ PE 0.5 L [ 3 Bottle], PE 1.0 L, PE 2.0 L, G 1.0 L ]

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. Parkpoom Buasawad



บริษัท อีสเทิร์นไทยคอนซัลติง 1992 จำกัด

Examined By : 

(Miss Apiradee Chuen-arom)

21/01/2025

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
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## Test Report

Request No : W6805040

Report No : 6805-0912

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

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

Sampling Source : Surface Water\*\*

Sample No : W 68050116

Sample Name : คำนวณของพื้นที่โครงการ 200 เมตร\*\*

Sampling Date : 02/05/2025\*\*

Sampling By : ETC\*\*

Sampling Time : 11:20 AM\*\*

Sampling Method : Grab\*\*

Received Date : 03/05/2025

Tested Date : 03/05/2025 - 14/05/2025

Reported Date : 15/05/2025

Parameter	Unit	Method	Result	Standard <sup>2</sup>	Standard <sup>1</sup>
Arsenic *	mg/L	Continuous Hydride Generation/AAS Method (SM:3114B)	0.0026	≤ 0.01	≤0.01
Biochemical Oxygen Demand #	mg/L	5-Day BOD Test, Membrane Electrode Method (SM:5210B)	7.5	≤ 2	≤4
Dissolved Oxygen *	mg/L	Membrane Electrode Method (SM:4500 -O G)	2.7	≥ 4	≥2
Fecal Coliform Bacteria *	MPN:100 mL	MPN Test Method (SM:9221E)	2,800	≤ 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 : yellow, lightly SS

2. Container : Normal [ PE 0.5 L [ 3 Bottle], PE 1.0 L, PE 2.0 L, G 1.0 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 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. Songpon Phiwuan \*  
7. ๕ \*\*\* = อุณหภูมิของน้ำจะต้องไม่สูงกว่าอุณหภูมิตามธรรมชาติเกิน 3 องศาเซลเซียส



Examined By : .....

(Miss Nunnaphat Bakhuntod)  
15/05/2025

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

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

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## Test Report

Request No : W6805040

Report No : 6805-0912

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

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

Sampling Source : Surface Water\*\*

Sample No : W 68050116

Sample Name : ดินน้ำของพื้นที่โครงการ 200 เมตร\*\*

Sampling Date : 02/05/2025\*\*

Sampling By : ETC\*\*

Sampling Time : 11:20 AM\*\*

Sampling Method : Grab\*\*

Received Date : 03/05/2025

Tested Date : 03/05/2025 - 14/05/2025

Reported Date : 15/05/2025

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)	0.71	≤ 5	-
Nitrogen (Nitrate) *	mg/L as NO <sub>3</sub> <sup>-</sup> N	Cadmium Reduction Method (SM:4500 -NO3 -B)	0.16	≤ 5	≤5
Oil and Grease *	mg/L	Liquid-Liquid, Partition-Gravimetric Method (SM:5520B)	< 3.0	-	-
pH (on site) *		Electrometric Method	7.2	5.0-9.0	5.0-9.0
Temperature *	°C	Laboratory and Field Method (SM:2550 B)	31	ท***	ท***
Total Suspended Solids #	mg/L	Dried at 103-105 degree celsius (SM:2540D)	31	-	-

Physical Apperance : 1. Sample : yellow, lightly SS

2. Container : Normal [ PE 0.5 L [ 3 Bottle], PE 1.0 L, PE 2.0 L, G 1.0 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 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. Songpon Phiwuan \*

7. ท \*\*\* = อุณหภูมิของน้ำจะต้องไม่สูงกว่าอุณหภูมิตามบรรทัดที่เกิน 3 องศาเซลเซียส



Examined By : .....

(Miss Nunnaphat Bakhuntod)

15/05/2025

บริษัท อีสเทิร์นไทยคอนซัลติง 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 : W6805040

Report No : 6805-0912

Customer : MDX Public Co.,Ltd.

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

Sampling Source : Surface Water

Sample No : W 68050116

Sample Name : ดินน้ำของพื้นที่โครงการ 200 เมตร

Sampling Date : 02/05/2025

Sampling By : ETC

Sampling Time : 11:20 AM

Sampling Method : Grab

Received Date : 03/05/2025

Tested Date : 03/05/2025 - 14/05/2025

Reported Date : 15/05/2025

Parameter	Unit	Method	Result	Standard <sup>1/2</sup>	Standard <sup>1/1</sup>
Ammonia Nitrogen #	mg/L	Spectrophotometer	2.74	≤ 0.5	≤ 0.5

Physical Apperance : 1. Sample : yellow, lightly SS

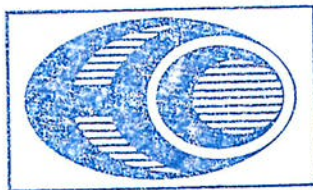
2. Container : Normal [ PE 0.5 L [ 3 Bottle], PE 1.0 L, PE 2.0 L, G 1.0 L ]

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. Songpon Phiwuan



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....

(Miss Apiradee Chuen-arom)

15/05/2025

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## Test Report

Request No : W6801199

Report No : 6801-0906

Customer : MDX Public Co.,Ltd.

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

Sampling Source : Surface Water

Sample No : W 68010616

Sample Name : จุดระบายน้ำทิ้ง (จุดบรรจบท้ายอ่างเก็บน้ำ)

Sampling Date : 10/01/2025

Sampling By : ETC

Sampling Time : 12:50 PM

Sampling Method : Grab

Received Date : 11/01/2025

Tested Date : 13/01/2025 - 18/01/2025

Reported Date : 21/01/2025

Parameter	Unit	Method	Result	Standard <sup>2</sup>	Standard <sup>1</sup>
Arsenic	mg/L	Continuous Hydride Generation/AAS Method (SM:3114B)	0.0026	≤ 0.01	≤0.01
Biochemical Oxygen Demand	mg/L	5-Day BOD Test, Membrane Electrode Method (SM:5210B)	20.7	≤ 2	≤4
Dissolved Oxygen	mg/L	Membrane Electrode Method (SM:4500 -O G)	8.7	≥ 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 : yellowish, lightly SS

2. Container : Normal [ PE 0.5 L [ 3 Bottle], PE 1.0 L, PE 2.0 L, G 1.0 L ]

Remark : 1. /1 Surface Water Quality Standards, Notification of the Environment Board No. 8, B.E. 2537 (1994), Class 4.

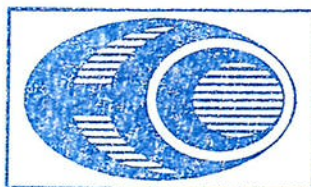
2. /2 Surface Water Quality Standards Notification of the Environment Board No. 8 BE. 2537 (1994) , Class 3

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

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

5. ท\*\*\* = อุณหภูมิของน้ำจะต้องไม่สูงกว่าอุณหภูมิตามธรรมชาติ เกิน 3 องศาเซลเซียส

6. Sampling By Mr. Parkpoom Buasawad



บริษัท อีสเทิร์นไทยคอนซัลติง 1992 จำกัด

Examined By : .....

(Miss Apiradee Chuen-arom)

21/01/2025

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## Test Report

Request No : W6801199

Report No : 6801-0906

Customer : MDX Public Co.,Ltd.

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

Sampling Source : Surface Water

Sample No : W 68010616

Sample Name : จุดระบายน้ำทิ้ง (จุดบรรจบท้ายอ่างเก็บน้ำ)

Sampling Date : 10/01/2025

Sampling By : ETC

Sampling Time : 12:50 PM

Sampling Method : Grab

Received Date : 11/01/2025

Tested Date : 13/01/2025 - 18/01/2025

Reported Date : 21/01/2025

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)	14.6	≤ 5	-
Nitrogen (Nitrate)	mg/L as NO <sub>3</sub> <sup>-</sup> N	Cadmium Reduction Method (SM:4500 -NO3 -B)	3.29	≤ 5	≤5
Oil and Grease	mg/L	Liquid-Liquid, Partition-Gravimetric Method (SM:5520B)	< 3.0	-	-
pH (on site)		Electrometric Method	7.2	5.0-9.0	5.0-9.0
Temperature	°C	Laboratory and Field Method (SM:2550 B)	27	๓***	๓***
Total Suspended Solids	mg/L	Dried at 103-105 degree celsius (SM:2540D)	6	-	-

Physical Apperance : 1. Sample : yellowish, lightly SS

2. Container : Normal [ PE 0.5 L [ 3 Bottle], PE 1.0 L, PE 2.0 L, G 1.0 L ]

Remark : 1. /1 Surface Water Quality Standards, Notification of the Environment Board No. 8, B.E. 2537 (1994), Class 4.

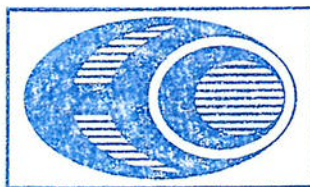
2. /2 Surface Water Quality Standards Notification of the Environment Board No. 8 BE. 2537 (1994) , Class 3

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

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

5. ๓\*\*\* = คุณภาพของน้ำจะต้องไม่สูงกว่าคุณภาพตามธรรมชาติ เกิน 3 องศาเซลเซียส

6. Sampling By Mr. Parkpoom Buasawad



บริษัท อีสเทิร์นไทยคอนซัลติง 1992 จำกัด

Examined By : .....

(Miss Apiradee Chuen-arom)  
21/01/2025

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## Test Report

Request No : W6801199

Report No : 6801-0906

Customer : MDX Public Co.,Ltd.

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

Sampling Source : Surface Water

Sample No : W 68010616

Sample Name : จุดระบายน้ำทิ้ง (จุดบรรจบท้ายอ่างเก็บน้ำ)

Sampling Date : 10/01/2025

Sampling By : ETC

Sampling Time : 12:50 PM

Sampling Method : Grab

Received Date : 11/01/2025

Tested Date : 13/01/2025 - 18/01/2025

Reported Date : 21/01/2025

Parameter	Unit	Method	Result	Standard <sup>2</sup>	Standard <sup>1</sup>
Ammonia Nitrogen #	mg/L	Spectrophotometer	0.26	≤ 0.5	≤ 0.5

Physical Apperance : 1. Sample : yellowish, lightly SS

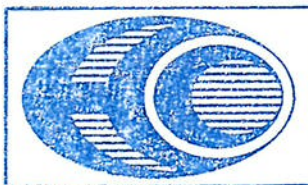
2. Container : Normal [ PE 0.5 L [ 3 Bottle], PE 1.0 L, PE 2.0 L, G 1.0 L ]

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. Parkpoom Buasawad



บริษัท อีสเทิร์นไทยคอนซัลติง 1992 จำกัด

Examined By : 

(Miss Apiradee Chuen-arom)

21/01/2025

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## Test Report

Request No : W6805040

Report No : 6805-0911

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

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

Sampling Source : Surface Water\*\*

Sample No : W 68050115

Sample Name : จุกระบายน้ำทิ้ง (จุดบรรจบท้ายอ่างเก็บน้ำ)\*\*

Sampling Date : 02/05/2025\*\*

Sampling By : ETC\*\*

Sampling Time : 11:30 AM\*\*

Sampling Method : Grab\*\*

Received Date : 03/05/2025

Tested Date : 03/05/2025 - 14/05/2025

Reported Date : 15/05/2025

Parameter	Unit	Method	Result	Standard <sup>2</sup>	Standard <sup>1</sup>
Arsenic *	mg/L	Continuous Hydride Generation/AAS Method (SM:3114B)	0.0025	≤ 0.01	≤0.01
Biochemical Oxygen Demand #	mg/L	5-Day BOD Test, Membrane Electrode Method (SM:5210B)	7.5	≤ 2	≤4
Dissolved Oxygen *	mg/L	Membrane Electrode Method (SM:4500 -O G)	3.4	≥ 4	≥2
Fecal Coliform Bacteria *	MPN:100 mL	MPN Test Method (SM:9221E)	3,100	≤ 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 : yellow, lightly SS

2. Container : Normal [ PE 0.5 L [ 3 Bottle], PE 1.0 L, PE 2.0 L, G 1.0 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 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. Songpon Phiwuan \*

7. ๕ \*\*\* = อุณหภูมิของน้ำจะต้องไม่สูงกว่าอุณหภูมิมาตรฐานที่กำหนด 3 องศาเซลเซียส



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
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Examined By : .....

(Miss Nunnaphat Bakhuntod)  
15/05/2025

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## Test Report

Request No : W6805040

Report No : 6805-0911

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

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

Sampling Source : Surface Water\*\*

Sample No : W 68050115

Sample Name : จุฑระบายน้ำทิ้ง (จุดบรรจบท้ายอ่างเก็บน้ำ)\*\*

Sampling Date : 02/05/2025\*\*

Sampling By : ETC\*\*

Sampling Time : 11:30 AM\*\*

Sampling Method : Grab\*\*

Received Date : 03/05/2025

Tested Date : 03/05/2025 - 14/05/2025

Reported Date : 15/05/2025

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)	0.67	≤ 5	-
Nitrogen (Nitrate) *	mg/L as NO <sub>3</sub> <sup>-</sup> N	Cadmium Reduction Method (SM:4500 -NO3- B)	0.15	≤ 5	≤5
Oil and Grease *	mg/L	Liquid-Liquid, Partition-Gravimetric Method (SM:5520B)	< 3.0	-	-
pH (on site) *		Electrometric Method	7.0	5.0-9.0	5.0-9.0
Temperature *	°C	Laboratory and Field Method (SM:2550 B)	31	๓***	๓***
Total Suspended Solids #	mg/L	Dried at 103-105 degree celsius (SM:2540D)	82	-	-

Physical Apperance : 1. Sample : yellow, lightly SS

2. Container : Normal [ PE 0.5 L [ 3 Bottle], PE 1.0 L, PE 2.0 L, G 1.0 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 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. Songpon Phiwan \*  
7. ๓ \*\*\* = อุณหภูมิของน้ำจะต้องไม่สูงกว่าอุณหภูมิมาตรฐานที่กำหนด กรมวิทยาศาสตร์สิ่งแวดล้อม



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....

(Miss Nunnaphat Bakhuntod)  
15/05/2025

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## Test Report

Request No : W6805040

Report No : 6805-0911

Customer : MDX Public Co.,Ltd.

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

Sampling Source : Surface Water

Sample No : W 68050115

Sample Name : จุกระบายน้ำทิ้ง (จุดบรรจบท้ายอ่างเก็บน้ำ)

Sampling Date : 02/05/2025

Sampling By : ETC

Sampling Time : 11:30 AM

Sampling Method : Grab

Received Date : 03/05/2025

Tested Date : 03/05/2025 - 14/05/2025

Reported Date : 15/05/2025

Parameter	Unit	Method	Result	Standard <sup>2</sup>	Standard <sup>1</sup>
Ammonia Nitrogen #	mg/L	Spectrophotometer	3.15	≤ 0.5	≤0.5

Physical Apperance : 1. Sample : yellow, lightly SS

2. Container : Normal [ PE 0.5 L [ 3 Bottle], PE 1.0 L, PE 2.0 L, G 1.0 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. Songpon Phiwuan



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....

(Miss Apiradee Chuen-arom)

15/05/2025

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## Test Report

Request No : W6801199

Report No : 6801-0905

Customer : MDX Public Co.,Ltd.

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

Sampling Source : Surface Water

Sample No : W 68010615

Sample Name : ฝ่ายคลองวังด้วน

Sampling Date : 10/01/2025

Sampling By : ETC

Sampling Time : 12:10 PM

Sampling Method : Grab

Received Date : 11/01/2025

Tested Date : 13/01/2025 - 18/01/2025

Reported Date : 21/01/2025

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)	32.6	≤ 2	≤ 4
Dissolved Oxygen	mg/L	Membrane Electrode Method (SM:4500 -O G)	2.0	≥ 4	≥ 2
Fecal Coliform Bacteria	MPN:100 mL	MPN Test Method (SM:9221E)	330	≤ 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 : yellowish, lightly SS

2. Container : Normal [ PE 0.5 L [ 3 Bottle], PE 1.0 L, PE 2.0 L, G 1.0 L ]

Remark : 1. /1 Surface Water Quality Standards, Notification of the Environment Board No. 8, B.E. 2537 (1994), Class 4.

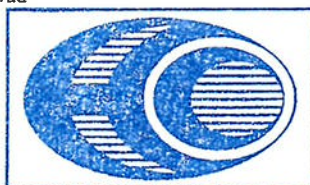
2. /2 Surface Water Quality Standards Notification of the Environment Board No. 8 BE. 2537 (1994) , Class 3

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

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

5. ท\*\*\* = คุณภูมิของน้ำจะต้องไม่สูงกว่าคุณภูมิตามธรรมชาติ เกิน 3 องศาเซลเซียส

6. Sampling By Mr. Parkpoom Buasawad



บริษัท อีสเทิร์นไทยคอนซัลติง 1992 จำกัด

Examined By : 

(Miss Apiradee Chuen-arom)

21/01/2025

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## Test Report

Request No : W6801199

Report No : 6801-0905

Customer : MDX Public Co.,Ltd.

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

Sampling Source : Surface Water

Sample No : W 68010615

Sample Name : ฝายคลองวังควัน

Sampling Date : 10/01/2025

Sampling By : ETC

Sampling Time : 12:10 PM

Sampling Method : Grab

Received Date : 11/01/2025

Tested Date : 13/01/2025 - 18/01/2025

Reported Date : 21/01/2025

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)	2.06	≤ 5	-
Nitrogen (Nitrate)	mg/L as NO <sub>3</sub> <sup>-</sup> N	Cadmium Reduction Method (SM:4500 -NO3 -B)	0.46	≤ 5	≤5
Oil and Grease	mg/L	Liquid-Liquid, Partition-Gravimetric Method (SM:5520B)	< 3.0	-	-
pH (on site)		Electrometric Method	7.9	5.0-9.0	5.0-9.0
Temperature	°C	Laboratory and Field Method (SM:2550 B)	27	๕***	๕***
Total Suspended Solids	mg/L	Dried at 103-105 degree celsius (SM:2540D)	19	-	-

Physical Apperance : 1. Sample : yellowish, lightly SS

2. Container : Normal [ PE 0.5 L [ 3 Bottle], PE 1.0 L, PE 2.0 L, G 1.0 L ]

Remark : 1. /1 Surface Water Quality Standards, Notification of the Environment Board No. 8, B.E. 2537 (1994), Class 4.

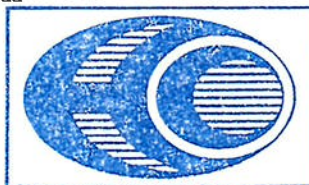
2. /2 Surface Water Quality Standards Notification of the Environment Board No. 8 BE. 2537 (1994) , Class 3

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

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

5. ๕\*\*\* = คุณภูมิของน้ำจะต้องไม่สูงกว่าภูมิตามธรรมชาติ เกิน 3 องศาเซลเซียส

6. Sampling By Mr. Parkpoom Buasawad



บริษัท อีสเทิร์นไทยคอนซัลติง 1992 จำกัด

Examined By : 

(Miss Apiradee Chuen-arom)

21/01/2025

## Test Report

Request No : W6801199

Report No : 6801-0905

Customer : MDX Public Co.,Ltd.

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

Sampling Source : Surface Water

Sample No : W 68010615

Sample Name : ฝายคลองวังด้วน

Sampling Date : 10/01/2025

Sampling By : ETC

Sampling Time : 12:10 PM

Sampling Method : Grab

Received Date : 11/01/2025

Tested Date : 13/01/2025 - 18/01/2025

Reported Date : 21/01/2025

Parameter	Unit	Method	Result	Standard <sup>2</sup>	Standard <sup>1</sup>
Ammonia Nitrogen #	mg/L	Spectrophotometer	0.25	≤ 0.5	≤0.5

Physical Apperance : 1. Sample : yellowish, lightly SS

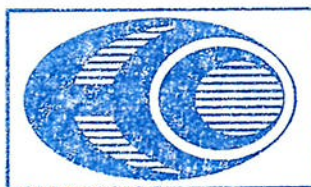
2. Container : Normal [ PE 0.5 L [ 3 Bottle], PE 1.0 L, PE 2.0 L, G 1.0 L ]

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. Parkpoom Buasawad



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....

(Miss Apiradee Chuen-arom)

21/01/2025

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## Test Report

Request No : W6805040

Report No : 6805-0910

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

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

Sampling Source : Surface Water\*\*

Sample No : W 68050114

Sample Name : ฟายคตองวังด้วน\*\*

Sampling Date : 02/05/2025\*\*

Sampling By : ETC\*\*

Sampling Time : 12:00 PM\*\*

Sampling Method : Grab\*\*

Received Date : 03/05/2025

Tested Date : 03/05/2025 - 14/05/2025

Reported Date : 15/05/2025

Parameter	Unit	Method	Result	Standard <sup>2</sup>	Standard <sup>1</sup>
Arsenic *	mg/L	Continuous Hydride Generation/AAS Method (SM:3114B)	0.0025	≤ 0.01	≤0.01
Biochemical Oxygen Demand #	mg/L	5-Day BOD Test, Membrane Electrode Method (SM:5210B)	7.8	≤ 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)	2,200	≤ 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 : yellow, lightly SS

2. Container : Normal [ PE 0.5 L [ 3 Bottle], PE 1.0 L, PE 2.0 L, G 1.0 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 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. Songpon Phiwuan \*

7. ๓ \*\*\* = อุณหภูมิของน้ำจะต้องไม่สูงกว่าอุณหภูมิอากาศวันทดสอบ 3 องศาเซลเซียส



Examined By : .....

(Miss Nunnaphat Bakhuntod)

15/05/2025

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
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## Test Report

Request No : W6805040

Report No : 6805-0910

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

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

Sampling Source : Surface Water\*\*

Sample No : W 68050114

Sample Name : ฝายคลองวังด้วน\*\*

Sampling Date : 02/05/2025\*\*

Sampling By : ETC\*\*

Sampling Time : 12:00 PM\*\*

Sampling Method : Grab\*\*

Received Date : 03/05/2025

Tested Date : 03/05/2025 - 14/05/2025

Reported Date : 15/05/2025

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)	0.73	≤ 5	-
Nitrogen (Nitrate) *	mg/L as NO <sub>3</sub> <sup>-</sup> N	Cadmium Reduction Method (SM:4500 -NO3 -B)	0.16	≤ 5	≤ 5
Oil and Grease *	mg/L	Liquid-Liquid, Partition-Gravimetric Method (SM:5520B)	< 3.0	-	-
pH (on site) *		Electrometric Method	7.1	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)	47	-	-

Physical Apperance : 1. Sample : yellow, lightly SS

2. Container : Normal [ PE 0.5 L [ 3 Bottle], PE 1.0 L, PE 2.0 L, G 1.0 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 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. Songpon Phiwuan \*

7. ๗ \*\*\* = อุณหภูมิของน้ำจะต้อง ไม่สูงกว่าอุณหภูมิความรวมยวติงเกิน 3 องศาเซลเซียส



Examined By : .....

(Miss Nunnaphat Bakhuntod)  
15/05/2025

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด  
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## Test Report

Request No : W6805040

Report No : 6805-0910

Customer : MDX Public Co.,Ltd.

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

Sampling Source : Surface Water

Sample No : W 68050114

Sample Name : ฝายคลองวังควัน

Sampling Date : 02/05/2025

Sampling By : ETC

Sampling Time : 12:00 PM

Sampling Method : Grab

Received Date : 03/05/2025

Tested Date : 03/05/2025 - 14/05/2025

Reported Date : 15/05/2025

Parameter	Unit	Method	Result	Standard <sup>2</sup>	Standard <sup>1</sup>
Ammonia Nitrogen #	mg/L	Spectrophotometer	3.18	≤ 0.5	≤ 0.5

Physical Apperance : 1. Sample : yellow, lightly SS

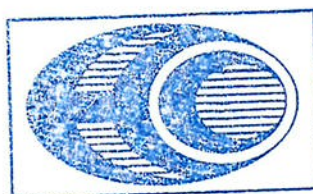
2. Container : Normal [ PE 0.5 L [ 3 Bottle], PE 1.0 L, PE 2.0 L, G 1.0 L ]

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. Songpon Phiwan



Examined By : .....

(Miss Apiradee Chuen-arom)

15/05/2025

REPORTED TEST REFER TO EXAMINED SAMPLES ONLY  
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## Test Report

Request No : W6801201, W6802187

Report No : 6801-0911-1, 6802-0911

Customer : MDX Public Co.,Ltd.  
Address : 199 Ratchadapisek Road, 12 A Floor, Klongtoey, Bangkok 10110  
Sampling Source : Ground Water Sample No : W 68010621, W 68020567  
Sample Name : บำเนินไร Sampling Date : 10/01/2025, 06/02/2025  
Sampling By : ETC Sampling Time : 12:30 PM, 3:35 PM  
Sampling Method : Grab Received Date : 11/01/2025, 07/02/2025  
Tested Date : 13/01/2025 - 18/01/2025 Reported Date : 17/02/2025

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)	9.4	≤ 250	-
Coliform Bacteria /3	MPN:100 mL	MPN Test Method (SM:9221B)	2.0	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 Apperance : 1. Sample : lightly SS  
2. Container : Normal [ PE 0.5 L [ 2 Bottle], PE 2.0 L [ 2 Bottle ], 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 from Deep Wells Quality Standards ,  
Notification of the Ministry of Natural Resources and Environment B.E. 2551 (2008).  
3. /3 Sample No. W68020567 : Sampling Date 06/02/2025 (3:35 PM) : Tested Date 07/02/2025 - 14/02/2025  
4. Parameter Outside The Scope of The Registration of Department of Industrial Works  
5. SM = Standard Methods for the Examination of Water and Wastewater, APHA, AWWA, WEF, 24th Edition, 2023.  
6. Sampling By Mr. Parkpoom Buasawad

SUPPLEMENT TO TEST REPORT NO. 6801-0911



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Examined By : .....

(Miss Apiradee Chuen-arom)  
17/02/2025

REPORTED TEST REFER TO SUBMITTED SAMPLES ONLY  
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## Test Report

Request No : W6801201, W6802187

Report No : 6801-0911-1, 6802-0911

Customer : MDX Public Co.,Ltd.

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

Sampling Source : Ground Water

Sample No : W 68010621, W 68020567

Sample Name : บำบัดน้ำ

Sampling Date : 10/01/2025, 06/02/2025

Sampling By : ETC

Sampling Time : 12:30 PM, 3:35 PM

Sampling Method : Grab

Received Date : 11/01/2025, 07/02/2025

Tested Date : 13/01/2025 - 18/01/2025

Reported Date : 17/02/2025

Parameter	Unit	Method	Result	Standard <sup>2</sup>	Standard <sup>1</sup>
M-Alkalinity	mg/L as CaCO <sub>3</sub>	Titration Method (SM:2320B)	63.7	-	-
Mercury	mg/L	Digestion, Cold -Vapor Atomic Absorption Spectrometric Method (SM:3112B)	<0.0010	None	≤0.001
pH (on site)		Electrometric Method	6.9	7.0-8.5	-
Temperature	°C	Laboratory and Field Method (SM:2550 B)	31	-	-
Total Dissolved Solids	mg/L	Dried at 180 degree celsius (SM:2540C)	139	≤ 600	-
Total Suspended Solids	mg/L	Dried at 103-105 degree celsius (SM:2540D)	< 5	-	-
Turbidity	NTU	Nephelometric Method (SM:2130B)	0.60	≤ 5	-

Physical Appearance : 1. Sample : lightly SS

2. Container : Normal [ PE 0.5 L [ 2 Bottle], PE 2.0 L [ 2 Bottle ], 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 from Deep Wells Quality Standards ,

Notification of the Ministry of Natural Resources and Environment B.E. 2551 (2008).

3. /3 Sample No. W68020567 : Sampling Date 06/02/2025 (3:35 PM) : Tested Date 07/02/2025 - 14/02/2025

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

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

6. Sampling By Mr. Parkpoom Buasawad

SUPPLEMENT TO TEST REPORT NO. 6801-0911



Examined By : .....

(Miss Apiradee Chuen-arom)  
17/02/2025

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด  
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## Test Report

Request No : W6801201

Report No : 6801-0912

Customer : MDX Public Co.,Ltd.

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

Sampling Source : Ground Water

Sample No : W 68010622

Sample Name : Monitoring Well

Sampling Date : 10/01/2025

Sampling By : ETC

Sampling Time : 1:30 PM

Sampling Method : Grab

Received Date : 11/01/2025

Tested Date : 13/01/2025 - 18/01/2025

Reported Date : 21/01/2025

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	7.0	-

Physical Apperance : 1. Sample : orange, lightly SS

2. Container : Normal [ PE 0.5 L [ 2 Bottle], PE 2.0 L [ 2 Bottle ], G 0.25 L ]

Remark : 1. /I Ground Water Standard Notification of the National of Environment Board No. 20 , B.E. 2543 (2000)

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

3. Sampling By Mr. Parkpoom Buasawad (จ-003-ค-0017)

Examined By : .....

(Miss Apiradee Chuen-arom)

(จ-003-ค-0007)

21/01/2025



บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

Approved By : .....

(Mr. Kawee Suthasub)

(จ-003-ค-0004)

21/01/2025

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## Test Report

Request No : W6801201, W6802187

Report No : 6801-0912-1, 6802-0912

Customer : MDX Public Co.,Ltd.

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

Sampling Source : Ground Water

Sample No : W 68010622, W 68020568

Sample Name : Monitoring Well

Sampling Date : 10/01/2025, 06/02/2025

Sampling By : ETC

Sampling Time : 1:30 PM, 11:20 AM

Sampling Method : Grab

Received Date : 11/01/2025, 07/02/2025

Tested Date : 13/01/2025 - 18/01/2025

Reported Date : 17/02/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Chloride	mg/L as Cl <sub>2</sub>	Argentometric Method (SM:4500-Cl- B)	146	-
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)	0.15	-
M-Alkalinity	mg/L as CaCO <sub>3</sub>	Titration Method (SM:2320B)	762	-
Temperature	°C	Laboratory and Field Method (SM:2550 B)	30	-
Total Bacteria /2	CFU/mL	Pour Plate Count Method (SM:9215B)	5,800	-
Total Dissolved Solids	mg/L	Dried at 180 degree celsius (SM:2540C)	848	-

Physical Apperance : 1. Sample : orange, lightly SS

2. Container : Normal [ PE 0.5 L [ 2 Bottle], PE 2.0 L [ 2 Bottle ], 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 Sample No. W68020568 : Sampling Date 06/02/2025 (11:20 AM) : Tested Date 07/02/2025 - 14/02/2025

3. 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. Sampling By Mr. Parkpoom Buasawad

SUPPLEMENT TO TEST REPORT NO. 6801-0912



Examined By : .....

(Miss Apiradee Chuen-arom)  
17/02/2025
 REPORTED BY : บริษัท อีสเทิร์นไทย คอนซัลติ้ง 1992 จำกัด  
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## Test Report

Request No : W6801201, W6802187

Report No : 6801-0912-1, 6802-0912

Customer : MDX Public Co.,Ltd.

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

Sampling Source : Ground Water

Sample No : W 68010622, W 68020568

Sample Name : Monitoring Well

Sampling Date : 10/01/2025, 06/02/2025

Sampling By : ETC

Sampling Time : 1:30 PM, 11:20 AM

Sampling Method : Grab

Received Date : 11/01/2025, 07/02/2025

Tested Date : 13/01/2025 - 18/01/2025

Reported Date : 17/02/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Total Suspended Solids	mg/L	Dried at 103-105 degree celsius (SM:2540D)	87	-
Turbidity	NTU	Nephelometric Method (SM:2130B)	239	-

Physical Apperance : 1. Sample : orange, lightly SS

2. Container : Normal [ PE 0.5 L [ 2 Bottle], PE 2.0 L [ 2 Bottle ], 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 Sample No. W68020568 : Sampling Date 06/02/2025 (11:20 AM) : Tested Date 07/02/2025 - 14/02/2025

3. 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. Sampling By Mr. Parkpoom Buasawad

SUPPLEMENT TO TEST REPORT NO. 6801-0912



Examined By : .....

(Miss Apiradee Chuen-arom)

17/02/2025

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด

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## Test Report

Request No : W6804417

Report No : 6805-0323-1

Customer : MDX Public Co.,Ltd.

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

Sampling Source : MDX Public Co.,Ltd.

Sample No : W 68041235

Sample Name : ตะกอนดินฝายหนองมะฆาม

Sampling Date : 21/04/2025

Sampling By : ETC

Sampling Time : 1:20 PM

Sampling Method : Grab

Received Date : 22/04/2025

Tested Date : 30/04/2025 - 07/05/2025

Reported Date : 17/05/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Arsenic (As)	mg/kg	Digestion, ICP (US EPA. Method 3050B, 6010C)	< 5.00	≤ 10
Hexavalent Chromium	mg/kg	Alkaline Digestion, Colorimetric (US EPA. Method 3060A, 7196A)	< 0.25	-
Lead (Pb)	mg/kg	Digestion, ICP (US EPA. Method 3050B, 6010C)	14.3	≤ 36
Nickel (Ni)	mg/kg	Digestion, ICP (US EPA. Method 3050B, 6010C)	6.24	≤ 23

Physical Appearance : 1. Sample : gray, soil

2. Container : Bag

Remark : 1. /1 ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ เรื่อง กำหนดมาตรฐานคุณภาพตะกอนดินในแหล่งน้ำผิวดิน เพื่อปกป้องสัตว์น้ำดิน พ.ศ. 2565

2. Unit mg/kg (Dry weight)

3. United States Environmental Protection Agency. SW-846 Method 3050B (1996), 6010C (2007).

4. Sampling By Mr. Parkpoom Buasawad (จ-003-ก-0017)

Examined By : (Miss Apiradee Chuen-arom)  
(จ-003-ก-4377)

17/05/2025

SUPPLEMENT TO TEST REPORT NO. 6805-0323

Approved By : (Miss Nunnaphat Bakhuntod)  
(จ-003-ก-0005)

17/05/2025

บริษัท อีสเทิร์นไทยคอนซัลติ้ง 1992 จำกัด  
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## Test Report

Request No : W6804417

Report No : 6805-0324-1

Customer : MDX Public Co.,Ltd.

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

Sampling Source : MDX Public Co.,Ltd.

Sample No : W 68041236

Sample Name : ตะกอนดินคลองวังด้วน

Sampling Date : 21/04/2025

Sampling By : ETC

Sampling Time : 1:40 PM

Sampling Method : Grab

Received Date : 22/04/2025

Tested Date : 30/04/2025 - 07/05/2025

Reported Date : 17/05/2025

Parameter	Unit	Method	Result	Standard <sup>1</sup>
Arsenic (As)	mg/kg	Digestion,ICP (US EPA. Method 3050B,6010C)	< 5.00	≤10
Hexavalent Chromium	mg/kg	Alkaline Digestion, Colorimetric (US EPA.Method 3060A, 7196A)	< 0.25	-
Lead (Pb)	mg/kg	Digestion,ICP (US EPA. Method 3050B,6010C)	7.32	≤36
Nickel (Ni)	mg/kg	Digestion,ICP (US EPA. Method 3050B,6010C)	3.20	≤23

Physical Apperance : 1. Sample : gray, soil

2. Container : Bag

Remark : 1./1 ประกาศคณะกรรมการสิ่งแวดล้อมแห่งชาติ เรื่อง กำหนดมาตรฐานคุณภาพตะกอนดินในแหล่งน้ำผิวดิน  
เพื่อปกป้องสัตว์น้ำดิน พ.ศ. 2565

2. Unit mg/kg (Dry weight)

3. United States Environmental Protection Agency. SW-846 Method 3050B (1996), 6010C (2007).

4. Sampling By Mr. Parkpoom Buasawad (จ-003-ค-0017)

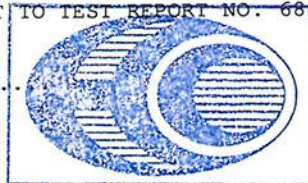
Examined By : .....

(Miss Apiradee Chuen-arom)

(จ-003-ค-4377)

17/05/2025

SUPPLEMENT TO TEST REPORT NO. 6805-0324



Approved By : .....

(Miss Nunnaphat Bakhuntod)

(จ-003-ค-0005)

17/05/2025

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ภาคผนวกที่ 3

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เอกสารชี้แนะทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

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

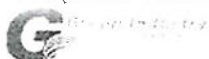
(นายทวี อำพาพันธ์)

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 พลเสน	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) นางสาวภัสนันท์ ป้อมน้อย	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๒๖
๒๗) นายชานูวัฒน์ โชตะวงศ์	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) นางสาวพรพินันท์...



๓๖) นางสาวพรพินันท์ วิริยกุลกุล	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๓๖
๓๗) นางสาวอาภาภรณ์ เสริมสนธิ	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๓๗
๓๘) นางสาวนภัทร์ธมมภ์ ประดิษฐ์นุช	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๓๘
๓๙) นางสาวสุนิษา เอ็งเส้ง	ทะเบียนเลขที่	ว-๐๐๓-ค-๐๐๓๙
๔๐) นางสาวระพิน อ้นขัน	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) นางสาวกัญจน์ถวิกา 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) นางสาวสรวรรยา 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 เอสันเทียะ	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>

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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**

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>

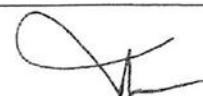
**สิ่งปฏิกูลหรือวัสดุที่ไม่ใช้แล้ว จำนวน 18 รายการ**

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>
3	Barium	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>
5	Cadmium	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>
7	Chromium (VI)	2) Digestion, Inductively Coupled Plasma Method <sup>[9,10]</sup>
8	Cobalt	1) Waste Extraction, Digestion, Colorimetric Method <sup>[2,13]</sup>
9	Copper	2) Alkaline Digestion, Colorimetric Method <sup>[9,13]</sup>
		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>

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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>

COPY



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>

**COPY**

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>

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ที่ อก ๐๓๒๐/ ๕๖๐๕ 1



กรมโรงงานอุตสาหกรรม  
ถนนพระรามที่ ๖ แขวงทุ่งพญาไท  
เขตราชเทวี กรุงเทพฯ ๑๐๕๐๐

๑๕ พฤษภาคม ๒๕๖๗

เรื่อง เปลี่ยนแปลงเอกสารอ้างอิงวิธีวิเคราะห์สารมลพิษ เปลี่ยนแปลงสารมลพิษในดิน และเปลี่ยนแปลงบุคลากร  
ของห้องปฏิบัติการวิเคราะห์

เรียน กรรมการผู้จัดการ บริษัท อีสเทิร์น ไทย คอนซัลติ้ง ๑๙๙๒ จำกัด

อ้างถึง คำขอขึ้นทะเบียน/ต่ออายุ/เปลี่ยนแปลงบุคลากร และชนิดสารมลพิษของห้องปฏิบัติการวิเคราะห์เอกชน  
ลงวันที่ ๕ 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>

**COPY**

25 Chlordane ...

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**

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

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**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 :



(นางจันทร์ตนี 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	- 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
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 :

  
(นางจันทน์ 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>สาขาสังแวดล้อม (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

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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>

กระทรวงอุตสาหกรรมสำนักงานมาตรฐานผลิตภัณฑ์อุตสาหกรรม

(Ministry of Industry, Thai Industrial Standards Institute)

รายละเอียดสาขาและขอบข่ายใบรับรองห้องปฏิบัติการ

(Scope of Accreditation for Testing)

ใบรับรองเลขที่ 23-LB0251

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สาขาการทดสอบ (Field of Testing)	รายการทดสอบ (Parameter)	วิธีทดสอบ (Test Method)
<p>สาขาสีสิ่งแวดล้อม (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 - 846/5/846/4 - 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: 

### Weighing Device

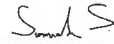
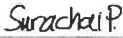
Manufacturer: Mettler Toledo Instrument Type: Weighing Instrument  
Model: XS205DU Asset Number: LABE 05/1  
Serial No.: 1126323724 Terminal Model: SAT  
Building: Laboratory Terminal Serial No.: 1126323724  
Floor: 1 Terminal Asset No.: N/A  
Room: Analytical Balance

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 %

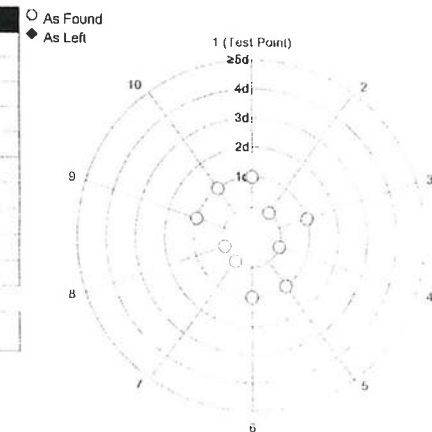
As Found Calibration Date: 09-Dec-2024  
As Left Calibration Date: N/A  
Issue Date: 11-Dec-2024  
Calibrator:   
Somsak Sattanaco  
Approved Signatory:   
Technical Manager / Head of Calibration Center

## 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



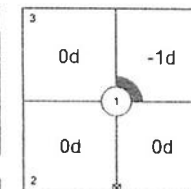
The "d" in the graph represents the readability of the range/interval in which the test was performed.

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

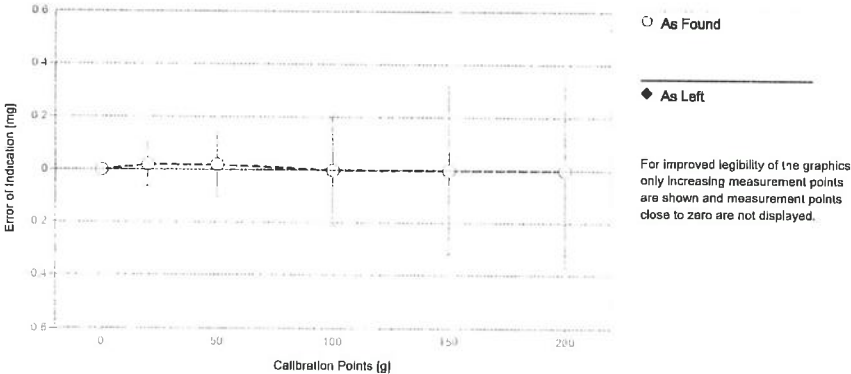
The "d" in the graph represents the readability of the range/interval in which the test was performed.

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	100.0000 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 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:  $1.5 \cdot 10^{-8} / K$

Temperature range on site for the evaluation of the measurement uncertainty in use: 3 K

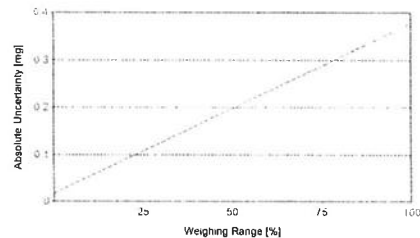
### Linearization of Uncertainty Equation

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

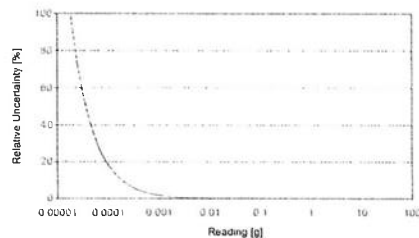
To optimize the stability of the linearization, besides of the zero load only increasing measurement points with a test load of 5% of the measurement range or larger are taken for the calculation of the linear equation.

### 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.

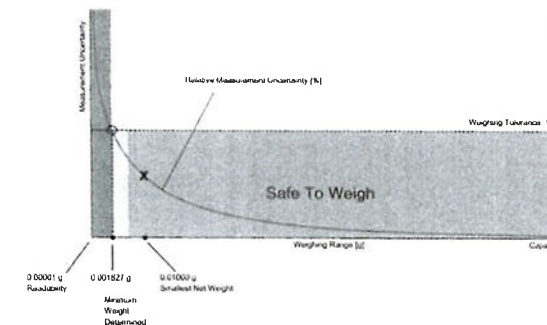
## Process Requirements

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
100.0000 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	0.0000 g	0.0750 g	0.1500 g	0.3750 g	0.7500 g	1.5000 g	3.7500 g
200.0000 g	0.0000 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%
0.00000 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
100.0000 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	0.0000 g	0.0750 g	0.1500 g	0.3750 g	0.7500 g	1.5000 g	3.7500 g
200.0000 g	0.0000 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.

COPY



**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



## 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

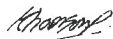

Manufacturer: Mettler Toledo Instrument Type: Weighing Instrument  
Model: MS204TS/00 Asset Number: LABE 05/4  
Serial No.: B904136539 Terminal Model: N/A  
Building: Laboratory Terminal Serial No.: N/A  
Floor: 1 Terminal Asset No.: N/A  
Room: Balance

Range	Max. Capacity	Readability (d)
1	220 g	0.0001 g

### Procedure

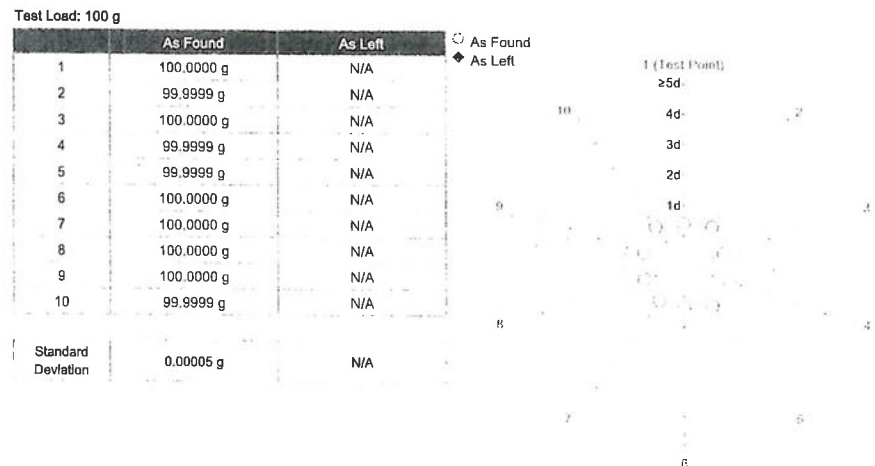
Calibration Guideline: EURAMET cg-18 v. 4.0 (11/2015)  
METTLER TOLEDO Work Instruction: CPM002/20  
This calibration certificate contains measurements for As Found calibration. No As Left calibration was performed because the device was not modified after As Found calibration. Therefore, results for 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 Calibrator:   
As Left Calibration Date: N/A  
Issue Date: 01-Feb-2025 Khomsan Prataung  
Approved Signatory:   
Technical Manager / Head of Calibration Center

## Measurement Results

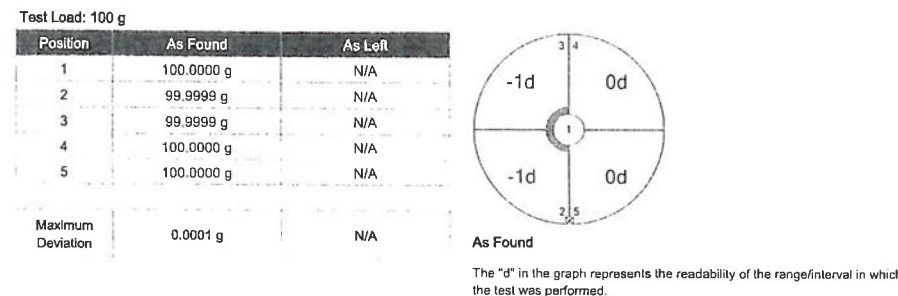
### Repeatability



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



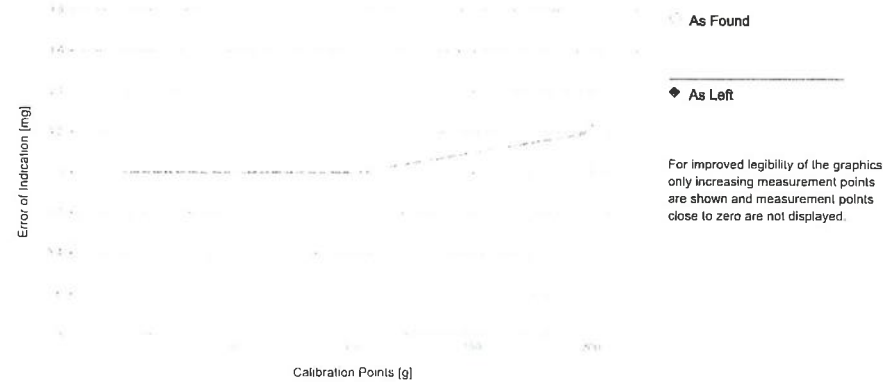
The "d" in the graph represents the readability of the range/interval in which the test was performed.

Error of Indication

As Found

	Reference Value	Indication	Error of Indication	Expanded Uncertainty	k
1	0.0000 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	150.0000 g	150.0001 g	0.0001 g	0.31 mg	2
11	200.0000 g	200.0002 g	0.0002 g	0.35 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.

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:  $1.5 \cdot 10^{-6} / K$

Temperature range on site for the evaluation of the measurement uncertainty in use: 5 K

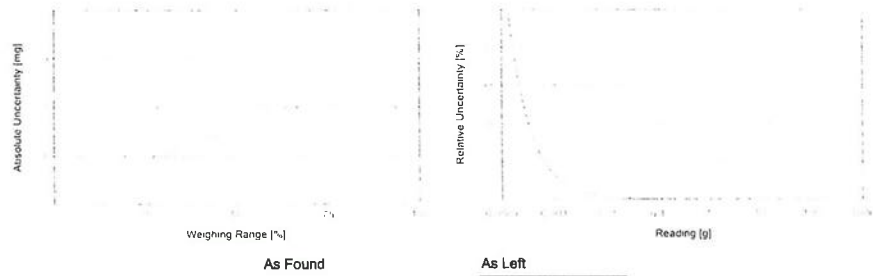
Linearization of Uncertainty Equation

	Range		As Found	As Left
	d	Max		
1	0.0001 g	220 g	$U_1 = 0.13 \text{ mg} + 0.00598 \text{ mg/g} \cdot R$	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	
0.0220 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



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Certificate



As Found



As Left



The weighing device meets the given process requirements.

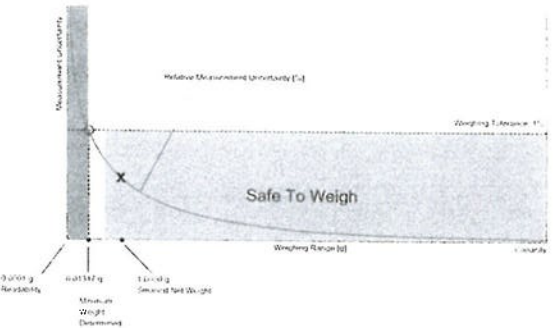
The weighing device meets the given process requirements.

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:

- 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 = 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		✓		✓
0.2%	0.00100 g		✓		✓
0.5%	0.00250 g	0.00005 g	✓	0.00005 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		✓		✓
0.2%	0.1000 g		✓		✓
0.5%	0.2500 g	0.0001 g	✓	0.0001 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**

**Equipment : Analog Barometer**

**ID No. / Tag No. : BM001/41**



MIRACLE INTERNATIONAL TECHNOLOGY CO.,LTD

214 Bangwaek Rd. Bangpai Bangkac Bangkok 10160  
Tel.: 0-2865-4647-8 Fax: 0-2865-4649 http://www.mit.in.th



## CALIBRATION CERTIFICATE

Certificate No. : L202405022-0013

Date Issued : 08-May-24

**Customer** : Eastern Thai Consulting 1992 Co., Ltd.  
683 Moo 11, Sukhapibarn 8 Rd., Nongkham, Sriracha, Chonburi 20230

**Equipment** : Analog Barometer

**Manufacturer** : Barigo

**Model** : -

**Serial No.** : -

**ID No./Tag No.** : BM001/41

**Date Received** : 03-May-24

**Date Calibrated** : 06-May-24

**Calibrated by** : Mr. Saruth Srichulikul

### Calibration Method or Calibration Procedure Used

In-house method : CP-21 base on DKD-R 6-1: Edition 3 2014.

This certificate is traceable to national standards, which realize the units of measurement according to the International System of Units (SI).

### Result of Calibration

The reported uncertainty of measurement was based on standard uncertainty multiplied by a coverage factor  $k = 2$ , providing a level confidence approximately 95 percent.

This certificate may not be reproduced other than in full except with the prior written approval of the Miracle International Technology Company Limited.

Approved by:

*Sarayuth T.*  
(Mr. Sarayuth Tochua)



Page 1 of 2

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Certificate No : L202405022-0013

Environment Ambient Temperature :  $(25 \pm 2)^{\circ}\text{C}$

Relative Humidity :  $(50 \pm 15)\%\text{RH}$

STD Reading	UUC Reading (mbar)	UUC Reading (mbar)	UUC Error	Uncertainty	MPE	Pass / Fail
mbar	Before Adjusted	After Adjusted	mbar	$\pm$ mbar	$\pm$ mbar	with Guard Band
990.00	990	-	0.00	0.59	10.3	Pass
1000.00	1000	-	0.00	0.59	10.3	Pass
1010.00	1010	-	0.00	0.59	10.3	Pass
1020.00	1020	-	0.00	0.59	10.3	Pass
1030.00	1030	-	0.00	0.59	10.3	Pass

STD = Standard Pass =  $|\text{error}| + |\text{uncertainty}| \leq |\text{MPE}|$

UUC = Unit Under Calibration Fail =  $|\text{error}| + |\text{uncertainty}| > |\text{MPE}|$

MPE = Maximum Permissible Error

Calibrated condition : Pressure Medium Air : Density =  $1.19 \text{ kg/m}^3$  @  $20^{\circ}\text{C}$ , 1 bar  
Mounting Position Vertical  
Reference Level at center of its dial  
Conversion Factor Multiply by  $1.0 \text{ E}+02$  - Pa unit

Description of UUC : Range 950 - 1080 mbar Absolute  
Calibration Range 990 - 1030 mbar Absolute  
Scale Interval 1 mbar

Condition As-Received : Used Item

The measurement results and statements of conformity with specification only relate to the item calibrated.

Measurement Standards Used & Traceability :

The International System of Units (SI) through

iRPC Certificate No. CLI-P230097 for Reference Pressure Monitor Serial No. 1598. Due 09-Nov-24

End of Certificate

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Page 2 of 2

**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 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 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	16060607	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	2498 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

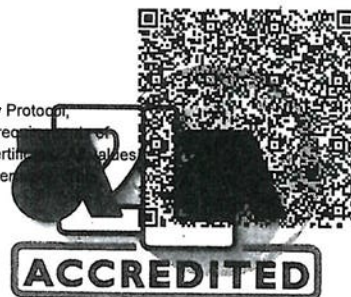
Triad Data Available Upon Request

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

*Don Maceri*  
Approved for Release

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**DRY GAS METER XC-572-V**

**Serial No. : 1110070**



WISDOM SCIENCE  
SALE AND SERVICE GROUP COMPANY LIMITED

## Certificate Of Calibration

Method 5 Pre-Test Console Calibration - Cubic meter (m3)

### Meter Console Information

Console Model : XC-572-V  
Console serial : 1110070  
DGM Model #: SK25EX  
DGM Serial #: 00006432

### Calibration Condition

Cal. Date: 28-Jun-24  
Due Date: 28-Jun-25  
Cal. Report No.: WDS-SV6706007  
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. 2024  
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
15.00	13.0	239.7603	239.9212	27	27	63.63889	63.79843	27	27
10.00	25.0	239.9406	240.0979	27	27	63.81777	63.97353	27	27
8.00	50.0	240.1147	240.2952	27	28	63.99028	64.16968	26	26
7.00	80.0	240.3308	240.5352	28	28	64.20536	64.40956	26	26
5.00	120.0	240.5641	240.7422	29	29	64.43852	64.61730	26	26

### 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)corr</sub>	ΔH <sub>g</sub>	ΔΔH <sub>g</sub>	
0.157	0.010	0.155	0.010	0.991	-0.003	0.010	53.303	6.250	
0.154	0.015	0.152	0.015	0.989	-0.005	0.015	47.860	0.807	
0.176	0.022	0.175	0.022	0.993	-0.001	0.022	46.233	-0.820	
0.200	0.029	0.199	0.028	0.997	0.003	0.028	43.895	-3.158	
0.174	0.035	0.175	0.035	1.001	0.007	0.035	43.973	-3.080	

### Calibration Results

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>g</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:

(Patpasu Chaisana)  
Service Manager

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WISDOM SCIENCE SALE AND SERVICE GROUP COMPANY LIMITED

Date: 28-Jun-24

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## Certificate of Calibration - Supplemental

METHOD 5 PRE-TEST CONSOLE CALIBRATION

### Nomenclature

P<sub>b</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  
C<sub>total</sub> - Number of raw pulse counts of a calibration run

### Equations

$$V_{w(std)} = Y * K_1 \frac{V_w * (P_{bar} + \frac{P_{m(std)}}{13.6})}{T_{sc}}$$

$$V_{m(std)} = Counts_{std} * Y_{sc(avg)}$$

$$Counts_{std} = K_1 \frac{Counts_{total} * (P_{bar} + \frac{P_{m(std)}}{13.6})}{T_{sc}}$$

$$Q_{w(std)} = \frac{V_{w(std)}}{t}$$

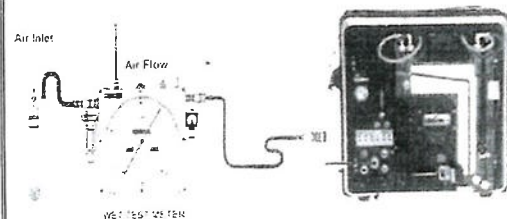
$$Y_{sc} = \frac{V_{w(std)}}{Counts_{std}}$$

$$K_1 = \frac{T_{std}}{P_{std}}$$

$$Y = \frac{V_{w(std)}}{V_{m(std)}}$$

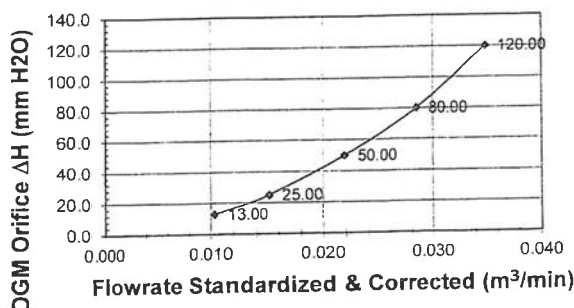
$$Metric \Delta H_g = \frac{P_w - (1.001136 * P_{std} * \frac{t_w}{t_m})}{( \frac{T}{T_{std}} - \frac{\Theta}{P_w} )}$$

### Calibration Train



### Calibration Graphs

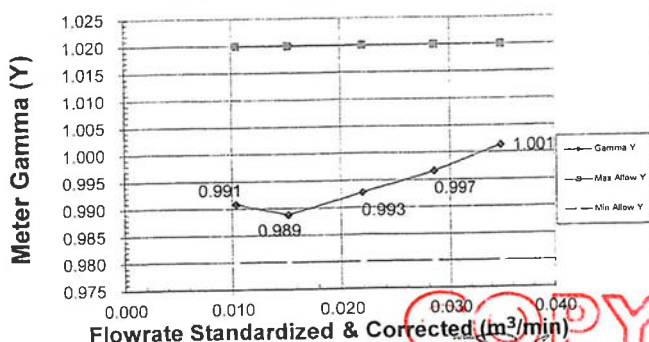
#### Meter Pressure vs Flowrate



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	ID-85
Temp Indicator Serial	-

## Calibration Conditions

Cal Date	28-Jun-24
Due Date	28-Jun-25
Cal Report No	WDS-SV6706007
Ambient Temp (°C)	25
Pressure (mm Hg)	758
Humidity (%)	60

## Reference Equipment

Temp Meter Model	Fluke 714B
Serial No	60590035
Cal Date	07-Apr-24
Temp Meter Model	Fluke 179
Serial No	58620112
Cal Date	06-Feb-24

## Temperature Sensor Calibration

Reference Point	Ref Thermometer Temperature	Thermocouple Display Temperature	Temperature Difference
#	°C	°C	°C
1	-18.0	-17.0	1.0
2	38.0	39.0	-1.0
3	93.0	94.0	-1.0
4	149.0	150.0	-1.0
5	260.0	261.0	-1.0
6	371.0	372.0	-1.0
7	482.0	483.0	-1.0
8	593.0	593.0	0.0
9	816.0	815.0	1.0
10	1038.0	1038.0	0.0
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	1.0	2.0	-1.0
Ambient	24.2	25.0	-0.8
Heat	110.5	111.0	-0.5

## 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*

( Patpasu Chaisana )

Service Manager

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**DRY GAS METER MC-572-V**

**Serial No. : 1007055**

## Certificate Of Calibration

Method 5 Pre-Test Console Calibration - Cubic meter (m3)

## Meter Console Information

Console Model : MC-572-V  
 Console serial : 1007055  
 DGM Model #: SK25EX  
 DGM Serial #: 0009799

## Calibration Condition

Cal. Date: 04-Aug-24  
 Due Date: 04-Aug-25  
 Cal. Report No.: WDS-SV6707001  
 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. 2024  
 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
e	P <sub>diff</sub>	V <sub>std</sub>	V <sub>ref</sub>	t <sub>in</sub>	t <sub>out</sub>	V <sub>std</sub>	V <sub>ref</sub>	t <sub>in</sub>	t <sub>out</sub>
15.00	13.0	107.7550	107.9221	29	30	68.41024	68.57350	28	27
10.00	25.0	107.9308	108.0876	30	30	68.58202	68.73488	27	27
8.00	50.0	108.1027	108.2822	30	30	68.74958	68.92516	27	27
7.00	80.0	108.3029	108.5061	30	30	68.94550	69.14488	27	27
5.00	120.0	108.5139	108.6908	30	30	69.15251	69.32550	27	27

## 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>std(std)</sub> (m <sup>3</sup> )	Q <sub>std(std)</sub> m <sup>3</sup> /min	V <sub>std(std)</sub> (m <sup>3</sup> )	Q <sub>std(std)</sub> m <sup>3</sup> /min	(Y)	(ΔY)	Q <sub>std(stdcorr)</sub>	ΔH <sub>std</sub>	ΔΔH <sub>std</sub>	
0.162	0.011	0.159	0.011	0.982	0.000	0.011	50.751	2.535	
0.152	0.015	0.149	0.015	0.982	0.001	0.015	49.300	1.084	
0.174	0.022	0.171	0.021	0.983	0.002	0.021	48.061	-0.155	
0.197	0.028	0.194	0.028	0.983	0.002	0.028	45.922	-2.293	
0.173	0.035	0.169	0.034	0.976	-0.005	0.034	47.046	-1.170	
				0.981	= Y Avg			48.216	= 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>std</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 ±0.2 inches (5.1mm) H<sub>2</sub>O

Approved By: \_\_\_\_\_

(Patpasu Chaisana)  
 Service Manager

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Date: 04-Aug-24

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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  
 t - 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>total</sub> - Number of raw pulse counts of a calibration run

## Equations

$$V_{w(std)} = Y * K_1 \frac{V_w * (P_{bar} + \frac{P_w}{13.6})}{T_w}$$

$$V_{m(std)} = Counts_{std} * Y_{scaling}$$

$$Counts_{std} = K_1 \frac{Counts_{total} * (P_{bar} - \frac{P_m}{13.6})}{T_m}$$

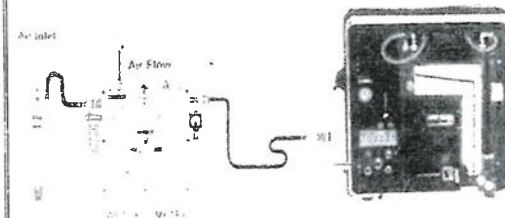
$$Q_{w(std)} = \frac{V_{w(std)}}{t}$$

$$Y = \frac{V_{m(std)}}{V_{w(std)}}$$

$$K_1 = \frac{T_{std}}{P_{std}}$$

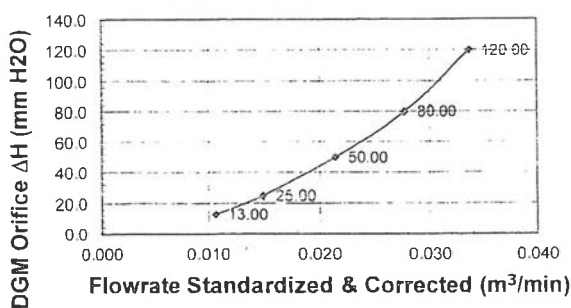
$$Metric \Delta H = \frac{P_m}{13.6} * \left( \frac{T_w}{T_{std}} \right)$$

## Calibration Train



## Calibration Graphs

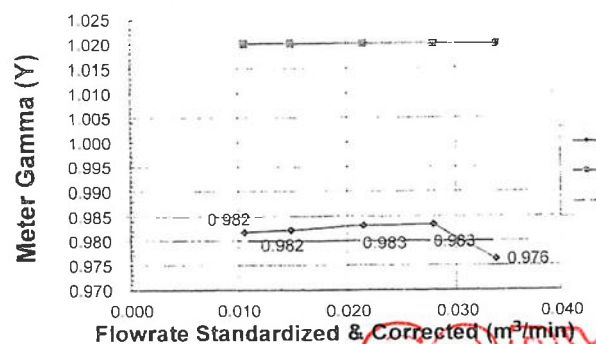
## Meter Pressure vs Flowrate



Console Serial: 1007055

Console Model: MC-

## Meter Gamma vs Flowrate



Console Serial: 1007055

Console Model: MC-572-V



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## TEMPERATURE DISPLAY CALIBRATION

## Meter Console Information

Console Model	MC-S72-V
Console Serial	1007055
Temp Indicator Model	765-KF
Temp Indicator Serial	JC17852

## Calibration Conditions

Cal Date	04-Aug-24
Due Date	04-Aug-25
Cal Report No	WDS-SV6707001
Ambient Temp (°C)	25
Pressure (mm Hg)	750
Humidity (%)	60

## Reference Equipment

Temp Meter Model	Fluke 714B
Serial No	60590035
Cal Date	07-Apr-24
Temp Meter Model	Fluke 179
Serial No	59620112
Cal Date	06-Feb-24

## 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	93.0	94.0	-1.0
4	149.0	149.0	0.0
5	260.0	261.0	-1.0
6	371.0	372.0	-1.0
7	482.0	482.0	0.0
8	593.0	593.0	0.0
9	816.0	816.0	0.0
10	1038.0	1038.0	0.0
Maximum <sup>1</sup>			1.0

## Note

PASS

<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	26.9	27.0	-0.1
Heat	114.5	115.0	-0.5

## Difference Rang

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*  
( Patpasu Chaisana )  
Service Manager



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**DRY GAS METER XC-572-V**

**Serial No. : A2007510**

## Certificate Of Calibration

Method 5 Pre-Test Console Calibration - Cubic meter (m3)

## Meter Console Information

Console Model : XC-S72-V  
 Console serial : A2007510  
 DGM Model #: SK25EX  
 DGM Serial #: 00005115

## Calibration Condition

Cal. Date: 30-Aug-24  
 Due Date: 30-Aug-25  
 Cal. Report No.: WDS-SV6708010  
 Ambient Temp (°C): 25  
 Pressure (mm Hg): 758  
 Relative Humidity (%): 60

## Factors/Conversion

Std. Temp. (°K): 298  
 Std. Pressure (mm Hg): 760  
 $K_1$  (K/mm Hg): 0.3857


## Reference Equipment

WTM Model: W-NKoDa-5B WTM Cal. Due Date: Dec 2024  
 WTM Serial: 600245 Gamma: 1.0000

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
15.00	13.0	814.2810	814.4438	26	26	77.39845	77.56182	28	27
10.00	25.0	814.4657	814.6233	26	27	77.58371	77.74136	27	27
8.00	50.0	814.6427	814.8218	27	27	77.76069	77.93943	27	27
7.00	80.0	815.2310	815.4323	28	28	78.34575	78.54534	29	28
5.00	120.0	815.4512	815.6222	28	28	78.58461	78.73859	28	28

Standardized Data				Calibration Results				
Test Meter		Reference Meter		Correction Factor		Flow Rate	$\Delta H$ (mm H <sub>2</sub> O)	
Std. Volume	Std. Flow Rate	Std. Volume	Std. Flow Rate	"Gamma"	Variation	Std & Corr	0.0212 SCMM	Variation
$V_{m(std)}$ (m <sup>3</sup> )	$Q_{m(std)}$ m <sup>3</sup> /min	$V_{w(std)}$ (m <sup>3</sup> )	$Q_{w(std)}$ m <sup>3</sup> /min	(Y)	( $\Delta Y$ )	$Q_{m(refer)}$	$\Delta H_g$	$\Delta \Delta H_g$
0.159	0.011	0.159	0.011	0.997	0.002	0.011	51.276	3.517
0.154	0.015	0.154	0.015	0.996	0.002	0.015	46.891	-0.868
0.175	0.022	0.174	0.022	0.994	-0.001	0.022	46.793	-0.966
0.197	0.028	0.193	0.028	0.982	-0.013	0.028	46.623	-1.136
0.168	0.034	0.169	0.034	1.005	0.010	0.034	47.211	-0.547
				0.995	= Y Avg.		47.759	= $\Delta H @$ 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  $\pm 0.02$ Note: For  $\Delta H_g$ , 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  $\pm 0.2$  inches (5.1mm) H<sub>2</sub>O

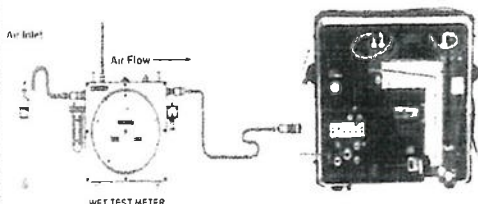
Approved By:   
 (Palpasu Chaisana)  
 Service Manager

Date: 30-Aug-24

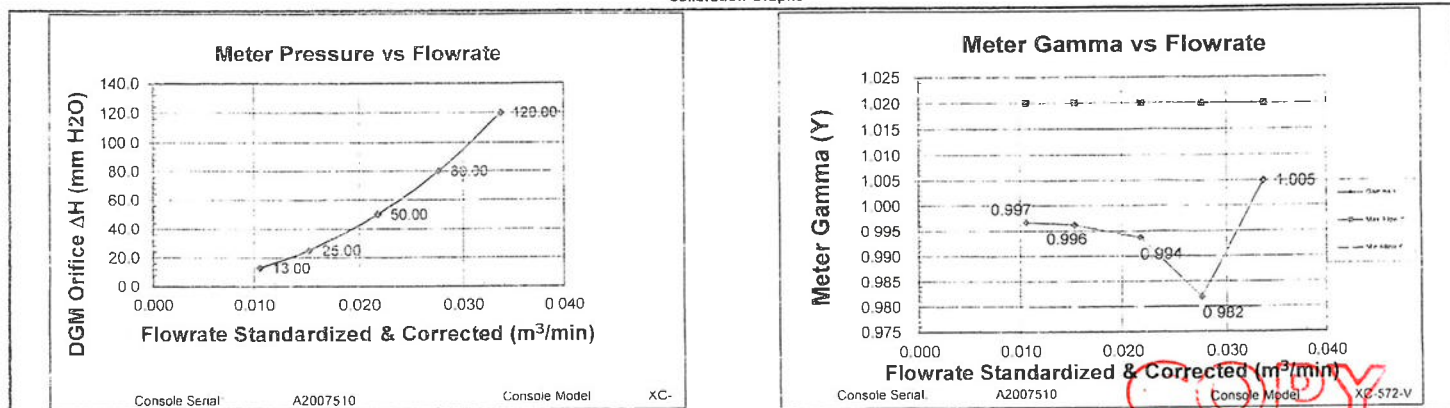
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## Certificate of Calibration - Supplemental

METHOD 5 PRE-TEST CONSOLE CALIBRATION

Nomenclature	Equations	Calibration Train
<p><math>P_b</math> - Barometric Pressure</p> <p>DGM - Dry Gas Meter</p> <p><math>K_1</math> - Constant based on standard temp and press</p> <p><math>\Theta</math> - Run time, in minutes</p> <p><math>P_m</math> - <math>\Delta H</math> (Meter Pressure, gauge)</p> <p><math>V_m</math> - Volume collected by test meter, corrected for STP</p> <p><math>Q_{m(std)}</math> - Calculated flow rate of test meter</p> <p><math>K'</math> - Critical orifice coefficient</p> <p><math>P_w</math> - Measured pressure of reference meter</p> <p><math>T_w</math> - Temperature measured in reference meter</p> <p><math>T_m</math> - Temperature measured in test meter</p> <p><math>Y</math> - Ratio of volume collected from test meter and orifice</p> <p>sc - Scaling Factor</p> <p>Counts<sub>std</sub> - Number of pulse counts, standardized</p> <p>Counts<sub>total</sub> - Number of raw pulse counts of a calibration run</p>	$V_{w(std)} = Y * K_1 \frac{V_w * (P_{bar} + \frac{P_{m(g)}}{13.6})}{T_w}$ $V_{m(std)} = Counts_{std} * Y_{sc(avg)}$ $Counts_{std} = K_1 \frac{Counts_{total} * (P_{bar} + \frac{P_{m(g)}}{13.6})}{T_m}$ $Q_{w(std)} = \frac{V_{w(std)}}{\Theta} \quad Y_{sc} = \frac{V_{w(std)}}{Counts_{std}}$ $K_1 = \frac{T_{std}}{P_{std}} \quad Y = \frac{V_{T(std)}}{V_{m(std)}}$ $Metric \Delta H_{sc} = \frac{P_{bar} - 0.3911658 * (P_{bar} + \frac{P_{m(g)}}{13.6})}{T_w} * \left( \frac{T_w * \Theta}{V_w * P_{bar}} \right)^2$	

## Calibration Graphs





TEMPERATURE DISPLAY CALIBRATION

**Meter Console Information**

Console Model	XC-572-V
Console serial	A2007510
Temp Indicator Model	765-KF
Temp Indicator Serial	JC17819

**Calibration Conditions**

Cal Date	30-Aug-24
Due Date	30-Aug-25
Cal Report No	WDS-SV6708010
Ambient Temp (°C)	25
Pressure (mm Hg)	759
Humidity (%)	60

**Reference Equipment**

Temp Meter Model	Fluke 714B
Serial No	60590035
Cal Date	07-Apr-24
Temp Meter Model	Fluke 179
Serial No	58620112
Cal Date	06-Feb-24

**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	93.0	93.0	0.0
4	149.0	149.0	0.0
5	260.0	260.0	0.0
6	371.0	372.0	-1.0
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	27.6	28.0	-0.4
Heat	116.3	116.0	0.3

**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*

( Patpasu Chaisana )  
Service Manager

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**Flue gas Analyzer**

**Testo 350 New**

**Serial No. 63455616/0722**



**Certificate No:** G 670713  
**Date of issue :** 09-Oct-24

**Instrument description :** Flue Gas Analyzer  
**Instrument model :** Testo 350 New  
**Instrument serial no. :** 63455616/0722  
**Control unit serial no. :** 03600177/0722  
**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-243862  
**Receiving date. :** 03-Oct-24  
**Parameter of calibration :** Gas Calibration(Oxygen 2.50,10.04,21.02 %vol, Carbon Monoxide 80.18,302,1007 ppm, Nitrogen Dioxide 30.68, 81.8, 201.9 ppm, Nitric Oxide 30.0, 151.5, 322.5 ppm, Sulphur Dioxide 50.36, 100.8, 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 Ngamwongwan 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 repoduced 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 :** 09-Oct-24

*Kwanchai K.*  
Mr. Kwanchai Khamdoung  
Calibration Technician

*D. Nongluck*  
Mrs. Nongluck Wongsettee  
Technical Manager

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**Certificate No.:** G 670713

**Standard References (Table 1)**

Standard	Certificate No.	Vendor	Due date
Oxygen ( O2 ) 2.50 % Vol	2412/23	Linde	27-Aug-27
Oxygen ( O2 ) 10.04 % Vol	CG-0153-21	Nimt	18-Nov-26
Oxygen ( O2 ) 21.02 % Vol	CG-0041-22	Nimt	10-Feb-27
Carbon monoxide ( CO ) 80.18 ppm	CG-0002-24	Nimt	11-Jan-29
Carbon monoxide ( CO ) 302 ppm	1915/23	Linde	16-Jun-25
Carbon monoxide ( CO ) 1007 ppm	1870/24	Linde	17-Jun-26
Nitrogen Dioxide ( NO2 ) 30.68 ppm	2832/24	Linde	08-Sep-24
Nitrogen Dioxide ( NO2 ) 81.8 ppm	2330/24	Linde	01-Aug-26
Nitrogen Dioxide ( NO2 ) 201.9 ppm	1975/23	Linde	17-Jul-25
Nitric Oxide ( NO ) 30.0 ppm	CG-0065-24	Nimt	06-May-26
Nitric Oxide ( NO ) 151.5 ppm	0161/23	Linde	22-Jan-25
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 ) 100.8 ppm	3507/22	Linde	09-Nov-24
Sulphur Dioxide ( SO2 ) 600.8 ppm	2003/23	Linde	17-Jul-25

**Measured room conditions**

Temperature : 22.9 °C Humidity : 66.4 %RH Pressure : 1011.5 mbar

**Calibration conditions**

Gas Temperature : 23 °C Flow rate : 1,300 ml/min Gas pressure : 1014.8 mbar

**Calibration Results (Befor adjustment) (Table 2)**

Parameter of Standard	Standard Values	Mean of UUC	Error	Uncertainty (±)
O2 (%Vol)	2.50	2.43	-0.07	0.15
O2 (%Vol)	10.04	9.92	-0.12	0.20
O2 (%Vol)	21.02	21.11	0.09	0.30
CO (ppm)	80.18	74	-6.18	3.0
CO (ppm)	302	295	-7	6.0
CO (ppm)	1007	996	-11	12
NO2 (ppm)	30.68	32.2	1.52	8.0
NO2 (ppm)	81.8	81.5	-0.3	8.0
NO2 (ppm)	201.9	204.3	2.4	12
NO (ppm)	30.0	27	-3.0	8.0
NO (ppm)	151.5	146	-5.5	8.0
NO (ppm)	322.5	305	-17.5	12
SO2 (ppm)	50.36	48	-2.36	6.0
SO2 (ppm)	100.8	97	-3.8	6.0
SO2 (ppm)	600.8	591	-9.8	13

**COPY**

Calibration Results (After adjustment) (Table 3)

Parameter of Standard	Standard Values	Mean of UUC	Error	Uncertainty (±)
O2 (%Vol)	2.50	2.43	-0.70	0.15
O2 (%Vol)	10.04	9.92	-0.12	0.20
O2 (%Vol)	21.02	21.11	0.09	0.30
CO (ppm)	80.18	80	-0.18	3.0
CO (ppm)	302	303	1	6.0
CO (ppm)	1007	1008	1	12
NO2 (ppm)	30.68	32.2	1.52	8.0
NO2 (ppm)	81.8	81.5	-0.3	8.0
NO2 (ppm)	201.9	204.3	2.4	12
NO (ppm)	30.0	31	1.0	8.0
NO (ppm)	151.5	153	1.5	8.0
NO (ppm)	322.5	321	-1.5	12
SO2 (ppm)	50.36	51	0.64	6.0
SO2 (ppm)	100.8	102	1.2	6.0
SO2 (ppm)	600.8	604	3.2	13

Remark : 1 cmol/mol = 1 %vol, 1 μmol/mol = 1 ppm.

**End of Report**

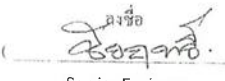
**COPY**

เรื่อง อายุการใช้งานโดยประมาณของ Gas Sensor

เรียน ท่านผู้ใช้งานฝ่ายจัดซื้อทราบ

เนื่องจากเครื่องมือวัด/วิเคราะห์ที่ทางบริษัท เอ็นเทค อินดัสเทรียล โซลูชั่น จำกัด ได้จำหน่ายให้แก่ท่านประกอบไปด้วย Sensor ที่มีโครงสร้างจาก Electrochemical หรือ วัสดุที่มีการเสื่อมอายุได้ ดังนั้น Sensor ที่ติดตั้งในเครื่อง จึงสามารถเสื่อมสภาพ ตามอายุการใช้งานได้

บริษัทฯ ได้ตระหนักถึงความสำคัญ ในการใช้งานเครื่องมือของท่าน ซึ่งจำเป็นต้องใช้งานอย่างต่อเนื่องและต้องการความถูกต้องแม่นยำตลอดเวลา บริษัทฯ จึงได้จัดทำตารางสำหรับตรวจสอบอายุการใช้งานและระยะเวลา ที่จะเปลี่ยน Sensor ครั้งต่อไปให้กับท่าน เพื่อความสะดวกในการดูแลรักษาและสั่งซื้อ Spare Sensor ก่อนที่ Sensor จะหมดอายุการใช้งาน ดังนี้

ใบรายงานอายุการใช้งานของ Gas Sensor									
อ้างอิงเอกสารเลขที่				AI-SV-RP-2407044		ชื่อลูกค้า		บริษัท อีสเทิร์น ไทยคอนซัลติง 1992 จำกัด	
ชื่อเครื่องมือ				Testo 350NEW		S/N		63455616/0722	
ส่วนที่ 1 : ตารางอายุการใช้งาน Sensor					ส่วนที่ 2 : Sensor ที่ติดตั้งในเครื่องของท่าน				
ข้อ	ชื่อ Sensor	ใช้สำหรับ	อายุ Sensor (เดือน)	การรับประกัน (เดือน)	Sensor (Part number)	วันที่สิ้นสุดการรับประกัน	วันที่หมดอายุตามปกติ	วันที่แนะนำให้สั่งซื้อครั้งต่อไป	หมายเหตุ
1	All sensor	Testo 3xx	24-36	12					
2	O2 (0390 0070)	Testo 200,335,350 M/XL	18-24	18					
3	O2,CO	Testo 327-1/-2, 320, 310	30	24					
4	O2 (0393 0000)	Testo 340/ 350, 2010	18-24	18	O2 (0393 0000)	30/4/2569	30/10/2569	30/8/2569	
5	O2,CO	Testo 330L.L, L.L, 2010	48-60	48	CO (0393 0104)	30/8/2566	30/8/2567	30/6/2567	
6	NO,NO <sub>2</sub> low	Testo 330L.L, L.L, 2010	36-48	24	NO (0393 0150)	30/8/2566	30/8/2568	30/6/2568	
7	CO2 IR	Testo 350 M/XL, 350, 2010	48-60	24	NO2 (0393 0200)	30/8/2566	30/8/2568	30/6/2568	
8	O2 (0393 0000)	Testo 340,350, 2010	18-24	18	SO2 (0393 0250)	30/8/2566	30/8/2568	30/6/2568	
หมายเหตุ					รายละเอียดอื่น ๆ				
อายุการใช้งานของ Sensor อาจเสื่อมสภาพช้าหรือเร็วกว่ากำหนด ขึ้นอยู่กับคุณภาพของอุปกรณ์ ปริมาณความเข้มข้นก๊าซ จำนวนครั้ง และปัจจัยอื่น ๆ ในการใช้งานด้วย					เนื่องจาก CO sensor วัดค่าได้ไม่เกิน 10,000 ppm หากวัดค่าเกินถือว่าอยู่นอกเหนือการรับประกัน				
					ลงชื่อ  Service Engineer วันที่ 3 / 10 / 2561				

**COPY**

**Hot Air Oven**

**Model : UFE 500**

**Serial No. : G511.0182**



## CERTIFICATE OF CALIBRATION

Certificate No. : 24-164691  
Sample Code : 24-67405-001Customer : EASTERN THAI CONSULTING 1992 CO., LTD.  
683 Moo 11, Sukhapibarn 8 Rd, Nongkham,  
Sriracha, Chonburi 20230Location 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

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)

  
(Mr. Somchai Neampunt)  
Signed for Director

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## 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 <i>k</i>
			# 1	# 2	# 3	# 4	# 5	# 6	# 7	# 8	# 9 <sup>fixed</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

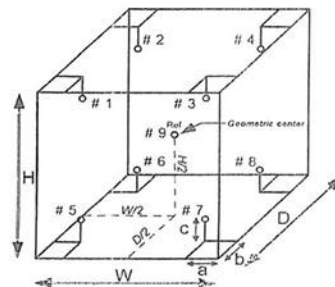
5. The quoted uncertainty includes "Stability of chamber and loading effect  
in chamber at 20% of uniformity".6. Uniformity - the maximum difference of measured temperatures at any sensors and the measured temperature at the reference  
location which are observed at the same time.

## 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  
44102  
613.467.9000  
877.283.7810 TOLL FREE  
613.467.9009 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**  
*J. K. [signature]*

**THERMO-HYGROMETER**

**Model : 608-H1**

**Serial No. : 45106737**



## CERTIFICATE OF CALIBRATION

Certificate No. : 24-062442

Sample Code : 24-25546-002

Customer : EASTERN THAI CONSULTING 1992 CO., LTD.

683 Moo 11, Sukhapibarn 8 Rd., Nongkham,  
Sriracha, Chonburi 20230Location 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 : 23 May 2024

Date of Calibration : 27-28 May 2024

## 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-0064-23	07 August 2024
3.2 Digital Thermometer	Optidew 401	LB-DP-03 & LB-DP-03 (Temp.)	23-103423	03 September 2024
3.3 Digital Thermometer	34972A	LB-DA-07 with RTD-89	23-101374	05 September 2024

## 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  
Scientist

Approved by

(Mr. Somchai Neampunt)  
Signed for Director

Issue date 30 May 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. : 24-062442

Sample Code : 24-25546-002

## 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		Expanded uncertainty °C
	Controlled humidity %RH	Temperature °C	Average reading °C	Correction value °C	
20	50	20.00	20.1	- 0.10	± 0.39
25	50	25.00	25.0	0.00	± 0.39
30	50	30.00	29.9	+ 0.10	± 0.39

## Humidity measurement

Resolution : 0.1 %RH

Range : 10 %RH to 95 %RH

Calibration point %RH	Average of standard reading		Unit under calibration		Expanded uncertainty %RH
	Air temperature °C	Calculated humidity %RH	Average reading %RH	Correction value %RH	
45	25.02	45.10	48.4	- 3.30	± 1.3
60	25.01	60.07	63.4	3.33	± 1.5
75	25.01	75.15	78.5	- 3.35	± 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  $k$ , 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 -



**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. BSCC-UV-146/24  
Equipment UV/Vis Spectrophotometer  
Model UV-1800  
Manufacturer Shimadzu  
Serial No. A11635101643 CD  
ID No. LABE 03/2  
Date of receipt 22 April 2024  
Date of calibration 22 April 2024  
Date of issue 29 April 2024

Customer name Eastern Thai Consulting 1992 Co., Ltd.

Address 683 Moo 11, Sukkaphibarn 8 Rd., Nongkham, Sriracha, Chonburi 20230

Temperature (22.9-24.1) °C (On site)  
Humidity (41.7-46.9) %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. 116614 and 116613  
Photometric Accuracy is traceable to certificate No. 116210 and 116224  
Sray Light is traceable to certificate No. 116616  
The above certificate are traceable to SI unit through Sarna Scientific Ltd.  
(UKAS accredited calibration laboratory NO. 0659)

Calibrated by Mr.Poomjai Korsawatvorakul

Approved by

**Mr.Sonthi Temboonsakdi**  
Service Manager

The above results are valid exclusively for the calibrated item(s) as mention in this report / certificate  
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except in full, without written approval of the Bara Scientific Co., Ltd.

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**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

Certificate No. BSCC-UV-146/24

Number of Page(s) 2 of 3

### Calibration Results:

#### 1.Wavelength Accuracy

Certified Wavelength (nm)	UUC (nm)	Error (nm)	Uncertainty ( $\pm$ nm)
287.71	287.75	0.04	0.18
445.82	445.89	0.07	0.18
536.52	536.50	-0.02	0.18
741.02	741.01	-0.01	0.18
879.41	879.33	-0.08	0.18

#### 2.Photometric Accuracy (UV)

Wavelength (nm)	Certified Absorbance (A)	UUC (A)	Error (A)	Uncertainty ( $\pm$ A)
235	0.0000 0.7415	0.0000 0.7387	0.0000 -0.0028	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 0.6406	0.0000 0.6395	0.0000 -0.0011	0.0075 0.0075

\*CNR = Customer not request

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# Certificate of Calibration

Certificate No. **BSCC-UV-146/24** 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	0.0000	0.0000	0.0042
	0.5715	0.5729	0.0014	0.0042
	0.7087	0.7087	0.0000	0.0042
	1.0987	1.1005	0.0018	0.0042
440.0	0.0000	0.0000	0.0000	0.0042
	0.5561	0.5578	0.0017	0.0042
	0.6968	0.6969	0.0001	0.0042
	1.0757	1.0774	0.0017	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
	0.5193	0.5213	0.0020	0.0042
	0.6937	0.6940	0.0003	0.0042
	1.0411	1.0428	0.0017	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
	0.5605	0.5624	0.0019	0.0042
	0.7579	0.7583	0.0004	0.0042
	1.1131	1.1138	0.0007	0.0042

\*CNR = Customer not request

### 4. Stray Light\*

Standard cut-off wavelength (nm)	Unit Under Calibration(UUC)		
	Wavelength (nm)	Transmission (%T)	Absorbance (A)
201.33 $\pm$ 0.11nm	200.80	0.9750	2.0111

The Stray light transmission reference is less than 1.0%T and Stray light absorbance reference is greater than 2.0A

\*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\*\*\*

The above results are valid exclusively for the calibrated item(s) as mention in this report / certificate. Advertising the report / Certificate and publicity of the results are prohibited and also shall not be reproduced except in full, without written approval of the Bara Scientific Co., Ltd.

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**SOUND LEVEL CALIBRATOR**

**MODEL : NC-75**

**SERIAL No. : 34802645**



**SITHIPORN ASSOCIATES CO., LTD.**  
**CALIBRATION LABORATORY**

451-451/1 Sirinthorn Road, Bangbunru, Bangplud, Bangkok, 10700 Thailand  
Tel. +66 2433 8331 Email : calibration@sithiphorn.com



Cert. No. : ACC24043  
Pages : 1 of 3

**Calibration Certificate**

**Equipment :** SOUND CALIBRATOR  
**Manufacturer :** RION  
**Model :** NC-75  
**Serial No.:** 34802645  
**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 ± 3 ) °C  
**Pressure :** ( 101.3 ± 3 ) kPa  
**Relative Humidity :** ( 50.0 ± 20 ) %

**Received Date :** 09 SEPTEMBER 2024  
**Calibration Date :** 26 SEPTEMBER 2024  
**Date of Issue :** 26 SEPTEMBER 2024

**Calibrated by :** Nathakorn Pisutpaisan

**Approved by :**

*T. Petchur*  
( Thanakul Petchurai )

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**CALIBRATION LABORATORY**

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Tel. +66 2433 8331 Email : calibration@sithiphorn.com



Cert. No. : ACC24043  
Job No. : VC67AC0150  
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 :

<u>Instrument</u>	<u>Model</u>	<u>Serial No.</u>	<u>Cert. No.</u>	<u>Due Date</u>
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	33461A	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
Audio Analyzer	AVR-3360A	V744B6069	EF-0009-24	09-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 :

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Job No. : VC67AC0150  
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**Result of calibration :**

**1. Sound pressure level**

Specified sound pressure level (dB)	Measured value (dB)	Deviated value (dB)	Uncertainty (dB)	Acceptance limit (dB)
94	93.97	-0.03	0.14	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 ( % )
0.15	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 %

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**SOUND LEVEL METER**

**MODEL : CR:172A**

**SERIAL No. : G301661**

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Cert. No. : ACL24349

Pages : 1 of 9

## Calibration Certificate

**Equipment :** SOUND LEVEL METER  
**Manufacturer :** CIRRUS  
**Model :** CR:172 A / Microphone PMP 22 / Preamplifier -  
**Serial No.:** G301661 / 240061 / 12349F  
**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 ± 3 ) °C  
**Pressure :** ( 101.3 ± 3 ) kPa  
**Relative Humidity :** ( 50.0 ± 20 ) %

**Received Date :** 18 OCTOBER 2024  
**Calibration Date :** 11-12 NOVEMBER 2024  
**Date of Issue :** 13 NOVEMBER 2024

**Calibrated by :** Nathakorn Pisutpaisan

**Approved by :**

*T. Petchur*  
( Thanakul Petchurai )

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Cert. No. : ACL24349

Job No. : VC68AC0014

Pages : 2 of 9

**Calibration Procedure :** CP-AC-02

### 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 :

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 Job No. : VC68AC0014  
 Pages : 3 of 9

**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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**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 )
17.8

**2.2 The microphone of the sound level meter was replaced by electrical signal input device.**

Frequency Weighting	Weighting ( dB )
A - weight	14.4
C - weight	18.3
Flat	29.6

**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	0.0	0.0	0.1	± 1.5
1000	0.1	0.1	0.1	± 1.0
8000	2.3	2.1	1.9	±5.0

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 Job No. : VC68AC0014  
 Pages : 5 of 9

**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	0.1	0.1	0.4	±2.0
125	0.0	0.1	0.3	±1.5
250	0.0	0.2	0.3	±1.5
500	0.0	0.2	0.1	±1.5
1000	0.0	0.0	0.0	±1.0
2000	0.0	0.0	-0.2	±2.0
4000	0.0	-0.2	-0.4	±3.0
8000	-0.1	-0.3	-0.5	±5.0

**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	± 0.3

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**7. Level linearity on the reference level range**

Anticipated Value ( dB )	Measured Value ( dB )	Deviated Value ( dB )	Acceptance Limits ( dB )
132.0	131.0	-1.0	±1.1
131.0	130.0	-1.0	±1.1
130.0	129.0	-1.0	±1.1
129.0	128.0	-1.0	±1.1
124.0	123.1	-0.9	±1.1
119.0	118.3	-0.7	±1.1
114.0	113.4	-0.6	±1.1
104.0	103.7	-0.3	±1.1
99.0	98.6	-0.4	±1.1
94.0	94.0	0.0	±1.1
89.0	89.0	0.0	±1.1
84.0	84.0	0.0	±1.1
79.0	79.0	0.0	±1.1
74.0	74.0	0.0	±1.1
69.0	69.0	0.0	±1.1
64.0	64.0	0.0	±1.1
59.0	59.0	0.0	±1.1
54.0	54.0	0.0	±1.1
49.0	49.0	0.0	±1.1
44.0	44.0	0.0	±1.1
39.0	39.0	0.0	±1.1
34.0	34.1	0.1	±1.1
33.0	33.1	0.1	±1.1
32.0	32.1	0.1	±1.1
31.0	31.1	0.1	±1.1
30.0	30.1	0.1	±1.1
29.0	29.1	0.1	±1.1
28.0	28.1	0.1	±1.1
27.0	27.1	0.1	±1.1
26.0	26.1	0.1	±1.1
25.0	25.1	0.1	±1.1

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**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	±1.1

Range	Anticipated Value ( dB )	Measured Value ( dB )	Deviated Value ( dB )	Acceptance Limits ( dB )
130	43.0	43.0	0.0	±1.1

**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	107.0	106.9	-0.1	1.5 ; -5.0
	2	8	116.0	116.0	0.0	1.0 ; -2.5
	200	800	133.0	133.1	0.1	±1.0
Slow	2	8	107.0	107.0	0.0	1.5 ; -5.0
	200	800	126.6	126.6	0.0	±1.0
SEL	0.25	1	98.0	98.0	0.0	1.5 ; -5.0
	2	8	107.0	107.1	0.1	1.0 ; -2.5
	200	800	127.0	127.1	0.1	±1.0

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**10. Peak C sound level**

Number of cycle in test signal	Anticipated Value ( dB )	Measured Value, Lcpeak ( dB )	Deviated Value ( dB )	Acceptance Limits ( dB )
Continuous	126.4	126.4	0.0	±3.0
One	129.8	129.9	0.1	±3.0

Number of cycle in test signal	Anticipated Value ( dB )	Measured Value ( dB )	Deviated Value ( dB )	Acceptance Limits ( dB )
Continuous	126.4	126.4	0.0	±2.0
Positive half cycle	128.8	128.7	-0.1	±2.0
Negative half cycle	128.8	128.8	0.0	±2.0

**11. Overload indication**

Measured value ( dB )		Deviated Value ( dB )	Acceptance Limits ( dB )
Positive one-half cycle	Negative one-half cycle		
86	85.9	-0.1	±1.5

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**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	±0.3

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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**SOUND LEVEL METER**

**MODEL : CR:172A**

**SERIAL No. : G300957**

Cert. No. : ACL25123

Pages : 1 of 9

## Calibration Certificate

**Equipment :** SOUND LEVEL METER  
**Manufacturer :** CIRRUS  
**Model :** CR172 A / Microphone PMP21/ Preamplifier -  
**Serial No.:** G300957 / 230004 / 9371F  
**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 :** 30-31 JANUARY 2025  
**Date of Issue :** 31 JANUARY 2025

**Calibrated by :** Nathakorn Pisutpaisan

**Approved by :**

*T. Petchurai*  
( Thanakul Petchurai )

**Calibration Procedure :** CP-AC-02

### 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-0009-4	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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Job No. : VC67AC0048  
Pages : 3 of 9

**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	-	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

Cert. No. : ACL25123  
Job No. : VC67AC0048  
Pages : 4 of 9

**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 )
17.3

**2.2 The microphone of the sound level meter was replaced by electrical signal input device.**

Frequency Weighting	Measured value ( dB )
A - weight	14.6
C - weight	20.5
Flat	29.4

**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	0.0	0.1	0.4	± 1.5
1000	0.0	0.0	0.0	± 1.0
8000	0.7	0.5	0.3	±5.0

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Job No. : VC67AC0048  
Pages : 6 of 9

#### 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	0.3	0.1	0.4	±2.0
125	0.1	0.1	0.3	±1.5
250	0.1	0.2	0.3	±1.5
500	0.1	0.2	0.1	±1.5
1000	0.0	0.0	0.0	±1.0
2000	0.1	0.0	-0.2	±2.0
4000	0.1	-0.2	-0.4	±3.0
8000	0.0	-0.3	-0.5	±5.0

#### 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	± 0.3

#### 7. Level linearity on the reference level range

Anticipated Value ( dB )	Measured Value ( dB )	Deviated Value ( dB )	Acceptance Limits ( dB )
138.0	137.8	-0.2	± 1.1
137.0	136.7	-0.3	± 1.1
136.0	135.7	-0.3	± 1.1
135.0	134.8	-0.2	± 1.1
134.0	133.9	-0.1	± 1.1
133.0	132.9	-0.1	± 1.1
132.0	131.8	-0.2	± 1.1
131.0	130.7	-0.3	± 1.1
130.0	129.8	-0.2	± 1.1
129.0	128.8	-0.2	± 1.1
124.0	124.0	0.0	± 1.1
119.0	118.7	-0.3	± 1.1
114.0	114.0	0.0	± 1.1
109.0	108.7	-0.3	± 1.1
104.0	103.8	-0.2	± 1.1
99.0	98.9	-0.1	± 1.1
94.0	94.0	0.0	± 1.1
89.0	89.0	0.0	± 1.1
84.0	84.0	0.0	± 1.1
79.0	79.0	0.0	± 1.1
74.0	74.0	0.0	± 1.1
69.0	69.0	0.0	± 1.1
64.0	64.0	0.0	± 1.1
59.0	59.0	0.0	± 1.1
54.0	54.0	0.0	± 1.1
49.0	49.0	0.0	± 1.1
44.0	44.0	0.0	± 1.1
39.0	39.1	0.1	± 1.1
34.0	34.1	0.1	± 1.1
33.0	33.0	0.0	± 1.1
32.0	32.2	0.2	± 1.1
31.0	31.1	0.1	± 1.1
30.0	30.1	0.1	± 1.1
29.0	29.1	0.1	± 1.1
28.0	28.2	0.2	± 1.1
27.0	27.2	0.2	± 1.1
26.0	26.2	0.2	± 1.1
25.0	25.3	0.3	± 1.1

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Cert. No. : ACL25123  
Job No. : VC67AC0048  
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**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	±1.1

**Level linearity on each level range**

Range	Anticipated Value ( dB )	Measured Value ( dB )	Deviated Value ( dB )	Acceptance Limits ( dB )
130	43.0	43.0	0.0	±1.1

**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	107.0	106.9	-0.1	1.5 ; -5.0
	2	8	116.0	116.0	0.0	1.0 ; -2.5
	200	800	133.0	133.1	0.1	±1.0
Slow	2	8	107.0	107.0	0.0	1.5 ; -5.0
	200	800	126.6	126.6	0.0	±1.0
SEL	0.25	1	98.0	98.0	0.0	1.5 ; -5.0
	2	8	107.0	107.6	0.6	1.0 ; -2.5
	200	800	127.0	127.1	0.1	±1.0

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**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	126.4	126.3	-0.1	±3.0
One	129.8	131.1	1.3	±3.0

Number of cycle in test signal	Anticipated Value ( dB )	Measured Value ( dB )	Deviated Value ( dB )	Acceptance Limits ( dB )
Continuous	126.4	126.5	0.1	±2.0
Positive half cycle	128.8	129.8	1.0	±2.0
Negative half cycle	128.8	129.8	1.0	±2.0

**11. Overload indication**

Measured value ( dB )		Deviated	Acceptance
Positive one-half cycle	Negative one-half cycle	Value ( dB )	Limits ( dB )
87.9	87.9	0.0	±1.5

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**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	136.9	0.1	±0.3

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 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	0.00001 g
2	220 g	0.0001 g

### Procedure

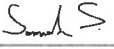

Calibration Guidelines: EURAMET cg-18 v. 4.0 (11/2015)  
METTLER TOLEDO Work Instruction: CP/W002/20

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  
As Left Calibration Date: N/A  
Issue Date: 11-Dec-2024  
Calibrator:   
Somsak Sattanaco  
Approved Signatory:   
Sirachai P.  
Technical Manager / Head of Calibration Center

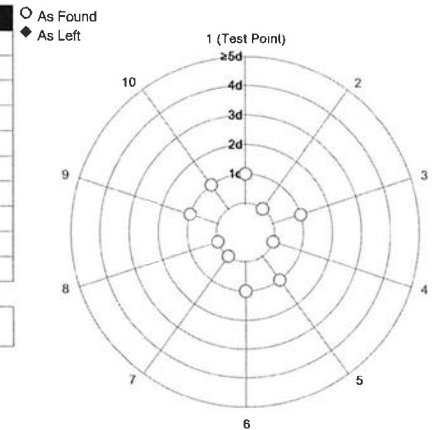
## Measurement Results

### 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.

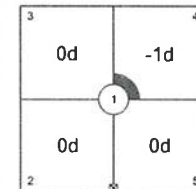
The results of this graph are based upon the absolute values of the differences from the mean value.

### 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

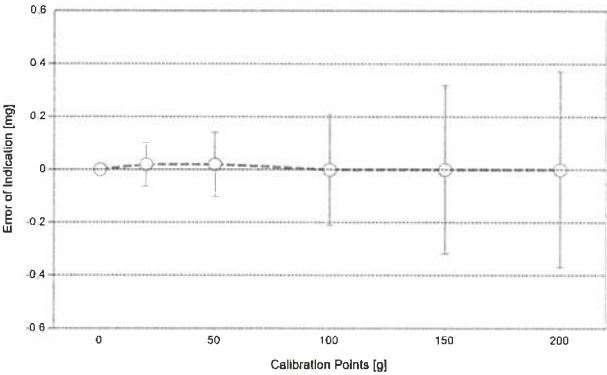
The "d" in the graph represents the readability of the range/interval in which the test was performed.

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.



○ As Found

◆ As Left

For improved legibility of the graphics only increasing measurement points are shown and measurement points close to zero are not displayed.

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.: 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.

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>-8</sup> / K  
Temperature range on site for the evaluation of the measurement uncertainty in use: 3 K

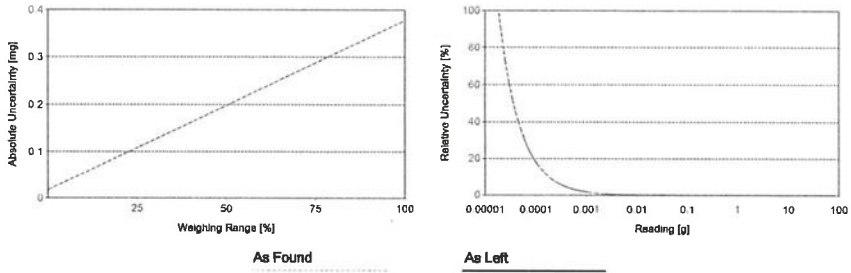
Linearization of Uncertainty Equation

Range		As Found		As Left
d	Max			
1	0.00001 g	81 g	U <sub>1</sub> = 0.018 mg + 0.00444 mg/g · R	N/A
2	0.0001 g	220 g	U <sub>2</sub> = 0.06 mg + 0.00439 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 (Example)

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



The weighing range shown in the absolute uncertainty graph refers to the first interval/range of the device.

GWP®  
Certificate



As Found



As Left



The weighing device meets the given process requirements.

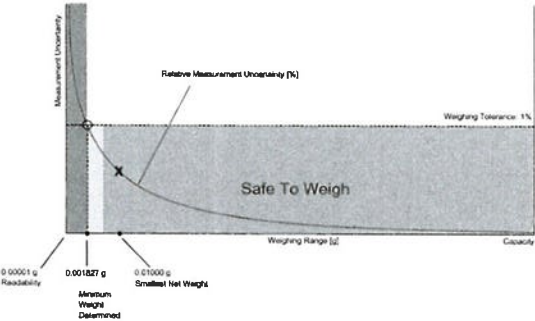
The weighing device meets the given process requirements.

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.

## 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
100.0000 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	0.0000 g	0.0750 g	0.1500 g	0.3750 g	0.7500 g	1.5000 g	3.7500 g
200.0000 g	0.0000 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%
0.00000 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
100.0000 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	0.0000 g	0.0750 g	0.1500 g	0.3750 g	0.7500 g	1.5000 g	3.7500 g
200.0000 g	0.0000 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.

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**ATOMIC ABSORPTION SPECTROPHOTOMETER**

**Model : Pin AAcle 900F**

**Serial No. : PFBS22080801**

### PinAAcle 900F Preventive Maintenance (PM)

<b>Company Name:</b>	Eastern Thai Consulting 1992 Ci.,Ltd.		
<b>Address (Instrument Location):</b>	683 Moo 11 Sukapibal 8 Rd. Nong Kham,Si Racha, Chonburi 20230		
<b>Serial Number:</b>	PFBS22080801	<b>PM Number:</b>	2 of 2
<b>Customer Name (If applicable):</b>		<b>Telephone Number:</b>	
<b>Customer Support Engineer Name:</b>	Khwanchai	<b>Service Order Number:</b>	WO-02963148
<b>Date PM Performed: (DD-MMM-YYYY)</b>	25-Oct-2024	<b>Next PM Due Date: (DD-MMM-YYYY)</b>	25-Apr-2025
<b>Standard Labor Hours to Complete PM :</b>		<b>5 hours</b>	

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
FIAS100		

### Parts Lists

Parts Included with the PM		
Part Number (if applicable)	Description	Quantity
B0501696	Fan Filters	NA
N3160156	O-Ring Kits for Sampling Introduction ( Stainless Steels Nebulizer)	NA
N3160157	O-Ring Kits for Sampling Introduction ( Plastic Nebulizer)	NA
N9301714	Replacement Acetylene Filter Cartridge	NA
TH001022	Replacement Air Filter Cartridge	NA

#### 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	27-39CUI1	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

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Additional Tools Required for PM			
Part Number (if applicable)	Description	Quantity	Serial #
N1013000	0.2A Neutral density filter	1	MG0-056
N1013002	1.0A Neutral density filter	1	MG2-054
03030997	System 2 EDL Driver	1	03030997
N3050605	As System 2 EDL	1	16148
N3050121	Cu Lumina HCL	1	092216-010130
N3050109	Ba Lumina HCL	1	102416-040160
N3050139	K Lumina HCL	1	110716-010060
N3050152	Ni Lumina HCL	1	100516-030190

## 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.

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## 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	Pass
Drain Sensor	Air/C <sub>2</sub> H <sub>2</sub> Flame correctly shuts down	Active	Pass
Nebulizer Sensor	Air/C <sub>2</sub> H <sub>2</sub> Flame correctly shuts down	Active	Pass
C <sub>2</sub> H <sub>2</sub> Pressure Sensor	Air/C <sub>2</sub> H <sub>2</sub> Flame correctly shuts down	Active	Pass
Air Pressure Sensor	Air/C <sub>2</sub> H <sub>2</sub> Flame correctly shuts down	Active	Pass
Burner Head Sensor	Choosing Nitrous Oxide as the oxidant should trigger an interlock shuts down	Active	Pass

## 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.	1.0531	1.0516	Pass
0.2 A ND Filter	± 5% from Cert.	0.1806	0.1791	Pass

### 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	Pass

### 8.3 AA Baseline Noise with Copper

Description: Check baseline noise.

Parameter	Specification	Results	Pass/Fail
Standard Deviation	≤ 0.001	0.0001	Pass

### 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	-0.0204	Pass

### 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	0.0003	Pass

### 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	0.0004	Pass

### 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.	NA	NA
2 mg/L Sensitivity HS Neb (if applicable)	> 0.250 Abs.	0.3874	Pass

## 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**

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**Additional Comments**

Additional Comments Regarding the PM
None

**Review**

<i>The preventive maintenance checks and if applicable performance tests for PinAAcle 900F have been completed.</i>	
<i>This PinAAcle 900F Passes <input checked="" type="checkbox"/> Fails <input type="checkbox"/> the preventive maintenance.</i>	
<b>Review of Preventive Maintenance:</b>	
Authorized PerkinElmer Representative: 	Date: 25-Oct-2024 <small>(DD-MMM-YYYY)</small>
Authorized Customer Representative:	Date: 25-Oct-2024 <small>(DD-MMM-YYYY)</small>

**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:	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	Syngistix Ver 5.0.1.2029

### Parts Lists

Parts Included with the PM		
Part Number (if applicable)	Description	Quantity
B0501596	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-B7CUY1	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

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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.

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## 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 <input type="checkbox"/>	Passed <input type="checkbox"/>
Drain Sensor	Air/C <sub>2</sub> H <sub>2</sub> Flame correctly shuts down	Active <input type="checkbox"/>	Passed <input type="checkbox"/>
Nebulizer Sensor	Air/C <sub>2</sub> H <sub>2</sub> Flame correctly shuts down	Active <input type="checkbox"/>	Passed <input type="checkbox"/>
C <sub>2</sub> H <sub>2</sub> Pressure Sensor	Air/C <sub>2</sub> H <sub>2</sub> Flame correctly shuts down	Active <input type="checkbox"/>	Passed <input type="checkbox"/>
Air Pressure Sensor	Air/C <sub>2</sub> H <sub>2</sub> Flame correctly shuts down	Active <input type="checkbox"/>	Passed <input type="checkbox"/>
Burner Head Sensor	Choosing Nitrous Oxide as the oxidant should trigger an Interlock shuts down	Active <input type="checkbox"/>	Passed <input type="checkbox"/>

## 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 <input type="checkbox"/>
0.2 A ND Filter	± 5% from Cert.	0.1936	0.1874	Passed <input type="checkbox"/>

### 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 <input type="checkbox"/>

### 8.3 AA Baseline Noise with Copper

Description: Check baseline noise.

Parameter	Specification	Results	Pass/Fail
Standard Deviation	≤ 0.001	0.0001	Passed <input type="checkbox"/>

### 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.

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### 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:

621025564

Date:

22 APR 2025

(DD-MMM-YYYY)

**COPY**



**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.

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. : 24-164695  
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

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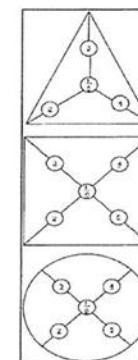
## REPORT OF CALIBRATION

## 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.

<input checked="" type="radio"/> Circle		
<input type="radio"/> Triangular		
<input type="radio"/> Rectangular		
Weighing pan	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 :

Instrument	Class	ID No.	Certificate No.	Due Date
1) STANDARD WEIGHT 1 mg to 1 kg	E2	LB-WE-78	24-097116	02 August 2025

- End of Report -

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

**AUTOCLAVE**

**Model : FLA-1000**

**Serial No. : 55169083**

## CERTIFICATE OF CALIBRATION

Certificate No. : 24-089294

Sample Code : 24-35676-004

Customer : EASTERN THAI CONSULTING 1992 CO., LTD.  
663 Moo 11, Sukhapibarn 8 Rd., Nongkham, Sriracha,  
Chonburi 20230

Location 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 : 16 July 2024 Date of Calibration : 16 July 2024

## Condition of Calibration

1. Environment  
1.1 Ambient temperature : Maximum 31.3 °C ; Minimum 30.4 °C  
1.2 Relative humidity : Maximum 67.7 % ; Minimum 65.1 %  
1.3 Line voltage supplied : Maximum 219.9 VAC ; Minimum 216.8 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-22	24-030263	18 March 2025
3.2 Temperature Data Logger	HiTemp 140	LB-TEM-23	24-030264	18 March 2025
3.3 Temperature Data Logger	HiTemp 140	LB-TEM-24	24-030265	18 March 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 17 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)

## REPORT OF CALIBRATION

Certificate No. : 24-089294

Sample Code : 24-35676-004

## 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 (kPa)	# 1	# 2 Ref	# 3		
121	121	121	120	121.41	121.30	121.32	1.2	2.00

## 2. Characterization results

Calibration Point (°C)	Stability ± (°C)	Uniformity (°C)	Overall Variation (°C)
121	0.88	0.51	1.92

## 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.

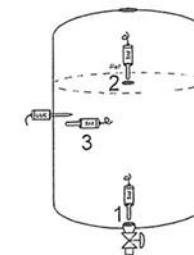


Figure: Example of sensor  
installation Positions

- 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 -



## **BAROMETER**

**Equipment : Analog Barometer**

**ID No. / Tag No. : BM001/41**



MIRACLE INTERNATIONAL TECHNOLOGY CO.,LTD

214 Bangwaek Rd. Bangpai Bangkok 10160  
Tel.: 0-2865-4647-8 Fax: 0-2865-4649 http://www.mit.in.th



## CALIBRATION CERTIFICATE

Certificate No. : L202405022-0013

Date Issued : 08-May-24

**Customer** : Eastern Thai Consulting 1992 Co., Ltd.  
683 Moo 11, Sukhapibarn 8 Rd., Nongkham, Sriracha, Chonburi 20230

**Equipment** : Analog Barometer

**Manufacturer** : Barigo

**Model** : -

**Serial No.** : -

**ID No./Tag No.** : BM001/41

**Date Received** : 03-May-24

**Date Calibrated** : 06-May-24

**Calibrated by** : Mr. Saruth Srichutikul

### Calibration Method or Calibration Procedure Used

In-house method : CP-21 base on DKD-R 6-1: Edition 3 2014.

This certificate is traceable to national standards, which realize the units of measurement according to the International System of Units (SI).

### Result of Calibration

The reported uncertainty of measurement was based on standard uncertainty multiplied by a coverage factor  $k = 2$ , providing a level confidence approximately 95 percent.

This certificate may not be reproduced other than in full except with the prior written approval of the Miracle International Technology Company Limited.

Approved by:

Sarayuth T.  
(Mr. Sarayuth Tochua)



Page 1 of 2

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Certificate No : L202405022-0013

**Environment** Ambient Temperature :  $(25 \pm 2)^{\circ}\text{C}$   
Relative Humidity :  $(50 \pm 15)\%\text{RH}$

STD Reading	UUC Reading (mbar)	UUC Reading (mbar)	UUC Error	Uncertainty	MPE	Pass /
mbar	Before Adjusted	After Adjusted	mbar	$\pm$ mbar	$\pm$ mbar	with Gua
990.00	990	-	0.00	0.59	10.3	Pa
1000.00	1000	-	0.00	0.59	10.3	Pa
1010.00	1010	-	0.00	0.59	10.3	Pa
1020.00	1020	-	0.00	0.59	10.3	Pa
1030.00	1030	-	0.00	0.59	10.3	Pa

STD = Standard Pass =  $|\text{error}| + |\text{uncertainty}| \leq |\text{MPE}|$

UUC = Unit Under Calibration Fail =  $|\text{error}| + |\text{uncertainty}| > |\text{MPE}|$

MPE = Maximum Permissible Error

**Calibrated condition :** Pressure Medium Air : Density =  $1.19 \text{ kg/m}^3$  @  $20^{\circ}\text{C}$ . 1 bar  
Mounting Position Vertical  
Reference Level at center of its dial  
Conversion Factor Multiply by  $1.0 \text{ E}+02$  - Pa unit

**Description of UUC :** Range 950 - 1080 mbar Absolute  
Calibration Range 990 - 1030 mbar Absolute  
Scale Interval 1 mbar

Condition As-Received : Used Item

The measurement results and statements of conformity with specification only relate to the item calibrated.

**Measurement Standards Used & Traceability :**

The International System of Units (SI) through

iRPC Certificate No. CL1-P230097 for Reference Pressure Monitor Serial No. 1598, Due 09-Nov-24

End of Certificate

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## **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



# 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 : 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





# CALIBRATION LABORATORY CO., LTD.

2/10-11,14,55 Soi Prasert Manukil 29 Yaek 4, Prasert Manukil Rd., Ladphrao, Bangkok 10230  
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  $\pm 0.7$  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**



Page 1 of 3

## CERTIFICATE OF CALIBRATION

Certificate No. : 24-089291

Sample Code : 24-35676-001

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 : พัด เครื่องเย็น Model : N/A

Serial No. : S43020027 ID No. : LABE 19/3

Date of Receipt : 16 July 2024 Date of Calibration : 16 July 2024

## Condition of Calibration

1. Environment
- |                           |   |         |           |   |         |           |
|---------------------------|---|---------|-----------|---|---------|-----------|
| 1.1 Ambient temperature   | : | Maximum | 30.6 °C   | : | Minimum | 28.9 °C   |
| 1.2 Relative humidity     | : | Maximum | 76.9 %    | : | Minimum | 69.4 %    |
| 1.3 Line voltage supplied | : | Maximum | 219.8 VAC | : | Minimum | 217.1 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-12 (RTD-168 to RTD-176)	24-045389	28 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 : 17 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)



Page 2 of 3

## REPORT OF CALIBRATION

Certificate No. : 24-089291

Sample Code : 24-35676-001

## 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>Rev</sup>		
20	20.0	20.0	20.56	20.45	20.01	19.85	20.21	20.25	20.17	20.05	20.11	0.24	2.00

## 2. Characterization results

Calibration point (°C)	Stability ± (°C)	Uniformity (°C)	Overall variation (°C)
20	0.08	0.50	0.87

## Notes

- UUC\* = Unit Under Calibration

## REPORT OF CALIBRATION

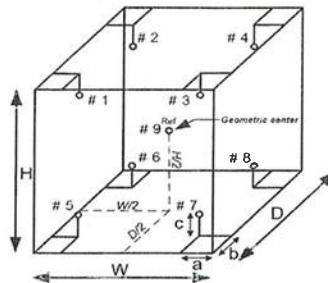
Certificate No. : 24-089291

Sample Code : 24-35676-001

## 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 -



# **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-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. 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 <i>k</i>	
			# 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

(Mr. Somchai Neampunt)  
Signed for Director  
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NSC-TISI-TIS17025  
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.

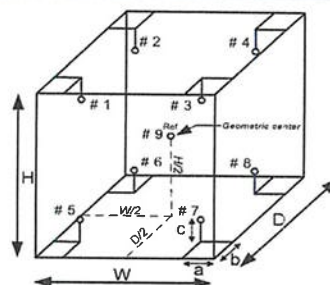


Figure: Example of sensor  
Installation Positions

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 -

**COPY**

**DO**

**Model : YSI 5000**

**Serial No. : 18E101961**



Harikul Science Co.,Ltd.  
694 Soi Ratchadanivet 24, Pracharatbamphen,  
Samsaennok, Huaikhwang, Bangkok 10310  
Tel: 0-2274-2456 Fax: 0-2274-2443  
Email: info@harikul.com www.harikul.com  
Certificate of Calibration

CERT.No.: HS-V053H

Calibration Date : 13 Aug 24	Model : YSI 5000
Submitted by : Eastern Thai Consulting 1992 Company Limited	S/N : 18E101961
683 Moo.11 Sukaphibal8 Rd., Nongkham, Sriracha,	Probe : YSI 5010
Chonburi 20230	S/N : 18A100724
	ID NO. : -
Avg Room Temp : 20 °C	Air Temp ref : S/N. F8065C26
Avg Water Temp : 20 °C	Barometric ref : S/N. F8065C26
Air Pressure : 760.00 mmHg	Water Temp ref : -
Salinity : 0 ppt	ID NO. HS001
	Technician : Kittipong M.

#### 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)	9.09	(PASS)	-
Measurement 4 (mg/l)	9.09	(PASS)	-
Measurement 5 (mg/l)	9.09	(PASS)	-
Measurement 6 (mg/l)	9.09	(PASS)	-
Measurement 7 (mg/l)	9.07	(PASS)	-
Measurement 8 (mg/l)	9.07	(PASS)	-
Measurement 9 (mg/l)	9.07	(PASS)	-
Measurement 10 (mg/l)	9.07	(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)

Laboratory Manager  
(Natenapha Pisatkunchon)

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**Hot Air Oven**

**Model : UM 400**

**Serial No. : 900982**



Page 1 of 3

## CERTIFICATE OF CALIBRATION

Certificate No. : 24-164692

Sample Code : 24-67405-002

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.  
(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).



Page 2 of 3

## 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 k
			# 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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**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-02963150
Date PM Performed: (DD-MMM-YYYY)	25-Oct-2024	Next PM Due Date: (DD-MMM-YYYY)	25-Apr-2025
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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### 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 #	Expired Date (MM/YY)
N0691579	Muti-Element Standard	AR	61-176CRX1	06/2025
N9300221	DL Standard diluted 100 X	AR	59-091CRY1	11/2024
N0582152	Wave Cal Solution	AR	61-023CRX1	02/2025
N9302946	VIS Wavecal Solution	AR	58-145CRT1	04/2025

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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	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.

### 3. Electrical

- ☒ 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	0.00528	Passed
Ni 231.604 - Resolution	≤0.008	0.00724	Passed
Ni 341.476 - Resolution	≤0.012	0.00911	Passed
La 408.672 - Resolution	≤0.020	0.01596	Passed
Ba 455.403 - Resolution	≤0.025	0.02165	Passed

#### Test Precision:

- ☒ Test for reproducibility of a set of measurement.

Parameter	Specification	Test Result	Pass/Fail
As 193.696	%RSD ≤ 1 %	0.26	Passed
Zn 213.856	%RSD ≤ 1 %	0.21	Passed
Mn 257.610	%RSD ≤ 1 %	0.20	Passed
La 379.478	%RSD ≤ 1 %	0.21	Passed
Ba 455.403	%RSD ≤ 1 %	0.21	Passed
Ba 493.408	%RSD ≤ 1 %	0.19	Passed

☒ 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	523.1	223029.5	
IB*Conc	IS-IB	BEC	Spec	Pass/Fail
261550	222506.4	1.18	<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	586.9	253416.6	
IB*Conc	IS-IB	BEC	Spec	Pass/Fail
586900	252829.7	2.32	<45 PPB	Passed

**6. Review:**

- ☒ Review with the customer PM work performed.
- ☒ Discuss recommended customer supplied materials to have on hand.
- ☒ Attach PM sticker.

## 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:

*KL S.*

Date:

25-Oct-2024  
(DD-MMM-YYYY)

Authorized Customer Representative:

Date:

25-Oct-2024  
(DD-MMM-YYYY)

## REPORT OF CALIBRATION

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 ( $a \times b \times c$ ) 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.

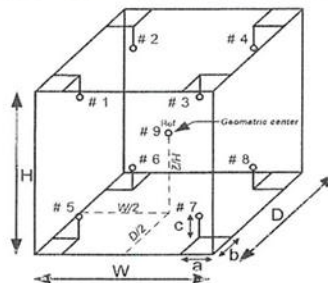


Figure: Example of sensor  
installation Positions

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 -

**COPY**




**ICP-OES/Avio550**

**Serial No. : M81S221010**

### ICP-OES/Avio500 Preventive Maintenance (PM)

<b>Company Name:</b>	Eastern Thai Consulting 1992 Co.,Ltd		
<b>Address (Instrument Location):</b>	683 Moo 11, Nong Kham Subdistrict, Si Racha District, Chonburi		
<b>Serial Number:</b>	M81S221010	<b>PM Number:</b>	1 of 2
<b>Customer Name (if applicable):</b>	Channarong	<b>Telephone Number:</b>	0968761232
<b>Service Engineer Name:</b>	Khwanchai	<b>Service Order Number:</b>	WO-03149107
<b>Date PM Performed: (DD-MMM-YYYY)</b>	22-Apr-2025	<b>Next PM Due Date: (DD-MMM-YYYY)</b>	22-Oct-2025
<b>Standard Labor Hours to Complete PM :</b>		<b>4 hours</b>	

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	Muti-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.

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### 3. Electrical

- ☒ 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 fatal 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

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☒ 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.

## 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:	<i>KLS</i>	Date: 22-Apr-2025 (DD-MMM-YYYY)
Authorized Customer Representative:		Date: 22-Apr-2025 (DD-MMM-YYYY)

**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)

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Certificate No. Q24116258

F3-011-05/12-23

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@clccalibration



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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 IPT  
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 IPT 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 (EA-4/02 M:2022)"

Certificate No. Q24116258

F3-011-05/12-23

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@clccalibration



# 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 )
0.039	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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@dcalibration

**MERCURY ANALYZER**

**Model : RA-4500**

**Serial No. : 21780504**

# EASTREN THAI CONSULTING 1992

## Mercury Analyzer

RA-4500

### Preventive Maintenance Report

SERIAL No. RA-4500 : 21780504

Sample Tube 5 mL

Soft version : Ver 2.0.8

ROM version : Ver 2.0.2

DATE : 5 August 2024

DUE DATE : 5 February 2025

INSPECTED BY : *Chayanan T.*  
( Chayanan T. )

APPROVED BY : *Kitichai S.*  
( Kitichai S. )



**COAX GROUP CORPORATION LTD.**

1131/62, 64, 325-331 Nakornchaisri road,

Kwang Thanon Nakornchaisri, Dusit, Bangkok 10300 Thailand

Tel. 02-2435263, 02-6682436 Fax. 02-2437386

Mercury Analyzer RA-4500 SN : 21780504

ITEMS		SPECIFICATIONS	RESULT	JUDGE
1. Quantity	-	Accessories are completed.	GOOD	OK
2. Appearance	2.1 Overall Appearance	No visible damage.	GOOD	OK
	2.2 Parts / Cables	Correctly placed and connected.	GOOD	
3. Indication	Nameplate / Label	Plate and Label are indicated.	GOOD	OK
4. Self check	-	All items are "PASS"	GOOD	OK
5. Calibration Curve	No Pretreatment (Low)	0-100ng : Max.Dev. 5.0%	2.50%	OK
		{ r } ≥ 0.9990	1.0000	
6. Repeatability	50 µg/L (n=3)	Average: 50 ± 5 µg/L	49.086 µg/L	OK
		C.V. ≤ 3.0%	2.93%	OK
7. Blank	-	Less than 0.001 (PEAK)	0.0000668	OK

#### Apparatus

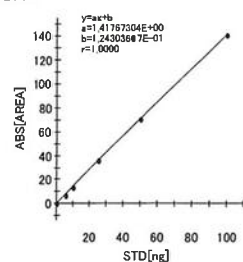
NAME	Date Certified	Expiration
Mercury ICP Standard (1000 µg/mL) AccuStandard, Inc. Lot 223035027	March 10, 2023	March 10, 2028

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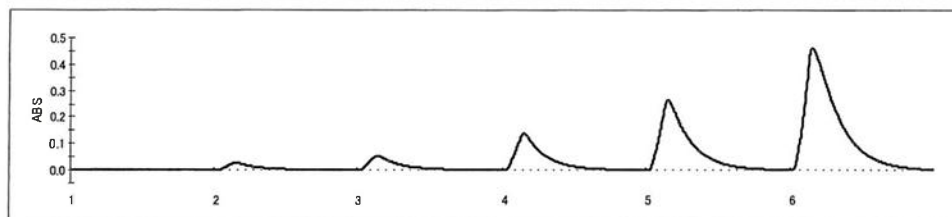
Title : Preventive Maintenance RA-4500 SN:21780504  
Date : 05-Aug-24  
Name : Coax Group Corporation Ltd.  
Memo : Calibration Curve 0-100ng

#### Calib



#### STD

No.	STD [ppb]	SVOL [mL]	CVOL [mL]	DVOL [mL]	STD [ng]	AREA [ON]	MEAS [ng]	Dev [%]	Note
1	0.000	5.000	5.000	5.000	0.000	0.0066	-0.0830	-	
2	50.000	0.100	5.000	5.000	5.000	7.0381	4.8769	2.5	
3	50.000	0.200	5.000	5.000	10.000	14.0505	9.8233	1.8	
4	50.000	0.500	5.000	5.000	25.000	36.0062	25.3104	1.2	
5	50.000	1.000	5.000	5.000	50.000	71.3659	50.2525	0.5	
6	50.000	2.000	5.000	5.000	100.000	141.6364	99.8200	0.2	

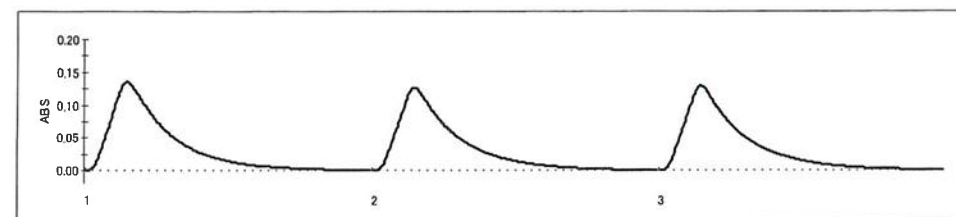


#### SMP

No.	NAME	SVOL [mL]	CVOL [mL]	DVOL [mL]	AREA [ON]	MEAS [ng]	CONC [ug/L]	Note
1	50 ppb	0.500	5.000	5.000	36.0505	25.3417	50.6834	
2	50 ppb	0.500	5.000	5.000	34.0679	23.9432	47.8864	
3	50 ppb	0.500	5.000	5.000	34.6353	24.3434	48.6868	

#### Statistics

No.	NAME	TRY	AV [ug/L]	SD [ug/L]	Cv [%]
1	50 ppb	3	49.08553	1.4405011	2.93



#### Self Check

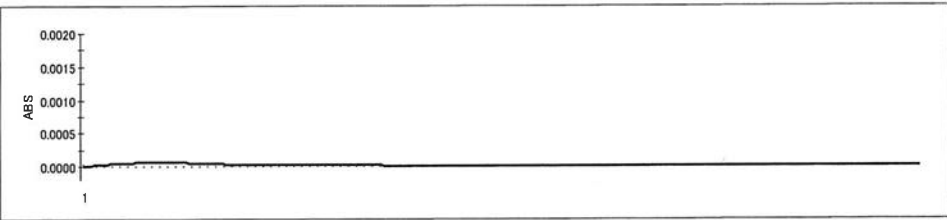
Heat check: PASS!! ( 24.8degC[05:00] -> 28.8degC[03:00])  
Sensor check: PASS!! ( 916- 86= 830)  
Leak check: PASS!! (0.19L/min)  
Sig/Ref check: PASS!! (Sig:3.50V, Ref:3.66V)  
Drift check: PASS!! (-0.0027994 - -0.0032910 = 0.0004916)



Title : Preventive Maintenance RA-4500 SN:21780504  
Date : 05-Aug-24  
Name : Coax Group Corporation Ltd.  
Memo : Blank

SMP

No.	NAME	SVOL [mL]	CVOL [mL]	DVOL [mL]	PEAK [ON]	MEAS [ng]	CONC [ug/L]	Note
1	Blank	5.000	5.000	5.000	0.0000668	-1.9935	-0.3987	



GLP of RA-4500 SN:21780504

SC	Counter	Parameter	
	Measurement Count	12727(01/01/17)	Clear
	Mercury Exhaust Filter Ampos[μm](1500mg)	103(04/09)	Clear
	Lamp Active Time(000h)	163h 44m 04s(07/09)	Clear
	Membrane Filter Usage Time(000h)	596h 25m 03s(08/09)	Clear
	Max Pump tube(750h)	556h 35m 03s(08/09)	Clear
	Hydric Lamp Time	1082h 15m 03s(09/17)	Clear
		P1 tube(H00000)	75h 12m 03s(08/09) Clear
		P2 tube(H00000)	8h 40m 03s(08/09) Clear
		P3 tube(H00000)	8h 35m 03s(08/09) Clear
		P4 tube(H00000)	69h 11m 03s(08/09) Clear
		P5 tube(H00000)	2h 44m 03s(08/09) Clear
		P6 tube(H00000)	10h 11m 03s(08/09) Clear
		P7 tube(H00000)	15h 51m 03s(08/09) Clear

Exit

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AccuStandard®, Inc.

Tel (203) 786-5290  
Fax (203) 786-5287  
www.AccuStandard.com

## CERTIFICATE OF ANALYSIS

### AccuTrace™ Reference Standard

Catalog No: ICP-34N-1  
Description: Mercury ICP Standard  
Element: Mercury (Hg)  
SRM: 3133.  
Lot: 223035027  
Matrix: 10% Nitric acid  
Hazards: Refer to SDS for complete safety information

Date Certified: Mar 10, 2023  
Expiration: Mar 10, 2028  
Density: 1.052 g/mL  
Sample Size: 100 mL  
Components: 1  
Storage Condition: Ambient (>5 °C)

#### Certified Reference Material



Signal Word: Danger



#### Certified Concentration: 1000 µg/mL

##### Trace Elements in µg/mL

Ag nd<0.02	Ce nd<0.2	Gd nd<0.02	Lu nd<0.02	Pb nd<0.2	Sc nd<0.02	Ti nd<0.02
Al nd<0.02	Co nd<0.02	Ge nd<0.2	Mg nd<0.02	Pd nd<0.2	Se nd<0.2	Tl nd<0.2
As nd<0.2	Cr nd<0.02	Hf nd<0.02	Mn nd<0.02	Pr nd<0.2	Si N/A	Tm nd<0.02
Au nd<0.02	Cs N/A	Hg *	Mo nd<0.02	Pt nd<0.2	Sm nd<0.2	U nd<0.2
B nd<0.2	Cu nd<0.02	Ho nd<0.02	Na nd<0.02	Rb N/A	Sr nd<0.02	V nd<0.02
Ba nd<0.02	Dy nd<0.02	In nd<0.2	Nb nd<0.2	Re nd<0.2	Sr nd<0.02	W nd<0.2
Be nd<0.02	Er nd<0.02	Ir nd<0.2	Nd nd<0.02	Rh nd<0.2	Ta nd<0.2	Y nd<0.02
Bi nd<0.2	Eu nd<0.02	K nd<0.2	Ni nd<0.02	Ru nd<0.02	Tb nd<0.02	Yb nd<0.02
Ca nd<0.02	Fe nd<0.02	La nd<0.02	Os N/A	S N/A	Te nd<0.2	Zn nd<0.02
Cd nd<0.02	Ga nd<0.02	Li nd<0.02	P N/A	Sb nd<0.2	Th nd<0.02	Zr nd<0.02

This Certified Reference Material was verified in accordance with ISO/IEC 17025 (AT-1339) and ISO 17034 (AR-1463)

This solution was assayed gravimetrically, using a balance calibrated against weight sets, ID #88270, traceable to NIST

A product with a suffix (-1A, -2B, etc., or -01, -02, etc.) on its lot number has had its expiration date extended and is identical to the same lot number without the suffix.

This product contains mercury and MUST be disposed of in accordance with all federal, state and local regulations.

The gravimetric uncertainty for this product is ±0.24%. The CRM uncertainty is ±2.4%.

In order to verify the concentration(s), the final solution was checked by plasma emission spectroscopy (ICP) against material traceable to the above listed NIST SRM(s).

We use the highest purity raw materials available to minimize impurity levels in the final solution. Typically 99.999%+ pure starting materials are used as well as high purity acids and ASTM Type I 18 megohm deionized water.

All trace level elemental impurities were determined via plasma emission spectroscopy on the concentrate.

All weights are traceable through NIST, Test No. 684/291344-18 & 684/292805-19

All glassware used in preparation is Class A.

All bottles are acid leached and triple rinsed with deionized water prior to use.

Shake bottle prior to use and do not pipette directly out of the bottle. Use only cleaned Class A volumetric glassware. Keep bottle tightly capped.

Certified By:   
Meghan O'Leary, Inorganic CRM Manager

#### 1. Quality Standards:

ISO 17034:2016 – General Requirements for the Competence of Reference Material Producers

ISO/IEC 17025:2017 – General Requirements for the Competence of Testing And Calibration Laboratories

ISO 9001:2015 – Quality Management System – Requirements  
Eagle Registrations

2. **Intended Use:** The product covered by this certificate is designed for calibration or for use in quality control procedures for the specified chemical compounds listed on the reverse side. This product can be used for quantification and/or identification. This product can also be used as a reference material to validate analytical procedures, subject to the conditions under Section 7.

3. **Manufacturing:** All balances are calibrated daily using an in-house procedure with weights that are compared annually to master weights and traceable to NIST. The balances are also calibrated annually by an ISO/IEC 17025 accredited calibration laboratory. Please refer to the NIST test number listed on the front of this certificate. Class A glassware is used in the manufacture and quality control of all standards. Good Laboratory Practices have been used throughout the preparation of this Standard.

4. **Homogeneity:** This product is sufficiently homogeneous and any sample size would be within the uncertainty budget.

5. **Stability:** The manufacturer guarantees the stability of this solution through the expiration date stated on the label, when handled and stored according to the conditions stated on the label

6. **Uncertainty:** The uncertainty values as stated on the face of this certificate have been determined using the EURACHEM/CITAC Guide. We report a combined expanded uncertainty equal to the positive square root of the total variance of the uncertainty of the components using the following formula:  $u_a = \sqrt{(u(V))^2 + (u(m))^2 + (u(V))^2 + (u(RD))^2}$  This formula represents uncertainty components from the mass, volume, short-term stability, long-term stability and homogeneity factors associated with the production of this product. The expanded uncertainty, assumes a normal distribution and a coverage factor of  $k=2$  is chosen using approximately a 95% confidence level.

7. **Legal Notice and Limit of Liability:** This product is for routine laboratory analysis and research purposes only. The company's liability will be limited to replacement of product or refund of purchase price. Notice of claims must be made within thirty (30) days from date of delivery.

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**MERCURY ANALYZER**

**Model : RA-4500**

**Serial No. : 21780504**

Eastern Thai Consulting 1992

## Automatic Mercury Analyzer

Model : RA-4500

### Preventive Maintenance Report

SERIAL No. RA-4500 : 21780504

Soft version : Ver 2.0.8

ROM version : Ver 2.0.2

DATE : 3 FEBRUARY 2025

DUE DATE : 3 AUGUST 2025

INSPECTED BY : *Chayanant T.*  
( Chayanant T. )

APPROVED BY : *Natthaphong P.*  
( Natthaphong P. )



**Kinetic Solutions Company Limited.**

2, Soi Lat Krabang 1, Lat Krabang Subdistrict,

Lat Krabang District, Bangkok 10520

Tel. (+66) 062-789-5221

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KINETIC SOLUTIONS CO., LTD.

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## Inspection

ITEMS	SPECIFICATIONS	RESULT	JUDGE
1. Quantity	-	Accessories are completed.	GOOD OK
2. Appearance	2.1 Overall Appearance	No visible damage.	GOOD OK
	2.2 Parts / Cables	Correctly placed and connected.	
3. Indication	Nameplate / Label	Plate and Label are indicated.	GOOD OK
4. Self check			
4.1 GLP Counter	Mercury Lamp	5000 hours	1625 hr OK
	Membrane Filter	2000 hours or 1 year after replace	830 hr OK
	Main Pump Tube	750 hours or 1 year after replace	721 hr OK
	Absorbed Hg	1500 mg	2 mg OK
	P1 Tube	2000 hours or 1 year after replace	109 hr OK
	P2 Tube	2000 hours or 1 year after replace	12 hr OK
	P3 Tube	2000 hours or 1 year after replace	11 hr OK
	P4 Tube	2000 hours or 1 year after replace	96 hr OK
	P5 Tube	2000 hours or 1 year after replace	10 hr OK
	P6 Tube	2000 hours or 1 year after replace	28 hr OK
	P7 Tube	2000 hours or 1 year after replace	27 hr OK
	Heater	2000 hours	1254 hr OK
4.2 Check/Test	Flow rate Adjustment	Flow rate 0.14 - 0.20 L/min	0.19 L/min OK
	Signals Detector	V.SIG is 3.5 - 4.5 V.	3.50 V. OK
		V.REF is 3.5 - 4.5 V.	3.52 V. OK
	Cooling Fan	Check the operation of cooling fan	PASS OK
	Color Sensor	signals (R,G,B) at least one nonzero	PASS OK
	Radiation Thermometer	a positive valve form thermometer	PASS OK
	Heater	heater temp rises 4 °C within 5 min.	PASS OK
5. Heater	Temperature	At 95°C ± 2°C with 30 min.	94.7°C OK
6. Calibration Curve	no pretreatment	0-100 ng : Max.Dev. ≤ 5.0%	3.40% OK
7. Repeatability	50 ug/L, 500ul, 25ng (n=5)	Average: 50ug/L ± 0.05 ug/L	51.06412 ug/L OK
		C.V. ≤ 5.0%	0.87% OK
8. Blank	no pretreatment	Less than 0.02 (AREA)	0.0025 AREA OK

### Apparatus

NAME	Date Certified	Expiration
Mercury ICP Standard (1000 ug/mL) AccuStandard, Inc. Lot 223035027	March 10, 2023	March 10, 2028

### Inspection details

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## Inspection details

### Remark

#### 1. Cleaning Mercury Analyzer RA-4500

- Body case, Reagent Tube, Cell Detector, Table of Sample, Measurement Probe, Rinse Tube

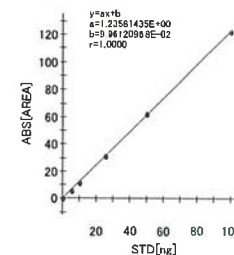
#### 2. Checking Mercury Analyzer RA-4500

- Mercury Lamp
- Membrane Filter
- Main Pump Tube
- Motor Pump
- Motor Reagent pump
- Motor of Arm
- Motor of Table
- Motor of Lift
- Outlet Activated Carbon Filter
- Flow Sensor
- Valves
- Heater
- Cooling Fan
- Instrument Performance

#### 3. Inspection Calibration curve and Reproducibility of Mercury Analyzer RA-4500

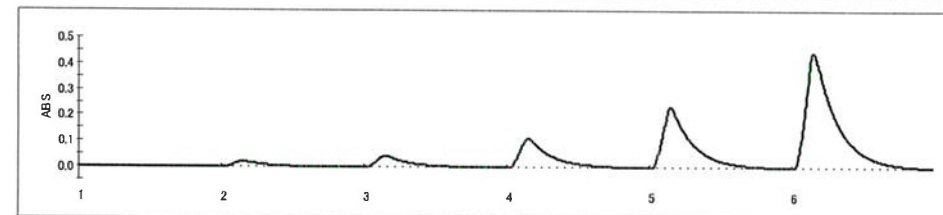
Title : Preventive Maintenance Mercury Analyzer RA-4500 SN21780504  
 Date : 03-Feb-25  
 Name : Kinetic solutions  
 Memo : Calibration Curve 0 - 100 ng

Calib



### STD

No.	STD [ppm]	SVOL [mL]	CVOL [mL]	DVOL [mL]	STD [ng]	AREA [ON]	MEAS [ng]	Dev [%]	Note
1	0.000	0.000	5.000	5.000	0.000	0.0157	-0.0679	-	
2	0.050	0.100	5.000	5.000	5.000	6.0656	4.8276	3.4	
3	0.050	0.200	5.000	5.000	10.000	12.3481	9.9113	0.9	
4	0.050	0.500	5.000	5.000	25.000	31.2619	25.2160	0.9	
5	1.000	0.050	5.000	5.000	50.000	62.2600	50.2991	0.6	
6	1.000	0.100	5.000	5.000	100.000	123.4511	99.8139	0.2	



### SMP

No.	NAME	SVOL [mL]	CVOL [mL]	DVOL [mL]	AREA [ON]	MEAS [ng]	CONC [ug/L]	Note
1	50ppb, 500ul, 25ng	0.500	5.000	5.000	31.4230	25.3464	50.6928	
2	50ppb, 500ul, 25ng	0.500	5.000	5.000	31.3033	25.2495	50.4990	
3	50ppb, 500ul, 25ng	0.500	5.000	5.000	31.9460	25.7696	51.5392	
4	50ppb, 500ul, 25ng	0.500	5.000	5.000	31.7697	25.6269	51.2538	
5	50ppb, 500ul, 25ng	0.500	5.000	5.000	31.8204	25.6679	51.3358	

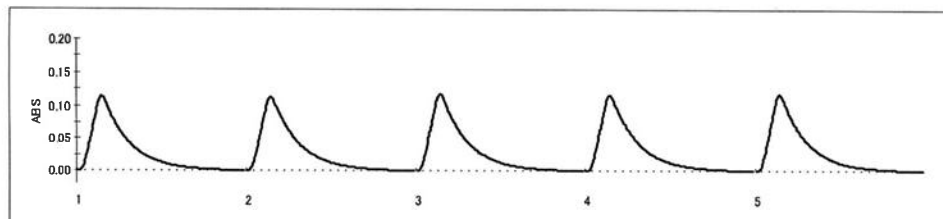
### Statistics

No.	NAME	TRY	AV [ug/L]	SD [ug/L]	Cv [%]
1	50ppb, 500ul, 25ng	5	51.06412	0.4451766	0.87

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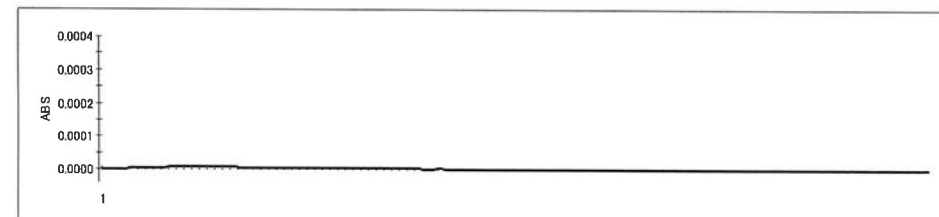
## Self Check

Heat check:PASS!! ( 24.9degC[05:00] -> 28.9degC[02:55])  
 Sensor check:PASS!! (1091- 69=1022)  
 Leak check:PASS!! (0.19L/min)  
 Sig/Ref check:PASS!! (Sig:3.50V, Ref:3.52V)  
 Drift check:PASS!! (-0.0054498 - -0.0059411 = 0.0004914)

Title : Preventive Maintenance Mercury Analyzer RA-4500 SN21780504  
 Date : 03-Feb-25  
 Name : Kinetic solutions  
 Memo : Blank

## SMP

No.	NAME	SVOL [mL]	CVOL [mL]	DVOL [mL]	AREA [ON]	MEAS [ng]	CONC [ug/L]	Note
1	blank	0.000	5.000	5.000	0.0025	-0.0786	0.0000	



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AccuStandard, Inc.

Tel (203) 786-5290  
Fax (203) 786-5287  
www.AccuStandard.com

# CERTIFICATE OF ANALYSIS

## AccuTrace™ Reference Standard

Catalog No: ICP-34N-1  
Description: Mercury ICP Standard  
Element: Mercury (Hg)  
SRM: 3133  
Lot: 223035027  
Matrix: 10% Nitric acid  
Hazards: Refer to SDS for complete safety information

Date Certified: Mar 10, 2023  
Expiration: Mar 10, 2028  
Density: 1.052 g/mL  
Sample Size: 100 mL  
Components: 1  
Storage Condition: Ambient (>5 °C)

### Certified Reference Material



### Certified Concentration: 1000 µg/mL

#### Trace Elements in µg/mL

Ag nd<0.02	Ce nd<0.2	Gd nd<0.02	Lu nd<0.02	Pb nd<0.2	Sc nd<0.02	Ti nd<0.02
Al nd<0.02	Co nd<0.02	Ge nd<0.2	Mg nd<0.02	Pd nd<0.2	Se nd<0.2	Tl nd<0.2
As nd<0.2	Cr nd<0.02	Hf nd<0.02	Mn nd<0.02	Pr nd<0.2	Si N/A	Tm nd<0.02
Au nd<0.02	Cs N/A	Hg *	Mo nd<0.02	Pt nd<0.2	Sm nd<0.2	U nd<0.2
B nd<0.2	Cu nd<0.02	Ho nd<0.02	Na nd<0.02	Rb N/A	Sn nd<0.02	V nd<0.02
Ba nd<0.02	Dy nd<0.02	In nd<0.2	Nb nd<0.2	Re nd<0.2	Sr nd<0.02	W nd<0.2
Be nd<0.02	Er nd<0.02	Ir nd<0.2	Nd nd<0.02	Rh nd<0.2	Ta nd<0.2	Y nd<0.02
Bi nd<0.2	Eu nd<0.02	K nd<0.2	Ni nd<0.02	Ru nd<0.02	Tb nd<0.02	Yb nd<0.02
Ca nd<0.02	Fe nd<0.02	La nd<0.02	Os N/A	S N/A	Te nd<0.2	Zn nd<0.02
Cd nd<0.02	Ga nd<0.02	Li nd<0.02	P N/A	Sb nd<0.2	Th nd<0.02	Zr nd<0.02

This Certified Reference Material was verified in accordance with ISO/IEC 17025 (AT-1339) and ISO 17034 (AR-1463)

This solution was assayed gravimetrically, using a balance calibrated against weight sets, ID #88270, traceable to NIST

A product with a suffix (-1A, -2B, etc. or -01, -02, etc.) on its lot number has had its expiration date extended and is identical to the same lot number without the suffix.

This product contains mercury and MUST be disposed of in accordance with all federal, state and local regulations.

The gravimetric uncertainty for this product is ±0.24%. The CRM uncertainty is ±2.4%.

In order to verify the concentration(s), the final solution was checked by plasma emission spectroscopy (ICP) against material traceable to the above listed NIST SRM(s).

We use the highest purity raw materials available to minimize impurity levels in the final solution. Typically 99.999%+ pure starting materials are used as well as high purity acids and ASTM Type I 18 megohm deionized water.

All trace level elemental impurities were determined via plasma emission spectroscopy on the concentrate.

All weights are traceable through NIST, Test No. 684/291344-18 & 684/292805-19

All glassware used in preparation is Class A.

All bottles are acid leached and triple rinsed with deionized water prior to use.

Shake bottle prior to use and do not pipette directly out of the bottle. Use only cleaned Class A volumetric glassware. Keep bottle tightly capped.

Certified By: *Megan O'Leary*  
Megan O'Leary, Inorganic QA Manager

For use in routine laboratory analysis.

### 1. Quality Standards:

ISO 17034:2016 – General Requirements for the Competence of Reference Material Producers

ISO/IEC 17025:2017 – General Requirements for the Competence of Testing And Calibration Laboratories

ISO 9001:2015 – Quality Management System – Requirements  
Eagle Registrations

2. **Intended Use:** The product covered by this certificate is designed for calibration or for use in quality control procedures for the specified chemical compounds listed on the reverse side. This product can be used for quantification and/or identification. This product can also be used as a reference material to validate analytical procedures, subject to the conditions under Section 7.

3. **Manufacturing:** All balances are calibrated daily using an in-house procedure with weights that are compared annually to master weights and traceable to NIST. The balances are also calibrated annually by an ISO/IEC 17025 accredited calibration laboratory. Please refer to the NIST test number listed on the front of this certificate. Class A glassware is used in the manufacture and quality control of all standards. Good Laboratory Practices have been used throughout the preparation of this Standard.

4. **Homogeneity:** This product is sufficiently homogeneous and any sample size would be within the uncertainty budget.

5. **Stability:** The manufacturer guarantees the stability of this solution through the expiration date stated on the label, when handled and stored according to the conditions stated on the label.

6. **Uncertainty:** The uncertainty values as stated on the face of this certificate have been determined using the EURACHEM/CITAC Guide. We report a combined expanded uncertainty equal to the positive square root of the total variance of the uncertainty of the components using the following formula:  $u_c = \sqrt{(u(V))^2 + (u(m))^2 + (u(T))^2 + (u(R))^2}$ . This formula represents uncertainty components from the mass, volume, short-term stability, long-term stability and homogeneity factors associated with the production of this product. The expanded uncertainty, assumes a normal distribution and a coverage factor of  $k=2$  is chosen using approximately a 95% confidence level.

7. **Legal Notice and Limit of Liability:** This product is for routine laboratory analysis and research purposes only. The company's liability will be limited to replacement of product or refund of purchase price. Notice of claims must be made within thirty (30) days from date of delivery.

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**pH Meter**

**Model : SevenCompact S220**

**Serial No. : B835349235**

Certificate Number CCP-2401-24**Calibration Certificate**  
**SevenCompact™ pH/Ion Meter S220****Customer**

Company EASTERN THAI CONSULTING 1992 CO., LTD.  
Address 683 Moo 11, Sukhaphiban 8 Rd., Nong Kham, Sriracha  
Chonburi 20230  
Customer ID number 301608441  
Customer representative Sasiporn Nakin

**Instrument**

Type SevenCompact™ S220 Instrument serial number B835349235  
Internal identification LABE 11/6 Firmware version 2.01.03

**Technical Specifications**

Measuring range -2000.0 ... 2000.0 mV -2.000 ... 20.000 pH  
Resolution 0.1 mV 0.001 pH  
Limit of error ± 0.2 mV; ± 0.1 mV in range -1000 ... 1000 mV ± 0.002 pH

Temperature range MTC -30.0 ... 130.0 °C  
Temperature range ATC -5.0 ... 130.0 °C  
Resolution 0.1 °C  
Limit of error ± 0.1 °C

**Procedure Statement**

METTLER TOLEDO Certification SOP (Doc. No. 30027577) is 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.

Certificate Number CCP-2401-24**Certification Tools**

Certified digital voltmeter Manufacturer Keysight Technologies Serial number MY60051376  
Type 34401A Certificate number E1U2303781  
Date of certification December 10, 2023

Certified temperature resistors Manufacturer METTLER-TOLEDO Serial number A425  
Type 51302410 Certificate number 71447  
Date of certification September 26, 2023

Designation	Nominal value	Certified value
NTC 30 kΩ, 0 °C	94.980 kΩ	94.941 kΩ
NTC 30 kΩ, 25 °C	30.000 kΩ	29.992 kΩ
NTC 30 kΩ, 50 °C	10.969 kΩ	10.975 kΩ
NTC 30 kΩ, 75 °C	4.528 kΩ	4.528 kΩ
NTC 30 kΩ, 100 °C	2.070 kΩ	2.069 kΩ
PT1000, 0 °C	1.0000 kΩ	1.0001 kΩ
PT1000, 25 °C	1.0974 kΩ	1.0974 kΩ
PT1000, 50 °C	1.1940 kΩ	1.1940 kΩ
PT1000, 75 °C	1.2899 kΩ	1.2900 kΩ
PT1000, 100 °C	1.3851 kΩ	1.3852 kΩ

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Certificate Number CCP-2401-24

## Certification Measurements

## pH/mV sensor input

Designation	Certified value	Measured value	Max. tolerance	Passed / Failed
-1900 mV	-1900.0 mV	-1899.9 mV	0.2 mV	Passed
-1000 mV	-1000.0 mV	-999.9 mV	0.1 mV	Passed
-500 mV	-500.0 mV	-500.0 mV	0.1 mV	Passed
-180 mV	-180.0 mV	-180.0 mV	0.1 mV	Passed
0 mV	0.0 mV	0.0 mV	0.1 mV	Passed
180 mV	180.0 mV	179.9 mV	0.1 mV	Passed
500 mV	500.0 mV	499.9 mV	0.1 mV	Passed
1000 mV	1000.0 mV	999.9 mV	0.1 mV	Passed
1900 mV	1900.0 mV	1899.9 mV	0.2 mV	Passed

pH/mV sensor input  
at high impedance

Designation	Measured low imp.	Measured high imp.	Max. difference	Passed / Failed
1900 mV	1899.9 mV	1899.9 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	75.0 °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	0.0 °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	75.0 °C	0.1 °C	Passed
PT1000, 100 °C	100.0 °C	100.0 °C	0.1 °C	Passed

Digital sensor input with  
pH sensor

Sensor recognition	The sensor was recognized correctly by the meter	Passed
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## 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 above.

## Remarks

Service Assignment ID : 0332980040-001

Certification of the instrument was performed by

Name Thiraphong Salanoi Function Service Engineer  
Company Mettler-Toledo (Thailand) Ltd.

Date February 5, 2024

Signature

## Performance Test

Attachment to Certificate No. CCP-2401-24

## pH Electrode

Type: InLab® Expert Pro-ISM

S/N: 2463982

## Certified standards used

Standard 1:	Type: pH Buffer	Manufacturer: METTLER TOLEDO	Exp. date: 7/Jul/2025
	Nominal value: pH ( 25.00 °C):	4.01	Lot No.: 1J188G
Standard 2:	Type: pH Buffer	Manufacturer: METTLER TOLEDO	Exp. date: 10/Jul/2025
	Nominal value: pH ( 25.00 °C):	7.00	Lot No.: 1J191H
Standard 3:	Type: pH Buffer	Manufacturer: METTLER TOLEDO	Exp. date: 23/Nov/2024
	Nominal value: pH ( 25.00 °C):	10.01	Lot No.: 1H327A
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 Segment	3-Point calibration			2-Point calibration			2-Point calibration		
3-Point Calibration	°C		pH	°C		pH	°C		pH
Cal 1	ATC	27.1	4.01	ATC	-	-	ATC	-	-
Cal 2	ATC	27.0	7.00	ATC	-	-	ATC	-	-
Offset (mV)	6.1			-			-		
Slope % (or mV/pH)	98.5			-			-		
Cal 3	ATC	27.1	10.01						
Offset (mV)	6.1								
Slope % (or mV/pH)	98.1								

## Measurements

Resolution: 2 Decimal places

As Found					As Left				
Buffer Values	Measured		Difference		Buffer Values	Measured		Difference	
pH	°C	pH	pH	pH	pH	°C	pH	pH	pH
4.01	27.0	ATC	4.03	0.02	4.01	27.0	ATC	4.02	0.01
7.00	27.1	ATC	7.04	0.04	7.00	26.8	ATC	7.01	0.01
9.99	27.1	ATC	9.98	-0.01	9.99	27.1	ATC	10.01	0.02

Redox Measurement Result = - mV

Note: The difference result of calibrated electrode should be within +/- 0.05 pH

## Remarks

Place: Laboratory Room

Calibration Date: 5/Feb/2024

Service Specialist: Thiraphong Salanoi

Signature:



**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 Kham

Siracha

CHONBURI 20230

Customer ID number 301608441

Customer representative คุณ ศิริกร นาคฉันท

#### Instrument

Type SevenCompact™ S220

Instrument Serial Number B835349235

Internal identification LABE 11/6

Firmware version 1.20.06

#### Technical specifications

Measuring Range -1999.9 ... 1999.9 mV -2.000 ... 20.000 pH

Resolution 0.1 mV 0.001 pH

Limit of Error  $\pm 0.2$  mV  $\pm 0.002$  pH

Temperature range MTC -30.0 ... 130.0 °C

Temperature range ATC -5.0 ... 130.0 °C

Resolution 0.1 °C

Limit of Error  $\pm 0.1$  °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 KEYSIGHT TECHNOLOGIES

Type 34461A

Control No. ANA143

Serial number MY60036967

Certificate number E1U2401054

Due date March 10, 2025

##### Certified Temperature Resistors

Manufacturer METTLER-TOLEDO

Type 51302410

Control No. ANA114

Serial number A275

Certificate number 73757

Due date February 12, 2026

Designation	Nominal value	Certified value
NTC 30 k $\Omega$ , 0 °C	94.980 k $\Omega$	94.9730 k $\Omega$
NTC 30 k $\Omega$ , 25 °C	30.000 k $\Omega$	29.9950 k $\Omega$
NTC 30 k $\Omega$ , 50 °C	10.969 k $\Omega$	10.9704 k $\Omega$
NTC 30 k $\Omega$ , 75 °C	4.528 k $\Omega$	4.5275 k $\Omega$
NTC 30 k $\Omega$ , 100 °C	2.070 k $\Omega$	2.0714 k $\Omega$
PT1000, 0 °C	1.000 k $\Omega$	1.0001 k $\Omega$
PT1000, 25 °C	1.0974 k $\Omega$	1.0975 k $\Omega$
PT1000, 50 °C	1.1940 k $\Omega$	1.1942 k $\Omega$
PT1000, 75 °C	1.2899 k $\Omega$	1.2900 k $\Omega$
PT1000, 100 °C	1.3851 k $\Omega$	1.3851 k $\Omega$

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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 [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: <u>pH Buffer</u>	Manufacturer: <u>METTLER TOLEDO</u>	Exp. date: <u>3-Dec-2026</u>
	Nominal value: <u>pH ( 25.00 °C):</u>	<u>4.01</u>	Lot No.: <u>1J338E</u>
Standard 2:	Type: <u>pH Buffer</u>	Manufacturer: <u>METTLER TOLEDO</u>	Exp. date: <u>27-Nov-2026</u>
	Nominal value: <u>pH ( 25.00 °C):</u>	<u>7.00</u>	Lot No.: <u>1J331B</u>
Standard 3:	Type: <u>pH Buffer</u>	Manufacturer: <u>METTLER TOLEDO</u>	Exp. date: <u>11-Jan-2026</u>
	Nominal value: <u>pH ( 25.00 °C):</u>	<u>10.00</u>	Lot No.: <u>1K011B</u>
Standard 4:	Type: <u>Redox Solution</u>	Manufacturer: <u>METTLER TOLEDO</u>	Exp. date: <u>-</u>
	Nominal value: <u>pH ( 25.00 °C):</u>	<u>-</u>	Lot No.: <u>-</u>

## 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
Cal 1	ATC 25.5	7.00	ATC		ATC	
Cal 2	ATC 25.5	4.00	ATC		ATC	
Offset (mV)	<u>-27.2</u>					
Slope % (or mV/pH)	<u>95.9</u>					
Cal 3	ATC 25.5	10.01				
Offset (mV)	<u>-27.2</u>					
Slope % (or mV/pH)	<u>97.4</u>					

## Measurements

Resolution: 2 Decimal places

As Found					As Left				
Buffer Values	Measured	Difference	Buffer Values	Measured	Difference	Buffer Values	Measured	Difference	
pH	°C	pH	pH	°C	pH	pH	°C	pH	pH
4.01	25.3	ATC	4.02	0.01	4.01	25.3	ATC	4.01	0.00
7.00	25.2	ATC	6.98	-0.02	7.00	25.2	ATC	7.01	0.01
9.99	25.3	ATC	10.11	0.12	9.99	25.2	ATC	10.00	0.01

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: [Signature]

**COPY**

**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	Conventional Mass	Expanded Uncertainty	Maximum Permissible Error	ID No.
	(mg)		(mg)	± (mg)	
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

**COPY**





Certificate No. : 24-062445

Sample Code : 24-25551-001

## 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 -

COPY

**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  
Scientist

Approved by ( Mr. Somchai Neampunt )  
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 photo 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 ( $\rho_a$ ) 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

## 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  
Scientist

Approved by ( Mr. Somchai Neampunt )  
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. : 24-079773  
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 -

COPY

**THERMO-HYGROMETER**

**Model : 608-H1**

**Serial No. : 45106737**

## CERTIFICATE OF CALIBRATION

Certificate No. : 24-062442  
Sample Code : 24-25546-002Customer : EASTERN THAI CONSULTING 1992 CO., LTD.  
683 Moo 11, Sukhapibarn 8 Rd., Nongkham,  
Sriracha, Chonburi 20230Location 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 : 23 May 2024 Date of Calibration : 27-28 May 2024

## 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-0064-23	07 August 2024
3.2 Digital Thermometer	Optidew 401	LB-DP-03 & LB-DP-03 (Temp.)	23-103423	03 September 2024
3.3 Digital Thermometer	34972A	LB-DA-07 with RTD-89	23-101374	05 September 2024

## 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

Scientist

Approved by

(Mr. Somchai Neampunt)

Signed for Director

Issue date 30 May 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. : 24-062442  
Sample Code : 24-25546-002

## 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		Expanded uncertainty °C
	Controlled humidity %RH	Temperature °C	Average reading °C	Correction value °C	
20	50	20.00	20.1	- 0.10	± 0.39
25	50	25.00	25.0	0.00	± 0.39
30	50	30.00	29.9	+ 0.10	± 0.39

## Humidity measurement

Resolution : 0.1 %RH  
Range : 10 %RH to 95 %RH

Calibration point %RH	Average of standard reading		Unit under calibration		Expanded uncertainty %RH
	Air temperature °C	Calculated humidity %RH	Average reading %RH	Correction value %RH	
45	25.02	45.10	48.4	- 3.30	± 1.3
60	25.01	60.07	63.4	- 3.33	± 1.5
75	25.01	75.15	78.5	- 3.35	± 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  $k$ , 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

**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.  
683 Moo 11, Sukhapiarn 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

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 -

COPY

**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-2409-0303

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 :** RE240356  
**Customer name :** Eastern Thai Consulting 1992 Co., Ltd.  
683 Moo. 11, Sukhapiban 8 Rd., Nongkham,  
Siracha, Chonburi 20230  
**Received date :** 27 February 2024  
**Calibrate date :** 28 February 2024  
**Issue date :** 28 February 2024  
**Ambient Temperature :**  $(25 \pm 2)^{\circ}\text{C}$   
**Relative Humidity :**  $(50 \pm 15)\% \text{ RH}$   
**Calibrated Location :** Hanna Instruments (Thailand) Ltd.

**Calibrated by :** ☒ Mr. Pichit Petthong  
☐ Mr. Channarong Soinak

**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)

**COPY**



Certificate No. : HIT-2409-0303

Page : 2 of 2

### Condition of this result of analysis

### Turbidity standard calibration set:

Product code: HI98703-11 Lot No.: SC0338/22

Standard Cuvette	Target Value (NTU)	Mean Lot value (NTU)	Lot Number	Expire Date
HI98703-1	<0.10	0.08	6928	October 2024
HI98703-2	$15.0 \pm 0.3$	15.1	6963	October 2024
HI98703-3	$100 \pm 2$	101	6874	October 2024
HI98703-4	$750 \pm 10$	751	6957	October 2024

### Method of Standardization

This quality product is standardized using Turbidity meter with is calibration ratio nephelometric method ( $90^{\circ}$ ), 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	-
$15.0 \pm 0.3$	15.0	-
$100 \pm 2$	99.8	-0.2
$750 \pm 10$	748	-2

\*\* End of certificate \*\*

**COPY**

**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, Sukhapiban 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**



**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.** BSCC-UV-146/24  
**Equipment** UV/Vis Spectrophotometer  
**Model** UV-1800  
**Manufacturer** Shimadzu  
**Serial No.** A11635101643 CD  
**ID No.** LABE 03/2  
**Date of receipt** 22 April 2024  
**Date of calibration** 22 April 2024  
**Date of issue** 29 April 2024

**Customer name** Eastern Thai Consulting 1992 Co., Ltd.

**Address** 683 Moo 11, Sukkhaphibarn 8 Rd., Nongkham, Sriracha, Chonburi 20230

**Temperature** (22.9-24.1) °C (On site)  
**Humidity** (41.7-46.9) %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. 116614 and 116613  
Photometric Accuracy is traceable to certificate No. 116210 and 116224  
Stray Light is traceable to certificate No. 116616  
The above certificate are traceable to SI unit through Starna Scientific Ltd.  
(UKAS accredited calibration laboratory NO. 0659)

**Calibrated by** Mr.Poomjai Korsawatvorakul

Approved by

**Mr.Sonthi Temboonsakdi**  
Service Manager

The above results are valid exclusively for the calibrated item(s) as mention in this report / certificate.  
Advertising the report / Certificate and publicity of the results are prohibited and also shall not be reproduced  
except in full, without written approval of the Bara Scientific Co., Ltd.

**COPY**



**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

**Certificate No.** BSCC-UV-146/24

Number of Page(s) 2 of 3

### Calibration Results:

#### 1.Wavelength Accuracy

Certified Wavelength (nm)	UUC (nm)	Error (nm)	Uncertainty (±nm)
287.71	287.75	0.04	0.18
445.82	445.89	0.07	0.18
536.52	536.50	-0.02	0.18
741.02	741.01	-0.01	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 0.7415	0.0000 0.7387	0.0000 -0.0028	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 0.6406	0.0000 0.6395	0.0000 -0.0011	0.0075 0.0075

\*CNR = Customer not request

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www.barascientific.com



# Certificate of Calibration

Certificate No. **BSCC-UV-146/24** 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	0.0000	0.0000	0.0042
	0.5715	0.5729	0.0014	0.0042
	0.7087	0.7087	0.0000	0.0042
	1.0987	1.1005	0.0018	0.0042
440.0	0.0000	0.0000	0.0000	0.0042
	0.5561	0.5578	0.0017	0.0042
	0.6968	0.6969	0.0001	0.0042
	1.0757	1.0774	0.0017	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
	0.5193	0.5213	0.0020	0.0042
	0.6937	0.6940	0.0003	0.0042
	1.0411	1.0428	0.0017	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
	0.5605	0.5624	0.0019	0.0042
	0.7579	0.7583	0.0004	0.0042
	1.1131	1.1138	0.0007	0.0042

\*CNR = Customer not request

### 4. Stray Light\*

Standard cut-off wavelength (nm)	Unit Under Calibration(UUC)		
	Wavelength (nm)	Transmission (%T)	Absorbance (A)
201.33 $\pm$ 0.11nm	200.80	0.9750	2.0111

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%.

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**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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# 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

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# 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%.

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