

ภาคผนวก 9

เอกสารขึ้นทะเบียนห้องปฏิบัติการ วิเคราะห์เอกสารชน



ที่ อก ๐๓๓๐(๓)/๒๖๗๑๔

กรมโรงงานอุตสาหกรรม
ถนนพระรามที่ ๖ แขวงทุ่งพญาไท
เขตราชเทวี กรุงเทพฯ ๑๐๔๐๐

๔ กันยายน ๒๕๖๔

เรื่อง ต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

เรียน กรรมการผู้จัดการ บริษัท ศูนย์วิเคราะห์น้ำ จำกัด

อ้างถึง คำขอขึ้นทะเบียน/ต่ออายุ/เปลี่ยนแปลงบุคลากร และชนิดสารมลพิษของห้องปฏิบัติการวิเคราะห์เอกชน
ลงวันที่ ๑๓ พฤษภาคม ๒๕๖๔

สิ่งที่ส่งมาด้วย เอกสารแนบท้ายหนังสือรับต่ออายุขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน
บริษัท ศูนย์วิเคราะห์น้ำ จำกัด จำนวน ๑๐ แผ่น

ตามหนังสือที่อ้างถึง บริษัท ศูนย์วิเคราะห์น้ำ จำกัด ขอต่ออายุหนังสือรับขึ้นทะเบียน
ห้องปฏิบัติการวิเคราะห์เอกชน เลขทะเบียน ว-๓๕๐ สถาบันที่ตั้งเลขที่ ๑/๑๔ หมู่ที่ ๕ ตำบลคานหาม อำเภอกุฉินารายณ์
จังหวัดพระนครศรีอยุธยา ต่อกรมโรงงานอุตสาหกรรมนั้น

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว ให้บริษัท ศูนย์วิเคราะห์น้ำ จำกัด ต่ออายุหนังสือรับขึ้นทะเบียน
ห้องปฏิบัติการวิเคราะห์เอกชน โดยมีองค์ประกอบดังนี้

ก. ผู้ควบคุมดูแลห้องปฏิบัติการวิเคราะห์

- | | |
|----------------------------|----------------------------|
| ๑) นางนิรมล ผดุงสงฆ์ | ทะเบียนเลขที่ ว ๓๕๐-ค-๐๐๐๑ |
| ๒) นางสาวเปรมฤดี ชิวเศรษฐ์ | ทะเบียนเลขที่ ว ๓๕๐-ค-๐๐๐๒ |
| ๓) นางสาวนิตยา ชื่นอุบล | ทะเบียนเลขที่ ว ๓๕๐-ค-๐๐๐๓ |
| ๔) นางสาวจุฑารัตน์ ภูผาน | ทะเบียนเลขที่ ว ๓๕๐-ค-๐๐๐๔ |

ข. เจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์

- | | |
|-----------------------------|----------------------------|
| ๑) นางสาวอนุสรณ์ แพงดวงแก้ว | ทะเบียนเลขที่ ว ๓๕๐-จ-๐๐๐๑ |
| ๒) นายรังศศิกร โกสุมภ์ | ทะเบียนเลขที่ ว ๓๕๐-จ-๐๐๐๒ |
| ๓) นางสาวสุวิมล บังแสงอ่อน | ทะเบียนเลขที่ ว ๓๕๐-จ-๐๐๐๓ |
| ๔) นางสาววราพร วันวิเศษ | ทะเบียนเลขที่ ว ๓๕๐-จ-๐๐๐๔ |
| ๕) นางสุนันทา แจ่มมิน | ทะเบียนเลขที่ ว ๓๕๐-จ-๐๐๐๕ |
| ๖) นายพณิพงศ์ วรสุมนต์ | ทะเบียนเลขที่ ว ๓๕๐-จ-๐๐๐๖ |
| ๗) นางสาวอรรณพ สีสัก | ทะเบียนเลขที่ ว ๓๕๐-จ-๐๐๐๗ |
| ๘) นายวชิราวุฒ อุไรวรรณ | ทะเบียนเลขที่ ว ๓๕๐-จ-๐๐๐๘ |
| ๙) นางสาวศนิศรา สร้อยจิตร | ทะเบียนเลขที่ ว ๓๕๐-จ-๐๐๐๙ |
| ๑๐) นางสาวณกร ผดุงเวียง | ทะเบียนเลขที่ ว ๓๕๐-จ-๐๐๑๐ |
| ๑๑) นายมานพ สลามขอ | ทะเบียนเลขที่ ว ๓๕๐-จ-๐๐๑๑ |
| ๑๒) นายจตุเมธ อินทรโอภาส | ทะเบียนเลขที่ ว ๓๕๐-จ-๐๐๑๒ |
| ๑๓) นางสาวแคทริยา มีแก้ว | ทะเบียนเลขที่ ว ๓๕๐-จ-๐๐๑๓ |
| ๑๔) นางสาวอัญชิสา ผลองศรี | ทะเบียนเลขที่ ว ๓๕๐-จ-๐๐๑๔ |
| ๑๕) นายรัตพล ใบไกร | ทะเบียนเลขที่ ว ๓๕๐-จ-๐๐๑๕ |

๑๖) นางสาวสมมาต

รายงานผลการดำเนินงานตามมาตรการลดผลกระทบสิ่งแวดล้อมและผลการติดตามตรวจสอบคุณภาพสิ่งแวดล้อม
โครงการ บี คอนโด


๑๖) นางสาวสมมาต อยู่สา	ทะเบียนเลขที่ ๖-๑๕๐-จ-๐๐๑๖
๑๗) นายภูเบศร์ สรรยศ	ทะเบียนเลขที่ ๖-๑๕๐-จ-๐๐๑๗
๑๘) นางสาวกันชญา อ่างโยธา	ทะเบียนเลขที่ ๖-๑๕๐-จ-๐๐๑๘
๑๙) นายสุวิทย์ ใจริ้วภาพกุล	ทะเบียนเลขที่ ๖-๑๕๐-จ-๐๐๑๙
๒๐) นายธนภฤต สุจริต	ทะเบียนเลขที่ ๖-๑๕๐-จ-๐๐๒๐
๒๑) นางสาวกนกพร หลวงประมุล	ทะเบียนเลขที่ ๖-๑๕๐-จ-๐๐๒๑
๒๒) นางสาววนิชยา แก้วรุ่งฟ้า	ทะเบียนเลขที่ ๖-๑๕๐-จ-๐๐๒๒
๒๓) นางสาวสุราสินี หอมสาทา	ทะเบียนเลขที่ ๖-๑๕๐-จ-๐๐๒๓
๒๔) นางสาวเครือวัลย์ สมภิกพงษ์	ทะเบียนเลขที่ ๖-๑๕๐-จ-๐๐๒๔

ค. ขอบข่ายสารมลพิษที่ได้รับขึ้นทะเบียนให้วิเคราะห์ในน้ำเสีย น้ำใต้ดิน สิ่งปฏิกูลหรือวัสดุที่ไม่ใช้แล้ว และดิน ตามสิ่งที่ส่งมาด้วย

หนังสือฉบับนี้จะหมดอายุในวันที่ ๑๖ มิถุนายน ๒๕๖๘ หากประสงค์จะต่ออายุหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน ให้ยื่นคำขอต่ออายุพร้อมเอกสารประกอบคำขอต่อกรมโรงงานอุตสาหกรรมภายใน ๓๐ วัน ก่อนวันสิ้นอายุของหนังสือรับขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน ทั้งนี้ สามารถยื่นคำขอผ่านระบบอิเล็กทรอนิกส์ได้ทั้งหน้าเว็บไซต์กรมโรงงานอุตสาหกรรม ตาม QR Codeท้ายหนังสือฉบับนี้

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ


(นางจินดา เคชะกรินทร์)
ผู้อำนวยการกองวิจัยและเฝ้าระวังมลพิษโรงงาน
ปฏิบัติราชการแทนอธิบดีกรมโรงงานอุตสาหกรรม



กองวิจัยและเฝ้าระวังมลพิษโรงงาน
กลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษและทะเบียนห้องปฏิบัติการ
โทร. ๐ ๒๕๓๐ ๖๓๑๒ ต่อ ๒๑๐๓-๕
โทรสาร ๐ ๒๕๓๐ ๖๓๑๒ ต่อ ๒๑๑๙
ไปรษณีย์อิเล็กทรอนิกส์ saraban@diw.mail.go.th

ยื่นคำขอผ่านระบบอิเล็กทรอนิกส์



"อุตสาหกรรมก้าวไกล ประเทศไทยก้าวหน้า ร่วมกันพัฒนา อุตสาหกรรมสีเขียว"



เอกสารแนบท้ายหนังสือรับต่ออายุขึ้นทะเบียนห้องปฏิบัติการวิเคราะห์เอกชน

บริษัท ศูนย์วิเคราะห์น้ำ จำกัด

เลขทะเบียน ๖-๑๙๐

ที่ ออก ๐๓๑๐(๑)๑๒๗๑๔

ลงวันที่ ๔ กันยายน ๒๕๖๕

ขอขยายสารมลพิษที่ได้รับขึ้นทะเบียนจากกรมโรงงานอุตสาหกรรม จำนวน ๑๒๙ รายการ

น้ำเสีย จำนวน 44 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Aldrin	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽³⁾
2	Arsenic	Digestion, Hydride Generation/Atomic Absorption Spectrometric Method ⁽³⁾
3	Barium	Digestion, Direct Nitrous Oxide Acetylene Flame Method ⁽³⁾
4	α BHC	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽³⁾
5	β-BHC	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽³⁾
6	γ BHC	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽³⁾
7	δ-BHC	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽³⁾
8	Biochemical Oxygen Demand	1) 5 Day BOD Test, Azide Modification Method ⁽³⁾ 2) 5-Day BOD Test, Membrane Electrode Method ⁽³⁾
9	Cadmium	1) Digestion, Direct Air-Acetylene Flame Method ⁽³⁾ 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method ⁽³⁾
10	Chemical Oxygen Demand	Closed Reflux, Titrimetric Method ⁽³⁾
11	Chromium	Digestion, Direct Air-Acetylene Flame Method ⁽³⁾
12	Color	ADMI Weighted-Ordinate Spectrophotometric Method ⁽³⁾
13	Copper	Digestion, Direct Air-Acetylene Flame Method ⁽³⁾
14	Cyanide	Distillation, Colorimetric Method ⁽³⁾
15	4,4'-DDD	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽³⁾
16	4,4' DDE	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽³⁾

17 4,4'-DDT

ลำดับที่	สารเคมี	วิธีวิเคราะห์
17	4,4'-DDT	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽³⁾
18	Dieldrin	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽³⁾
19	Endosulfan I	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽³⁾
20	Endosulfan II	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽³⁾
21	Endosulfan Sulfate	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽³⁾
22	Endrin	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽³⁾
23	Endrin Aldehyde	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽³⁾
24	Formaldehyde	Distillation, Colorimetric Method ⁽²⁾
25	Free Chlorine	DPD Colorimetric Method ⁽³⁾
26	Hexavalent Chromium	Filtration, Colorimetric Method ⁽³⁾
27	Heptachlor	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽³⁾
28	Heptachlor Epoxide	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽³⁾
29	Lead	1) Digestion, Direct Air Acetylene Flame Method 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method ⁽³⁾
30	Manganese	Digestion, Direct Air-Acetylene Flame Method ⁽³⁾
31	Mercury	Digestion, Cold Vapor Atomic Absorption Spectrometric Method ⁽³⁾
32	Methoxychlor	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽³⁾
33	Nickel	Digestion, Direct Air-Acetylene Flame Method ⁽³⁾
34	Oil & Grease	Soxhlet Extraction Method ⁽³⁾
35	pH	Electrometric Method ⁽³⁾

36 Phenol...

รายงานผลการดำเนินงานตามมาตรการลดผลกระทบสิ่งแวดล้อมและผลการติดตามตรวจสอบคุณภาพสิ่งแวดล้อม
โครงการ บี คอนโด

- ๓ -

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
36	Phenol	Distillation, Direct Photometric Method ⁽³⁾
37	Selenium	Digestion, Hydride Generation/Atomic Absorption Spectrometric Method ⁽³⁾
38	Sulfide	Precipitation, Iodometric Method ⁽³⁾
39	Temperature	Laboratory and Field Methods ⁽³⁾
40	Total Dissolved Solids	Dried at 180 °C ⁽³⁾
41	Total Kjeldahl Nitrogen	Macro Kjeldahl, Titrimetric Method ⁽³⁾
42	Total Suspended Solids	Dried at 103-105 °C ⁽³⁾
43	Trivalent Chromium	Digestion, Direct Air-Acetylene Flame Method; Filtration, Colorimetric Method; Calculation ⁽³⁾
44	Zinc	Digestion, Direct Air-Acetylene Flame Method ⁽³⁾

น้ำใต้ดิน จำนวน 31 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Aldrin	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽³⁾
2	Antimony	Digestion, Direct Air-Acetylene Flame Method ⁽³⁾
3	Arsenic	Digestion, Hydride Generation/Atomic Absorption Spectrometric Method ⁽³⁾
4	Barium	Digestion, Direct Nitrous Oxide-Acetylene Flame Method ⁽³⁾
5	Beryllium	Digestion, Direct Nitrous Oxide-Acetylene Flame Method ⁽³⁾
6	Cadmium	1) Digestion, Direct Air Acetylene Flame Method ⁽³⁾ 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method ⁽³⁾
7	Chromium	Digestion, Direct Air-Acetylene Flame Method ⁽³⁾
8	Chromium (III)	Digestion, Direct Air Acetylene Flame Method; Filtration, Colorimetric Method; Calculation ⁽³⁾
9	Chromium (VI)	Filtration, Colorimetric Method ⁽³⁾
10	Cyanide	Distillation, Colorimetric Method ⁽³⁾
11	DDD	Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ⁽³⁾

12 DDE..

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
12	DDE	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽³⁾
13	DDT	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽³⁾
14	Dieldrin	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽³⁾
15	Endrin	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽³⁾
16	α -HCH	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽³⁾
17	β -HCH	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽³⁾
18	γ -HCH	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽³⁾
19	Heptachlor	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽³⁾
20	Heptachlor epoxide	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽³⁾
21	Lead	1) Digestion, Direct Air-Acetylene Flame Method ⁽³⁾ 2) Digestion, Electrothermal Atomic Absorption Spectrometric Method ⁽³⁾
22	Manganese	Digestion, Direct Air-Acetylene Flame Method ⁽³⁾
23	Mercury	Digestion, Cold-Vapor Atomic Absorption Spectrometric Method ⁽³⁾
24	Methoxychlor	Liquid-Liquid Extraction, Gas Chromatographic/ Mass Spectrometric Method ⁽³⁾
25	Nickel	Digestion, Direct Air-Acetylene Flame Method ⁽³⁾
26	pH	Electrometric Method ⁽³⁾
27	Phenols	Distillation, Direct Photometric Method ⁽³⁾
28	Selenium	Digestion, Hydride Generation/Atomic Absorption Spectrometric Method ⁽³⁾
29	Silver	Digestion, Direct Air-Acetylene Flame Method ⁽³⁾

30 Vanadium...

รายงานผลการดำเนินงานตามมาตรการลดผลกระทบสิ่งแวดล้อมและผลการติดตามตรวจสอบคุณภาพสิ่งแวดล้อม
โครงการ บี คอนโด

-๕-

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
30	Vanadium	Digestion, Direct Nitrous Oxide-Acetylene Flame Method ⁽³⁾
31	Zinc	Digestion, Direct Air-Acetylene Flame Method ⁽³⁾

สิ่งปฏิกูลหรือวัสดุที่ไม่ใช้แล้ว จำนวน 25 รายการ

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
1	Aldrin	1) Waste Extraction, Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^(1,6,14) 2) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(6,14)
2	Antimony	1) Waste Extraction, Digestion, Direct Air-Acetylene Flame Method ^(1,8) 2) Digestion, Direct Air-Acetylene Flame Method ^(4,8)
3	Arsenic	1) Waste Extraction, Digestion, Hydride Generation/Atomic Absorption Spectrometric Method ^(1,9) 2) Digestion, Hydride Generation/Atomic Absorption Spectrometric Method ^(4,9)
4	Barium	1) Waste Extraction, Digestion, Direct Nitrous Oxide-Acetylene Flame Method ^(1,8) 2) Digestion, Direct Nitrous Oxide Acetylene Flame Method ^(4,8)
5	Beryllium	1) Waste Extraction, Digestion, Direct Nitrous Oxide-Acetylene Flame Method ^(1,8) 2) Digestion, Direct Nitrous Oxide-Acetylene Flame Method ^(4,8)
6	Cadmium	1) Waste Extraction, Digestion, Direct Air Acetylene Flame Method ^(1,8) 2) Digestion, Direct Air-Acetylene Flame Method ^(4,8)
7	Chromium	1) Waste Extraction, Digestion, Direct Air-Acetylene Flame Method ^(1,8) 2) Digestion, Direct Air Acetylene Flame Method ^(4,8)
8	Chromium (VI)	1) Waste Extraction, Colorimetric Method ^(1,10) 2) Digestion, Colorimetric Method ^(7,10)

9 Copper...

๖.

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
9	Copper	1) Waste Extraction, Digestion, Direct Air-Acetylene Flame Method ^(1,8) 2) Digestion, Direct Air-Acetylene Flame Method ^(4,8)
10	DDD	1) Waste Extraction, Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^(1,5,14) 2) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(6,14)
11	DDE	1) Waste Extraction, Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^(1,5,14) 2) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(6,14)
12	DDT	1) Waste Extraction, Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^(1,5,14) 2) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(6,14)
13	Dieldrin	1) Waste Extraction, Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^(1,5,14) 2) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(6,14)
14	Endrin	1) Waste Extraction, Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^(1,5,14) 2) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(6,14)
15	Heptachlor	1) Waste Extraction, Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^(1,5,14) 2) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(6,14)
16	Lead	1) Waste Extraction, Digestion, Direct Air-Acetylene Flame Method ^(1,8) 2) Digestion, Direct Air-Acetylene Flame Method ^(4,8)

17 Lindane..

-๗-

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
17	Lindane	1) Waste Extraction, Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^(1,5,14) 2) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(6,14)
18	Mercury	1) Waste Extraction, Digestion, Cold-Vapor Atomic Absorption Spectrometric Method ^(1,11) 2) Digestion, Cold-Vapor Atomic Absorption Spectrometric Method ^(4,12)
19	Methoxychlor	1) Waste Extraction, Liquid-Liquid Extraction, Gas Chromatographic/Mass Spectrometric Method ^(1,5,14) 2) Soxhlet Extraction, Gas Chromatographic/Mass Spectrometric Method ^(6,14)
20	Nickel	1) Waste Extraction, Digestion, Direct Air Acetylene Flame Method ^(1,4) 2) Digestion, Direct Air Acetylene Flame Method ^(4,8)
21	pH	Electrometric Method ⁽¹⁶⁾
22	Selenium	1) Waste Extraction, Digestion, Hydride Generation/Atomic Absorption Spectrometric Method ^(1,11) 2) Digestion, Hydride Generation/Atomic Absorption Spectrometric Method ^(6,11)
23	Silver	1) Waste Extraction, Digestion, Direct Air Acetylene Flame Method ^(1,8) 2) Digestion, Direct Air Acetylene Flame Method ^(4,4)
24	Vanadium	1) Waste Extraction, Digestion, Direct Air-Acetylene Flame Method ^(1,8) 2) Digestion, Direct Air-Acetylene Flame Method ^(4,8)
25	Zinc	1) Waste Extraction, Digestion, Direct Air-Acetylene Flame Method ^(1,8) 2) Digestion, Direct Air-Acetylene Flame Method ^(4,4)

ดิน...

สิน จำนวน 29 รายการ

ลำดับที่	สารเคมี	วิธีวิเคราะห์
1	Aldrin	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(6,14)
2	Antimony	Digestion, Direct Air-Acetylene Flame Method ^(4,8)
3	Arsenic	Digestion, Hydride Generation/Atomic Absorption Spectrometric Method ^(4,9)
4	Barium	Digestion, Direct Air-Acetylene Flame Method ^(4,8)
5	Beryllium	Digestion, Direct Air-Acetylene Flame Method ^(4,8)
6	Cadmium	Digestion, Direct Air-Acetylene Flame Method ^(4,8)
7	Chromium	Digestion, Direct Air-Acetylene Flame Method ^(4,8)
8	Chromium (III)	Digestion, Direct Air Acetylene Flame, Colorimetric Method; Calculation ^(4,5,7,10)
9	Chromium (VI)	Digestion, Colorimetric Method ^(7,10)
10	Cyanide	Cyanide Extraction Method ⁽⁵⁾
11	DDD	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(6,14)
12	DDF	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(6,14)
13	DDI	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(6,14)
14	Dieldrin	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(6,14)
15	Endrin	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(6,14)
16	α -HCH	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(6,14)
17	β -HCH	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(6,14)
18	γ -HCH	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(6,14)

19 Heptachlor...

รายงานผลการดำเนินงานตามมาตรการลดผลกระทบสิ่งแวดล้อมและผลการติดตามตรวจสอบคุณภาพสิ่งแวดล้อม
โครงการ บี คอนโด

ลำดับที่	สารมลพิษ	วิธีวิเคราะห์
19	Heptachlor	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(6,14)
20	Heptachlor epoxide	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(6,14)
21	Lead	Digestion, Direct Air-Acetylene Flame Method ^(4,8)
22	Manganese	Digestion, Direct Air-Acetylene Flame Method ^(4,8)
23	Mercury	Digestion, Cold Vapor Atomic Absorption Spectrometric Method ^(4,12)
24	Methoxychlor	Soxhlet Extraction, Gas Chromatographic/ Mass Spectrometric Method ^(6,14)
25	Nickel	Digestion, Direct Air Acetylene Flame Method ^(4,8)
26	Selenium	Digestion, Hydride Generation/Atomic Absorption Spectrometric Method ^(4,13)
27	Silver	Digestion, Direct Air Acetylene Flame Method ^(4,8)
28	Vanadium	Digestion, Direct Air Acetylene Flame Method ^(4,8)
29	Zinc	Digestion, Direct Air-Acetylene Flame Method ^(4,8)

เอกสารอ้างอิง

- กระทรวงอุตสาหกรรม. ประกาศกระทรวงอุตสาหกรรม, พ.ศ. 2548 เรื่อง การกำจัดสิ่งปฏิกูลหรือวัสดุที่ไม่ใช้แล้ว. ราชกิจจานุเบกษา. 25 มกราคม 2549 เล่มที่ 123 ตอนที่ 11ง
- สมาคมวิศวกรรมสิ่งแวดล้อมแห่งประเทศไทย. คู่มือวิเคราะห์น้ำเสีย. พิมพ์ครั้งที่ 4. กรุงเทพฯ: เรือนแก้วการพิมพ์, 2547.
- APHA, AWWA, WEF. **Standard Methods for the Examination of Water and Wastewater**. 23rd ed. Washington, DC: APHA, 2017
- United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. **Acid Digestion of Sediments, Sludges, and Soils. SW-846 Method 3050B**, 1996.
- United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. **Separatory Funnel Liquid-Liquid Extraction. SW-846 Method 3510C**, 1996.
- United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. **Soxhlet Extraction. SW-846 Method 3540C**, 1996

7. United...

๑๐

7. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. **Alkaline Digestion for Hexavalent Chromium. SW-846 Method 3060A, 1996.**

8. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. **Flame Atomic Absorption Spectrophotometry. SW-846 Method 7000B, 2007**

9. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. **Antimony and Arsenic (Atomic Absorption, Borohydride Reduction). SW-846 Method 7062, 1994.**

10. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. **Chromium, Hexavalent (Colorimetric). SW-846 Method 7196A, 1992**

11. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. **Mercury in Liquid Waste (Manual Cold Vapor Technique). SW-846 Method 7470A, 1994.**

12. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. **Mercury in Solid or Semisolid Waste (Manual Cold-Vapor Technique). SW-846 Method 7471B, 2007**

13. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. **Selenium (Atomic Absorption, Borohydride Reduction). SW-846 Method 7742, 1994.**

14. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. **Semivolatile Organic Compounds by Gas Chromatography Mass Spectrometry (GC/MS) SW-846 Method 8270D, 2014.**

15. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. **Cyanide Extraction Procedure for Solids and Oils. SW-846 Method 9013A, 2014**

16. United States Environmental Protection Agency. Test Methods for Evaluation Solid Waste Physical/Chemical Methods. **Soil and Waste pH. SW-846 Method 9045D, 2004.**



ที่ อก ๐๓๓๐(๓)/ ๗๗๗ ๓

กรมโรงงานอุตสาหกรรม
ถนนพระรามที่ ๖ แขวงทุ่งพญาไท
เขตราชเทวี กรุงเทพฯ ๑๐๕๐๐

๒๔ เมษายน ๒๕๖๖

เรื่อง เปลี่ยนแปลงบุคลากรของห้องปฏิบัติการวิเคราะห์

เรียน กรรมการผู้จัดการ บริษัท ศูนย์วิเคราะห์น้ำ จำกัด

อ้างถึง คำขอขึ้นทะเบียน/ต่ออายุ/เปลี่ยนแปลงบุคลากร และชนิดสารมลพิษของห้องปฏิบัติการวิเคราะห์เอกชน
ลงวันที่ ๒๔ มีนาคม ๒๕๖๖

ตามหนังสือที่อ้างถึง บริษัท ศูนย์วิเคราะห์น้ำ จำกัด ห้องปฏิบัติการวิเคราะห์เอกชน
เลขทะเบียน ๖-๑๔๐ สถานที่ตั้งเลขที่ ๑/๔๔ หมู่ที่ ๕ ตำบลคานหาม อำเภออุทัย จังหวัดพระนครศรีอยุธยา
ขอเปลี่ยนแปลงบุคลากรของห้องปฏิบัติการวิเคราะห์ ความละเอียดแจ้งแล้ว นั้น

กรมโรงงานอุตสาหกรรมพิจารณาแล้ว มีความเห็นดังนี้

๑. ให้ยกเลิกเจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ จำนวน ๕ ราย

- | | |
|-----------------------------|----------------------------|
| ๑) นายจตุเมธ อินทรโภาส | ทะเบียนเลขที่ ๖-๑๔๐-๖-๐๐๑๒ |
| ๒) นางสาวณิชา แก้วรุ่งฟ้า | ทะเบียนเลขที่ ๖-๑๔๐-๖-๐๐๒๒ |
| ๓) นางสาวสุราณี หอมสาท | ทะเบียนเลขที่ ๖-๑๔๐-๖-๐๐๒๓ |
| ๔) นางสาวเครือวัลย์ สมภิมพ์ | ทะเบียนเลขที่ ๖-๑๔๐-๖-๐๐๒๔ |

๒. ให้เพิ่มเจ้าหน้าที่ประจำห้องปฏิบัติการวิเคราะห์ จำนวน ๕ ราย

- | | |
|------------------------------|----------------------------|
| ๑) นางสาวอารณี แซ่เอื้อ | ทะเบียนเลขที่ ๖-๑๔๐-๖-๐๐๒๕ |
| ๒) นางสาวทิพรรัตน์ ทองเย็น | ทะเบียนเลขที่ ๖-๑๔๐-๖-๐๐๒๖ |
| ๓) นายนิเทศ พูลศรี | ทะเบียนเลขที่ ๖-๑๔๐-๖-๐๐๒๗ |
| ๔) นายจิตติวีร์ วงศ์หมากเห็บ | ทะเบียนเลขที่ ๖-๑๔๐-๖-๐๐๒๘ |
| ๕) นายฤกษ์ ธรรมชัย | ทะเบียนเลขที่ ๖-๑๔๐-๖-๐๐๒๙ |

อนึ่ง หนังสือฉบับนี้จะหมดอายุพร้อมหนังสือต่ออายุรับขึ้นทะเบียนห้องปฏิบัติการ
วิเคราะห์เอกชน คือในวันที่ ๑๖ มิถุนายน ๒๕๖๘ ทั้งนี้ สามารถยื่นคำขอผ่านระบบอิเล็กทรอนิกส์ได้
ที่หน้าเว็บไซต์กรมโรงงานอุตสาหกรรม

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ

จรุญ ดิวงษ์

(นายประสม ดำรงพงษ์)
ผู้อำนวยการกองวิจัยและเฝ้าระวังมลพิษโรงงาน
ปฏิบัติการงานห้องปฏิบัติการโรงงานอุตสาหกรรม

กองวิจัยและเฝ้าระวังมลพิษโรงงาน

กลุ่มมาตรฐานวิธีการวิเคราะห์ทดสอบมลพิษและทะเบียนห้องปฏิบัติการ

โทร. ๐ ๒๔๓๐ ๖๓๑๒ ต่อ ๒๓๐๓-๕

โทรสาร ๐ ๒๔๓๐ ๖๓๑๒ ต่อ ๒๑๔๔

ไปรษณีย์อิเล็กทรอนิกส์ saraban@diw.mail.go.th



"อุตสาหกรรมก้าวไกล ประเทศไทยก้าวหน้า ร่วมกันพัฒนา อุตสาหกรรมสีเขียว"





Ref No. : 0303/17008

CERTIFICATE OF TESTING LABORATORY ACCREDITATION

This is to certify that

Laboratory of Water Analysis Center Co., Ltd.
1/94 Moo 5, Tambon Kanharm, Amphoe U-Thai,
Changwat Phra Nakhon Si Ayutthaya 13210

has successfully undergone assessment according to ISO/IEC 17025 : 2017
and under the Bureau of Laboratory Accreditation, Department of Science Service
for the requirements, regulations and criteria for the competence of testing laboratories

Accreditation Number TESTING - 0029

The scope of accreditation is as annexed hereto

Issue date : 7th November 2022

Expired date : 6th November 2026

Signature :

(Mrs. Pochaman Tagheen)

Director of Bureau of Laboratory Accreditation

Bureau of Laboratory Accreditation, Department of Science Service,
Ministry of Higher Education, Science, Research and Innovation

รายงานผลการดำเนินงานตามมาตรการลดผลกระทบสิ่งแวดล้อมและผลการติดตามตรวจสอบคุณภาพสิ่งแวดล้อม
โครงการ บี คอนโด

Reference No. : 0303/17008

Scope of Testing Laboratory Accreditation

Laboratory Name : Laboratory of Water Analysis Center Co., Ltd.

Address : 1/94 Moo 5, Tambon Kanharm, Amphoe U-Thai,

Changwat Phra Nakhon Si Ayutthaya 13210

Accreditation Number : Testing - 0029

Laboratory Status : ☒ Permanent ☐ Site ☐ Temporary ☐ Mobile

Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
1	Bottled drinking water	<ul style="list-style-type: none"> Chloride 6 mg/L to 1 000 mg/L Total hardness (Calculated as CaCO₃) 5 mg/L to 2 000 mg/L Total solids dried at 103 °C to 105 °C 25 mg/L to 4 000 mg/L 	<p>Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 4500-Cl B</p> <p>Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 2340 C</p> <p>Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WFF, 23rd ed., 2017, part 2540 B</p>

Initial Issue Date 23rd September 2008

Issue Number 13

Bureau of Laboratory Accreditation, Department of Science Service, Ministry of Higher Education, Science, Research and Innovation

LA-031-3-11-19

page 1/14

Reference No. : 0303/1/008

Scope of Testing Laboratory Accreditation

Laboratory Name : Laboratory of Water Analysis Center Co., Ltd
Address : 1/94 Moo 5, Tambon Kanharm, Amphoe U-Thai,
Changwat Phra Nakhon Si Ayutthaya 13210
Accreditation Number : Testing : 0029
Laboratory Status : ☒ Permanent ☐ Site ☐ Temporary ☐ Mobile

Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
1 (cont.)	Bottled drinking water	Manganese 0.05 mg/L to 5 mg/L Iron 0.10 mg/L to 5 mg/L Cadmium 1 µg/l to 5 µg/l Lead 10 µg/L to 50 µg/L pH 6.0 to 8.0	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 rd ed., 2017, part 3111 B, 3030 E Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 rd ed., 2017, part 3113 B, 3030 E In - house method : TM 001 based on Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 rd ed., 2017, part 4500 H ⁺ B

Initial Issue Date 23rd September 2008

Issue Number 13

Bureau of Laboratory Accreditation, Department of Science Service, Ministry of Higher Education, Science, Research and Innovation

LA 1/01/011/19

page 2/14

Reference No. : 0303/17008

Scope of Testing Laboratory Accreditation

Laboratory Name : Laboratory of Water Analysis Center Co., Ltd.
Address : 1/94 Moo 5, Tambon Kanharm, Amphoe U-Thai,
Changwat Phra Nakhon Si Ayutthaya 13210
Accreditation Number : Testing - 0029
Laboratory Status : ☒ Permanent ☐ Site ☐ Temporary ☐ Mobile

Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
2	Water	<p>- pH 6.0 to 10.0</p> <p>- Total suspended solids dried at 103 °C to 105 °C 10 mg/L to 1 000 mg/L</p> <p>- Total dissolved solids dried at 180 °C 25 mg/L to 4 000 mg/L</p>	<p>In - house method : TM 001 based on Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 4500-H⁺ B</p> <p>Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D</p> <p>Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C</p>

Initial Issue Date 23rd September 2008

Issue Number 13

Bureau of Laboratory Accreditation, Department of Science Service, Ministry of Higher Education, Science, Research and Innovation

LA-F-31.9/11-19

page 3/14

Reference No. : 0303/17008

Scope of Testing Laboratory Accreditation

Laboratory Name : Laboratory of Water Analysis Center Co., Ltd.
Address : 1/94 Moo 5, Tambon Kanharm, Amphoe U-Thai,
Changwat Phra Nakhon Si Ayutthaya 13210
Accreditation Number : Testing 0029
Laboratory Status : ☒ Permanent ☐ Site ☐ Temporary ☐ Mobile

Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
2 (cont.)	Water	<ul style="list-style-type: none"> - Cadmium 0.02 mg/L to 0.9 mg/L - Copper 0.05 mg/L to 5 mg/L - Zinc 0.05 mg/L to 5 mg/L - Chromium 0.05 mg/L to 5 mg/L - Nickel 0.10 mg/L to 4 mg/L - Manganese 0.05 mg/L to 5 mg/L - Lead 0.10 mg/L to 2 mg/L - Iron 0.10 mg/L to 5 mg/L 	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 rd ed., 2017, part 3111 B, 3030 E

Initial Issue Date 23rd September 2008

Issue Number 13

Bureau of Laboratory Accreditation, Department of Science Service, Ministry of Higher Education, Science, Research and Innovation

Reference No : 0303/17008

Scope of Testing Laboratory Accreditation

Laboratory Name : Laboratory of Water Analysis Center Co., Ltd.

Address : 1/94 Moo 5, Tambon Kanharm, Amphoe U-Thai,
Changwat Phra Nakhon Si Ayutthaya 13210

Accreditation Number : Testing - 0029

Laboratory Status : ☒ Permanent ☐ Site ☐ Temporary ☐ Mobile

Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
2 (cont.)	Water	<ul style="list-style-type: none"> Water soluble silica (Calculated as SiO_2) 1.1 mg/L to 26 mg/L Chloride 6 mg/L to 1 000 mg/L Total hardness (Calculated as CaCO_3) 5 mg/L to 2 000 mg/L 	<p>Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 4500-SiO₂ C</p> <p>Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 4500-Cl B</p> <p>Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 2340 C</p>

Initial Issue Date 23rd September 2008

Issue Number 13

Bureau of Laboratory Accreditation, Department of Science Service, Ministry of Higher Education, Science, Research and Innovation

รายงานผลการดำเนินงานตามมาตรการลดผลกระทบสิ่งแวดล้อมและผลการติดตามตรวจสอบคุณภาพสิ่งแวดล้อม
โครงการ บี คอนโด

Reference No. : 0303/17008

Scope of Testing Laboratory Accreditation

Laboratory Name : Laboratory of Water Analysis Center Co., Ltd.

Address : 1/94 Moo 5, Tambon Kanharm, Amphoe U-Thai,
Changwat Phra Nakhon Si Ayutthaya 13210

Accreditation Number : Testing - 0029

Laboratory Status : ☒ Permanent ☐ Site ☐ Temporary ☐ Mobile

Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
2 (cont.)	Water	BOD 2 mg/L to 500 mg/L	In - house method : TM 041 based on Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 rd ed, 2017, part 5210 B
		BOD 2 mg/L to 500 mg/L	In - house method : TM 013 based on Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 rd ed, 2017, part 5210 B, part 4500-O C
		COD 40 mg/L to 200 mg/L	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 rd ed, 2017, part 5220 C

Initial Issue Date 23rd September 2008

Issue Number 13

Bureau of Laboratory Accreditation, Department of Science Service, Ministry of Higher Education, Science, Research and Innovation

LA-F-319/11-13

page 6/14

Reference No. : 0303/17008

Scope of Testing Laboratory Accreditation

Laboratory Name : Laboratory of Water Analysis Center Co., Ltd.

Address : 1/94 Moo 5, Tambon Kanharm, Amphoe U-Thai,
Changwat Phra Nakhon Si Ayutthaya 13210

Accreditation Number : Testing - 0029

Laboratory Status : ☒ Permanent ☐ Site ☐ Temporary ☐ Mobile

Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
2 (cont.)	Water	<ul style="list-style-type: none"> Total Kjeldahl Nitrogen 5 mg/L to 200 mg/L Oil and grease 2 mg/L to 100 mg/L Total solids dried at 103 °C to 105 °C 25 mg/L to 4 000 mg/L 	<p>Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 4500-NH₃-C, part 4500-N_{org}-B</p> <p>Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 5520 D</p> <p>Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WFF, 23rd ed., 2017, part 2540 B</p>

Initial Issue Date 23rd September 2008

Issue Number 13

Bureau of Laboratory Accreditation, Department of Science Service, Ministry of Higher Education, Science, Research and Innovation

LA F 31 9/11 19

page 7/14

Reference No. : 0303/17008

Scope of Testing Laboratory Accreditation

Laboratory Name : Laboratory of Water Analysis Center Co., Ltd
Address : 1/94 Moo 5, Tambon Kanharm, Amphoe U-Thai,
Changwat Phra Nakhon Si Ayutthaya 13210
Accreditation Number : Testing - 0029
Laboratory Status : ☒ Permanent ☐ Site ☐ Temporary ☐ Mobile

Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
2 (cont.)	Water	<p>Selenium 5 µg/L to 50 µg/L</p> <p>Arsenic 5 µg/L to 50 µg/L</p> <p>Barium 0.5 mg/L to 5 mg/L</p> <p>Cadmium 1 µg/L to 5 µg/L</p> <p>Lead 10 µg/L to 50 µg/L</p>	<p>Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 3114 C</p> <p>Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 3111 D, 3030 E</p> <p>Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 3113 B, 3030 E</p>

Initial Issue Date 23rd September 2008

Issue Number 13

Bureau of Laboratory Accreditation, Department of Science Service, Ministry of Higher Education, Science, Research and Innovation

LA F31 9/11 19

page 8/14

Reference No. : 0303/17008

Scope of Testing Laboratory Accreditation

Laboratory Name : Laboratory of Water Analysis Center Co., Ltd.

Address : 1/94 Moo 5, Tambon Kanharm, Amphoe U-Thai,
Changwat Phra Nakhon Si Ayutthaya 13210

Accreditation Number : Testing - 0029

Laboratory Status : ☒ Permanent ☐ Site ☐ Temporary ☐ Mobile

Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
3	Wastewater	<p>pH</p> <p>4.0 to 10.0</p> <p>- Total suspended solids dried at 103 °C to 105 °C 10 mg/L to 1 000 mg/L</p> <p>- Total dissolved solids dried at 180 °C 50 mg/L to 4 000 mg/L</p>	<p>In - house method : TM 001 based on Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 4500 - H⁺ B</p> <p>Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 2540 D</p> <p>Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 2540 C</p>

Initial Issue Date 23rd September 2008

Issue Number 13

Bureau of Laboratory Accreditation, Department of Science Service, Ministry of Higher Education, Science, Research and Innovation

LAF/319/11-19

page 9/14

Reference No. : 0303/17008

Scope of Testing Laboratory Accreditation

Laboratory Name : Laboratory of Water Analysis Center Co., Ltd.

Address : 1/94 Moo 5, Tambon Kanharm, Amphoe U-Thai,
Changwat Phra Nakhon Si Ayutthaya 13210

Accreditation Number : Testing : 0029

Laboratory Status : ☒ Permanent ☐ Site ☐ Temporary ☐ Mobile

Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
3 (cont.)	Wastewater	<ul style="list-style-type: none"> Cadmium 0.02 mg/L to 0.9 mg/L Copper 0.05 mg/L to 5 mg/L Zinc 0.05 mg/L to 5 mg/L Chromium 0.05 mg/L to 5 mg/L Nickel 0.10 mg/L to 4 mg/L Manganese 0.05 mg/L to 5 mg/L Lead 0.10 mg/L to 2 mg/L Iron 0.10 mg/L to 5 mg/L 	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 rd ed., 2017, part 3111 B, 3030 E

Initial Issue Date 23rd September 2008

Issue Number 13

Bureau of Laboratory Accreditation, Department of Science Service, Ministry of Higher Education, Science, Research and innovation

LA-F-31/9/11/19

page 10/14

รายงานผลการดำเนินงานตามมาตรการลดผลกระทบสิ่งแวดล้อมและผลการติดตามตรวจสอบคุณภาพสิ่งแวดล้อม
โครงการ บี คอนโด

Reference No 0303/17008

Scope of Testing Laboratory Accreditation

Laboratory Name : Laboratory of Water Analysis Center Co., Ltd.

Address : 1/94 Moo 5, Tambon Kanharm, Amphoe U Thai,
Changwat Phra Nakhon Si Ayutthaya 13210

Accreditation Number : Testing - 0029

Laboratory Status : ☒ Permanent ☐ Site ☐ Temporary ☐ Mobile

Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
3 (cont.)	Wastewater	Total hardness (Calculated as CaCO ₃) 5 mg/l to 2 000 mg/L BOD 4 mg/L to 7 000 mg/L BOD 4 mg/L to 7 000 mg/L	Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 rd ed., 2017, part 2340 C In - house method : TM 041 based on Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 rd ed., 2017, part 5210 B In - house method : TM 013 based on Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23 rd ed., 2017, part 5210 B, part 4500-O C

Initial Issue Date 23rd September 2008

Issue Number 13

Bureau of Laboratory Accreditation, Department of Science Service, Ministry of Higher Education, Science, Research and Innovation

LA F-319/1119

page 11/14

Reference No : 0303/17008

Scope of Testing Laboratory Accreditation

Laboratory Name : Laboratory of Water Analysis Center Co., Ltd.

Address : 1/94 Moo 5, Tambon Kanharm, Amphoe U Thai,
Changwat Phra Nakhon Si Ayutthaya 13210

Accreditation Number : Testing - 0029

Laboratory Status : ☒ Permanent ☐ Site ☐ Temporary ☐ Mobile

Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
3 (cont.)	Wastewater	<p>- COD 40 mg/L to 3 000 mg/L</p> <p>- Total Kjeldahl Nitrogen 5 mg/L to 200 mg/L</p> <p>- Oil and grease 2 mg/L to 1 000 mg/L</p>	<p>Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 5220 C.</p> <p>Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 4500-NH₃-C, 4500-N_{org}-B</p> <p>Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 5520 D</p>

Initial Issue Date 23rd September 2008

Issue Number 13

Bureau of Laboratory Accreditation, Department of Science Service, Ministry of Higher Education, Science, Research and Innovation

LA 131-911 19

page 12/14

Reference No. : 0303/17008

Scope of Testing Laboratory Accreditation

Laboratory Name Laboratory of Water Analysis Center Co., Ltd.

Address 1/94 Moo 5, Tambon Kanharm, Amphoe U-Thai,

Changwat Phra Nakhon Si Ayutthaya 13210

Accreditation Number Testing - 0029

Laboratory Status ☒ Permanent ☐ Site ☐ Temporary ☐ Mobile

Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
3 (cont.)	Wastewater	<p>Total solids dried at 103 °C to 105 °C 25 mg/L to 4 000 mg/L</p> <p>Selenium 5 µg/L to 50 µg/L</p> <p>Arsenic 5 µg/L to 50 µg/L</p> <p>Barium 0.5 mg/L to 5 mg/L</p>	<p>Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 2540 B</p> <p>Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 3114 C</p> <p>Standard Methods for the Examination of Water and Wastewater, APHA, AWWA & WEF, 23rd ed., 2017, part 3111 D, 3030 F</p>

Initial Issue Date 23rd September 2008

Issue Number 13

Bureau of Laboratory Accreditation, Department of Science Service, Ministry of Higher Education, Science, Research and Innovation

LA 319/11-19

page 13/14

รายงานผลการดำเนินงานตามมาตรการลดผลกระทบสิ่งแวดล้อมและผลการติดตามตรวจสอบคุณภาพสิ่งแวดล้อม
โครงการ บี คอนโด

Reference No. : 0303/17008

Scope of Testing Laboratory Accreditation

Laboratory Name : Laboratory of Water Analysis Center Co., Ltd.
Address : 1/94 Moo 5, Tambon Kanharm, Amphoe U-Thai,
Changwat Phra Nakhon Si Ayutthaya 13210
Accreditation Number : Testing - 0029
Laboratory Status : ☐ Permanent ☒ Site ☐ Temporary ☐ Mobile

Item Number	Test Material / Product	Test Item / Range of Testing	Test Method / Technique Used
4	Environmental noise	Sound level Equivalent sound level $L_{eq,T}$ 30 dB (A) to 120 dB (A) Maximum sound level L_{max} 30 dB (A) to 120 dB (A)	In - house method : TM 201 based on ISO 1996-2 : 2017

Issue Date : 7th November 2022

Signature : 

(Mrs. Pochaman Tagheen)

Director of Bureau of Laboratory Accreditation

Initial Issue Date 23rd September 2008

Issue Number 13

Bureau of Laboratory Accreditation, Department of Science Service, Ministry of Higher Education, Science, Research and Innovation

LA-313/11/19

page 14/14



THAI HEART CALIBRATION CO., LTD.
112/11 Moo 5, Ban Lat Sai, Mueang Samut Prakan District, Samut Prakan 10280
Tel. (66) 02 052 4177, 02 052 4178, 02 052 4179 Fax. (66) 02 052 4177



CERTIFICATE OF CALIBRATION

Certificate No.: C0-1808005/23

Page 1 of total 4 pages

Customer WATER ANALYSIS CENTER CO., LTD.
1/94 Moo 5, T.Kanham,
A.U-thai, Ayutthaya 13210

Equipment	pH Meter		
Manufacturer	METTLER TOLEDO	Model	SevenCompact S220
Serial No.	B327527211	ID No.	WWL 0068
Description	Range : 0 - 14 pH, Resolution : 0.01 pH		

Environmental Conditions Ambient Temperature: $(20 \pm 2) ^\circ\text{C}$
Relative Humidity: $(50 \pm 10) \%$
Atmospheric Pressure: -

Calibration Location Jayhawks Laboratory (CL&GL)

Received Date 18 August 2023

Calibration Date 18 August 2023

Date of Issue 21 August 2023

Condition of Artifacts Used conditions but can be calibrated

Checked by

Act as Technical Manager

Approved by

Representative of Managing Director

() (Krisyosil K.)	() (Sakda Y.)
() (Patiphan K.)	(✓) (Onnapa P.)
() (Pongsak H.)	() (Nitiphong K.)
() (Kanung C.)	() (Nonthachai K.)
() (Pramong P.)	() (Noppol P.)

(Dr. Ekachai Puttitwong)

This calibration certificate shall not be reproduced other than in full except with the prior written approval of the Thai Heart Calibration Co., Ltd.

FE-169

REV.02 02/24/21



THAI HEART CALIBRATION CO., LTD.
112/11 - Vibhavadi Place, 5th Floor, Samsat Building, 10300
Tel. 02-26013002, 02-26013003, 02-26013004, 02-26013005, 02-26013006



Certificate No.: C0-1808005/23

Page 2 of total 4 pages

Reference Method:

- The calibration method used was CP-178 based on an in-house method.
- This certificate can be traceable to the national standards, which is realized the shown measurement units according to the International System of Units (SI Units).

Reference Standard:

Type	pH Value	Lot No.	Due Date	Traceability
pH Standard Solution	4.01	030822	Feb. 9, 2024	NIMT
	7.01	300522	Feb. 9, 2024	
	10.01	230822	Feb. 7, 2024	

Type	Model	Serial No.	Certificate No.	Due Date	Traceability
Documenting Process Calibrator	754	2630521	10-2412001/22	Dec. 23, 2023	THC
Digital Thermometer with Sensor	1523 / 5622	1709138 / 4605984-005	10-0806001/23	Jun. 8, 2024	

Remark: This certificate is traceable to the International System of Unit (SI Unit) through:

- NIMT, National Institute of Metrology (Thailand).
- THC, Thai Heart Calibration Co., Ltd.

Measurement Results:

1. Function Simulated pH Meter

Standard Applied (mV)	Nominal Value (pH)	UUC Reading		Uncertainty (± mV)
		pH	mV	
177.48	4.00	4.01	177.4	0.060
0.00	7.00	7.00	0.0	0.060
-177.48	10.00	10.01	-177.4	0.060

UUC : Unit Under Calibration

Note : Adjust Curve to simulate pH (4,7,10)

FE-169

Calibrated by Kittipong
REV.02 02/24/21



THAI HEART CALIBRATION CO., LTD.

112/11 Moo 2, Phraek Si-Nong, Sam Rong, 10280

TEL 0-8308-0201, 0-8308-0202, 0-8308-0203, 0-8308-0204, 0-8308-0205, 0-8308-0206, 0-8308-0207



Certificate No.: C0-1808005/23

Page 3 of total 4 pages

Measurement Results (Cont.):

2. Calibration of pH Electrode (Serial No.: 3222623)

pH Standard Solution (pH)	Measured Value		Uncertainty (± pH)
	(pH)	(mV)	
4.01	4.01	180.0	0.013
7.01	7.00	4.0	0.013
10.01	10.01	-172.0	0.013

Note : Adjust Curve to Buffer Solution pH (4,7,10)

Temperature stability of micro bath : $25 \pm 0.2^{\circ}\text{C}$

The above reported uncertainty of measurement is the expanded uncertainty obtained by multiplying the standard uncertainty with the coverage factor $k = 2.00$, providing a level of confidence approximately 95%.

FE-169

Calibrated by Kittipong
REV.02 02/24/21



THAI HEART CALIBRATION CO., LTD.
112/11 Moo 11, Phraeksa, Muang, Samut Prakan 10680
Tel. (02) 902-2402, 01875-8845, 02755-8846, 02755-8847



Certificate No.: C0-1808005/23

Page 4 of total 4 pages

Reference Method:

- The calibration method used was CP-096 based on an in-house method.
- The temperature scale used was an ITS-90.
- This certificate can be traceable to the national standards, which is realized the shown measurement units according to the International System of Units (SI Units).

Reference Standard Instruments:

Type	Model	Serial No.	Cert. No.	Due Date	Traceability
Thermometer Readout	1529-R	B7C853	10-0911001/22	Nov. 9, 2023	THC
Platinum Resistance Thermometer	5626	4854	C0A30047	Oct. 22, 2023	FLUKE
Liquid Bath	XORTS-40A	XO111019	10-2405001/23	May 25, 2025	THC

Remark: This certificate is traceable to the International System of Unit (SI Unit) through:

- THC, Thai Heart Calibration Co., Ltd.
- FLUKE, Fluke Corporation, U.S.A.

Measurement Results: (X) Without Adjustment

Dimension of probe : Diameter 4 mm. Sensor Type : RTD (PT100)

Immersion Depth (mm.)	Standard Reading (°C)	UUC Reading (°C)	Correction (°C)	Uncertainty (\pm °C)
120	22.00	22.2	-0.20	0.065
120	25.00	25.2	-0.20	0.065
120	28.00	28.2	-0.20	0.065

UUC : Unit Under Calibration

The above reported uncertainty of measurement is the expanded uncertainty obtained by multiplying the standard uncertainty with the coverage factor $k = 2.00$, providing a level of confidence approximately 95%.

- End of Certificate -

Calibrated by

Pongsak

REV.02 02/24/21

FE-169



Master Calibration Co., Ltd.

547 Soi Ratchadaniwar, Kwaeng Samsenok, Khet Huaykwang, Bangkok 10310

Tel. : (02) 274 2978-9, (02) 2742987-8 Fax : (02) 274 2518, (02) 274 2989

Website : www.mastercalibration.com E-mail : calibrate@mastercalibration.com

Certificate of Calibration

TEMPERATURE CONTROLLER ENCLOSURES



Certificate No.: MC 2307702

Page 1 of 3



Customer : Water Analysis Center Co., Ltd.
1/94 Moo 5, T.Kantham, A.U.-Thai, Ayutthaya 13210.

Reference Job No. : 23-1577 Received Date : 11 July 2023

Description : Refrigerator

Manufacturer : SANDEN INTERCOOL. Model : SEC-1500SBD

Serial No. : SEC1500201A-0708-00304 ID. No. : WWL0038

Marking : Additionally for the purpose of identification by this laboratory a label marked with this certificate number (MC 2307702) has been attached to the case.

Method : In-House calibration procedure MWI-T-033 this method is reference to TLAS G-20 "Temperature Controlled Enclosures".

Location of Calibration : Water Analysis Center Co., Ltd. ; Laboratory.

Environmental Conditions : Ambient Temperature : (25.3 to 25.9) °C
Relative Humidity : (65.2 to 67.9) %

Date of Calibration : 11 July 2023 Date of Issue : 12 July 2023

Checked by : Thanagorn
Thanagorn Limchaicharoen
(Calibration Supervisor)

Approved by : Aittipong
Aittipong Kanjanawasit
(Technical Manager)

The uncertainties are for a confidence probability of approximately 95%

This certificate is issued in accordance with the conditions of accreditation granted by the National Standardization Council of Thailand-Office of the National Standardization Council that has assessed the measurement capability of the laboratory and its traceability to recognized national standards and to the units 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 Master Calibration Co., Ltd.

[MCF-Q-077 ; Rev.6 ; Date : 22/04/2021]



547 Soi Ratchadanivat, Kwang Samsennok, Khet Huaykwang, Bangkok 10310
Tel : (02) 274 2978-9, (02) 2742987-8 Fax : (02) 274 2518, (02) 274 2989
Website : www.mastercalibration.com E-mail : calibrate@mastercalibration.com

Certificate No.: MC 2307702

Page 2 of 3

The Reference Standard Instrument :

Description	Certificate No.	Serial No.	Due date	Traceable thru
Data Acquisition/Switch Unit With Thermocouple Type " T " ID. No.17/1 to 17/9	MC 2303173	MY41010916	9 Mar 2024	MCAL

Traceability :

The measurement standard traceable to the international system of units (SI) through certificate as mentioned above

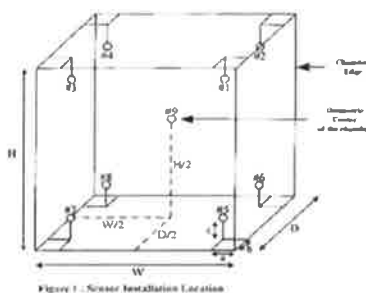
1. Calibration Procedure:

This Instrument was calibration according to TLAS G-20 by comparison with calibrated thermocouple type T under no load condition. The Thermocouples were placed on nine points and located one thermocouple in each of the eight corners of the chamber and was away from the each wall of 5 cm to 10 cm. And placed the ninth thermocouple within 2.5 cm of the geometric center of the chamber.

Temperature 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 or at as close an observation time as possible to determine the temperature pattern or homogeneity within the chamber under steady state conditions. The reference sensor should preferably be located at the geometric center of the chamber.

Temperature Stability - one-half of the greatest maximum difference of measured temperatures at any one sensor.

Overall Variation - The Difference of the maximum and minimum measured temperatures throughout observation.



Overall Ambient Temperature around the Chamber variation : 3.2 °C

Overall Line Voltage variation : 0.1 V

Chamber Size (W*H*D) : 171 cm x 157 cm x 60 cm

Checked by : *Thanagim*

[MCF-Q-077 : Rev.6 : Date : 22/04/2021]



547 Soi Ratchadaniwat, Kwaeng Samsenok, Khet Huaykwang, Bangkok 10310
Tel.: (02) 274 2978-9, (02) 2742987-8 Fax: (02) 274 2518, (02) 274 2989
Website: www.mastercalibration.com E-mail: calibrate@mastercalibration.com

Certificate No.: MC 2307702

Page 3 of 3

2. Result of calibration :

Temperature Measurement Accuracy Test

Indicating Temperature (°C)	Measured Temperature (°C) at Spread Locations									Uncertainty (±°C)
	#1	#2	#3	#4	#5	#6	#7	#8	Ref. #9	
2.5	4.4	4.2	4.2	4.2	4.0	3.9	4.1	4.0	3.8	0.86

Chamber Characterization Result

Controller Temperature (°C)	Indicating Temperature (°C)	Temperature Stability (±°C)	Temperature Uniformity (°C)	Overall Variation (°C)
2.0	2.5	1.50	1.01	3.3

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

This certificate will certify of the calibrated equipment only.

End of Certificate

Checked by: *Thanagorn*

[MCF-Q-077 ; Rev.6 ; Date : 22/04/2021]



THAI HEART CALIBRATION CO., LTD.

119/1 Moo 5, Phase 3, Nongkham Suburb, Prachin Buri 32100
Tel. 02384 2102, 02384 2103, 02384 2104, 02384 2105, 02384 2106, 02384 2107



CERTIFICATE OF CALIBRATION

Certificate No.: C0-1907007/23

Page 1 of total 2 pages

Customer WATER ANALYSIS CENTER CO., LTD.
1/94 Moo 5, T.Kanham,
A.U-thai, Ayutthaya 13210

Equipment	Conductivity Meter		
Manufacturer	EUTECH	Model	CON 2700
Serial No.	2657889	ID No.	WWL 0136
Description			

Environmental Conditions Ambient Temperature: $(20 \pm 2) ^\circ\text{C}$
Relative Humidity: $(50 \pm 10) \%$
Atmospheric Pressure: -

Calibration Location Jayhawks Laboratory (CL&GL)

Received Date 19 July 2023

Calibration Date 19 July 2023

Date of Issue 20 July 2023

Condition of Artifacts Used conditions but can be calibrated

Checked by

Act as Technical Manager

Approved by

Representative of Managing Director

() (Krisyosl K.)	() (Sakda Y.)
() (Patiphan K.)	(✓) (Onnapa P.)
() (Pongsak H.)	() (Nitiphong K.)
() (Kanung C.)	() (Nonthachai K.)
() (Pramong P.)	() (Noppol P.)

(Dr. Ekachai Puttitwong)

This calibration certificate shall not be reproduced other than in full except with the prior written approval of the Thai Heart Calibration Co., Ltd.

FE-169

REV.02 02/24/21



THAI HEART CALIBRATION CO., LTD.

442/1 Moo 1, Phase 1, Muang Samut Prakan 10280

Tel. 02830 2162, 0275 5115, 0275 5116, 0275 5117



Certificate No.: C0-1907007/23

Page 2 of total 2 pages

Reference Method:

- The calibration method used was CP-177 based on an in-house method.
- This certificate can be traceable to the national standards, which is realized the shown measurement units according to the International System of Units (SI Units).

Reference Standard :

Material	Batch Value	Lot Number	Due Date	Traceability
Conductivity Standard Solution	147.8 $\mu\text{S/cm}$	S220611005	Dec. 6, 2023	SCP Science
	1.425 mS/cm	S220812006	May 31, 2024	

Remark: This certificate is traceable to the International System of Unit (SI Unit) through:

SCP Science.

Measurement Results: (Probe Serial No. : 93X219065)

Conductivity Standard Solution	Measured Value	Correction	Uncertainty (\pm)
147.8 $\mu\text{S/cm}$	147.5 $\mu\text{S/cm}$	0.3 $\mu\text{S/cm}$	2.5 $\mu\text{S/cm}$
1.425 mS/cm	1.427 mS/cm	-0.002 mS/cm	0.0051 mS/cm

Note : Adjustment points: 147.8 $\mu\text{S/cm}$ 1.425mS/cm

The above reported uncertainty of measurement is the expanded uncertainty obtained by multiplying the standard uncertainty with the coverage factor $k = 2.00$, providing a level of confidence approximately 95%.

- End of Certificate -

FE-169

Calibrated by Onnapa
REV.02 02/24/21



SV 201005/2024

Cert. No. WAC-065

Page 1 of 2

Instrument : DO Meter
Model : DO-31P
Serial No. : 780065
Manufacturer : TOA-DKK
Measuring Range : 0.00 ~ 20.00 mg/l

Machine : -

Location : -

Customer : Water Analysis Center Co.,Ltd.
1/94 Moo.5 T.Kanham, A.U-Thai
Ayutthaya 13210 Thailand

Date Of Received : 11 / 01 / 2024

Date Of Calibration : 11 / 01 / 2024

Ambient Condition :

Temperature	26 °C
Humidity	58 % RH

Calibrated By :

P. Yooyen
(Ms. Phanee Yooyen)
Technician

Approved By :


(Mr. Nipon Phungsomsak)
Technical Manager

Date Of Issue : 15 / 01 / 2024

This Certificate may not be reproduced other than in full, except with the prior written approval of the head of the industrial instruments calibration center.

Automation Service Co. Ltd. 929.929/1 Soi Pattanakarn30, Pattanakarn Rd., Suanluang, Suanluang, Bangkok 10250
Tel 02-319-9994 ext. 721,725 | E-mail iso@automation.co.th, service@automation.co.th | www.automation.co.th



Automation

AUTOMATION SERVICE CO.,LTD.

CALIBRATION LABORATORY

Instrument : DO Meter
Model : DO-31P
Serial No. : 780065

Cert. No. WAC-065
Page 2 of 2

Calibrate Procedure

- ☐ This instrument was calibrated by comparison with standard solution (PH/ORP)
- ☐ This instrument was calibrated by comparison with scattering plate value (Turbidity)
- ☐ This instrument was calibrated by comparison with conductivity (Conductivity)
- ☒ This instrument was calibrated by comparison with Sodium sulfite anhydrous (DO)

Condition of this result of calibration

1). Reference Standard Solution

Standard	Lot No	Batch.	Cert. No.	Due Date
Sodium Sulfite Power	408K1405			

2). Traceability This certification is traceable to

- ☒ Kanto Chemical Co.,INC.
- ☐ DKK Corporation

Result Of Calibration

Standard Solution		Before Adjust		After Adjust	
(mg/l) at 25.7°C		Indicator	Error	Indicator	Error
Zero	0.00	0.10	+ 0.10	0.00	-
Span	8.02	6.45	- 1.57	8.02	-

DO Electrode No. OE270AA(5) S/N 111F0029

Calibrated By

P. Yooyen

(Ms. Phanee Yooyen)
Technician



Inctech Metrological Center Co.Ltd.
39/1 Soi 82, Sukhapiban 5 Rd., O ngoen,
Saimai, Bangkok 10220, Thailand
Tel. (662) 909-8820 (Auto 10 lines) www.imcinstrument.com



Certificate of Calibration

Certificate No. : MT24-3208

Page : 1 of 2

Customer : Water Analysis Center Co.,Ltd.
Address : 1/94 M 5, Rojana Industrial Park, T.Kanham, A.U-Thai, Ayutthaya 13210

Description : Hot Air Oven
Manufacturer : Memmert
Model : UF 260
Serial No. : B620.0814
Identification No. : WWL 0212
Calibration Place : Customer Laboratory

Order No. : 1152/24
Received date : Mar 22, 2024
Calibration date : Mar 22, 2024
Environment Condition :
Temperature : (25+/-10) °C
Humidity : (50+/-30) %RH

Calibration Method : Calibration were conducted using In-house calibration procedure CP-MT-006 According to comparison with LXI Data Acquisition Switch Unit with sensor. The calibration methods based on Euramet Calibration Guide No.20 - guidelines on the Calibration of Temperature and/or Humidity Controlled Enclosures.

Reference Standard Instruments :

<u>Instrument</u>	<u>Model</u>	<u>Serial No.</u>	<u>Certificate No.</u>	<u>Due Date</u>
LXI Data Acquisition Switch Unit with Sensor	34972A	MY49020096	MT23-7163	Nov 30, 2024

The effect that the result relate only to the items calibrated. It was found accurate as shown on date and place of calibration only.

Traceability : This measurement are traceable to the International System of Unit (SI), through National Institute of Metrology Thailand (NIMT)

The reported expanded uncertainty of measurement was based on standard uncertainty multiplied by coverage factor 2, providing a level of confidence of not less than 95%



Calibrated by : Mr.Yuttakorn Jamneansri

Approved by : (Mr.Panuwat Phuklan)

Issue date : Apr 10, 2024

This calibration certificate shall not be reproduced other than in full except with the prior written approval of Inctech Metrological Center Co.,Ltd

Rev.03 / Feb 2024

FM-MT-013



Inctech Metrological Center Co.Ltd.
39/1 Soi 82, Sukhapiban 5 Rd., O ngoen,
Saimai, Bangkok 10220, Thailand
Tel. (662) 909-8820 (Auto 10 lines) www.imcinstrument.com



Certificate No. : MT24-3208

Page : 2 of 2

Function : Temperature measurement

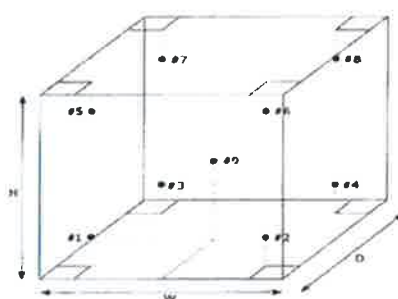
Result : Without adjustment

Calibration point : 104, 180 °C

Resolution : 0.1 °C

Calibration point (°C)	Temperature of UUC* at each position (°C)									Uncertainty of measurement (+/- °C)
	Ch.1	Ch.2	Ch.3	Ch.4	Ch.5	Ch.6	Ch.7	Ch.8	Ch.9	
104	103.494	103.933	103.871	103.988	103.990	104.081	103.843	104.217	104.022	0.45
180	179.985	179.953	180.047	179.985	179.908	180.086	180.065	180.273	180.105	0.54

Setting temperature (°C)	Indicating Temperature (°C)	Measured stability (+/- °C)	Measured uniformity (°C)	Overall variation (°C)
104.0	104.0	0.34	0.66	1.3
180.0	180.0	0.41	0.86	1.2



Front view

- #1 Lower Left Front
- #2 Lower Right Front
- #3 Lower Left Rear
- #4 Lower Right Rear
- #5 Upper Left Front
- #6 Upper Right Front
- #7 Upper Left Rear
- #8 Upper Right Rear
- #9 Geometric Center

UUC* = Unit under calibration

Uniformity = Maximum and Minimum difference of measured temperature at any probes and the measured temperature at the reference and same time.

Overall Variation = Difference of temperature value between the maximum and minimum any time.

Stability = One half of the maximum difference of measured temperatures at any one probe.

-oOo-

Rev.03 / Feb 2024

FM-MT-013



Certificate of Calibration

Equipment:	Balance	Certificate No.:	C01241754
Model:	BL 210S	Issued Date:	05 June 2024
Serial No. (or ID.):	15808131 (WWL 0022)	Job No.:	WO-00030302
Manufacturer:	Sartorius	Page:	1 of 2
Condition:	In condition		

Customer: Water Analysis Center Co., Ltd.
1/94 Moo 5, Rojana Industrial Park, Rojana Road,
Tambol Kanham, Amphur U-Thai, Ayutthaya 13210 Thailand

Environment Condition: Temperature: 26 °C ± 0.2 °C
Humidity: 50 %RH ± 2.6 %RH

Calibration Place: Water Analysis Center Co., Ltd. (ห้องเครื่องชั่ง)
1/94 Moo 5, Rojana Industrial Park, Rojana Road,
Tambol Kanham, Amphur U-Thai, Ayutthaya 13210 Thailand

Calibration By: Mr. Polawad Ruaminup

Calibration Date: 05 June 2024

The Method used: In-house method, CAL-WI-47, based on UKAS Lab 14

Traceability: This certificate is traceable to the SI Units maintained by National Institute of Metrology (NIMT), Thailand through DKSH Technology Co., Ltd. Certificate No. C02240400

(Mr. Polawad Ruaminup)

Person in charge

(Mr. Rungrod Jenkitrakulchai)

Authorized signatory

This certificate is issued the units of measurement according to the International System of Units (SI). It provides traceability of measurement to international or national standard or other recognized national standard laboratories.

The measurement uncertainty stated is the expanded uncertainty which is obtained from the standard uncertainty multiplied by the coverage factor ($k=2$) to provide a level of confidence of approximately 95%. It is determined in accordance with the Guide to Expression of Uncertainty in Measurement (GUM).

These results may be affected by deviations from specified conditions. The results relate only to the items tested, calibrated or sampled. The report shall not be reproduced except in full without approval of DKSH Technology Limited.

บริษัท ดีเคเอสเอช เทคโนโลยี จำกัด
DKSH Technology Limited
2533 ถนนสุขุมวิท แขวงบางจาก เขตคลองเตย กรุงเทพมหานคร 10260
2533 Sukhumvit Road, Bangchak, Phrakhanong, Bangkok 10260
Phone: +66 2634 7000 Email: info.calibration@dksh.com Website: www.dksh.com/thailand/office/stand

Delivering Growth - in Asia and Beyond.

CAL-FM-C01-14: 12 Sep 2022



Certificate No.: C01241754

Page: 2 of 2

Calibration Results:

Without Adjustment

Eccentric Error: Weight to be 1/3 or 1/2 of Maximum capacity, taken from the center of the pan as a zero reference.

Nominal Test Value			Reference Points (g)				
100			(g)				
			A	B	C	D	E
				0.0000	0.0001	0.0000	-0.0002

Repeatability: Determination of the standard deviation of weighing balance., Readability 0.0001 (g)

Nominal test value (g)	Standard Deviation
20	0.00004
200	0.00006

Error of indication from nominal or conventional mass value., Readability 0.0001 (g)

Nominal Value (g)	Conventional Mass (g)	Displayed Value (g)	Error of Indication (g)	Uncertainty (g)	k
1	1.00001	1.0000	0.0000	0.00011	2.04
2	2.00002	2.0000	0.0000	0.00011	2.04
5	5.00002	5.0000	0.0000	0.00011	2.04
10	10.00001	10.0000	0.0000	0.00011	2.04
20	20.00001	20.0000	0.0000	0.00012	2.03
50	50.00003	50.0000	0.0000	0.00013	2.02
70	70.00004	70.0000	0.0000	0.00016	2.01
100	99.99996	100.0001	0.0001	0.00017	2.01
120	119.99997	120.0002	0.0002	0.00021	2.00
150	149.99999	150.0002	0.0002	0.00024	2.00
200	199.99996	200.0004	0.0004	0.00030	2.00

The End of Certificate

บริษัท ดีเคเอสเอช (ประเทศไทย) จำกัด
DKSH Technology Limited
2533 ถนนสุขุมวิท แขวงคลองเตย เขตคลองเตย กรุงเทพมหานคร 10280
2533 Sukhumvit Road, Bangkok, Phra Khanong, Bangkok 10280
Phone: +66 2639 7000 Email: info.calibration@dksh.com Website: www.dksh.com/scientific-thailand

Delivering Growth - in Asia and Beyond.

CAL-FM-C01-14: 12 Sep 2022



Master Calibration Co., Ltd.

547 Soi Ratchadaniwat, Kwaeng Samsenok, Khet Huaykwang, Bangkok 10310

Tel : (02) 274 2978-9, (02) 2742987 8 Fax : (02) 274 2518, (02) 274 2989

Website : www.mastercalibration.com E-mail : calibrate@mastercalibration.com

Certificate of Calibration

LIQUID BATH



Certificate No.: MC 2314268

Page 1 of 3



Customer

Water Analysis Center Co., Ltd.
1/94 Moo 5, T. Kantham, A.U.-Thai, Ayutthaya 13210.

Reference Job No.

23-2833

Received Date : 15 December 2023

Description

Water Bath

Manufacturer

ESSTEL

Model : FWB-122D

Serial No.

20180508122

ID. No. : WWI. 0214

Marking

Additionally for the purpose of identification by this laboratory a label marked with this certificate number (MC 2314268) has been attached to the case

Method

In-House calibration procedure MWI-T-029 this method is reference to ASTM E715 "Liquid Bath".

Location of Calibration

Water Analysis Center Co., Ltd. ; Laboratory

Environmental Condition

Ambient Temperature : (29.4 to 29.8) °C

Relative Humidity : (49.0 to 52.0) %

Date of Calibration

15 December 2023

Date of Issue : 19 December 2023

Checked by :

Chalermkit

Chalermkit Rakphada

(Calibration Engineer)

Approved by :

Aittipong

Aittipong Karjanasit

(Technical Manager)

The uncertainties are for a confidence probability of approximately 95%

This certificate is issued in accordance with the conditions of accreditation granted by the National Standardization Council of Thailand-Office of the National Standardization Council that has assessed the measurement capability of the laboratory and its traceability to recognized national standards and to the units 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 Master Calibration Co., Ltd.

[MCF-Q-077 ; Rev.6 ; Date : 22/04/2021]

Certificate No.: MC 2314268

Page 2 of 3

Reference Standard Instrument :

Description	Certificate No.	Serial No.	Due date	Traceable thru
Data Acquisition/Switch Unit With Thermocouple Type " T " ID. No.27/1 to 27/5	MC 2301270	MY44020009	9 Mar 2024	MCAL

Traceability :

The measurement standard traceable to the international system of units (SI) through certificate as mentioned above

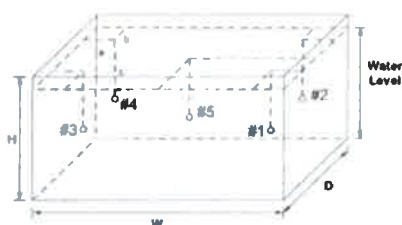
1. Calibration Procedure:

This Instrument was calibration according to ASTM F715 - 2007 by comparison with calibrated sensor under no load condition. The sensor were placed on five points and located one sensor in each of the eight corners of the chamber and was away from the each wall of 5 cm to 10 cm. And placed the five sensor within 2.5 cm of the geometric center of the chamber.

Temperature 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 or at as close an observation time as possible to determine the temperature pattern or homogeneity within the chamber under steady state conditions. The reference sensor should preferably be located at the geometric center of the chamber.

Temperature Stability - one-half of the greatest maximum difference of measured temperatures at any one sensor.

Overall Variation - The Difference of the maximum and minimum measured temperatures throughout observation.



- Overall Ambient Temperature around the Chamber variation : 1.3 °C
- Overall Line Voltage variation : 0.0 V
- Chamber Size (W*H*D) : 50 cm x 12 cm x 30 cm
- Water Level : 7 cm

Checked by : Chalemkrit

[MCF-Q-077 ; Rev.6 ; Date : 22/04/2021]



547 Soi Ratchadaniyat, Kwaeng Samsenok, Khet Huaykwang, Bangkok 10310
Tel. : (02) 274 2978-9, (02) 2742987-8 Fax : (02) 274 2518, (02) 274 2989
Website : www.mastercalibration.com E-mail : calibrate@mastercalibration.com

Certificate No.: MC 2314268

Page 3 of 3

2. Result of calibration :

Temperature Measurement Accuracy Test

Indicating Temperature (°C)	Measured Temperature (°C) at Spread Locations					Uncertainty (±°C)
	#1	#2	#3	#4	Ref. #5	
45.0	44.5	44.4	44.5	44.5	44.6	0.45

Chamber Characterization Result

Desired Temperature (°C)	Controller Temperature (°C)	Indicating Temperature (°C)	Temperature Stability (±°C)	Temperature Uniformity (°C)	Overall Variation (°C)
44.5	45.0	45.0	0.62	0.88	1.5

The reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor $k = 2.0$, providing a level of confidence of approximately 95 %.

This certificate will certify of the calibrated equipment only.

End of Certificate

Checked by : Chalangkul

[MCF-Q-077 ; Rev.6 ; Date : 22/04/2021]



Master Calibration Co., Ltd.

547 Soi Ratchadaniwar, Kwaeng Samsenuek, Khet Huaykwang, Bangkok 10310

Tel (02) 274 2978-9, (02) 2742987-8 Fax (02) 274 2518, (02) 274 2989

Website: www.mastercalibration.com E-mail: calibrate@mastercalibration.com

Certificate of Calibration

TEMPERATURE CONTROLLER ENCLOSURES



NBC 1754-175 17021
CALIBRATION 0183

Certificate No.: MC 2314270

Page 1 of 3



Customer

Water Analysis Center Co., Ltd.

1/94 Moo 5, T.Kantham, A.U-Thai, Ayutthaya 13210.

Reference Job No.

23-2833

Received Date : 15 December 2023

Description

Incubator

Manufacturer

Memmert

Model : IN260

Serial No.

D619.0170

ID. No. : WWL 0192

Marking

Additionally for the purpose of identification by this laboratory a label marked with this certificate number (MC 2314270) has been attached to the case.

Method

In-House calibration procedure MWI-T-033 this method is reference to TLAS G-20 "Temperature Controlled Enclosures".

Location of Calibration

Water Analysis Center Co., Ltd. ; Laboratory

Environmental Conditions

Ambient Temperature : (25.2 to 25.6) °C

Relative Humidity : (65.4 to 66.2) %

Date of Calibration

15 December 2023

Date of Issue : 19 December 2023

Checked by :

Chalermkit

Chalermkit Rakphada

(Calibration Engineer)

Approved by :

Aittipong

Aittipong Kanchanasit

(Technical Manager)

The uncertainties are for a confidence probability of approximately 95%

This certificate is issued in accordance with the conditions of accreditation granted by the National Standardization Council of Thailand-Office of the National Standardization Council that has assessed the measurement capability of the laboratory and its traceability to recognized national standards and to the units 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 Master Calibration Co., Ltd.

[MCP-Q-077 ; Rev 6 ; Date : 22/04/2021]

Certificate No.: MC 2314270

Page 2 of 3

Reference Standard Instrument :

Description	Certificate No.	Serial No.	Due date	Traceable thru
Data Acquisition/Switch Unit With Thermocouple Type " T " ID. No.31/1 to 31/9	MC 2214032	MY41029992	26 Dec 2023	MCAL

Traceability :

The measurement standard traceable to the international system of units (SI) through certificate as mentioned above

1. Calibration Procedure:

This Instrument was calibration according to TLAS G-20 by comparison with calibrated thermocouple type T under no load condition. The Thermocouples were placed on nine points and located one thermocouple in each of the eigh corners of the chamber and was away from the each wall of 5 cm to 10 cm. And placed the ninth thermocouple within 2.5 cm of the geometric center of the chamber.

Temperature 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 or at as close an observation time as possible to determine the temperature pattern or homogeneity within the chamber under steady state conditions. The reference sensor should preferably be located at the geometric center of the chamber.

Temperature Stability - one-half of the greatest maximum difference of measured temperatures at any one sensor.

Overall Variation - The Difference of the maximum and minimum measured temperatures throughout observation.

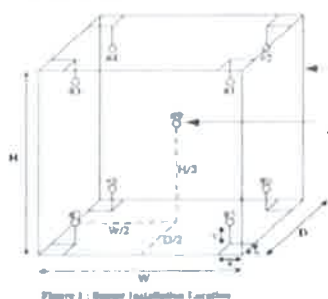


Figure 1 : Sensor Installation Location

Overall Ambient Temperature around the Chamber variation : 0.4 °C

Overall Line Voltage variation : 0.0 V

Chamber Size (W*H*D) : 65 cm x 80 cm x 50 cm

Checked by : Chalermkit

[MCF-Q-077 ; Rev.6 ; Date : 22/04/2021]



547 Soi Ratchadaniwat, Kwaeng Samsenok, Khet Huaykwang, Bangkok 10310
Tel : (02) 274 2978-9, (02) 2742987-8 Fax : (02) 274 2518, (02) 274 2989
Website : www.mastercalibration.com E-mail : calibrate@mastercalibration.com

Certificate No.: MC 2314270

Page 3 of 3

2. Result of calibration :

Temperature Measurement Accuracy Test

Indicating Temperature (°C)	Measured Temperature (°C) at Spread Locations									Uncertainty (±°C)
	#1	#2	#3	#4	#5	#6	#7	#8	Ref. #9	
35.0	35.2	35.2	35.2	35.2	35.1	35.1	35.0	35.1	35.1	0.44

Chamber Characterization Result

Desired Temperature (°C)	Controller Temperature (°C)	Indicating Temperature (°C)	Temperature Stability (±°C)	Temperature Uniformity (°C)	Overall Variation (°C)
35.0	35.0	35.0	0.13	0.21	0.4

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

This certificate will certify of the calibrated equipment only.

End of Certificate

Checked by : Chalermit

[MCF-Q 077, Rev.6 ; Date : 22/04/2021]