Issue date: 14 February 2022
Valid until: 13 February 2025

NO: SAMM 1051

LABORATORY LOCATION:
(PERMANENT LABORATORY)

CHEMSAIN KONSULTANT SDN. BHD.
(JOHOR LABORATORY)
NO. 50 & 52
JALAN PELEPAS 4/9
TAMAN PERINDUSTRIAN TANJUNG PELEPAS
81550 GELANG PATAH
JOHOR DARUL TAKZIM
MALAYSIA

FIELDS OF TESTING: **CHEMICAL & MECHANICAL**

This laboratory has demonstrated its technical competence to operate in accordance with MS ISO/IEC 17025:2017 (ISO/IEC 17025:2017).

This laboratory's fulfillment of the requirements of ISO/IEC 17025 means the laboratory meets both the technical competence requirements and management system requirements that are necessary for it to consistently deliver technically valid test results and calibrations. The management system requirements in ISO/IEC 17025 are written in language relevant to laboratory operations and operate generally in accordance with the principles of ISO 9001 (see Joint ISO-ILAC-IAF Communiqué dated April 2017).

SCOPE OF TESTING: CHEMICAL

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Water and Wastewater	Turbidity	APHA 2130 B, 2005 APHA 2130 B, 2017
	Conductivity	APHA 2510 B, 2005 APHA 2510 B, 2017
	Salinity	APHA 2520 B, 2005 APHA 2520 B, 2017
	Total Solids	APHA 2540 B, 2005 APHA 2540 B, 2017
	Total Dissolved Solids	APHA 2540 C, 2005 APHA 2540 C, 2017
	Total Suspended Solids	APHA 2540 D, 2005 APHA 2540 D, 2017
	Temperature	APHA 2550 B, 2005 APHA 2550 B, 2017
	Chloride	APHA 4500-Cl^- B, 2005 APHA 4500-Cl^- B, 2017
	pH	APHA 4500-H^+B, 2005 APHA 4500-H^+B, 2017

SCOPE OF TESTING: CHEMICAL

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement		Standard Test Methods/ Equipment/Techniques
Water and Wastewater (continue)	Ammoniacal Nitrogen		APHA 4500-NH_3 B & C, 2005 APHA 4500-NH_3 B & C, 2017
	Oxygen (Dissolved)		APHA 4500-O C, 2005 APHA 4500-O C, 2017 APHA 4500-O G, 2005 APHA 4500-O G, 2017 APHA 4500-O H, 2017
	Biochemical Oxygen Demand		APHA 5210 B & 4500-O G, 2005 APHA 5210 B & 4500-O G, 2017
	Chemical Oxygen Demand		APHA 5220 C, 2005 APHA 5220 C, 2017
	Oil & Grease		APHA 5520 B, 2005 APHA 5520 B, 2017
	Free, Combined and Total Residual Chlorine		In-House Method 0501 based on Palintest Comparator
	Silver (Ag) Aluminum (Al) Arsenic (As) Boron (B) Barium (Ba) Beryllium (Be) Bismuth (Bi) Calcium (Ca) Cadmium (Cd) Cobalt (Co) Chromium (Cr) Copper (Cu) Iron (Fe) Potassium (K) Lithium (Li)	Magnesium (Mg) Manganese (Mn) Molybdenum (Mo) Sodium (Na) Nickel (Ni) Phosphorus (P) Lead (Pb) Sulfur (S) Antimony (Sb) Selenium (Se) Silicon (Si) Tin (Sn) Strontium (Sr) Titanium (Ti) Thallium (Tl) Vanadium (V) Zinc (Zn)	APHA 3120 B, 2005 APHA 3120 B, 2017 Inductively Coupled Plasma – Optical Emission Spectrometry (ICP-OES)
	Sample Pre-Treatment for Metals Analysis		APHA 3030 F, 2005 APHA 3030 F, 2017

SCOPE OF TESTING: CHEMICAL

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Marine Water Estuarine Water Formation/ Produced Water	Turbidity	APHA 2130 B, 2005 APHA 2130 B, 2017
	Conductivity	APHA 2510 B, 2005 APHA 2510 B, 2017
	Salinity	APHA 2520 B, 2005 APHA 2520 B, 2017
	Total Solids	APHA 2540 B, 2005 APHA 2540 B, 2017
	Total Dissolved Solids	APHA 2540 C, 2005 APHA 2540 C, 2017
	Total Suspended Solids	APHA 2540 D, 2005 APHA 2540 D, 2017
	Temperature	APHA 2550 B, 2005 APHA 2550 B, 2017
	Chloride	APHA 4500-Cl^- B, 2005 APHA 4500-Cl^- B, 2017
	pH	APHA 4500-H+B, 2005 APHA 4500-H+B, 2017
	Ammoniacal Nitrogen	APHA 4500-NH_3 B & C, 2005 APHA 4500-NH_3 B & C, 2017
	Oxygen (Dissolved)	APHA 4500-O C, 2005 APHA 4500-O C, 2017 APHA 4500-O G, 2005 APHA 4500-O G, 2017 APHA 4500-O H, 2017
	Biochemical Oxygen Demand	APHA 5210 B & 4500-O G, 2005 APHA 5210 B & 4500-O G, 2017
	Oil & Grease	APHA 5520 B, 2005 APHA 5520 B, 2017
	Chemical Oxygen Demand	In-House Method 0560 based on APHA 5220 C, 2005/2017 & USGS – Method for analysis of organic substances in water – Chemical Oxygen Demand COD

SCOPE OF TESTING: CHEMICAL

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Marine Water Estuarine Water Formation/ Produced Water (continue)	Free, Combined and Total Residual Chlorine	In-House Method 0501 based on Palintest Comparator

Note:

- APHA – American Public Health Association (Standards Method for the Examination of Water and Wastewater)

Signatories:

1. **Muhammad Zulfadli bin Zulkefli** **IKM No.: M/5099/7717/17/19 (Non resident)**
2. **Fathin binti Karudin** **IKM No.: M/5560/7852/17/20 (Non resident)**
3. **Kuan Ho Tai** **IKM No.: M/4411/7318/16**

FIELDS OF TESTING: **CHEMICAL & MECHANICAL**

SITE: CATEGORY I

Materials/ Products Tested	**Type of Test/ Properties Measured/ Range of Measurement**	**Standard Test Methods/ Equipment/Techniques**
Water and Wastewater Marine Water Estuarine Water Formation / Produced Water	Temperature	APHA 2550 B, 2005 APHA 2550 B, 2017
	pH	APHA 4500-H^+ B, 2005 APHA 4500-H^+ B, 2017
	Oxygen (Dissolved)	APHA 4500-O G, 2005 APHA 4500-O G, 2017 APHA 4500-O H, 2017
	Free, Combined and Total Residual Chlorine	In-House Method 0501 based on Palintest Comparator
Ambient Air	Total Suspend Particulates	AS/NZS 3580 9.3: 2015
	PM10	AS/NZS 3580 9.6: 2015
	PM2.5	AS/NZS 3580 9.14: 2013
Stationary Air Emission	Particulates	MS 1596:2003 USEPA Method 5
	O_2, CO_2, NO_2, CO, SO_2, NO, H_2S	In-House Method 0585 based on Testo 350 Flue Gas Analyser
Vibration	Measurement of Vibration Level	In-House Method 0591 based on Seismographs Manufacturer Manual
Noise	Measurement of Environmental Noise Levels	ISO 1996-1:2016 & ISO 1996-2:2017

Note:

- APHA – American Public Health Association (Standards Method for the Examination of Water and Wastewater)

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Signatories:

1.	**Kuan Ho Tai**	**IKM No.: M/4411/7318/16 (Ambient Air Particulate, Stationary Air Emission and Field Testing only)**
2.	**Muhammad Sufi Bin Mohd Nor**	**IKM No.: L/2980/8823/20 (Ambient Air Particulate, Stationary Air Emission, Field Testing, Noise and Vibration only)**
3.	**Nazirah Binti Muhamad Haitamin**	**(Noise and Vibration only)**
4.	**Wan Noorhayani Binti Wan Rosdi**	**(Noise and Vibration only)**

SCOPE OF TESTING: CHEMICAL

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Refinery Products	Flash Point	ASTM D 93-20 (Procedure A)
	Acid Number	ASTM D 664-18e2 (Procedure A) by Potentiometric Titration
	Water	ASTM D 6304-20 (Procedure C excluded)
	Vanadium, Nickel, Iron, Sodium, Calcium, Zinc	In-House Method 6016 by ICP based on ASTM D 5863-11
	Density, Relative Density, and API Gravity of Liquids	ASTM D 4052-18
	Compositional Analysis Hydrocarbons (C1 – C6+)	GPA 2261-00 Gas Composition by Gas Chromatography
	Calculated Property	ISO 6976-2005
Crude Oil	Water	ASTM D 4928-12 (Reapproved 2018)
	Density and Relative Density	ASTM D 5002-19
Lubricant	Cleveland Open Cup Flash Point	ASTM D 92-18
	Viscosity @ 40°C and 100°C	ASTM D 445-19
JET-A1	Distillation	ASTM D 86-20a
	Corrosion: Copper Strip	ASTM D 130-19
	Saybolt Color	ASTM D 156-15
	Smoke Point	ASTM D 1322-18
	Freezing Point	ASTM D 2386-19
	Electrical Conductivity, pS/m	ASTM D 2624-15
	Total Acidity	ASTM D 3242-11
	Water Separation Characteristics	ASTM D 3948-20
	Density	ASTM D 4052-18
	Flash Point Abel	IP 170-14

SCOPE OF TESTING: CHEMICAL

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement		Standard Test Methods/ Equipment/Techniques
Lubricant Oil Fuel Oil Waste Oil Base Oil Engine Oil	Total Acid Number		ASTM D 664-18e2
	Pentane Insoluble		ASTM D 893-18
	Aluminium (Al) Barium (Ba) Boron (B) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Copper (Cu) Iron (Fe) Magnesium (Mg) Lead (Pb) Zinc (Zn)	Molybdenum (Mo) Manganese (Mn) Nickel (Ni) Phosphorus (P) Sodium (Na) Silicon (Si) Silver (Ag) Tin (Sn) Titanium (Ti) Vanadium (V) Potassium (K)	ASTM D 5185-18
	Membrane Patch Colorimetry		ASTM D 7843-12
Fuel (Gasoline & Diesel)	Reid Vapor Pressure		ASTM D 323-15a
	Ash		ASTM D 482-19
	Density, Specific Gravity, API Gravity		ASTM D 1298-17
	Carbon Residue (Micro)		ASTM D 4530-15
	Loss On Ignition		In House Method 6046 based on EN 12879-2000
Crude Oil, Condensate & Fuel (Naphtha Distilled Fraction)	Organic Chloride		ASTM D 4929-15a
Avgas	Reid Vapor Pressure		ASTM D 323-15a
LPG	Volatility of LPG		ASTM D 1837-17
	Copper Corrosion		ASTM D 1838-16
	Relative Density @ 60°F (Calculation)		ASTM D 2598-16
	Vapor Pressure (Calculation)		ASTM D 2598-16
	Motor Octane Number (Calculation)		ASTM D 2598-16
LPG/Propane/Propene Mixture	Hydrocarbon		ASTM D 2163-07

SCOPE OF TESTING: CHEMICAL

Note:

- GPA : Gas Processors Association
- APHA : American Public Health Association
- ASTM : American Standard for Testing and Materials
- USGS : United States Geological Survey
- EN : European Standard
- AS/NZS : Australian/ New Zealand Standard
- ISO : International Standards Organization
- MS : Malaysian Standards
- IP : Institute of Petroleum

Signatories:

1.	**Sim Hang Thiew**	**IKM No.: M/0688/1530/83 (Non resident) (Petroleum & Petroleum Products)**
2.	**Kuan Ho Tai**	**IKM No.: M/4411/7318/16 (Petroleum & Petroleum Products)**
3.	**Ahmad Al Ashir Bin Amat**	**IKM No.: M/5861/8394/19/21 (Petroleum & Petroleum Products)**
4.	**Lahung Lah Kebing**	**IKM No.: M/4886/7415/16/18 (Non resident) (Petroleum & Petroleum Products)**
5.	**Nur An-Nisaa' Binti Mohamad Yusoff**	**IKM No.: M/3521/6116/11/12 (Non resident) (Lubricant testing only)**