



MS ISO/IEC 17025

## Certificate of Accreditation

No: SMM 106

Valid until: 24 March 2011

This is to certify that

**SPECTRUM LABORATORIES (JOHORE) SDN BHD**  
**JOHOR BAHRU**  
**MALAYSIA**  
(FIELDS OF TESTING: CHEMICAL & MICROBIOLOGY)

has been granted accreditation in respect of the scope of accreditation described in the SCHEDULE attached, subject to the terms and conditions governing the *Skim Akreditasi Makmal Malaysia (SMM)*, the Laboratory Accreditation Scheme of Malaysia.

Laboratories accredited under SMM meet the requirements of MS ISO/IEC 17025 'General requirements for the competence of testing and calibration laboratories'. This Malaysian Standard is identical with ISO/IEC 17025 published by the International Organization for Standardization (ISO).

*"This laboratory is accredited in accordance with recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer joint ISO-ILAC-IAF Communiqué dated 18 June 2005)"*



**(FADILAH BAHARIN)**  
Director-General  
Department of Standards Malaysia  
Date of issue: 7 May 2008



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**LABORATORY LOCATION:** SPECTRUM LABORATORIES (JOHORE) SDN BHD  
(PERMANENT LABORATORY) 18A, JALAN MOLEK 2/5, TAMAN MOLEK  
81100 JOHOR BAHRU  
JOHOR, MALAYSIA

The standard used for assessment of this laboratory is MS ISO/IEC 17025:2005

**FIELD OF TESTING: CHEMICAL**

**SCOPE OF ACCREDITATION:**

<b>Materials/ Products tested</b>	<b>Type of test/ Properties measured/ Range of measurement</b>	<b>Standard test methods/ Equipment/Techniques</b>
Effluent/Water	Alkalinity	APHA 2320 B
	Arsenic as As	APHA 3114-C
	Bicarbonate Alkalinity	APHA 4500 CO <sub>2</sub> D
	Biochemical Oxygen Demand (BOD)	APHA 5210B
	Boron as B	APHA 4500-B C
	Calcium as Ca	APHA 3111-B
	Carbonate Alkalinity	APHA 4500 CO <sub>2</sub> D
	Chromium, Hexavalent	APHA 3500-Cr D
	Chromium, Trivalent	In house method no. 19 based on APHA 3500-Cr D
	Chromium, Total	APHA 3111-B
	Cadmium as Cd	APHA 3111-B
	Chemical Oxygen Demand	APHA 5220 C
	Cobalt as Co	APHA 3111 B
	Copper as Cu	APHA 3111-B
	Cyanide as CN	OSRMA P-456
	Free Carbon Dioxide	APHA 4500 CO <sub>2</sub> D
	Free Chlorine	APHA 4500-Cl F
	Gold as Au	APHA 3111 B
	Hydroxide Alkalinity	APHA 4500 CO <sub>2</sub> D
	Iron as Fe	APHA 3111-B
	Lead as Pb	APHA 3111-B
	Magnesium as Mg	APHA 3111-B
	Manganese as Mn	APHA 3111-B
	Mercury as Hg	APHA 3112-B
	Nickel as Ni	APHA 3111-B
	pH	APHA 4500-H <sup>+</sup> B
	Phenol	APHA 5530-BC
	Potassium as K	APHA 3111-B
	Sodium as Na	APHA 3111-B
	Sulphide as S <sup>2-</sup>	APHA 4500-S <sup>2-</sup> F
	Suspended Solids	APHA 2540 D
	Total Carbon Dioxide	APHA 4500 CO <sub>2</sub> D
	Zinc as Zn	APHA 3111-B
	Nitrogen/Nitrate as N/NO <sub>3</sub>	AOAC 973.50
	Nitrate	APHA 4500-NO <sub>3</sub> <sup>-</sup> B
	COD	APHA 5220D



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**FIELD OF TESTING: CHEMICAL**

**SCOPE OF ACCREDITATION:**

<u>Materials/ Products tested</u>	<u>Type of test/ Properties measured/ Range of measurement</u>	<u>Standard test methods/ Equipment/Techniques</u>
Effluent/Water (cont.)	Preliminary Treatment of Samples:	
	Digestion for metals	APHA 3030-D
	Nitric Acid Digestion	APHA 3030-E
	Nitric Acid-Hydrochloric Acid Digestion	APHA 3030-F
	Phosphorus as P (or PO <sub>4</sub> )	APHA 4500-P B, C
	Chloride as Cl <sup>-</sup>	APHA 4500-Cl <sup>-</sup> C
	Aluminium as Al	APHA 3500-Al D
	Fluoride as F	APHA 4500-F D
	Ammonia Nitrogen as N	APHA 4500-NH <sub>3</sub> B, C
	COD	APHA 5220-B
	Oil & grease	APHA 5520-B
	Silver as Ag	APHA 3111-B
	Dissolved Oxygen	APHA 4500-O G
	Silica as SiO <sub>2</sub>	APHA 4500 Si-E
	Antimony as Sb	In house method no. 20 based on APHA 3114 -C
	Selenium as Se	APHA 3114-C
	Anionic Surfactant as MBAS	APHA 5540-C
	Hardness (EDTA)	APHA 2340-C
	Hardness (Calculation)	APHA 2340-B
	Total Dissolved Solid	APHA 2540-C
	Turbidity	APHA 2130-B
	Sulphate as SO <sub>4</sub> <sup>2-</sup>	APHA 4500 SO <sub>4</sub> <sup>2-</sup> E
	Tin	In house method No.1 based on APHA 3114-C
	Colour	APHA 2120-B
	Nitrite as NO <sub>2</sub>	APHA 4500-NO <sub>2</sub> B
	Fixed and volatile solids ignited at 550°C (mixed liquor volatile suspended solids or MLVSS)	APHA 2540E
	Total Solids	APHA 2540B



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**FIELD OF TESTING: CHEMICAL**

**SCOPE OF ACCREDITATION:**

<b>Materials/ Products tested</b>	<b>Type of test/ Properties measured/ Range of measurement</b>	<b>Standard test methods/ Equipment/Techniques</b>
Rubber/Palm Oil Mill Effluent	pH	APHA 4500-H <sup>+</sup> B
	Chemical Oxygen Demand (COD)	DOE (M) 1985 - Ref. Method
	Biochemical Oxygen Demand (BOD <sub>3</sub> ) 3 days at 30°C	DOE (M) 1985 - Alt. Method
	Suspended Solids	DOE (M) 1985 - Alt. Method
	Oil & Grease	DOE (M) 1985 - Alt. Method
Ammoniacal Nitrogen as NH <sub>4</sub> -N		DOE (M) 1985 - Ref. Method
Seafood	Salt (Chlorine as Sodium Chloride)	AOAC 937.09
Meats		AOAC 892.02
	Sulfurous acid (Free)	AOAC 960.38
Non-solid Food and Beverages	Benzoic acid	AOAC 967.21
Vitamin Preparations and Juices	Ascorbic acid	
Molasses	Total Sugar expressed as Invert Sugar	AOAC 968.28
Baking Powders	Starch	AOAC 920.44
Cured Meat	Nitrites	AOAC 973.31
Cocoa Products	Fat	AOAC 963.15
	Moisture	AOAC 931.04
Fruits and Fruits Products	Phosphorus	AOAC 970.39
Vinegar	Total acids	AOAC 930.35 (J) (1995)
Milk	Nitrogen (Total)	AOAC 991.20 (1995)
Food	Zinc	AOAC 969.32 and
	Na, Pb, Ca, Cu, K, Mn, Mg, Zn, Cd, Ag, Ni, Cr and Fe	In-house method no. 18 based on AAS Instrument Manual
	Ash	AOAC 31.012 (method 1)





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**FIELD OF TESTING: SITE TESTING - Category 1**

**SCOPE OF ACCREDITATION:**

<b>Materials/ Products tested</b>	<b>Type of test/ Properties measured/ Range of measurement</b>	<b>Standard test methods/ Equipment/Techniques</b>
Flue Gas	Determination of particulate emissions from stationary sources	EPA 40 CFR 60, App.A, Method - 5
	Determination of sulfur dioxide emissions from stationary sources	EPA 40 CFR 60, App.A, Method - 6
	Determination of nitrogen oxide emissions from stationary sources	EPA 40 CFR 60, App.A, Method - 7
	Determination of sulfuric acid mist and sulfur dioxide emissions from stationary sources	EPA 40 CFR 60, App.A, Method - 8
	Determination of metals emissions from stationary sources	EPA 40 CFR 60, App.A, Method -29
	Determination of concentration & mass flow of particulate matter in flue gas for stationary source emissions	MS 1596 : 2003
Air	Ambient Air-Determination of Total Suspended Particulates (TSP)	AS 2724.3
	Ambient Air-Determination of Lead (Pb)	AS 2800
	Nitrogen Dioxide (NO <sub>2</sub> ) in the atmosphere (24 hrs Average)	ISC Method 408
	Sulphur Dioxide (SO <sub>2</sub> ) in the atmosphere	ISC Method 704A
	Suspended Particulate Matter – PM <sub>10</sub>	AS 3580.9.6 - 1990
	Determination of lead from workplace	NIOSH 7082



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**FIELD OF TESTING: SITE TESTING - Category 1**

**SCOPE OF ACCREDITATION:**

Environment	Measurement of noise	ISO 1996/1
Effluent/Water	pH	APHA 4500 H <sup>+</sup> B
	Temperature	APHA 2550 B

APHA Methods - 19<sup>th</sup> Edition, 1995  
OSRMA Methods - 2<sup>nd</sup> Edition, 1973  
DOE Methods - 2<sup>nd</sup> Edition, 1995  
AS - Australia Standard  
ISC Methods - 3<sup>rd</sup> Edition, 1990  
AOAC Methods, 13<sup>th</sup> Edition, 1995  
NIOSH - National Institute of Occupational Safety and Health

**Signatories:**

1. Siew Yoke Lan
2. Kan King Choy
3. Low Poh Ling

IKM No.: LMIC 1771/86  
IKM No.: LMIC 1886/88  
IKM No.: L 1237/4016/99



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**FIELD OF TESTING: MICROBIOLOGY**

**SCOPE OF ACCREDITATION:**

<u>Materials/ Products tested</u>	<u>Type of test/ Properties measured/ Range of measurement</u>	<u>Standard test methods/ Equipment/Techniques</u>
Food	Aerobic Plate Count/Total Plate Count	FDA – BAM Chapter 1
	Yeast and Mold	FDA – BAM Chapter 18
	Coliform, Fecal Coliform and E. coli	FDA – BAM Chapter 4
	Staphylococcus aureus	FDA – BAM Chapter 12
Water	Heterotrophic Plate Count/Total Plate Count	APHA 9215 B
	Heterotrophic Plate Count/Total Plate Count	APHA 9215 C
	Coliform	APHA 9221 B
	Fecal Coliform and E.Coli	APHA 9221 E
	Coliform (Membrane Filtration method)	In house method No. 12 based on APHA 9222 B
	E. coli (Membrane Filtration method)	In house method No. 13 based on APHA 9222 G

**Signatory:**

- |    |                          |                             |
|----|--------------------------|-----------------------------|
| 1. | Prof. Dr. Thong Kwai Lin | I/C No.: 560127 – 10 – 5818 |
| 2. | Siew Yoke Lan            | IKM No.: LMIC 1771/86       |
| 3. | Noraini binti Hussin     | I/C No.: 830214 – 01 – 6116 |

