



MS ISO/IEC 17025

Certificate of Accreditation

No: **SAMM 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 *Skema Akreditasi Makmal Malaysia* (SAMM), the Laboratory Accreditation Scheme of Malaysia.

Laboratories accredited under SAMM 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 Communique dated 18 June 2005)."



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

Schedule

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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:

| <u>Materials/ Products tested</u> | <u>Type of test/ Properties measured/ Range of measurement</u> | <u>Standard test methods/ Equipment/Techniques</u> |
|---|--|--|
| Effluent/Water | Alkalinity | APHA 2320 B |
| | Arsenic as As | APHA 3114-C |
| | Bicarbonate Alkalinity | APHA 4500 CO ₂ 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 ₂ 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 ₂ D |
| | Free Chlorine | APHA 4500-Cl F |
| | Gold as Au | APHA 3111 B |
| | Hydroxide Alkalinity | APHA 4500 CO ₂ 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 ⁺ B |
| | Phenol | APHA 5530-BC |
| | Potassium as K | APHA 3111-B |
| | Sodium as Na | APHA 3111-B |
| | Sulphide as S ²⁻ | APHA 4500-S ²⁻ F |
| | Suspended Solids | APHA 2540 D |
| | Total Carbon Dioxide | APHA 4500 CO ₂ D |
| | Zinc as Zn | APHA 3111-B |
| | Nitrogen/Nitrate as N/NO ₃ | AOAC 873.60 |
| | Nitrate | APHA 4500-NO ₃ B |
| | COD | APHA 5220D |



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FIELD OF TESTING: CHEMICAL

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| <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 ₄) | APHA 4500-P B, C |
| | Chloride as Cl ⁻ | APHA 4500-Cl C |
| | Aluminium as Al | APHA 3500-Al D |
| | Fluoride as F ⁻ | APHA 4500-F D |
| | Ammonia Nitrogen as N | APHA 4500-NH ₃ B, C |
| | CO ₂ | APHA 5220-B |
| | Oil & grease | APHA 5520-B |
| | Silver as Ag | APHA 3111-B |
| | Dissolved Oxygen | APHA 4500-O G |
| | Silica as SiO ₂ | 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 ₄ ²⁻ | APHA 4500-SO ₄ ²⁻ E |
| | Tin | In house method No.1 based on APHA 3114-C |
| | Colour | APHA 2120-B |
| | Nitrite as NO ₂ | APHA 4500-NO ₂ 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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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> |
|---|---|--|
| Rubber/Palm Oil Mill Effluent | pH Chemical Oxygen Demand (COD) Biochemical Oxygen Demand (BOD ₅) 3 days at 30°C Suspended Solids Oil & Grease Ammoniacal Nitrogen as NH ₂ -N | APHA 4500-H ₂ B DOE (M) 1985 - Ref. Method DOE (M) 1985 - Alt. Method DOE (M) 1985 - Alt. Method DOE (M) 1985 - Alt. Method DOE (M) 1985 - Ref. Method |
| Seafood | Salt (Chlorine as Sodium Chloride) | AOAC 937.09 |
| Meats | Sulfurous acid (Free) | AOAC 882.02 |
| Non-solid Food and Beverages | Benzoic acid | AOAC 960.38 |
| Vitamin Preparations and Juices | Ascorbic acid | AOAC 967.21 |
| 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 Moisture | AOAC 963.15 AOAC 931.04 |
| Fruits and Fruits Products | Phosphorus | AOAC 970.39 |
| Vinegar | Total acids | AOAC 930.35 (J) (1995) |
| Milk | Nitrogen (Total) | AOAC 891.20 (1995) |
| Food | Zinc Na, Pb, Ca, Cu, K, Mn, Mg, Zn, Cd, Ag, Ni, Cr and Fe Ash | AOAC 969.32 and In-house method no. 16 based on AAS Instrument Manual AOAC 31.012 (method 1) |



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FIELD OF TESTING: SITE TESTING - Category 1
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> |
|---|--|--|
| 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 ₂) in the atmosphere (24 hrs Average) | ISC Method 408 |
| | Sulphur Dioxide (SO ₂) in the atmosphere | ISC Method 704A |
| | Suspended Particulate Matter - PM ₁₀ | 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 ⁺ B |
| | Temperature | APHA 2550 B |

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

Signatories:

- | | |
|------------------|-------------------------|
| 1. Siow Yoke Lan | IKM No.: LMIC 1771/86 |
| 2. Kan King Choy | IKM No.: LMIC 1886/88 |
| 3. Low Poh Ling | 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 |
| Water | Staphylococcus aureus | FDA – BAM Chapter 12 |
| | 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 |

