LABORATORY LOCATION:
(PERMANENT LABORATORY)

GLOBAL TESTING AND CONSULTANCY FOR RUBBER (G-TAC$_R$)
LEMBAGA GETAH MALAYSIA
47000 SUNGAI BULOH
SELANGOR, MALAYSIA

This laboratory accredited under *Skim Akreditasi Makmal Malaysia* (SAMM) meets the requirements of MS ISO/IEC 17025:2005 'General requirements for competence of testing and calibration laboratories'. This Malaysian Standards is identical with ISO/IEC 17025:2005 published by the International Organization for Standardization (ISO).

FIELD OF TESTING: **MECHANICAL (PHYSICAL TESTING OF RUBBER AND RUBBER PRODUCTS)**

SCOPE OF ACCREDITATION:

The valid scope of accreditation is in www.jsm.gov.my/cab-directories.

Materials/ Products Tested	**Type of Test/ Properties Measured/ Range of Measurement**	**Standard Test Methods/ Equipment/Techniques**
Rubber and Rubber Products	Abrasion (Test Method)	ISO 4649: 2010 BS ISO 4649: 2010 DIN ISO 4649: 2014 MS ISO 4649: 2005
	Ageing (Test Method)	MS ISO 188: 2008 BS ISO 188: 2011 ISO 188: 2011 ASTM D573: 04(2010) DIN 53508: 1977 AS 1180.3: 1972 AS 1683.26: 2001 JIS K 6257: 1993
	Ageing (Specification – Condom)	ISO 4074:2002 ASTM D3492-14 MS 113: 2003 BS EN ISO 4074:2002
	Ageing (Specification – Gloves)	ASTM D3578-05(2010) ASTM D5250-06(2011) ASTM D6319-10 MS 1155: 2003 ISO 11193-1: 2008 AS/NZS 4011-1:2014 AS/NZS 4011-2:2014 SMG Type I : 2013 SMG Type II: 2013 ASTM D4679:02(2015) ASTM D3577-09 MS 1291:2003 ISO 10282:2014 AS/NZS4179:2014 EN 455-2:2015

FIELD OF TESTING: **MECHANICAL (PHYSICAL TESTING OF RUBBER AND RUBBER PRODUCTS)**

SCOPE OF ACCREDITATION:

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Rubber and Rubber Products (continued)	Brittleness Temperature (Test Method)	ASTM D746:2014 ASTM D2137:2011 ISO 812: 2011 BS ISO 812:2011 JIS K6261: 2006
	Bursting volume and pressure (Specification – Condom)	BS EN ISO 4074:2002 MS 113: 2003 WHO SPECIFICATION :2003 ISO 4074:2002
	Compression Stress Relaxation (Test Method)	BS ISO 3384:2005 MS ISO 3384-1:2013 ASTM D575-91(2012)
	Compression stress-strain properties (Test Method)	JIS K6254 ISO 7743:2011 BS ISO 7743:2011
	Cuff Rupture Resistance (Specification - Examination Gloves)	AS/NZS 4011-1:2014 AS/NZS 4011-2:2014
	Density/SG (Test Method)	ISO 2781: 2008 BS ISO 2781: 2008 MS ISO 2781: 2010 AS 1683.4: 1992
	Effect of Liquids (Test Method)	ASTM D471:12 AS 1683.23-2000 MS ISO 1817:2015 ISO 1817:2015 BS ISO 1817:2015
	Electrical Resistivity (Test Method)	ASTM D257:14 BS ISO 14309:2011
	Fatigue (Test Method) -Resistance to flex -Cracking and crack growth	BS ISO 132:2011 ISO 132:2011 ASTM D430:06(2012) DIN ISO 132:2008
	Fatigue -Heat build-up	ISO 4666-3:2010 MS ISO 4666-3:2012 ASTMD623:07(2014) BS ISO 4666-3:2010

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FIELD OF TESTING: **MECHANICAL (PHYSICAL TESTING OF RUBBER AND RUBBER PRODUCTS)**

SCOPE OF ACCREDITATION:

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Rubber and Rubber Products (continued)	Dimension (Test Method)	MS ISO 23529: 2011 BS ISO 23529:2010 ISO 23529:2010 ASTM D3767:03(2014)
	Dimension (Specification - Condom)	ISO 4074:2002 WHO SPECIFICATION :2003 ASTM D3492-14 MS 113: 2003 BS EN ISO 4074:2002
	Dimension (Specification - Gloves)	ISO 11193-1: 2008 MS 1155: 2003 ASTM D3578-05(2010) ASTM D5250-06(2011) ASTM D6319-10 SMG Type I : 2013 SMG Type II: 2013 AS/NZS 4011-2:2014 AS/NZS 4011-1:2014 ASTM D4679:02(2015) EN 455-2:2013 ISO 10282:2014 AS/NZS4179:2014 MS 1291:2003 ASTM D3577-09
	Freedom From Holes (Specification - Condom)	ISO 4074:2002 WHO SPECIFICATION :2003 ASTM D3492-14 MS 113: 2003 BS EN ISO 4074:2002

The valid scope of accreditation is in www.jsm.gov.my/cab-directories.

FIELD OF TESTING: **MECHANICAL (PHYSICAL TESTING OF RUBBER AND RUBBER PRODUCTS)**

SCOPE OF ACCREDITATION:

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Rubber and Rubber Products (continued)	Freedom From Holes (Specification - Gloves)	ISO 11193-1: 2008 MS 1155: 2003 ASTM D3578-05(2010) ASTM D5151-06(2011) ASTM D5250-06(2011) ASTM D6319-10 EN 455-1: 2000 SMG Type I : 2013 SMG Type II: 2013 AS/NZS 4011-1:2014 AS/NZS 4011-2:2014 BS EN 374-2:2014 ASTM D4679:02(2015) ISO 10282:2014 AS/NZS4179:2014 MS 1291:2003 ASTM D3577-09 EN 455-1: 2000
	Hardness (Test Method)	MS ISO 48:2010 ISO 48:2010 BS ISO 48:2010 DIN ISO 48:2009 DIN ISO 7619-1:2012 DIN ISO 7619-2:2012 ASTM D1415:06(2012) AS 1683.15.1-2000 BS ISO 7619-1:2010 BS ISO 7619-2:2010 ISO 7619-1:2010 ISO 7619-2:2010 ASTM D2240:05(2010) AS 1683.15.2-1990 JIS K 6253: 2006
	Preparation of Test Pieces (Test Method)	ISO 23529:2010 BS ISO 23529:2010 MS ISO 23529:2011

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FIELD OF TESTING: **MECHANICAL (PHYSICAL TESTING OF RUBBER AND RUBBER PRODUCTS)**

SCOPE OF ACCREDITATION:

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Rubber and Rubber Products (continued)	Ozone Resistance Test Method	ISO 1431-1:2012 BS ISO 1431-1:2012 ASTM D1149-07(2012) ASTM D1171-99(2007) JIS K 6259:1993 DIN ISO 1431-1:2011 AS 1683.24-2001 AS 1683.25-2001 MS ISO 1431-1: 2008
	Ply Adhesion (Test Method) - Rubber-to-metal	ISO 813:2010 BS ISO 813:2010 ASTM D429-2008 (Method A and B) DIN ISO 813:2011 AS 1683.14.1: 2001 JIS K 6256-2:2006
	Rubber to substrate	ASTM D413-98(2013) BS ISO 36:2011 ISO 36:2011 JIS K 6256-1:2006
	Puncture Resistance (Specification – Gloves)	EN 388:2003 BS EN 388:2003 ASTM F 1342-05(2013)
	Package integrity (Specification - Condom)	WHO SPECIFICATION :2003 ISO 4074:2002
	Resilience Rebound resilience (Test Method)	BS ISO 4662:2009 ISO 4662:2009 MS ISO 4662:2013
	Shear Modulus (Test Method)	BS ISO 1827:2011 ISO 1827:2011 ASTMD4014:03(2012)(Annex A1) MS ISO 1827: 2008
	Stiffness – Compression/Shear (Test Method)	BS 5400:Sec. 9.2 (1983) Appendix A [Clause 7.2(b)(2)(ii)]
	Total lubricant in individual containers (Specification – Condom)	EN ISO 4074:2002 WHO SPECIFICATION :2003 ISO 4074:2002

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FIELD OF TESTING: **MECHANICAL (PHYSICAL TESTING OF RUBBER AND RUBBER PRODUCTS)**

SCOPE OF ACCREDITATION:

Materials/ Products Tested	**Type of Test/ Properties Measured/ Range of Measurement**	**Standard Test Methods/ Equipment/Techniques**
Rubber and Rubber Products (continued)	Set Compression set (Test Method)	ISO 815-1:2014 BS ISO 815-1: 2014 BS ISO 815-2: 2014 ASTM D395:2014 AS 1683.13-1992 MS ISO 815-1:2009 MS ISO 815-2:2009 DIN ISO 815-1:2010 DIN ISO 815-2:2010 JIS K 6262: 2006
	Set - Tension set	ISO 2285:2013 BS ISO 2285:2013 AS 1683.9-1992 ASTM D412:06(2013) DIN ISO 2285:2013 MS ISO 2285:2007
	Tear Strength (Test Method)	ISO 34-1:2010 BS ISO 34-1:2010 AS 1683.12-2001 DIN ISO 34-1:2015 JIS K 6252:2007 ISO 34-2:2011 BS ISO 34-2:2011 ASTM D624-00(2012) MS ISO 34-2:2010 EN 388:2003 BS EN 388:2003
	Tear Strength - Analysis of multiple-peaks	ISO 6133:1998 AS/NZS 3889:1993
	Tear Strength (Specification – Gloves)	EN 388:2003 BS EN 388:2003

The valid scope of accreditation is in www.jsm.gov.my/cab-directories.

FIELD OF TESTING: **MECHANICAL (PHYSICAL TESTING OF RUBBER AND RUBBER PRODUCTS)**

SCOPE OF ACCREDITATION:

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Rubber and Rubber Products (continued)	Tensile Properties (Test Method)	MS ISO 37:2015 BS ISO 37:2011 ISO 37:2011 ASTM D412-06(2013) DIN 53504-1985 AS 1683.11-2001 JIS K 6251: 2004
	Tensile Properties (Specification – Condom)	ISO 4074:2002 WHO SPECIFICATION :2003 ASTM D3492-14 MS 113: 2003 BS EN ISO 4074:2002
	Tensile Properties (Specification – Gloves)	EN 455-2:2015 ISO 11193-1: 2008 MS 1155: 2003 ASTM D3578-05(2010) ASTM D5250-06(2011) ASTM D6319-10 SMG Type I : 2013 SMG Type II: 2013 AS/NZS 4011-1:2014 AS/NZS 4011-2:2014 ASTM D4679:02(2015) EN 455-2:2013 ISO 10282:2014 AS/NZS4179:2014 MS 1291:2003 ASTM D3577-09
	Visible defects Specification - Condom	ISO 4074:2002 EN ISO 4074:2002

Signatories:

1. **Shamheza Suhatta**
2. **Suhana Abu Bakar**

The valid scope of accreditation is in www.jsm.gov.my/cab-directories.

FIELD OF TESTING: **MECHANICAL (TYRE TESTING)**

SCOPE OF ACCREDITATION:

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
New Pneumatic Passenger Car Tyres	Physical dimensions	FMVSS 109:2008, S5.1
	Bead unseating resistance	FMVSS 109:2008, S5.2
	Tire Strength	FMVSS 109:2008, S5.3
	Tire Endurance	FMVSS 109:2008, S5.4
	High Speed Performance	FMVSS 109:2008, S5.5
New Pneumatic Tyres other than Passenger Car Tyres	General conditions	FMVSS 119:2008, S7.1
	Endurance	FMVSS 119:2008, S7.2
	Strength	FMVSS 119:2008, S7.3
	High Speed Performance	FMVSS 119:2008, S7.4
	Treadwear Indicators	FMVSS 119:2008, S6.4
New Pneumatic Radial Tires for Light Vehicles	Physical dimensions	FMVSS 139:2003, S6.1
	High Speed	FMVSS 139:2003, S6.2
	Endurance	FMVSS 139:2003, S6.3
	Tire Strength	FMVSS 139:2003, S6.5
	Bead unseating	FMVSS 139:2003, S6.6
New Pneumatic Passenger Car Tyres	Physical Dimensions	MS 149:2008 Clause 6.1
	Tubeless Tyre Bead Unseating Resistance	MS 149:2008 Clause 6.2
	Tyre Strength	MS 149:2008 Clause 6.3
	Tyre Endurance	MS 149:2008 Clause 6.4
	High Speed Performance	MS 149:2008 Clause 6.5

The valid scope of accreditation is in www.jsm.gov.my/cab-directories.

FIELD OF TESTING: **MECHANICAL (TYRE TESTING)**

SCOPE OF ACCREDITATION:

Materials/ Products Tested	**Type of Test/ Properties Measured/ Range of Measurement**	**Standard Test Methods/ Equipment/Techniques**
New Pneumatic Tyres for Highway Vehicles other than Passenger Car Tyres	Physical Dimensions and Tyre Marking	MS 1394:2008 Clause 4.5
	Tyre Endurance	MS 1394:2008 Clause 6.2
	Tyre Strength	MS 1394:2008 Clause 6.3
	High Speed Performance	MS 1394:2008 Clause 6.4
New Pneumatic Passenger Car Tyres	Method of measuring pneumatic tyre	ECE Addendum 29; Regulation No. 30:2007 Annex 6
	Procedure for Load / Speed Performance	ECE Addendum 29; Regulation No. 30:2007 Annex 7
New Pneumatic Tyres for Road Vehicles other than Passenger Cars, Cycles And Motor Cycles	Method of measuring pneumatic tyre	ECE Addendum 53; Regulation No. 54:2004 Annex 6
	Procedure for Load / Speed Performance	ECE Addendum 53; Regulation No. 54:2004 Annex 7
JIS D4230 Automobiles	Tyre Strength (Breaking Energy)	JIS D4230: 1998, Clause 6.1
	Bead Unseating resistance	JIS D4230: 1998, Clause 6.2
	Tyre Endurance	JIS D4230: 1998, Clause 6.3
	High Speed Performance	JIS D4230: 1998, Clause 6.4 Clause 6.5

The valid scope of accreditation is in www.jsm.gov.my/cab-directories.

FIELD OF TESTING: **MECHANICAL (TYRE TESTING)**

SCOPE OF ACCREDITATION:

Materials/ Products Tested	**Type of Test/ Properties Measured/ Range of Measurement**	**Standard Test Methods/ Equipment/Techniques**
Australian Design Rule 23/1;Passanger Car Tyres	Physical Dimensions	ADR 23/02 Clause 23.3.1
	Resistance to Bead Unseating	ADR 23/02 Clause 23.3.2
	Tyre Strength (Breaking Energy)	
	Tyre Endurance	ADR 23/02 Clause 23.3.3
	High Speed	ADR 23/02 Clause 23.3.4
		ADR 23/02 Clause 23.3.5
Retreaded Car and Commercial Vehicle Tyres	Tyre Dimensions	BS AU 144f:1988, Clause 5
	Load/Speed Performance	BS AU144f:1988, Appendix B

Signatories

1. **Ir. Ahmad Nazir Kamaruddin**
2. **Mohd Ismail Rifdi Rizuan (Non-residence Signatory)**

The valid scope of accreditation is in www.jsm.gov.my/cab-directories.

*** The expanded uncertainties are based on an estimated confidence probability of approximately 95% and have a coverage factor of *k*=2 unless stated otherwise.**

FIELD OF CALIBRATION: FORCE AND DIMENSIONAL

SCOPE OF ACCREDITATION:

Instrument Calibrated/ Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty(±)***	**Remarks**
Hardness Tester Force IRHD Normal (Dead load) IRHD (Spring load) JIS A " Shore A " Dimensional Indentor geometry - Diameter of indentor - Indentor extension	 0 to 22 N 0 to 22 N 0 to 22 N 0 to 22 N 0 to 90 mm	 0.20 % of measured load 0.44 % of measured load 0.81 % of measured load 0.70 % of measured load 0.004 mm	Hardness Calibrator, force calibrator, based on ASTM D 2240:2010, JIS K 6301-1995, ISO 7619:2010, ISO 48:2010, manufacture manual.
Dimensional Die cutter measurement - Width - Length of parallel portion	0 to 90 mm	0.004 mm	Profile projector, Video Measuring System, Caliper, based on ISO 4648:1998, ASTM D 3767:2008, ASTM D 2240:2010, JIS K 6301-1995, ISO 7619:2010, ISO 48:2010, manufacture manual

The valid scope of accreditation is in www.jsm.gov.my/cab-directories.

The valid scope of accreditation is in www.jsm.gov.my/cab-directories.

FIELD OF CALIBRATION: OZONE CONCENTRATION

SITE CALIBRATION: CATEGORY 1

SCOPE OF ACCREDITATION:

Instrument Calibrated/ Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty(±)*	Remarks
Gas measurement Ozone concentration	0 to 200 pphm	3% of measured value	PTL/015/006 ISO 1431-1

FIELDS OF CALIBRATION: MASS AND FORCE

SITE CALIBRATION: CATEGORY 1

SCOPE OF CALIBRATION:

Instrument Calibrated/ Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty(±)*	Remarks
Analytical balance Weighing device	0 to 200 g 200 g to 4 000 g 4 000 g to 6 000 g 6 000 g to 34 000 g	0.4 mg 3 mg 30 mg 450 mg	Standard Weight E2, F1, F2, dead weight, based on OIML
Force Testing Machine / Force Measurement Tension Compression **Vertical speed measurement** **Rotational speed measurement** Rotor Speed **Range 38 rpm and above 14000 rpm**	 1 N to 500 N 0 to 5 000 kN 25 mm/min to 500 mm/min 2 rpm 38 rpm to 250 rpm 251 rpm to 1850 rpm 1850 rpm to 14000 rpm 14000 rpm above	 0.34 % of measured load 2.7 % of measured load 0.2 % 0.1 rpm 1 rpm 1 rpm 3 rpm 20 rpm	 Comparison with dead weight, based on ASTM E 4 : 2013 Comparison with standard load cell based on ASTM E 4 : 2013 Height Gauge, Timer Tachometer, Stroboscope, Timer

FIELDS OF CALIBRATION: MASS AND FORCE

SITE CALIBRATION: CATEGORY 1

SCOPE OF CALIBRATION:

Instrument Calibrated/ Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty(±)*	Remarks
Plastimeter			Standard / Dead weight, gauge block, timer
Load	100 N	0.1 N	
Displacement Test	0.2 mm to 1.0 mm	0.06 mm	
Timing	15.0 sec	0.08 sec	
Mooney Viscometer			Standard / Dead weight, temperature indicator, timer
Load	0 to 100 N (0 to 100 Mooney Unit)	0.4 N	
Platen Temperature	100 °C	0.2 °C	
Rotor Speed	2 rpm	0.1 rpm	
Rheometer (Monsanto R100)			Torque, Timer Temperature indicator (PT100).
Torque	42 lb.in	0.3 lb.in	
Timing	0 min to 40 min	0.21 sec	
	(0 sec to 2400 sec)	0.21 sec	
Platen Temperature	160 °C	0.2 °C	
	177 °C	0.2 °C	

The valid scope of accreditation is in www.jsm.gov.my/cab-directories.

FIELDS OF CALIBRATION: TEMPERATURE

SCOPE OF CALIBRATION:

Instrument Calibrated/ Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty(±)*	Remarks
Type K Thermocouple with Recorder or indicator	40 °C to 200 °C 200 °C to 600 °C	0.4 °C 1.3 °C	Comparison with PT 100 reference in Temperature Bath Comparison with PT 100 reference in Temperature calibrator / dry block

FIELDS OF CALIBRATION: TEMPERATURE

SITE TESTING: CATEGORY I

SCOPE OF ACCREDITATION:

Instrument Calibrated/ Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty(±)*	Remarks
Temperature Controlled Enclosure	40 °C to 200 °C 200°C to 600 °C	0.6 °C 1.4 °C	Calibrated using temperature Indicator/recorder and Thermocouples based on AS 2853

Signatories:

1. **Mohd Nizam Mansor**
2. **Mohamad Khairul Akmal Amran (Non-residence Signatory) –Force, Dimension, Vertical Speed, Hardness only**

The valid scope of accreditation is in www.jsm.gov.my/cab-directories.

FIELD OF TESTING: **CHEMICAL**

SCOPE OF ACCREDITATION:

Materials/ Products Tested	**Type of Test/ Properties Measured/ Range of Measurement**	**Standard Test Methods/ Equipment/Techniques**
Rubber and rubber products	Glass transition temperature via Differential Scanning Calorimeter	UPB/P/009 ASTM : E1356-98
	Standard Method for Assignment of the Glass Transition Temperatures by Differential Scanning Calorimetry or Differential Thermal Analysis.	ASTM : E1356-98
	Determination of epoxide level of ENR via ‘H Nuclear Magnetic Resonance (NMR) Spectrometry.	UPB/P/022
	H NMR to identify NR and ENR	UPB/P/019
	Quantitative Measurement of Length via Scanning Electron Microscopy (x 100 to x 10K mag)	UPB/P/021
	Semi quantitative analysis of blend NR/BR using NMR	UPB/P/067
	Standard test method for enthalpies of fusion and crystallization by Differential Scanning Calorimetry	ASTM E 793-01
	Standard test method for transition temperatures of polymers by Differential Scanning Calorimetry	ASTM D 3418-03
	Standard test method for melting and crystallization temperatures by thermal analysis	ASTM E 794-01

Signatories:

1. **Dr. Rosmahani Che Isa** — **IKM No. M 3199/6002/11**
2. **Dr. Faridah Hanim Ab Hanan** — **IKM No. M 1281/2396/94 (Non-resident Signatory)**
3. **Dr. Kartini Abd. Rahim** — **IKM No. M 2324/4901/06 (Non-resident Signatory)**
4. **Yusniwati Mohamed Yusof** — **IKM No. M 2439/5063/07 (Non-resident Signatory)**

The valid scope of accreditation is in www.jsm.gov.my/cab-directories.

FIELD OF TESTING: CHEMICAL

SCOPE OF ACCREDITATION:

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Rubber and rubber products	Determination of Epoxidation Level of Epoxidized Natural Rubber Via Differential Scanning Calorimetry (DSC) –Correlation with Nuclear Magnetic Resonance	UPB/P/041
	Determination of the aromaticity of oil in vulcanized rubber compounds	ISO 21461: 2009

Signatories:

1. **Dr. Rosmahani Che Isa** — **IKM No. M 3199/6002/11**
2. **Dr. Faridah Hanim Ab Hanan** — **IKM No. M 1281/2396/94 (Non-resident Signatory)**
3. **Yusniwati Mohamed Yusof** — **IKM No. M 2439/5063/07 (Non-resident Signatory)**

The valid scope of accreditation is in www.jsm.gov.my/cab-directories.

FIELD OF TESTING: **CHEMICAL**

SCOPE OF ACCREDITATION:

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Rubber Processing and Palm Oil Mill Effluent	Ammoniacal Nitrogen	DOE, (M)(REF) (2011)
	Biochemical Oxygen Demand (BOD_3)	DOE, (M)(ALT) (2011)
	Chemical Oxygen Demand (COD)	DOE, (M)(REF) (2011)
	Metallic Elements (Zn, Pb, Fe, Co, Ni, Mn, Mg, Cu, Ca)	APHA 3030E, 3111B (2005)
	pH	APHA 4500-H^+ B (2005)
	Settleable Solids	APHA 2540 F (2005)
	Sulphate	APHA 4500-SO_4^{2-} D (2005)
	Suspended Solids	DOE, (M)(ALT) (2011)
	Total Nitrogen	DOE, (M)(REF) (2011)
	Total Solids	APHA 2540 B (2005)
	Total Dissolved Solids	APHA 2540 C (2005)
	Volatile Solids	APHA 2540 E (2005)
	Volatile Suspended Solids	APHA 2540 D & 2540 E (2005)
Sludge and other Solid Waste	Volatile Suspended Solids	APHA 2540 D & 2540 E (2005)
	Metalic elements (Zn, Pb, Co, Ni, Mn, Fe, Mg, Cu)	APHA 3030, 3111 B (2005)

The valid scope of accreditation is in www.jsm.gov.my/cab-directories.

FIELD OF TESTING: **CHEMICAL**

SCOPE OF ACCREDITATION:

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Sewage, Industrial Effluent and Water	Ammoniacal Nitrogen	APHA 4500-NH_3 B & 4500-NH_3 C (2005)
	Biochemical Oxygen Demand (BOD_5)	APHA 5210 B & 4500-OG (2005)
	Chemical Oxygen Demand (COD)	APHA 5220 B (2005)
	Free Chlorine	APHA 4500 Cl B (2005)
	Metallic Elements (Zn, Pb, Co, Ni, Mn, Mg, Cu, Ca)	APHA 3030E, 3111B (2005)
	Oil & Grease	APHA 5520 B (2005)
	Organic Nitrogen	APHA 4500-Norg B (2005)
	pH	APHA 4500-H^+ B (2005)
	Settleable Solids	APHA 2540 F (2005)
	Sulphate	APHA 4500- SO_4^{2-} D (2005)
	Suspended Solids	APHA 2540 D (2005)
	Total Solids	APHA 2540 B (2005)
	Total Dissolved Solids	APHA 2540 C (2005)
	Volatile Solids	APHA 2540 E (2005)

APHA - American Public Health Association 21st Edition
DOE - Department of Environment, Malaysia (2011) 3rd Edition
REF - Reference
ALT - Alternative

Signatories:

1. Ruhida Ab. Rahim **IKM No. M 2542/5226/07**
2. Nor Hidayaty Kamarulzaman **IKM No. M/2467/5101/07 (Non-resident Signatory)**
3. Nur Fadhilah Idris **IKM No. M/2578/5249/08 (Non-resident Signatory)**

The valid scope of accreditation is in www.jsm.gov.my/cab-directories.

LABORATORY LOCATION:
(PERMANENT LABORATORY)

GLOBAL TESTING AND CONSULTANCY FOR RUBBER (G-TAC$_R$)
MALAYSIAN RUBBER BOARD
260 JALAN AMPANG
50450 KUALA LUMPUR
MALAYSIA

FIELD OF TESTING: **CHEMICAL**

SCOPE OF ACCREDITATION:

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Latex (Field Latex)	Dry Rubber Content (DRC)	MS 466: 1987 Sec. 4 RRIM In house Method (Ref. No. UPB/L/001)
	Total Solid Content (TSC)	MS 466: 1987 Sec. 3 RRIM In house Method (Ref. No. UPB/L/002)
	Alkalinity	MS 466: 1987 Sec. 5 RRIM In house Method (Ref. No. UPB/L/003)
	Volatile Fatty Acid number (VFA No.)	MS 466: 1987 Sec. 6 RRIM In house Method (Ref. No. UPB/L/006)
Latex (Concentrate Latex)	Dry Rubber Content (DRC)	ASTM D1076-06: Sec.9 ISO 126: 2005 MS 281: 2009 Part 3 RRIM In house Method (Ref. No. UPB/L/001)
	Total Solid Content (TSC)	ASTM D1076-06: Sec.8 ISO 124: 2008 Clause 6.2: Natural and Synthetic Rubber Latex MS 281: Part 2: 1998 RRIM In house Method (Ref. No. UPB/L/002)
	Alkalinity	ASTM D1076-06: Sec 11 ISO 125: 2003 (E) MS 281: 1999 Part 4 RRIM In house Method (Ref. No. UPB/L/003)

The valid scope of accreditation is in www.jsm.gov.my/cab-directories.

FIELD OF TESTING: **CHEMICAL**

SCOPE OF ACCREDITATION:

Materials/ Products Tested	**Type of Test/ Properties Measured/ Range of Measurement**	**Standard Test Methods/ Equipment/Techniques**
Latex (Concentrate Latex) (continued)	Mechanical Stability Time	ASTM D1076-06: Sec 17 ISO 35: 2004 MS 281: Part 5: 2010 RRIM In house Method (Ref. No. UPB/L/005)
	pH	ASTM D1076-06: Sec 16 ISO 976: 1996 (E) MS 281:2012 Part 16 RRIM In house Method (Ref. No. UPB/L/004A)
	Potassium Hydroxide Number (KOH No.)	ASTM D1076-06: Sec 15 ISO 127: 1995 (E) MS 281: 2011 Part 11 RRIM In house Method (Ref. No. UPB/L/004B)
	Volatile Fatty Acid Number (VFA No.)	ASTM D1076-06: Sec 32-36 ISO 506: 1992 (E) MS 281: 1999 Part 10 RRIM In house Method (Ref. No. UPB/L/006)
	Boric Acid	ASTM D1076-06: Sec 37 ISO 1802: 1992 (E) MS 281:2001 Part 12 RRIM In house Method (Ref. No. UPB/L/008)
	Coagulum Content	ASTM D1076-06: Sec 14 ISO 706: 2004 MS 281: 1998 Part 6 RRIM In house Method (Ref. No. UPB/L/007)
	Sludge Content	ASTM D1076-06: Sec 13 ISO 2005: 1992 (E) MS 1541: 2002 RRIM In house Method (Ref. No. UPB/L/009)
	Viscosity of latex	ASTM D1076-06: Sec 12 RRIM In House Method (Ref. No. UPB/L/015)
	Determination of Zinc Stability Time (ZST)	UPB/L/016

The valid scope of accreditation is in www.jsm.gov.my/cab-directories.

FIELD OF TESTING: **CHEMICAL**

SCOPE OF ACCREDITATION:

Materials/ Products Tested	**Type of Test/ Properties Measured/ Range of Measurement**	**Standard Test Methods/ Equipment/Techniques**
Latex (Concentrate Latex) (continued)	Determination of Zinc Oxide Viscosity (ZOV)	UPB/L/017
	Chemical Stability Time	UPB/L/019
	Determination of Apparent Viscosity by the Brookfield Test Method	ISO 1652:2004
	Zinc Oxide Stability Time	MS 281: part 17: 2007
	Zinc Oxide Viscosity	MS 281: part 18: 2007
Dry Natural Rubber	Determination of Dry Rubber Content (DRC)	UPB/R/007

Signatories:

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FIELD OF TESTING: CHEMICAL

SCOPE OF ACCREDITATION:

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Rubber and rubber products (continued)	Metallic Element (Ca, Mg, Mn, Fe, Cu and Zn)	UPB/P/001
	Polymer/ Carbon Black/ Ash (Via TGA)	UPB/P/010
	Polymer type/ blend ratio (Via FTIR)	UPB/P/011
	Extractable Protein	UPB/P/020 comprising of the following methods; RRIM Modified Lowry ASTM D5712 (1995) ASTM D5712 (2015) EN 455 : 3 (2006)
	Residual Powder	ASTM D6124-06 (2011) (Procedure I & II)
	Determination of Solvent Extract	ISO 1407 : 1992 Method B
	Rubber and Rubber Products – Determination of the composition of vulcanizates and uncured compounds by thermogravimetry Part 1: Butadiene, ethylene-propylene copolymer and terpolymer, isobutene-isoprene, isoprene and styrene-butadiene rubbers	ISO 9924-1 (2000)
	Identification of Accelerators and Antioxidants in Cured and Uncured Rubber Compounds by Thin Layer Chromatography	UPB/P/002
	Identification and Quantification of Residual Chemicals, which can be, Extracted from Rubber and Rubber Products by Hot Water.	UPB/P/003a
	Identification and Quantification of Residual Chemicals, which can be, Extracted from Rubber and Rubber Products by Neutral, Acidic and Alkaline Buffer Solution.	UPB/P/003b

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FIELD OF TESTING: **CHEMICAL**

SCOPE OF ACCREDITATION:

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Rubber and rubber products (continued)	Identification and Quantification of Residual Chemicals which can be Extracted from Rubber and Rubber Products by Neutral, Acidic and Alkaline Buffer Solutions Following Part of EN 455-3:2000 Method.	UPB/P/003c
	Determination of Chemical Purity of Tetramethylthiuram Disulfide (TMTD) And Zinc Diethyl Dithiocarbamate (ZDEC).	UPB/P/003d
	Determination of Carbon, Nitrogen and Sulphur by Elemental Analyzer	UPB/P/004
	Determination of Free Sulphur by Elemental Analyzer	UPB/P/005
	Determination of Zinc (Zn) content, which can be extracted, from rubber and rubber products by 3% acetic acid in metal plate with metal ring of 10 cm diameter.	UPB/P/024
	Determination of Zinc (Zn) content, which can be extracted, from rubber and rubber products by 4% acetic acid in metal plate with metal ring of 10 cm diameter.	UPB/P/025
	Determination of Zinc (Zn) content, which can be extracted, from rubber and rubber products by 10% ethanol in metal plate with metal ring of 10 cm diameter.	UPB/P/026
	Determination of Zinc (Zn) content, which can be extracted, from rubber and rubber products by artificial saliva in metal plate with metal ring of 10 cm diameter.	UPB/P/027
	Determination of Zinc content, which can be extracted, from rubber and rubber products by deionized water in water bath at 40 ± 2°C for 24 hours.	UPB/P/028

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FIELD OF TESTING: **CHEMICAL**

SCOPE OF ACCREDITATION:

Materials/ Products Tested	**Type of Test/ Properties Measured/ Range of Measurement**	**Standard Test Methods/ Equipment/Techniques**
Rubber and rubber products (continued)	Determination of Zinc content, which can be extracted, from rubber and rubber products by 3% acetic acid in water bath at 40 ± 2°C for 24 hours.	UPB/P/029
	Determination of Zinc content, which can be extracted, from rubber and rubber products by ethanol at 10% in water bath at 40 ± 2°C for 24 hours.	UPB/P/030
	Determination of Zinc content, which can be extracted, from rubber and rubber products by artificial saliva in water bath at 40 ± 2°C for 24 hours.	UPB/P/031
	Identification and Quantification of higher fatty acids (HFA) (C12, C14, C16, C18, C18:1, C18:2, C18:3) in latex and dry rubber samples.	UPB/P/032
	The Immunological Measurement of Antigenic Protein in Natural Rubber And its Products.	ASTM D6499-12
	Standard Test Methods For Rubber Product- Chemical Analysis Section 35: Fillers, Referee Ash Test Method.	ASTM D297-93 (2006)
	Migration of Certain Elements (As, Sb, Ba, Cd, Cr, Pb, Hg, Se)	UPB/P/042

The valid scope of accreditation is in www.jsm.gov.my/cab-directories.

FIELD OF TESTING: **CHEMICAL**

SCOPE OF ACCREDITATION:

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Rubber and rubber products (continued)	Determination of Carbon, Hydrogen, Nitrogen, Sulphur and Oxygen using elemental analyzer in Rubber and Rubber Products	UPB/P/045

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6. Dr. Kartini Abd. Rahim **IKM No. M 2324/4901/06 (Non-resident Signatory)**
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8. Yusniwati Mohamed Yusof **IKM No. M 2439/5063/07 (Non-resident Signatory)**

FIELD OF TESTING: **CHEMICAL**

SCOPE OF ACCREDITATION:

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Rubber and Rubber Products	Determination of acetone extract	UPB/P/046
	Determination of methanol extract	UPB/P/047
	Determination of iso propanol extract	UPB/P/048
	Identification and Quantification of residual dithiocarbamates namely ZDMC, ZDEC, ZPMC, ZBED, and ZDBC which can be extracted from rubber and rubber products, by dichloromethane.	UPB/P/049
	Determination of element content by ICP-OES on Rubber and rubber products.	UPB/P/058
	Thin Layer Chromatographic method for distinguishing between NR and synthetic polyisoprene	UPB/P/068

The valid scope of accreditation is in www.jsm.gov.my/cab-directories.

FIELD OF TESTING: CHEMICAL

SCOPE OF ACCREDITATION:

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Rubber and Rubber Products	Plastics/rubber -- Polymer dispersions and rubber latices (natural and synthetic) -- Determination of residual monomers and other organic components by capillary-column gas chromatography -- Part 1: Direct liquid injection method	ISO 13741-1
	Materials and articles in contact with foodstuffs – Plastics – Test methods for overall migration into aqueous food simulants by total immersion	BS EN 1186: 2002 Part 3

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4. **Muhammad Syaarani Danya IKM No. M 3986/6323/12/13 (Non-resident Signatory**
5. **Dr Faridah Hanim Ab Hanan IKM No. M 1281/2396/94 (Non-resident Signatory)**
6. **Kartini Alias IKM No. M 2541/5225/07 (Non-resident Signatory**

FIELD OF TESTING: CHEMICAL

SCOPE OF ACCREDITATION:

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Rubber and Rubber Products	Purity test of hydroxylammoniumSulphate (HNS) by Auto-titrator	UPB/P/039
	Determination of moisture content for industrial chemicals used in rubber and rubber products (Zinc Oxide, Diammonium hydrogen Phosphate and Sodium Metabisulphate)	UPB/P/050

Signatories:

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2. **Ruhida Ab Rahim IKM No. M 2542/5226/07**
3. **Dr. Faridah Hanim Ab Hanan IKM No. M 1281/2396/94 (Non-resident Signatory)**

The valid scope of accreditation is in www.jsm.gov.my/cab-directories.

FIELD OF TESTING: CHEMICAL

SCOPE OF ACCREDITATION:

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Industrial Chemicals	Determination of chemicals purity of 2 Mercapto benzo thiazole (MBT) and Zinc dibutyl dithiocarbamate (ZDBC)	UPB/M/026
Industrial Chemicals	Rubber Compounding Ingredients – Magnesium Oxide – Methods of Test	ISO 21869

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FIELD OF TESTING: CHEMICAL

SCOPE OF ACCREDITATION:

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Rubber and Rubber Products	Migration of certain elements (Test procedure 8.1 and 8.2)	EN 71-3: Safety of Toys Part 3

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The valid scope of accreditation is in www.jsm.gov.my/cab-directories.

FIELD OF TESTING: **MECHANICAL**

SCOPE OF ACCREDITATION:

Materials/ Products Tested	**Type of Test/ Properties Measured/ Range of Measurement**	**Standard Test Methods/ Equipment/Techniques**
Rubber and Rubber Products	Rubber, raw natural and raw synthetic-sampling and further preparative procedures	ISO 1795:2007 Clause 7;Natural Rubber
	Rubber Unvulcanized – Determination using a shearing-disc viscometer – Part 1: Determination of Mooney Viscosity	ISO 289-1:2015
	Rubber, raw natural – Determination of plasticity retention index (PRI)	ISO 2930:2009
	Rubber, unvulcanized – Determination of plasticity – Rapid - plastimeter method	ISO 2007:2007
	Rubber, raw natural –Color index test	ISO 4660:2011
	Standard Test Method for Rubber from Natural Sources – Chemical Analysis (Volatile Matter)	ASTM D 1278:2002 (Section 6-8)
	Standard Test Method for Rubber from Natural Sources – Chemical Analysis (Ash)	ASTM D 1278:2002 (Section 14-17)
	Standard Test Method for Rubber from Natural Sources – Color	ASTM D 3157:2005
	Standard Test Method for Rubber from Natural Sources – Determination of Curing characteristic by using Oscillating disc Rheometer	ISO 3417:2008

Signatories:

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2. **Noraziah Mohd Kassim**
3. **Sa'ari Jamil**
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5. **Yusniwati Mohamed Yusof** **IKM No. M 2439/5063/07 (Non-resident Signatory)**

The valid scope of accreditation is in www.jsm.gov.my/cab-directories.

FIELD OF TESTING: CHEMICAL

SCOPE OF ACCREDITATION:

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Fertilizers	Nitrogen Content by Auto Analyzer	UPB/F/001
	Moisture Content	UPB/F/002
	Phosphorus Content by Auto Analyzer	UPB/F/003
	Potassium, Magnesium and Calcium Contents by AAS	UPB/F/004
	Determination of Carbon, Nitrogen and Sulphur by Elemental Analyzer	UPB/F/005
	Determination of elements content by ICP-OES	UPB/F/007
Plant	Plant – Determination of K, Ca, Mg, Mn, Cu, Fe & Zn by Atomic Absorption Spectrometry	UPB/T/001
	Plant – Determination of P, K, Ca, Mg, Mn, Cu, Fe & Zn using the ICP-OES	UPB/T/002
	Plant – Determination of Nitrogen using the Auto-Analyzer	UPB/T/003
	Plant – Determination of Nitrogen, Carbon and Total Organic Carbon using the Elemental Analyzer	UPB/T/004
Soil	Determination of Moisture Content	UPB/S/001
	Determination of pH	MS 678: Pt. 1: 1980
	Determination of Total Organic Carbon using Elemental Analyzer	UPB/S/002
	Determination of Carbon and Nitrogen using Elemental Analyzer	UPB/S/003
	Determination of Total Phosphorus in Soil using the Auto Analyzer	UPB/S/004
	Determination of Exchangeable Cations (K, Ca, Mg, Mn) by Atomic Absorption Spectrometer	UPB/S/005
	Determination of Cation Exchangeable Capacity	UPB/S/006

The valid scope of accreditation is in www.jsm.gov.my/cab-directories.

FIELD OF TESTING: CHEMICAL

SCOPE OF ACCREDITATION:

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Soil (continued)	Determination of Acid Fluoride Soluble Phosphorus in Soil using the Auto Analyzer	UPB/S/007
	Determination of Total Manganese using the Atomic Absorption Spectrometer	UPB/S/008

Signatories:

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7. **Kartini Alias** — **IKM No. M 2541/5225/07 (Non-resident Signatory)**

The valid scope of accreditation is in www.jsm.gov.my/cab-directories.

FIELD OF TESTING: **MECHANICAL & CHEMICAL**

SCOPE OF ACCREDITATION:

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
SMR TESTING Raw, Dry Natural Rubber	**Chemical Test**	
	Dirt	SMR Bulletin No. 7, B4, 1992 ISO 249: 2014
	Volatile matter	SMR Bulletin No. 7, B5, 1992 ISO 248: 2005 (Oven Method A)
	Ash	SMR Bulletin No. 7, B6, 1992
	Nitrogen	SMR Bulletin No. 7, B7, 1992
	Acetone Extract	SMR Bulletin No. 7, D3, 1992
	Mechanical Test	
	Rapid Plasticity and Plasticity Retention Index	SMR Bulletin No. 7, B8, 1992
	Mooney Viscosity	SMR Bulletin No. 7, B9, 1992
	Colour (Lovibond)	SMR Bulletin No. 7, B10, 1992
	Wallace Accelerated Storage-Hardening test	SMR Bulletin No. 7, C1, 1992
	Mooney Accelerated Storage-Hardening test	SMR Bulletin No. 7, C2, 1992
	Rheometric Cure (Oscillating Disc)	SMR Bulletin No. 7, C3, 1992

Signatories:

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2. **Noraziah Mohd Kassim**
3. **Sa'ari Jamil**

The valid scope of accreditation is in www.jsm.gov.my/cab-directories.

LABORATORY LOCATION: (PERMANENT LABORATORY)

GLOBAL TESTING AND CONSULTANCY FOR RUBBER (G-TAC$_R$)
MALAYSIAN RUBBER BOARD
LOT PT 71847, PUSAT BANDAR AMAN JAYA
08000 SUNGAI PETANI
KEDAH, MALAYSIA

FIELD OF TESTING: **CHEMICAL**

SCOPE OF ACCREDITATION:

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Latex (Field Latex)	Dry Rubber Content (DRC)	MS 466: 1987 Sec. 4 RRIM In house Method (Ref. No. UPB/L/001)
	Total Solid Content (TSC)	MS 466: 1987 Sec. 3 RRIM In house Method (Ref. No. UPB/L/002)
	Alkalinity	MS 466: 1987 Sec. 5 RRIM In house Method (Ref. No. UPB/L/003)
Latex (Concentrate Latex)	Dry Rubber Content (DRC)	ISO 126: 2005 MS 281: 2009 Part 3 RRIM In house Method (Ref. No. UPB/L/001)
	Total Solid Content (TSC)	ISO 124:2008 Clause 6.2;Natural and synthetic rubber latex MS 281:1998 Part 2 RRIM In house Method (Ref. No. UPB/L/002)
	Alkalinity	ISO 125:2003 (E) MS 281:1999 Part 4 RRIM In house Method (Ref. No. UPB/L/003)

The valid scope of accreditation is in www.jsm.gov.my/cab-directories.

FIELD OF TESTING: CHEMICAL

SCOPE OF ACCREDITATION:

Materials/ Products Tested	Type of Test/ Properties Measured/ Range of Measurement	Standard Test Methods/ Equipment/Techniques
Latex (Concentrate Latex)	Mechanical Stability Time	ISO 35: 2004

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