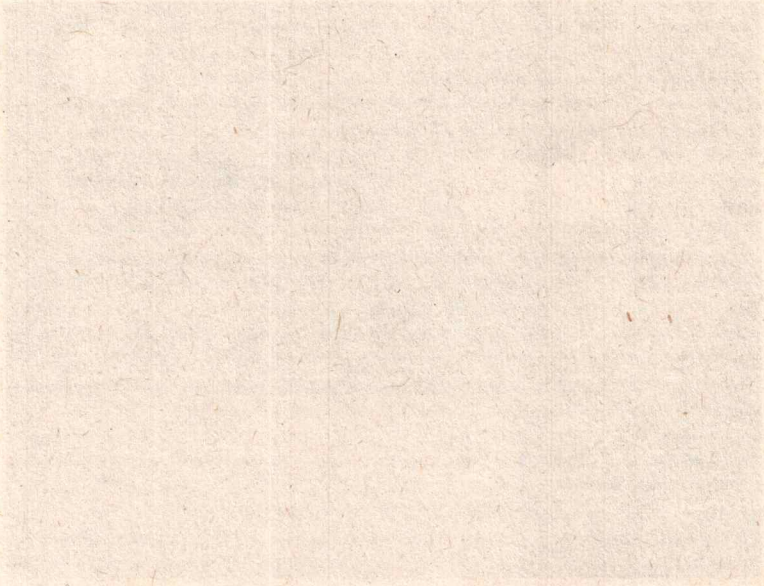


Miroad Rubber Industries Sdn Bhd (629141D)
Lot 6224, Batu 17 1/2 , Jalan Air Hitam, 81400 Senai, Johor Darul Takzim, Malaysia.
T +607-5990 699 F +607-5988 699 E sales@miroadrubber.com www.miroadrubber.com

FR-QUAL/2008/32532

FICHA DE SEGURIDAD DEL MATERIAL

Dated 07-Jul-2017

1. IDENTIFICACIÓN DE LA SUSTANCIA / PREPARACIÓN Y DE LA EMPRESA

Nombre del producto: Resina de poliuterano A++ (Polyurethane Binder A++)

Uso de la sustancia / preparación: Resina de poliuretano

Nombre de la empresa: Miroad Rubber

Lot 6224, Batu 17 ½, Senai 81400, Johor

Tel: 00607 5990 699

Fax: 00607 5988 699

Teléfono de emergencia: 00607 5990 699

2. IDENTIFICACIÓN DE LOS PELIGROS

Peligros principales: Puede causar sensibilidad por inhalación.

Límite de exposición laboral: Esta sustancia no tiene límite de exposición laboral.

PBT: Esta sustancia no es identificada como una sustancia PBT (sustancias persistentes, bioacumulativas y tóxicas)

Directiva 1999/45/EC: Esta preparación cumple con los criterios de clasificación de acuerdo con Directiva 1999/45/EC.

3. COMPOSICIÓN / INFORMACIÓN DE INGREDIENTES

Ingredientes peligrosos: DIISOCIANATO DE DIFENILMETANO (ISÓMEROS Y HOMÓLOGOS) 9.000%

CAS: 9016-87-9

[Xn] R20; [Xi] R36/37/38; [Sens.] R42

4. MEDIDAS DE PRIMEROS AUXILIOS

Contacto con la piel: Lave inmediatamente con agua y jabón.

Contacto con los ojos: Enjuague el ojo con agua por 15 minutos.

Ingestión: Lave la boca con agua. Consulte a un doctor.

Inhalación: Retire a la persona afectada para que no permanezca expuesta al material asegurando la seguridad propia mientras lo hace. Si la persona está consciente, asegúrese de que la persona se siente o se acueste. Si la persona está inconsciente y respira bien, póngala en posición de recuperación. Si hay alguna dificultad con la respiración, haga que la persona se siente y proporciónele oxígeno si está disponible. Remítase a un hospital lo más pronto posible.

5. MEDIDAS PARA EXTINCIÓN DE FUEGO

Medios de extinción: Se deben utilizar medios de extinción adecuados para el incendio circundante. Use agua pulverizada para enfriar los contenedores.

Riesgos de exposición: Cuando está en combustión emite humos tóxicos.

Protección de bomberos: Utilizar un equipo de respiración autónomo. Use ropa protectora para evitar contacto con piel y ojos.

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FR-QUAL/2008/32532

6. MEDIDAS EN CASO DE VERTIDO ACCIDENTAL

Precauciones del personal: Notifique a la policía y al cuerpo de bomberos de inmediato. Si está afuera, no se acerque a favor del viento. Si está afuera, mantenga a los transeúntes en contra del viento y lejos del punto de peligro. Marque el área contaminada con letreros y restrinja el acceso a personal no autorizado. No intente tomar acción sin la ropa protectora adecuada – consulte la sección 8 de esta ficha. Gire los contenedores con fugas hacia arriba para evitar que se escape más líquido.

Precauciones ambientales: No verter el material en desagües o ríos. Alerte al vecindario si hay presencia de humos o gases. Contenga el derrame de material usando diques.

Procedimientos de limpieza: La limpieza debe ser realizada solo por personal calificado y familiarizado con la sustancia específica. Absorber en tierra seca o arena. Transfiera a un contenedor de salvamento etiquetado que pueda cerrarse para su eliminación por un método apropiado.

7. MANIPULACIÓN Y ALMACENAMIENTO

Requisitos de manipulación: Asegúrese que haya ventilación de escape en el área. Evite la formación o propagación de vapores en el aire.

Condiciones de almacenamiento: Almacenar en un lugar fresco y bien ventilado. Mantener el contenedor bien cerrado.

8. PRECAUCIONES PARA EXPOSICIÓN AL MATERIAL / PROTECCIÓN DEL PERSONAL

Ingredientes peligrosos: DIISOCIANATO DE DIFENILMETANO (ISÓMEROS Y HOMÓLOGOS)

Reino Unido – TWA de 8 horas: 0.02 mg/m3

Reino Unido – 15 min. STEL: 0.07 mg/m3

Medidas de ingeniería: Asegúrese que haya ventilación de escape del área.

Protección respiratoria: Debe haber disponibles equipos de respiración autónomos en caso de emergencia.

Protección de las manos: Guantes de protección

Protección de los ojos: Gafas de protección. Asegúrese de que haya elementos para baño de ojos cerca.

Protección de la piel: Ropa protectora.

9. PROPIEDADES FÍSICAS Y QUÍMICAS

Estado: Líquido

Color: Amarillo pálido

Olor: de olor dulce

Velocidad de evaporación: insignificante

Solubilidad en agua: insoluble, reacciona con agua

También soluble en: La mayoría de los solventes orgánicos

Viscosidad: Viscosa

Valor de viscosidad: 3000-3500

Método de prueba de viscosidad: cps @ 25C

Punto de inflamación °C: > 200

Contenido de NCO (%): 9.2 $\pm$ 0.5

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10. ESTABILIDAD Y REACTIVIDAD

Estabilidad: Estable en condiciones normales.

Condiciones que se deben evitar: Calor. Superficies calientes. Llamas.

Materiales que se deben evitar: Agentes oxidantes fuertes. Ácidos fuertes.

Productos de descomposición peligrosa: Cuando está en combustión emite humos tóxicos.

11. INFORMACIÓN TOXICOLÓGICA

Sensibilidad: Puede causar sensibilidad por inhalación.

11. INFORMACIÓN TOXICOLÓGICA (SÍNTOMAS)

Contacto con la piel: Puede haber irritación leve en el sitio de contacto.

Contacto con los ojos: Puede haber irritación y enrojecimiento.

Ingestión: Puede haber irritación en la garganta. Puede haber dificultad para respirar debido a la congestión de los pulmones.

Inhalación: Exposición puede causar tos o sibilancias. Puede haber congestión de los pulmones causando fallas de respiración severas.

12. INFORMACIÓN ECOLÓGICA

Movilidad: Fácilmente absorbido por tierra.

Persistencia y degradabilidad: Biodegradable.

Potencial de bioacumulación: Sin potencial de bioacumulación.

Otros efectos adversos: ecotoxicidad insignificante.

Identificación PBT: Esta sustancia no es identificada como una sustancia PBT (sustancias persistentes, bioacumulativas y tóxicas).

13. RECOMENDACIONES PARA EL DESHECHO

Operaciones para la eliminación: Transfiera a un contenedor adecuado y coordine la recolección por una empresa especializada en deshechos.

Nota: Se llama la atención al usuario sobre la posible existencia de regulaciones regionales o nacionales con respecto a la eliminación de la sustancia.

14. INFORMACIÓN PARA EL TRANSPORTE

ADR / RID

UN no: No clasificado.

IMDG / IMO

UN no: No clasificado.

IATA / ICAO

UN no: No clasificado.

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FR-QUAL 2008 32532

15. INFORMACIÓN REGLAMENTARIA

Símbolos de peligro: Nocivo.

Frases de peligro: R42: Puede causar sensibilidad por inhalación.

Frases de seguridad: S23: No inhale los vapores / humos.

S45: En caso de accidente o si se siente mal, busque atención médica inmediatamente (muestre la etiqueta cuando sea posible).

S63: En caso de accidente por inhalación, lleve al herido al aire fresco y manténgalo en reposo.

Frases de precaución: Contiene isocianatos. Consulte la información proporcionada por el fabricante.

Ingredientes peligrosos (etiqueta): DIISOCIANATO DE DIFENILMETANO (ISÓMEROS Y HOMÓLOGOS)

Nota: La información regiamentaria proporcionada anteriormente solo indica las regulaciones principales que aplican al producto descrito en esta ficha de seguridad. Se llama la atención del usuario a la posible existencia de disposiciones y regulaciones adicionales que puedan complementar las mencionadas. Consulte todas las regulaciones o disposiciones nacionales, internacionales y locales que apliquen.

16. INFORMACIÓN ADICIONAL

Información adicional: Esta ficha de seguridad se ha realizado de acuerdo con la regulación (EC) No1907/2006.

* indica los textos en la ficha de seguridad que ha cambiado desde la última revisión.

Frases de riesgo utilizadas en s.3: R20: Nocivo por inhalación. R36/37/38: Irrita los ojos, la piel y las vías respiratorias.

R42: Puede causar sensibilidad por inhalación.

Descargo de responsabilidad legal: La información anterior se considera correcta pero no pretende ser exhaustiva y debe ser utilizada solo como guía. Esta empresa no se hace responsable por ningún daño resultante de la manipulación o del contacto con el producto descrito anteriormente.

LEMBAGA GETAH MALAYSIA
Malaysian Rubber Board
PHYSICAL TESTING LABORATORY
Rubber Technology Centre, RRIM Research Station,
47000 Sungai Buloh, Selangor Darul Ehsan.
Tel: (6)03-6157 6748 Fax: (6)03-6156 3304
(6)03-6156 1121 (6)03-6156 4418
Email: ptl@lgm.gov.my

TEST REPORT

REPORT NO : QA/2017/0751/1 DATE : 11.09.2017

SUBJECT : TESTING OF EPDM-MY Granules - Sample Color Green. (M600)
MANUFACTURER : MIROAD RUBBER INDUSTRIES SDN. BHD.

SUBMITTED BY : MIROAD RUBBER INDUSTRIES S/B

LOT 6224, BATU 17 1/2,
JALAN AIR HITAM,
81400 SENAI,
JOHOR

ON : 20th May 2017

THESE RESULTS HAVE BEEN OBTAINED ON SAMPLE (S) SUBMITTED TO US.

THE TYPES OF TEST ARE IN ACCORDANCE WITH THE CUSTOMER'S REQUIREMENT.

THE CONDITIONS OF THE TESTS ARE AVAILABLE FROM THE PHYSICAL TESTING LABORATORY, IF REQUIRED.

THIS REPORT, EXCEPT IN FULL, SHALL NOT BE REPRODUCED WITHOUT THE PRIOR APPROVAL OF THE DIRECTOR GENERAL.

LEMBAGA GETAH MALAYSIA
Malaysian Rubber Board
PHYSICAL TESTING LABORATORY
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Email: ptl@lgm.gov.my

TEST REPORT

REPORT NO : QA/2017/0751/1 DATE : 11.09.2017

SAMPLE DESCRIPTION

Sample description	:	EPDM–MY Granules – Sample Color Green
Marked	:	M600
Test to Standard	:	Please refer to page 4 of 4
Date of Testing	:	25.07.2017 – 11.09.2017

PROPERTY	OBSERVED: QA/2017/0751/1 (M600)				
Ignition Test** : Use Surface — Test Piece	#1.1	#1.2	#1.3		
a)Time for extinction of flame, seconds	32	37	37		
b)Time for extinction of after-glow and or smouldering, seconds	No signs of any after glow or smouldering				
c)Time for ignition effects to reach the clamping ring, seconds	Did not reach the clamping ring.				
d)Greatest radius of area affected by ignition effects, mm	25	25	25		
Under-surface					
e)Greatest radius of area affected by ignition effects, mm	Under surface area not affected by ignition				
Test Piece	**#1.1**	**#1.2**	**#1.3**	**#1.4**	**#1.5**
Tensile Strength, MPa	0.47	0.29	0.45	0.57	0.43
Elongation at Break, %	50	50	60	60	60
Properties after accelerated ageing in air , 168 hours at 100°C					
Tensile Strength, MPa	0.32	0.46	0.24	0.53	0.52
Elongation at Break, %	50	60	60	60	60

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Email: ptl@lgm.gov.my

TEST REPORT

REPORT NO : QA/2017/0751/1 DATE : 11.09.2017

PROPERTY		OBSERVED: QA/2007/0751/1 (M600)		
Slip Test, BPN units	Test Piece:	#1.1	#1.2	#1.3
Wet		25	27	27
Dry		55	55	59
ISO Abrasion, Abrasion Resistance Index, %		Easily Abraded		
Volume Loss,		—		
Density, g/cm^3		1.06		
Dunlop Resilience, % Testing at room temperature		53		

(Shamheza Suhatta)
Quality Manager
for Director General MRB

07/ckh

LEMBAGA GETAH MALAYSIA
Malaysian Rubber Board
PHYSICAL TESTING LABORATORY
Rubber Technology Centre, RRIM Research Station,
47000 Sungai Buloh, Selangor Darul Ehsan.
Tel: (6)03-6157 6748 Fax: (6)03-6156 3304
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TEST REPORT

REPORT NO : QA/2017/0751/1 DATE : 11.09.2017

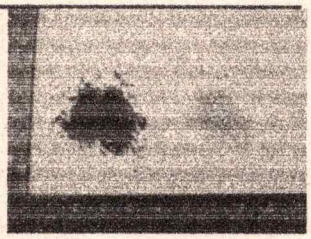
STANDARD TEST METHOD	
TEST	**METHOD**
Ease of Ignition	BS 7188 (1989) (Section 6)
Tensile Properties	MS ISO 1747 : 1976 (E)
Skid Resistance	BS 7188 : 1989 (Section 4)
ISO Abrasion	ISO 4649 : 2002
Density	ISO 2781 : 1988 (3rd Ed)
Rebound Resilience	ISO 4662 : 1986
Accelerated Ageing	MS ISO 188 : 2001
Preparation of Test Pieces	ISO661 – 1 : 1993

TEST REPORT

Test Report #	18W-001717-S1	Date of Report Issue:	April 25, 2018
Date of Sample Received:	April 10, 2018	Pages:	Page 1 of 6

CLIENT INFORMATION:

Company:	Miroad Rubber Industries Sdn Bhd
Address:	sales@miroadrubber.com



SAMPLE INFORMATION:

Product Name:	① EPDM- light Blue ② Pigmented -Green
Model/style No.:	-
PO No.:	-
Buyer:	-
Supplier:	-
Country of Distribution:	-
Country of Origin:	Malaysia
Testing Period:	04/10/2018-04/13/2018

OVERALL RESULT: PASS

Refer to page 2 for test result summary and appropriate notes.

HANGZHOU ASIAINSPECTION
TESTING TECHNOLOGY CO., LTD

Kevin Lee
Technical Manager

The test result(s) and conclusion(s) in this report relate to the sample(s) tested as described herein.
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TEST REPORT

Test Report #	18W-001717-S1	Date of Report Issue:	April 25, 2018
Date of Sample Received:	April 10, 2018	Pages:	Page 2 of 6

TEST RESULTS SUMMARY:

At the request of the client, the following tests were conducted:

CONCLUSION	TEST(S) CONDUCTED
PASS	EN 71-3:2013+A1:2014 Safety of Toys Part 3, Migration of Certain Elements – General Elements

Remark: +Revised information and supersedes the previous report no. 18W-001717 date: 04/13/2018

The test result(s) and conclusion(s) in this report relate to the sample(s) tested as described herein.
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DETAILED RESULTS:

EN 71-3:2013+A1:2014 Safety of Toys Part 3, Migration of Certain Elements – General Elements

Test Method: EN 71-3:2013+A1:2014
Analytical Method: Inductively Coupled Plasma-Mass Spectrometry

Category III: Scraped-off materials

Specimen No.	1	2	---	---	RL (mg/kg)	Limit (mg/kg)
Test Item	Result (mg/kg)	Result (mg/kg)	Result (mg/kg)	Result (mg/kg)		
Soluble Aluminum (Al)	590	328	---	---	50	70,000
Soluble Antimony (Sb)	ND	ND	---	---	10	560
Soluble Arsenic (As)	ND	ND	---	---	10	47
Soluble Barium (Ba)	ND	ND	---	---	50	18,750
Soluble Boron (B)	ND	ND	---	---	50	15,000
Soluble Cadmium (Cd)	ND	ND	---	---	5	17
Soluble Chromium (Cr)	ND	ND	---	---	0.2	0.2[A]
Soluble Cobalt (Co)	ND	ND	---	---	10	130
Soluble Copper (Cu)	ND	ND	---	---	50	7,700
Soluble Lead (Pb)	ND	ND	---	---	10	160
Soluble Manganese (Mn)	ND	ND	---	---	50	15,000
Soluble Mercury (Hg)	ND	ND	---	---	10	94
Soluble Nickel (Ni)	ND	ND	---	---	50	930
Soluble Selenium (Se)	ND	ND	---	---	10	460
Soluble Strontium (Sr)	87	ND	---	---	50	56,000
Soluble Tin (Sn)	ND	ND	---	---	5	180,000 / 4.9[B]
Soluble Zinc (Zn)	ND	ND	---	---	50	46,000
Conclusion	PASS	PASS	---	---		

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Note:
mg/kg = Milligrams per kilogram
LT = Less than
ND = Not detected. Result value is less than reporting limit (RL).
A = Limit of chromium (VI). When the migration of total chromium [i.e. chromium (III) + chromium (VI)] is below the maximum limit for chromium (VI), it can be inferred that the material complies with the requirements for both chromium (III) and chromium (VI).
B = Adjusted limit of organic tin. The regulatory limit of organic tin is 12 mg/kg. The adjusted limit of organic tin is used when the migration of elemental tin (i.e. both inorganic and organic tin) is inferred that material complies with the requirement of organic tin.

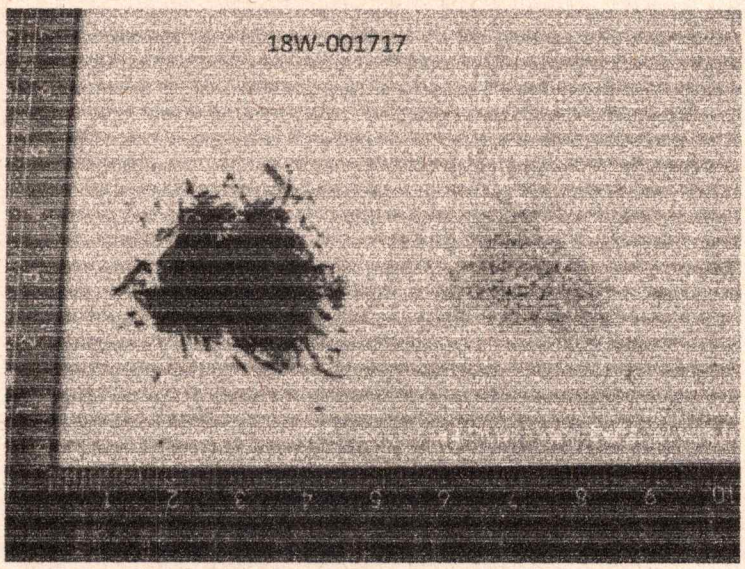
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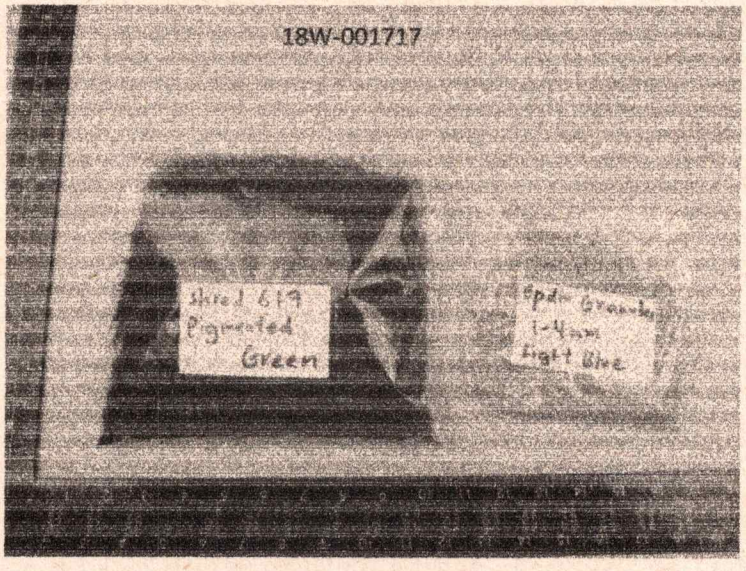
+SPECIMEN DESCRIPTION:

Specimen No.	Specimen Description	Location
1	Blue plastic	Raw material(EPDM- light Blue)
2	Green plastic	Raw material(Pigmented -Green)

The test result(s) and conclusion(s) in this report relate to the sample(s) tested as described herein.
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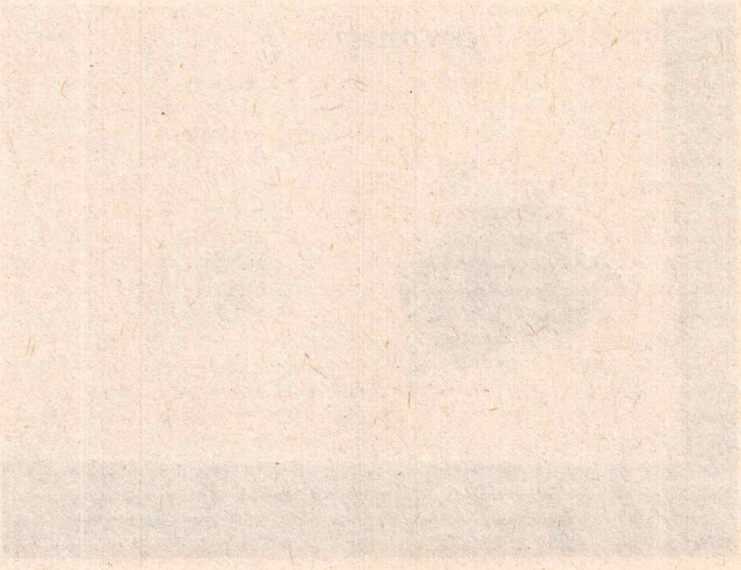
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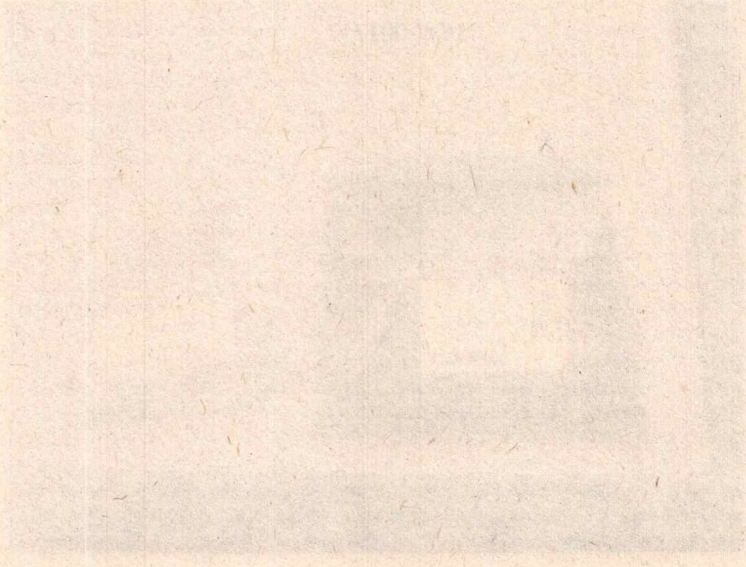




-End Report-

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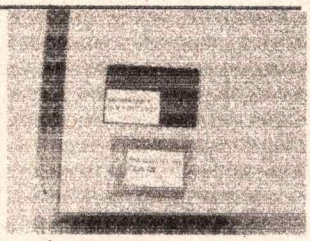


TEST REPORT

Test Report #	R-us7-17220547-E	Date of Report Issue:	May 24, 2017
Date of Sample Received:	May 19, 2017	Pages:	Page 1 of 6

CLIENT INFORMATION:

Company:	Miroad Rubber Industries Sdn Bhd
Address:	sales@miroadrubber.com



SAMPLE INFORMATION:

Product Name:	Pigmented green shredded rubber 619;Red EPDM Granules 1-4MM
Model/style No.:	-
PO No.:	-
Buyer:	-
Supplier:	-
Country of Distribution:	OT
Country of Origin:	Malaysia
Testing Period:	05/19/2017-05/24/2017

OVERALL RESULT: PASS

Refer to page 2 for test result summary and appropriate notes.

HANGZHOU ASIAINSPECTION
TECHNOLOGY CO., LTD

Kevin Lee
Technical Manager

The test result(s) and conclusion(s) in this report relate to the sample(s) tested as described herein.
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TEST REPORT

Test Report #	R-us7-17220547-E	Date of Report Issue:	May 24, 2017
Date of Sample Received:	May 19, 2017	Pages:	Page 2 of 6

TEST RESULTS SUMMARY:

At the request of the client, the following tests were conducted:

CONCLUSION	TEST(S) CONDUCTED
PASS	Specification and standards for foods, food additives, etc. under the food sanitation act (Japan External Trade Organization)-formaldehyde
PASS	Regulation (EC) No 1935/2004, (EU) No 10/2011 and its amendment (EU) 2016/1416 - Sensorial examination odour and taste test

The test result(s) and conclusion(s) in this report relate to the sample(s) tested as described herein.
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DETAILED RESULTS:

Specification and standards for foods, food additives, etc. under the food sanitation act (Japan External Trade Organization)-formaldehyde

Test method: Japan Ministry of Health and Welfare Notice No.370 and its amendments

Specimen No. :			1	2	Requirement
Test Item	Test condition	Unit	Result	Result	
Formaldehyde	water, 60℃/30min	μg/mL	negative	negative	negative
Conclusion			PASS	PASS	-

Note:
μg/mL = Micrograms per milliliter
LT = Less than

The test result(s) and conclusion(s) in this report relate to the sample(s) tested as described herein.
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DETAILED RESULTS:

Regulation (EC) No 1935/2004, (EU) No 10/2011 and its amendment (EU) 2016/1416-Sensorial examination odour and taste test

Test Method: Robinson's test with reference to basis of DIN10955:2004.
Test Condition: Water at 40℃ for 2 hours
Environmental Condition: Temperature: 23℃, Humidity: 65%RH

Test Items	Result		Maximum Permissible limit
	1	2	
Sensorial examination odour (Point scale)	0	0	2.5
Sensorial examination taste (Point scale)	0	0	2.5

Note:
Intensity scale:
0= no discernible deviation
1= barely discernible deviation
2= weak deviation
3= clear deviation
4= strong deviation

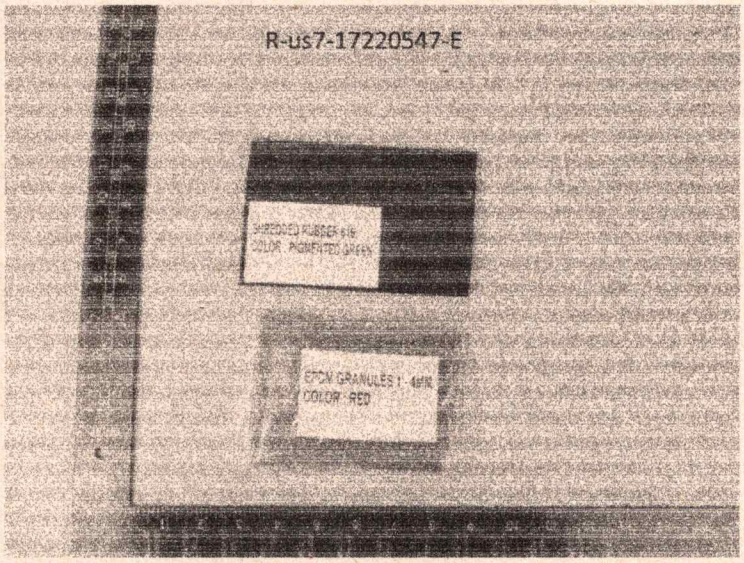
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SPECIMEN DESCRIPTION:

Sample No.	Specimen Description	Location
1	Pigmented green shredded rubber	Raw Material
2	Red EPDM granules	Raw Material

The test result(s) and conclusion(s) in this report relate to the sample(s) tested as described herein.
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SAMPLE PHOTO:



-End Report-

The test result(s) and conclusion(s) in this report relate to the sample(s) tested as described herein.
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LABORATORY PERFORMANCE REPORT

Exposure to Artificial weathering – UVA-340 nm

In accordance with the Procedure for Artificial Weathering (EN 14836: 2005)

Sample Reference **EPDM-MY**

Report Number **17095/2399**

Report Status **Final**

Issue Date **02/09/2016**

Client **Miroad Rubber Industries Sdn Bhd**
Lot 6224, 17 ½ Mile Jalan Air Hitam, Johor,
81400 Senai
Malaysia

FOREWORD

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2. This report is confidential to the Client and Sports Labs Limited accepts no responsibility whatsoever to third parties to whom this report, or any part thereof, is made known. Any such party relies upon the report at their own risk.
3. This report shall not be used for engineering or contractual purposes unless signed by the Author and the Checker and unless the report status is "Final".
4. *Not all tests carried out are within our scope of ISO 17025 Accreditation.
5. Comments and opinions are out with the scope of our ISO 17025 accreditation

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Email: info@sportslabs.co.uk

REGIONAL LOCATIONS
Johannesburg
Ghent
Ankara
Boston & Seattle
Casablanca

Registered in Scotland No 186755

1.0 INTRODUCTION

We refer to the EPDM Granules sample identified as 'EPDM-MY' submitted to our Laboratory on 7th April 2016.

Prepared By: Craig Melrose
Laboratory Supervisor
02/09/2016

Checked By: Sean Ramsay
Laboratory Director
02/09/2016

2.0 TESTING DETAILS

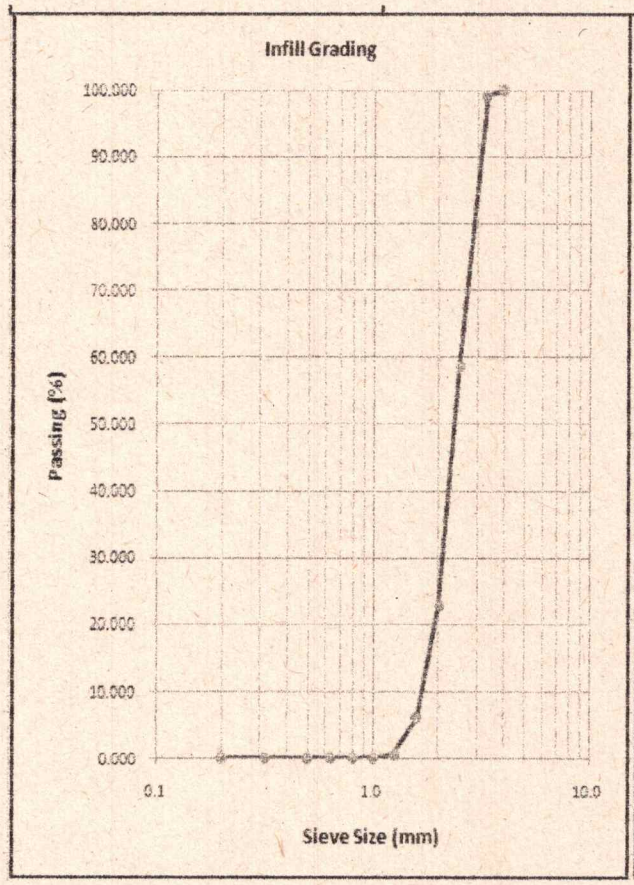
The tests were carried out in accordance with the following specifications and results can be viewed overleaf.

- Particle Size of Unbound Sub-bases – EN 933-1.
- Bulk Density of Infill Materials – EN 1097-3.
- Particle Shape of Infill Materials and Unbound Base Materials – EN 14955.
- *Assessment of Synthetic Infills – FIFA Test Method 11 (TGA).
- *Greyscale for assessing change in colour - BS EN 20105-A02: 1995.
- *Procedure for Artificial Weathering – EN 14836: 2005

(*Not all tests carried out are within our scope of ISO 17025 Accreditation)

3.0 RESULTS

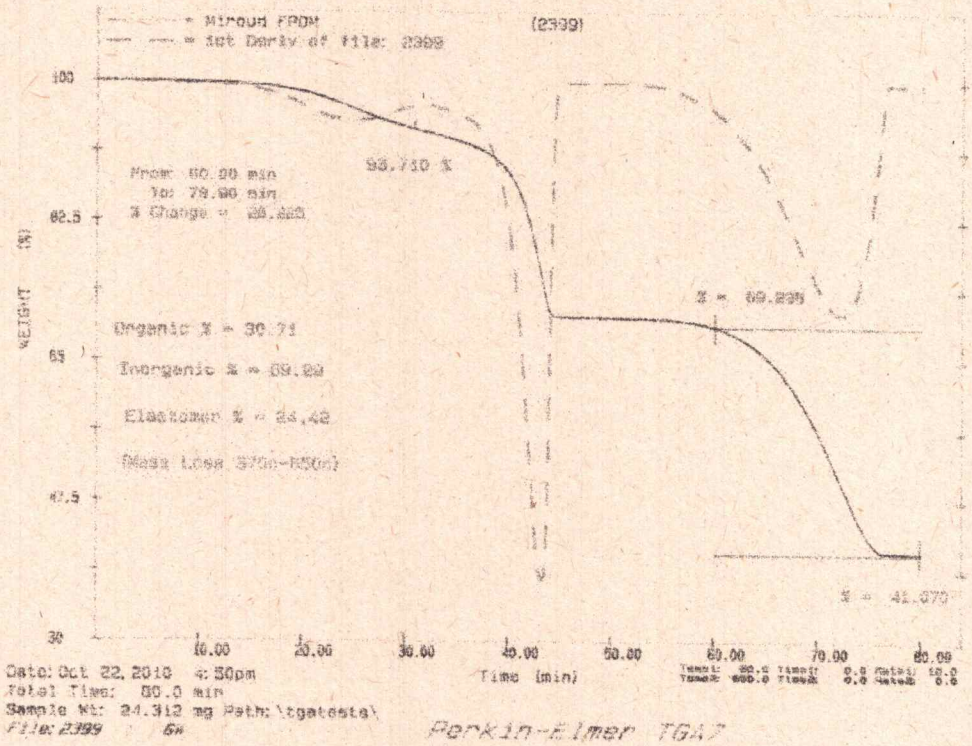
EPDM Identification			
Characteristic	**Units**	**Test Method**	**Result**
Particle Size	mm	EN 933-1	1.6 – 3.35 mm
Particle Shape	-	EN 14955	A2
Bulk Density	g/cm³	EN 1097-3	0.714 g/cm³
Colour	-	-	Red



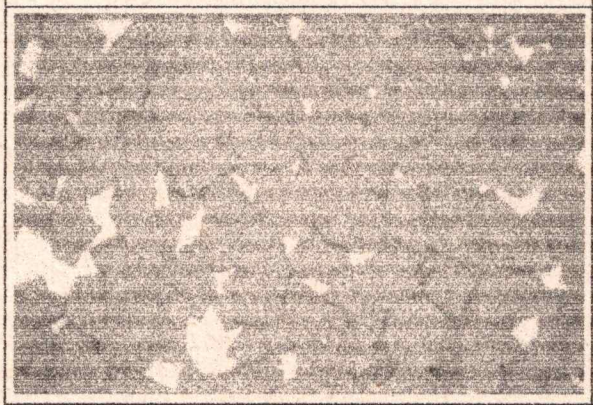
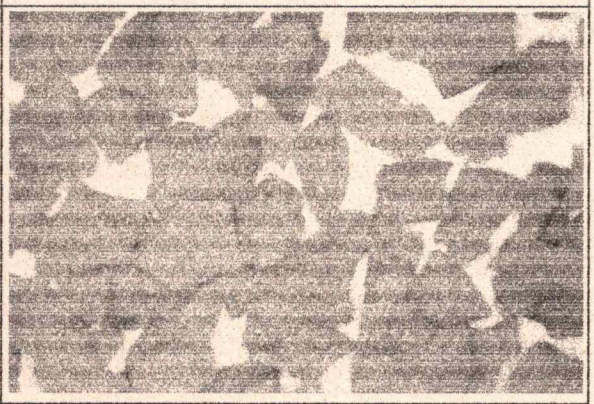
Sieve Size (mm)	Passing (%)
4.000	100.0
3.350	99.5
2.500	58.9
2.000	22.9
1.600	6.2
1.250	0.7
1.000	0.2
0.800	0.2
0.630	0.2
0.500	0.2
0.315	0.2
0.200	0.2
Passing to base tray	0.2



TGA			
Characteristic	**Units**	**Test Method**	**Result**
% Organic	%	Internal Method	30.71 %
% Elastomer			24.42 %
% Inorganic			69.29 %



UVA (340 nm) ageing			
Characteristic	**Units**	**Test Method**	**Result**
Colour change (Greyscale)	-	EN 20105-A02	4
Visual change in composition	-	-	No Change

Sample Pictures	
Pre Exposure	After UVA (340 nm) Exposure
	

4.0 CONCLUSION

Test	Requirement	Conformity
UVA – 340 nm (3000 hours)	IAAF (no requirement)	Pass

END OF REPORT

EPS INDUSTRIES SDN. BHD
RESEARCH AND DEVELOPMENT (R&D) AND TECHNICAL DEPARTMENT

QUV Accelerated Weathering Test Report

TEST NO: MRD - 008

REFERENCE NO: QUV/100602-001

DATE: June 2, 2010

DATE EXPOSED: May 2, 2010

DURATION: 700 hours

TYPE: Accelerated Weathering

SPECIMENS: 11 EPDM granules cast slab glued to panels

NOTES: Please refer to the attached legend for an explanation of the numerical ratings used in this report

Yellowing/darkening of glue used to adhere granules

Inspected by:	Approved by:
(Jimmy Ho) Polymer Technologist	(Mr. Aaron Cheong) Operations Manager

EPS INDUSTRIES SDN. BHD
RESEARCH AND DEVELOPMENT (R&D) DEPARTMENT

QUV Accelerated Weathering Test Report

Test No: MRD – 008 Ref No: QUV/10602-001 Date: Jun 2, 2010

Product Type: ☐ Granules ☒ Cast Slab ☐ Slab

No	Product Code	Color	Duration (hrs)			Comments
			700			
			Visual Color	Gray scale	Chalk	
1	01	RED	10 F	4	9	No fading, very slight chalking
2	02	GREEN	9 F	4	9	Very slight fading
3	03	L. GREEN	8 F	4	9	Slight fading, no chalking
4	04	BLUE	9 F	4	9	Very slight fading
5	05	L. BLUE	8 Y	3	9	Slight yellowing, no fading
6	06	ORANGE	9 F	4	9	Very slight fading
7	07	YELLOW	9 F	4	9	Very slight fading
8	11	GREY	8 F	4	8	Slight fading
9	12	L.GREY	8 Y	4	8	Slight yellowing
10	14	PINK	8 F	4	8	Slight fading
11	15	VIOLET	8 D	4	9	Slight darkening, no chalking

LEGEND

Inspection and Reporting Standard
Commonly used standard methods for determining degradation effects.

Effects	Standard
Chalking	ASTM D4214
Color (Visual)	ASTM D1729
Grey Scale	ASTM D2616

Numerical Scales
Numerical scales are used to depict the degree of effect being reported.

No	Quality	Change
10	Excellent	No effect
9	-----	Very Slight
8	Very Good	Slight
6	Good	Moderate
4	Fair	Pronounced
2	Poor	Severe
0	Very Poor	Very Severe

Numerical Scales are used for wide variety of defects included in the report such as: general appearance, chalk, color, etc. Odd numbers are used when the degree is obviously intermediate.

Visual Color Change
Subjective appearance evaluation under standard illumination with 10 to 0 scale. Added to the color rating to indicate direction of change.

F	Fading	
D	Darkening	Ex: 9F = Very Slight Fading
BL	Bleaching	
Y	Yellowing	
DC	Discoloration	

Grey Scale
The effect of alternating cycles of UV light and condensation in the product causes accelerates color change, which is measured on a standard Grey Scale.

A reading of 5 on the scale represents no change and 1 represents significant change. Reading 3 is the minimum for acceptable performance.

COLOR

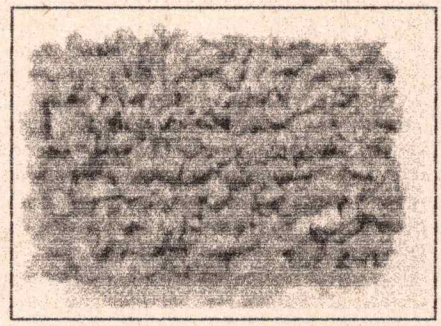
01	Red
02	Green
03	L. Green
04	Blue
05	L. Blue
06	Orange
07	Yellow
08	Golden Yellow
09	Brown
10	L. Brown
11	Grey
12	L. Grey
13	Ivory
14	Pink
15	Violet
16	White
17	Grass Green
18	Navy Blue

APPENDIX

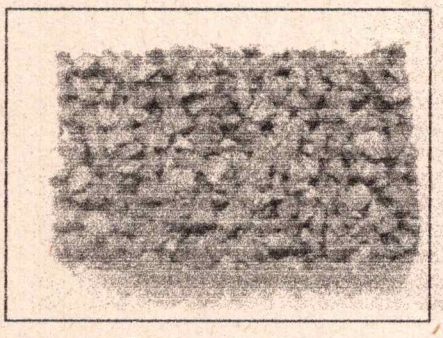
THE CHANGES OF COLOUR AND APPEARANCE AFTER 700 HOURS EXPOSE TO ACCELERATED

WEATHERING/UV

GREY (11)

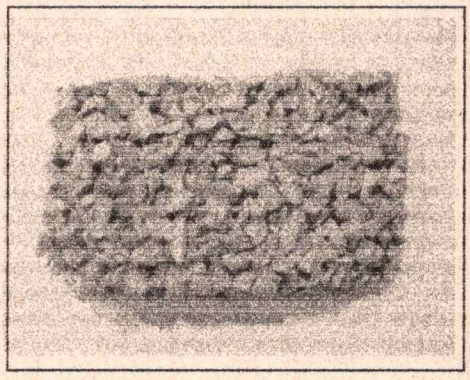


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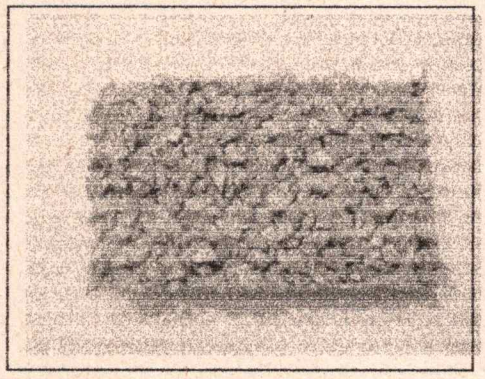


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LIGHT GREY (12)

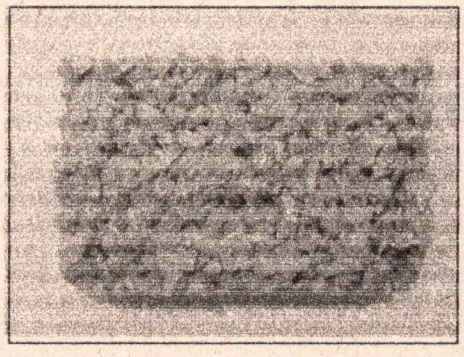


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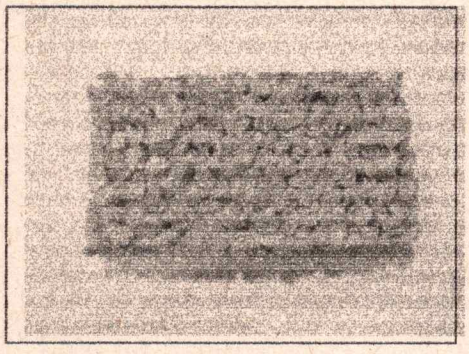


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PINK (14)

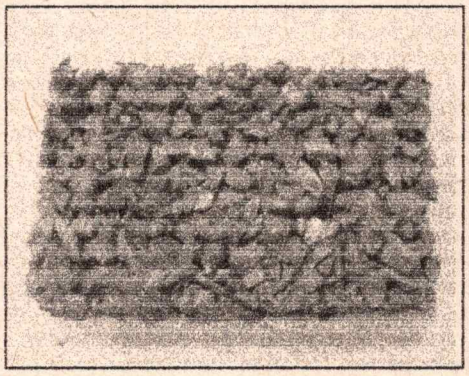


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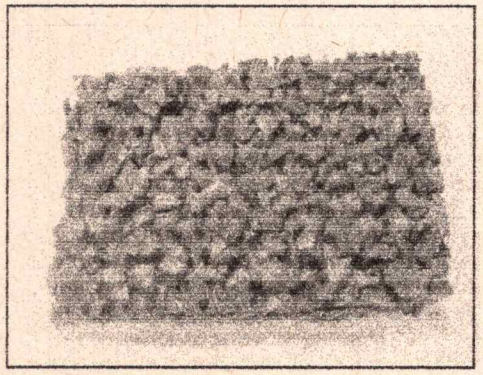


AFTER

VIOLET (15)

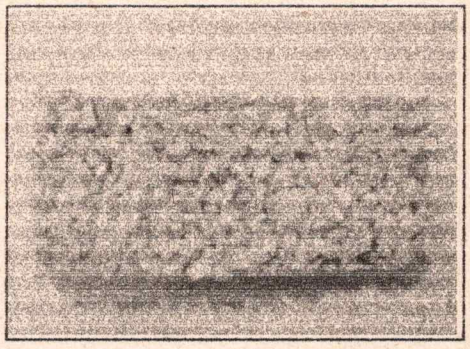


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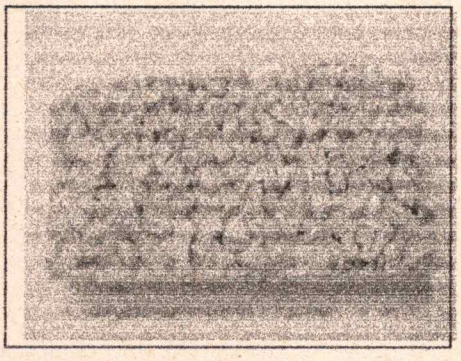


AFTER

YELLOW (07)

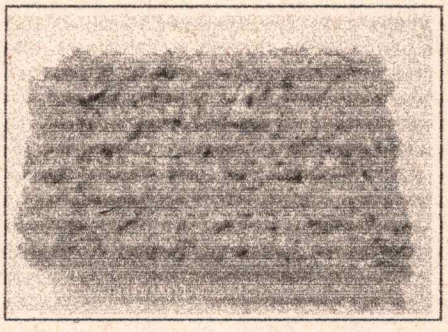


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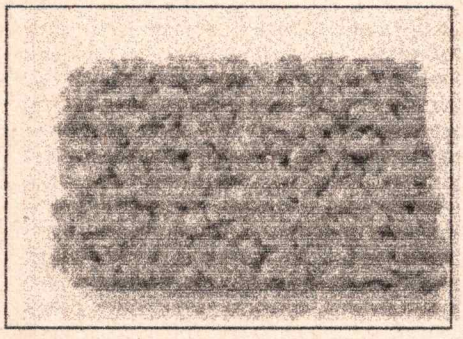


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ORANGE (06)

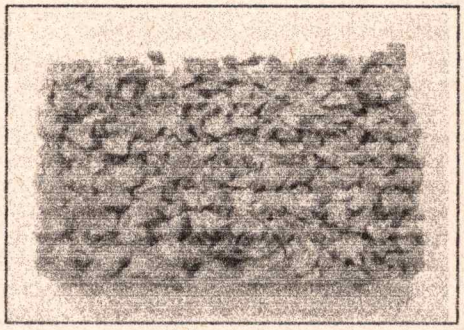


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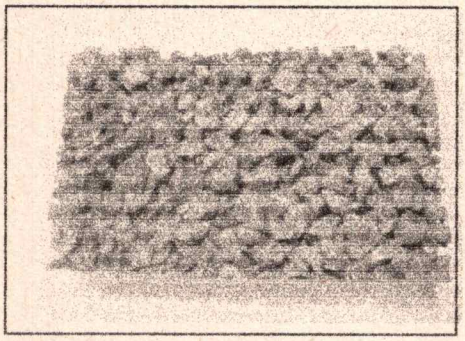


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GREEN (02)

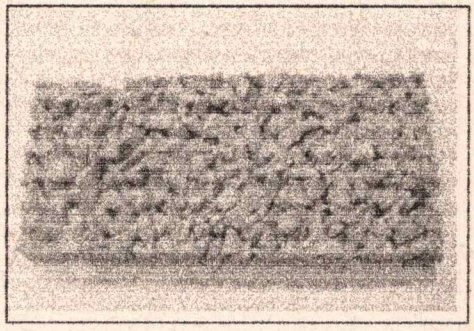


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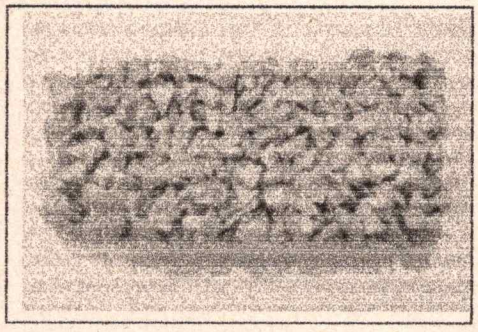


AFTER

LIGHT GREEN (03)

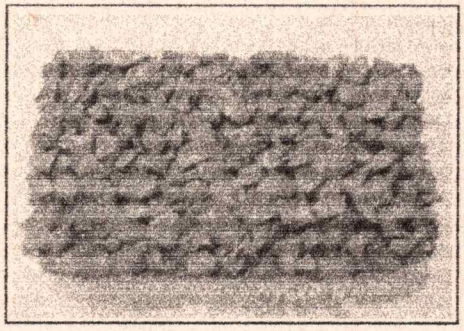


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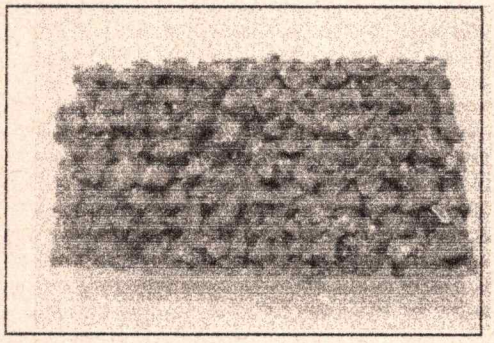


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BLUE (04)

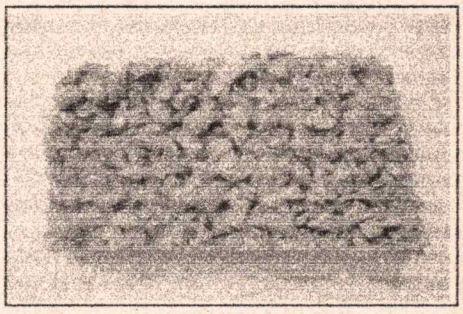


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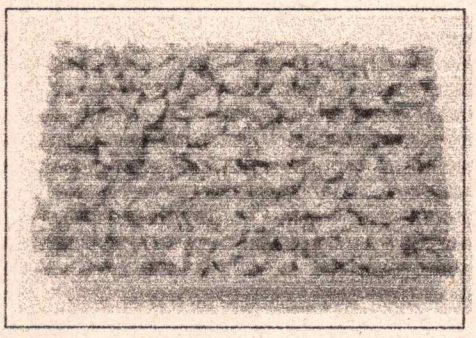


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LIGHT BLUE (05)

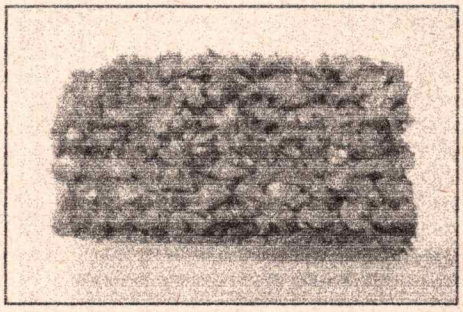


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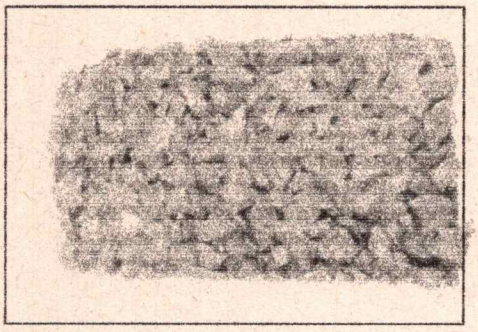


AFTER

RED (01)



BEFORE



AFTER

#

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ilac-MRA STANDARDS
MS ISO/IEC 17025
TESTING
SAMM NO 188

TEST REPORT

To : MIROAD RUBBER INDUSTRIES SDN. BHD.
Lot 6224, Batu 17 1/2,
Jalan Air Hitam,
81400 Senai, Johor,
Malaysia.
Attn: Ms. Xiao Qian

Report No. : IP1607-0067-1

Page No : 1 of 4

Date of Issue : 15/07/2016

The following sample(s) was(were) identified by the customer as :
PU BINDER

Date of Sample Received : 01/07/2016
Date of Testing : 01/07/2016 to 15/07/2016

Objective:
1. To determine Volatile Organic Compounds (VOC) in sample received via equilibrium headspace at 100 degree celcius for 15 minutes followed by GC-MS. (Based on the MS Library of NIST 2.0f Version 2008).
2. Determination of Lead in accordance with EU Directive 2011/65/EU (RoHS).

Remark : Sampled and submitted by MIROAD RUBBER INDUSTRIES SDN. BHD.

Signed for and on behalf of
EUROFINS NM LABORATORY SDN. BHD.

Yeap Cheo Mooi, M.Sc., AMIC
Consulting Chemist
IKM No. A/1913/4300/2002

Eurofins NM Laboratory Sdn Bhd 563645-P
(Formerly known as NM Laboratory Sdn Bhd)
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14000 Bukit Mertajam
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f : 604-537 8084
e : enquiry-nmlbm@eurofins.com
www.eurofins.my

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MS ISO/IEC 17025 TESTING SAMM NO. 188

Customer : MIROAD RUBBER INDUSTRIES SDN.BHD. Report No. : IP1607-0067-1

Date Of Issue : 15/07/2016 Page No. : 2 of 4

Test Procedure:

5.0g of sample were put into 22mL sample vial and capped it.
The prepared sample vial was ready for headspace method.

Equipment setting

GC Column - DB-5MS UI

Length	: 30m
Diameter	: 0.25mm
Film thickness	: 0.25µm

Headspace Condition

Oven	: 100°C
Needle	: 105°C
Transfer	: 110°C
Inject Volume	: 0.24 mL

GC Condition

Oven Temperature Programmed

Initial Temperature	: 40°C for 3.0 minute
Ramp 1	: 5°C/minute to 120°C, hold 0.0 minute.
Total GC Run Time	: *20 minutes*

MS condition

Source Temperature	: 200°C
Transfer Line Temperature	: 200°C
Scan Range of MS	: 30-500 m/z

Signed for and on behalf of
EUROFINS NM LABORATORY SDN. BHD.

Yeap Cheo Mooi, M.Sc., AMIC
Consulting Chemist
IKM No. A/1913/4300/2002

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ilac-MRA STANDARDS MS ISO/IEC 17025 TESTING SAMM NO. 188

Customer : MIROAD RUBBER INDUSTRIES SDN.BHD.
Report No. : IP1607-0067-1
Date Of Issue : 15/07/2016

Test Result:

Composition of each compound detected in PU Binder sample at 100°C (% by area)

RT;minute	Area	% by area
5.77	129902	21.38
6.51	477600	78.62
TOTAL	607502	100.00

Peak identification (Top 3 Hits) in PU Binder sample at 100°C

RT (min)	Hit	Compound Name	Match	Probability; %
5.77	1	Cyclopropane	622	24.2
	2	Oxetane, 2,4-dimethyl-, trans-	619	21.3
	3	Isobutane	587	5.70
6.51	1	Oxetane, 2,4-dimethyl-, trans-	744	58.3
	2	Isobutane	713	15.9
	3	Oxirane, trimethyl-	689	5.32

Signed for and on behalf of
EUROFINS NM LABORATORY SDN. BHD.

Yeap Cheo Mooi, M.Sc., AMIC
Consulting Chemist
IKM No. A/1913/4300/2002

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ilac-MRA STANDARDS MS ISO/IEC 17025 TESTING SAMM NO. 188

Customer : MIROAD RUBBER INDUSTRIES SDN.BHD.
Report No. : IP1607-0067-1
Date Of Issue : 15/07/2016
Page No. : 4 of 4

Standard Method / Equipment / Technique Description:

Method Ref.No.	Standard Method	Method Description/Title
M-1	IEC 62321,Ed.1;Sec.8 ICP-AES	Determination of lead and cadmium in polymers by ICP-OES, ICP-MS and AAS Inductively Coupled Plasma-Atomic Emission Spectrometry

Test Results(s) :

Parameter	Result	Unit	Method Ref. No	MDL; mg/kg	RoHS Limit; mg/kg
Lead (as Pb)	4	mg/kg	M-1	1	1000

Note(s) : The test portion was Totally Dissolved for Lead Test by using pre-conditioning method as mentioned above

Signed for and on behalf of
EUROFINS NM LABORATORY SDN. BHD.

Yeap Cheo Mooi, M.Sc., AMIC
Consulting Chemist
IKM No. A/1913/4300/2002

- End of Report -

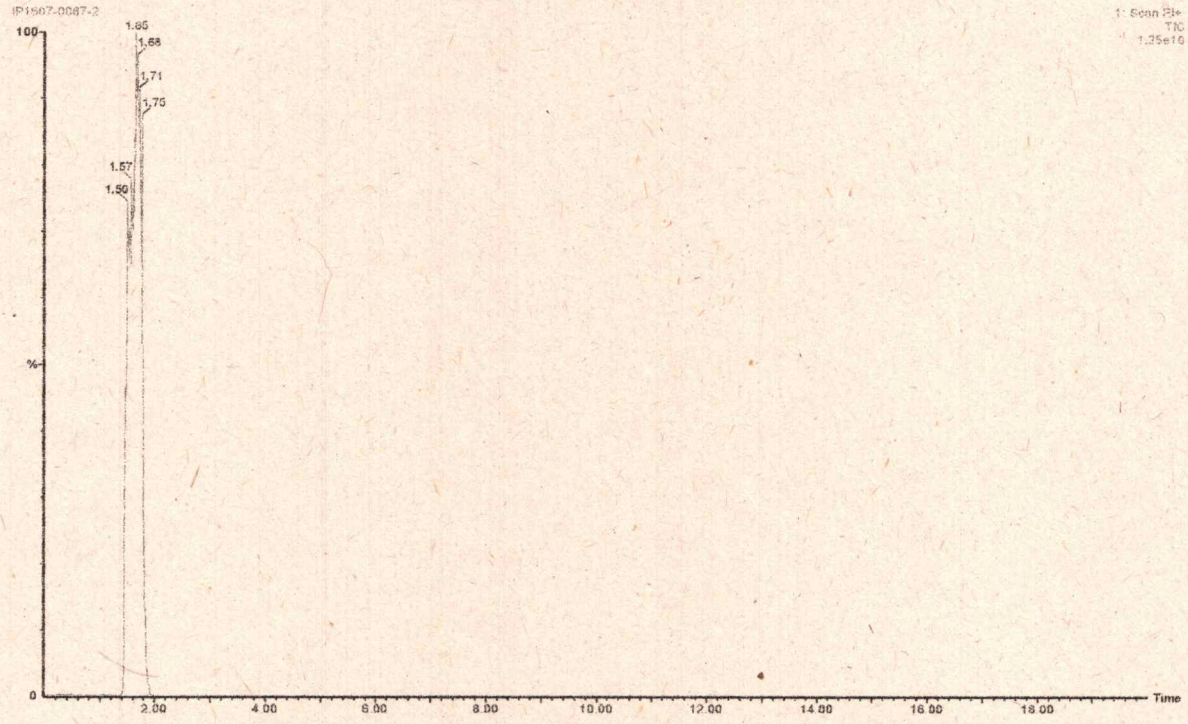
Eurofins NM Laboratory Sdn Bhd 563845-P
(Formerly known as NM Laboratory Sdn Bhd)
Branch : Johor Bahru, JOHOR

Main office :
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Bandar Perda
14000 Bukit Mertajam
PENANG, MALAYSIA

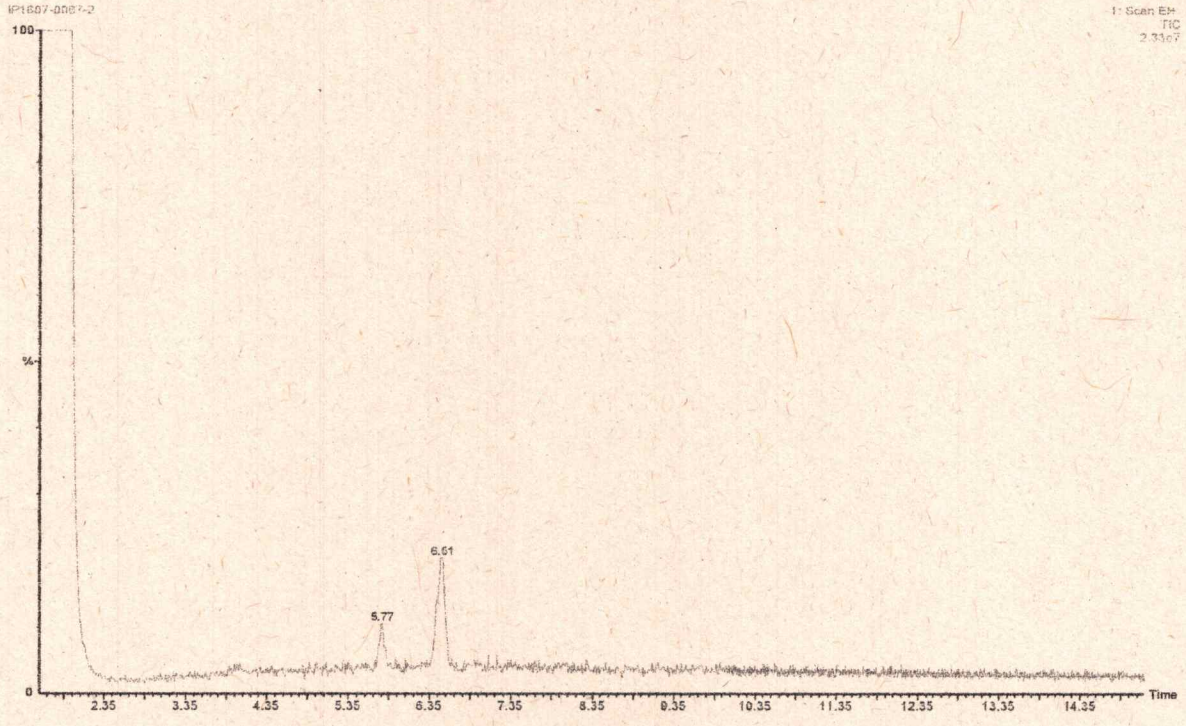
t : 604-538 8081
f : 604-537 8084
e : enquiry-enml.bm@eurofins.com
www.eurofins.my

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GC Chromatogram of PU Binder - Overall



GC Chromatogram of PU Binder - Enlarge



NOTE : ND(<MDL) denotes not detected for value obtained is less than the Method Detection Limit (MDL) stated.

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(Formerly known as NM Laboratory Sdn Bhd)
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Main office :
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ilac-MRA STANDARDS

MS ISO/IEC 17025
TESTING
SAMM NO. 188

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2. The integrity of the sample(s) and result(s) are dependent on the quality of sampling. The result(s) of testing / analysis performed by Eurofins NML is / are only applicable to the particular sample(s) received at the time of testing / analysis.

3. This report / certificate is not a certificate of quality. The results do not indicate or imply that Eurofins NML approves, recommends or endorses the manufacturers or suppliers or users of products and it shall not be used to imply product certification.

4. The overleaf test / analysis result(s) is / are based solely on the sample(s) submitted by the customers. Eurofins NML assumes no responsibility for the accuracy of information on the name, type, class, brand or model number of products or any information supplied by the customers.

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NOTE : ND(<MDL) denotes not detected for value obtained is less than the Method Detection Limit (MDL) stated; " * " denotes non SAMM accredited test.

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MS ISO/IEC 17025
TESTING
SAMM NO. 188

TEST REPORT

To : MIROAD RUBBER INDUSTRIES SDN. BHD.
Lot 6224, Batu 17 1/2,
Jalan Air Hitam,
81400 Senai, Johor,
Malaysia.
Attn: Ms. Xiao Qian

Report No. : IP1703-0403

Page No : 1 of 3

Date of Issue : 22/03/2017

The following sample(s) was(were) identified by the customer as :
PU BINDER B

Date of Sample Received : 15/03/2017
Date of Testing : 15/03/2017 to 22/03/2017

Objective :
Determination of Polycylic Aromatic Hydrocarbons in accordance to German Commission Specification for Product Safety Act AfPS GS 2014:01.

Conclusion :

Test Required	Compliance
Product Safety Act AfPS GS 2014:01 (18 PAHs compound)	Not exceeded the maximum limit for category 1,2,3

Remark : Sampled and submitted by MIROAD RUBBER INDUSTRIES SDN. BHD.

Test Performed by : Yip Pooi Chee

Signed for and on behalf of
EUROFINS NM LABORATORY SDN. BHD.

Nurul Fitriyah Abdullah, M.Sc., MMIC
Section Head (Chemistry)
IKM No. M/3945/6698/13

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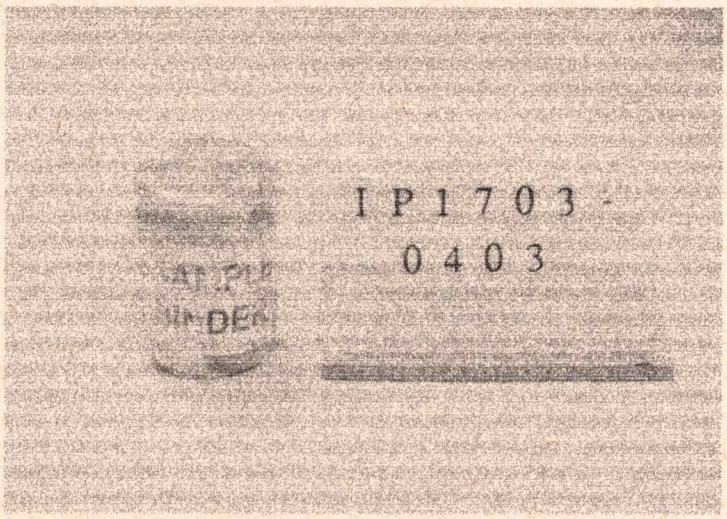
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Customer : MIROAD RUBBER INDUSTRIES SDN. BHD.
Date Of Issue : 22/03/2017

Report No. : IP1703-0403
Page No. : 2 of 3

Sample Photograph(s):



Standard Method / Equipment / Technique Description:

Method Ref.No.	Standard Method	Method Description/Title
M-1	AfPS GS 2014:01	German Commission of Product Safety
	GC-MS	Gas Chromatography-Mass Spectrometer

Signed for and on behalf of
EUROFINS NM LABORATORY SDN. BHD.

Nurul Fitriyah Abdullah, M.Sc., MMIC
Section Head (Chemistry)
IKM No. M/3945/6698/13

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Customer : MIROAD RUBBER INDUSTRIES SDN. BHD.
Date Of Issue : 22/03/2017

Report No. : IP1703-0403
Page No. : 3 of 3

Test Results(s) :

Parameter	Result	Unit	Method Ref. No	MDL; mg/kg
Acenaphthene	ND(<0.2)	mg/kg	M-1	0.2
Acenaphthylene	ND(<0.2)	mg/kg	M-1	0.2
Anthracene	ND(<0.2)	mg/kg	M-1	0.2
Benzo(a)anthracene	ND(<0.2)	mg/kg	M-1	0.2
Benzo(a)pyrene	ND(<0.2)	mg/kg	M-1	0.2
Benzo(b)fluoranthene	ND(<0.2)	mg/kg	M-1	0.2
Benzo(e)pyrene	ND(<0.2)	mg/kg	M-1	0.2
Benzo(g,h,i)perylene	ND(<0.2)	mg/kg	M-1	0.2
Benzo(j)flouranthene	ND(<0.2)	mg/kg	M-1	0.2
Benzo(k)fluoranthene	ND(<0.2)	mg/kg	M-1	0.2
Chrysene	ND(<0.2)	mg/kg	M-1	0.2
Dibenzo(a,h)anthracene	ND(<0.2)	mg/kg	M-1	0.2
Fluoranthene	ND(<0.2)	mg/kg	M-1	0.2
Fluorene	ND(<0.2)	mg/kg	M-1	0.2
Indeno(1,2,3-cd)pyrene	ND(<0.2)	mg/kg	M-1	0.2
Naphthalene	ND(<0.2)	mg/kg	M-1	0.2
Phenanthrene	ND(<0.2)	mg/kg	M-1	0.2
Pyrene	ND(<0.2)	mg/kg	M-1	0.2
Sum of PAH	-	-	-	-

Signed for and on behalf of
EUROFINS NM LABORATORY SDN. BHD.

Nurul Fitriyah Abdullah, M.Sc., MMIC
Section Head (Chemistry)
IKM No. M/3945/6698/13

- End of Report -

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Attachment

Report No. : IP1703-0403 Page No. : 1 of 2

AfPS (German Commission for Product Safety)- GS PAHs requirement

Parameter	Category 1	Category 2		Category 3	
	Materials intended to be put in the mouth, or materials of toys with intended long-term skin contact (longer than 30 s)	Materials not covered by category 1, with foreseeable skin contact for longer than 30 seconds (long term skin contact) or repeated short-term skin contact)		Materials not covered by category 1 or 2 with foreseeable skin contact up to 30 seconds (short term skin contact)	
		Toys in the scope 2009/48/EC	Other products in the scope of ProdSG	Toys in the scope of 2009/48/EC	Other products in the scope of ProdSG
Benzo[a]pyrene (mg/kg)	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo(e)pyrene (mg/kg)	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo(a)anthracene (mg/kg)	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo(b)fluoranthene (mg/kg)	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo(j)flouranthene (mg/kg)	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo(k)fluoranthene (mg/kg)	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Chrysene (mg/kg)	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Dibenzo(a,h)anthracene (mg/kg)	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo(g,h,i)perylene (mg/kg)	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Indeno(1,2,3-cd)pyrene (mg/kg)	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Acenaphthylene (mg/kg) Acenaphthene (mg/kg) Fluorene (mg/kg) Phenanthrene (mg/kg) Pyrene (mg/kg) Anthracene (mg/kg) Fluoranthene (mg/kg)	< 1 sum	< 5 sum	< 10 sum	< 20 sum	< 50 sum
Naphthalene (mg/kg)	< 1	< 2		< 10	
Sum of 18 PAH (mg/kg)	< 1	< 5	< 10	< 20	< 50

* Wording "short-term repetitive skin contact" from supplement to REACH annex XVII no.50 (REGULATION (EU) No 1272/2013)

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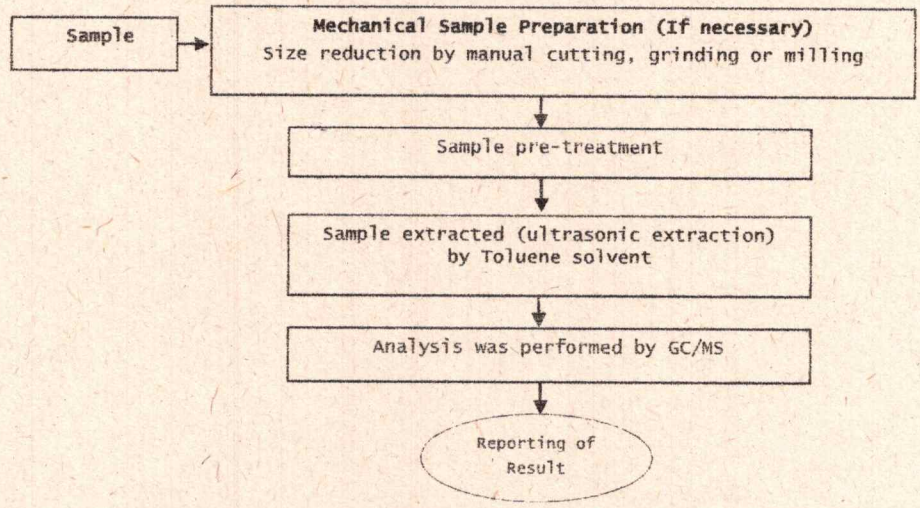
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Report No. : IP1703-0403 Page No. : 2 of 2

Flow chart for AfPS GS 2014:01



- End of Attachment -

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Premas

Job Ref : EPL/D&T/RPT/PG/10-12

Date : 12 October 2017

SUBJECT : SURFACE ATTENUATION TEST REPORT - MATERIAL TESTING

TESTED FOR : MIROAD RUBBER INDUSTRIES SDN BHD
Lot 6224, Batu 17 1/2, Jalan Air Hitam,
81400 Senai,
Johor, Malaysia

TEST DESCRIPTION:

Date of Test : 12 October 2017

Test Location : 10 Pandan Crescent #02-01 ,UE Tech Park Singapore 128466

Test Materials : 1) SQ-2L43FPRD-GRFL -Square Tiles (Thickness 43mm) Full Pigmented Red
2) SQ-2L110FPRD-GRFL -Square Tiles (Thickness 110mm) Full Pigmented Red

Test Apparatus : Triax 2000

Surface Temperature : 25°C

Weather condition : Indoor Environment

TEST STANDARDS:

Impact attenuation test on material surfacing was conducted by adopting the HIC test method in accordance with EN 1177:2008 Impact Absorbing Playground Surfacing.

Miroad Rubber Industries Sdn. Bhd. Co. No. 639141-D

TEST RESULTS: Tested at Critical Fall Height above the material surface for all material

Material	Height (M)	HIC			HIC (Ave 2 & 3)	Critical Height (M)
		1	2	3		
1) SQ-2L43FPRD-GRFL - Square Tiles (Thickness 43mm) Full Pigmented Red	1.30	980	951	940	946	1.33
	1.40	1020	1013	1045	1029	
2) SQ-2L110FPRD-GRFL - Square Tiles (Thickness 110mm) Full Pigmented Red	2.60	906	916	889	903	2.70
	2.75	1044	1053	1039	1046	

Note: The Shocking absorbency of surfacing material is based on the fall height. Surfacing material must yield HIC (Head Injury Criteria) of not more than 1000 & Gmax can not more than 200 when tested in accordance with EN 1177:2008 Impact absorbing playground surfacing - Safety requirements and test methods for impact attenuation requirements and determination using HIC criteria. The max height of our equipment is 3 meters.

Conclusion:

From the field impact attenuation test results, the estimated Critical height for 1& 2 are 1.33 meters and 2.70 meters respectively.

Choo Thiam Heng
Senior Engineer

Ang Keng Chuan
Senior Manager

Mitrap Rubber Industries Sdn. Bhd. Co. No. 623847-D

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1. The report is prepared based on the outcome of the testing(s) conducted and on the specific material(s) and is subject to the comprehensiveness and exhaustiveness of the examinations and surveys requested.

2. EPL assumes no other responsibilities except for those expressly agreed to herein.

3. Under no circumstances shall EPL bears any liability whatsoever for :-

   a) suitability of any material(s) for any particular purpose or use under any specific conditions whether or not the conditions were known or communicated to EPL;

   b) any loss or damage of any nature arising from any implied warranty or condition or from tort (including but not limited to negligence), breach of statutory or other duty on the part of EPL or in any way arising out of or in connection with the performance or purported performance of or failure to perform on the part of EPL and no warranties are given and none may be implied directly or indirectly relating to EPL, its services, facilities and this report. In no event shall EPL be liable for indirect, collateral, special or consequential damage (including without limitation, loss of profits).

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   b) subject to clause 6 herein, third parties shall not have any access to this report nor any copies hereof in whatever forms and in which ever manner;

   c) this report is made solely for the purposes of ascertaining the outcome of the inspection(s) conducted only and shall not be used for any promotion or advertising purposes;

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ANEXO 13. RCD