

Job Ref. CRS/2019-12-31-011

### MARUWA (MALAYSIA) SDN BHD

LOT 2,3,4,27,58,30 & 31 BATU BERENDAM INDUSTRIAL ESTATE, PHASE 3, FTZ, 75350 MELAKA, MALAYSIA

The following sample(s) was/were submitted and identified by applicant as:

SAMPLE DESCRIPTION : AS 970

SAMPLE RECEIVED : 31/12/2019

TESTING PERIOD : 31/12/2019 to 09/01/2020

TEST REQUESTED : Selected test(s) as requested by customer

TEST METHOD : -PLEASE REFER TO NEXT PAGE(S)-

TEST RESULTS : -PLEASE REFER TO NEXT PAGE(S)-

SIGNED FOR AND ON BEHALF OF SGS (MALAYSIA) SDN BHD

TAY SIAM PINE
TECHNICAL MANAGER
IKM No. M/3452/6047/11/12

Test Report Form No.: SGS/TR/CRS/013, Ver: 5.0, Effective Date: 13/01/2020

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Job Ref. CRS/2019-12-31-011

**TEST RESULTS:** 

**Test Part Description** 

Sample Description: -PLEASE REFER TO PAGE 1-

RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU

Test Item(s): Unit		Test Method	Result	MDL	Limit
Cadmium (Cd)	mg/kg	With reference to IEC 62321-5:2013, determination of Cadmium by ICP-OES.	N.D.	2	Max 100
Lead (Pb)	mg/kg	With reference to IEC 62321-5:2013, N.D. determination of Lead by ICP-OES.		2	Max 1000
Mercury (Hg)	mg/kg	With reference to IEC 62321-4:2013+A1:2017, determination of Mercury by ICP-OES.		2	Max 1000
Hexavalent Chromium (CrVI)	mg/kg	With reference to IEC 62321-7-2:2017, N.D. determination of Hexavalent Chromium by Colorimetric Method using UV-Vis.		8	Max 1000
Sum of PBBs	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	5	Max 1000
Monobromobiphenyl	mg/kg	With reference to IEC 62321-6:2015, N.D. determination of PBBs and PBDEs by GC-MS.		5	-
Dibromobiphenyl	mg/kg	With reference to IEC 62321-6:2015, N.D. determination of PBBs and PBDEs by GC-MS.		5	-
Tribromobiphenyl	mg/kg	With reference to IEC 62321-6:2015, N.D. determination of PBBs and PBDEs by GC-MS.		5	-
Tetrabromobiphenyl	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	5	-
Pentabromobiphenyl	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.		5	-
Hexabromobiphenyl	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	5	-
Heptabromobiphenyl	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	5	-
Octabromobiphenyl	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	5	-
Nonabromobiphenyl	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	5	-
Decabromobiphenyl	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.		5	-

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**TEST RESULTS:** 

**Test Part Description** 

Sample Description: -PLEASE REFER TO PAGE 1-

RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU

Test Item(s):	Unit	Test Method	Result	MDL	Limit
Sum of PBDEs	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D. 5		Max 1000
Monobromodiphenyl ether	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	5	-
Dibromodiphenyl ether	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	5	-
Tribromodiphenyl ether	mg/kg			5	-
Tetrabromodiphenyl ether	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	5	-
Pentabromodiphenyl ether	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.		5	-
Hexabromodiphenyl ether	mg/kg	determination of PBBs and PBDEs by GC-MS.  With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.  N.D.		5	-
Heptabromodiphenyl ether	mg/kg	determination of PBBs and PBDEs by GC-MS.  With reference to IEC 62321-6:2015, N.D. determination of PBBs and PBDEs by GC-MS.		5	-
Octabromodiphenyl ether	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.  N.D.		5	-
Nonabromodiphenyl ether	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.		5	-
Decabromodiphenyl ether	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	5	-

Note: (a) mg/kg = ppm; ug/kg = ppb (0.01 mg/kg = 10 ug/kg); 0.1wt% = 1000ppm

(b) N.D. = Not Detected

(c) MDL = Method Detection Limit

(d) - = Not regulated

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**TEST RESULTS:** 

<u>Test Part Description</u>
Sample Description:

-PLEASE REFER TO PAGE 1-

RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU

Test Item(s):	Unit	Test Method Result		MDL	Limit
Dibutyl phthalate (DBP) (CAS No. 84-74-2)	mg/kg	With reference to IEC 62321-8:2017, determination of phthalates by GC-MS.	N.D.	50	Max 1000
Benzyl butyl phthalate (BBP) (CAS No. 85-68-7)	mg/kg	With reference to IEC 62321-8:2017, N.D. determination of phthalates by GC-MS.		50	Max 1000
Di(2-ethylhexyl) phthalate (DEHP) (CAS No. 117-81-7)	mg/kg	With reference to IEC 62321-8:2017, determination of phthalates by GC-MS.	N.D.	50	Max 1000
Diisobutyl phthalate (DIBP) (CAS No. 84-69-5)	mg/kg	With reference to IEC 62321-8:2017, determination of phthalates by GC-MS.	N.D.	50	Max 1000

Note: (a) mg/kg = ppm; ug/kg = ppb (0.01 mg/kg = 10 ug/kg); 0.1wt% = 1000ppm

- (b) N.D. = Not Detected
- (c) MDL = Method Detection Limit
- (d) = Not regulated
- (e) On 4 June 2015, Commission Directive (EU) 2015/863 was published in the Official Journal of the European Union (OJEU) to include the phthalates BBP, DBP, DEHP and DIBP into ANNEX II of the RoHS Recast Directive. The new law restricts each phthalate to no more than 0.1% in each homogeneous material of an electrical product.
- (f)The restriction of DEHP, BBP, DBP and DIBP shall apply to medical devices, including in vitro medical devices, and monitoring and control instruments, including industrial monitoring and control instruments, from 22 July 2021.
- (g)The restriction of DEHP, BBP, DBP and DIBP shall not apply to cables or spare parts for the repair, the reuse, the updating of functionalities or upgrading of capacity of EEE placed on the market before 22 July 2019, and of medical devices, including in vitro medical devices, and monitoring and control instruments, including industrial monitoring and control instruments, placed on the market before 22 July 2021.
- (h)The restriction of DEHP, BBP and DBP shall not apply to toys which are already subject to the restriction of DEHP, BBP and DBP through entry 51 of Annex XVII to Regulation (EC) No 1907/2006.

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### **TEST RESULTS BY CHEMICAL METHOD:**

**Test Part Description** 

Sample Description: -PLEASE REFER TO PAGE 1-

Test Item(s):	Unit	Test Method	Result	MDL
Antimony (Sb)	mg/kg	With reference to EPA Method 3052, and performed by ICP-OES.	N.D.	2
Beryllium (Be)	mg/kg	With reference to EPA Method 3052, and performed by ICP-OES.	N.D.	2
Arsenic (As)	mg/kg	With reference to EPA Method 3052, and performed by ICP-OES.	N.D.	2
Halogen	-	-	-	-
Halogen-Fluorine (F)	mg/kg	With reference to BS EN 14582:2016, analysis performed by IC method for Fluorine content.	N.D.	50
Halogen-Chlorine (CI)	mg/kg	With reference to BS EN 14582:2016, analysis performed by IC method for Chlorine content.	N.D.	50
Halogen-Bromine (Br)	mg/kg	With reference to BS EN 14582:2016, analysis N.D. performed by IC method for Bromine content.		50
Halogen-lodine (I)	mg/kg	With reference to BS EN 14582:2016, analysis performed by IC method for lodine content.	N.D.	50

Note: (a) mg/kg = ppm; ug/kg = ppb (0.01 mg/kg = 10 ug/kg); 0.1wt% = 1000ppm

- (b) N.D. = Not Detected
- (c) MDL = Method Detection Limit
- (d) Negative = Undetectable / Positive = Detectable

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**TEST RESULTS:** 

**Test Part Description** 

Sample Description: -PLEASE REFER TO PAGE 1-

Test Method: CEN/TS 15968:2010

Test Item(s):	Result (%)	Max. Limit (μg/m²) (Textile/Coated material)	Max.Limit(%) (Plastic)	Max. Limit(%) (Substances/ in mixtures)
Perfluorooctanesulfonic acid (PFOS)	N.D.	1	0.1	0.001
Perfluorooctanoic acid (PFOA) (CAS No. 335-67-1)	N.D.	/	I	/
Conclusion	Pass			

Note: (a) N.D. = Not Detected

(b) Detection limit = 1 µg/m² for Textile / Coated Material

= 0.001% for Plastic, substances or mixtures

- (c) Max. limit specified by commission regulation (EU) No. 757/2010 amending Regulation (EC) No. 850/2004 (previously restricted under entry 53 of Regulation (EC) No 552/2009 amending Annex XVII of REACH Regulation (EC) No 1907/2006).
- (d) PFOS refers to Perfluoroctanesulfonic acid and its derivatives including Perfluoroctanesulfonic acid, Perfluoroctane sulfonamide, N-Methylperfluoroctane sulfonamide, N-Ethylperfluoroctane sulfonamide, N-Methylperfluoroctane sulfonamidoethanol and N-Ethylperfluoroctane sulfonamidoethanol.

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TAY SIAM PINE
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**Test Part Description:** 

Sample Description: -PLEASE REFER TO PAGE 1-

### MARUWA (MALAYSIA) SDN BHD CA29584



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TAY SIAM PINE
TECHNICAL MANAGER
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**TEST REPORT:** 

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### 1. DETERMINATION OF CADMIUM CONTENT BY IEC 62321-52013

Sample Receiving and Registration

Sample Preparation

Weigh sample (0.2-0.5g) into digestion vessel

Acid digestion (Microwave)

"Totally Dissolved"

Filtration

Analyses by ICP

### 2. DETERMINATION OF LEAD CONTENT BY IEC 62321-52013

**REPORTED DATE:** 13/02/2020

Sample Receiving and Registration

Sample Preparation

Weigh sample (0.2-0.5g) into digestion vessel

Acid digestion (Microwave)

"Totally Dissolved"

Filtration

Analyses by ICP

### 3. DETERMINATION OF MERCURY CONTENT BY IEC 62321-42013/AMD12017

Sample Receiving and Registration

Sample Preparation

Weigh sample (0.1-0.5g) into digestion vessel

Acid digestion(Microwave)

"TotallyDissolved"

Filtration

Analyses by ICP

### 4a. DETERMINATION OF HEXAVALENT CHROMIUM BY IEC 62321-7-22017 (Other Materials)

Sample Preparation

Digestionat 150~160°C

Separating to Obtain Aqueous Phase

pH Adjustment

Add Diphenyl-Carbazide for Color Development

Analyses by UV-Spectrophotometer (540 nm)

### 4b. DETERMINATION OF HEXAVALENT CHROMIUM BY IEC 62321-7-22017 (Soluble Polymers)

Sample Preparation

Add Digestion Solution

Ultrasonicate Sample

pH Adjustment

Add Diphenyl-Carbazide for Colour Development

Analyses by UV-Spectrophotometer (540 nm)

### 5. DETERMINATION OF PBB/PBDE WITH GC-MS BY IEC 62321-62015

Sample Preparation

Weigh sample (0.5-4.0g) into extraction thimble

Soxhlet Extraction with Toluene

Filter through 0.45 um membrane filter

Analyses by GC-MS (with appropriate dilution)

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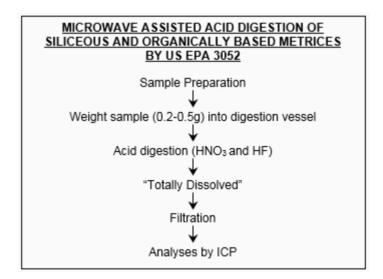
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**TEST REPORT:** 

No. CRSSA/200233702-CA29584 Job Ref. CRS/2019-12-31-011

# DETERMINATION OF PHTHALATES WITH GC-MS BY IEC 62321-8:2017 Sample Cutting / Preparation ↓ Sample Measurement ↓ Solvent Extraction ↓ Concentrate / Dilute extracted solution ↓ GC-MS analysis ↓ DATA



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**TEST REPORT:** 

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## **REPORTED DATE:** 13/02/2020

# **DETERMINATION OF HALOGEN CONTENT** Sample pre-treatment Weighting and putting sample in cell Combustion / Absorption Dilution to fixed volume Analyses by IC

# DETERMINATION OF PFOS AND PFOA CONTENTS Sample pre-treatment / separation Solvent extraction Concentrate / Dilute extracted solution Sample filtration Analysis performed by LC/MS Data

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10871-1 TAY SIAM PINE TECHNICAL MANAGER IKM No. M/3452/6047/11/12

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\*\*\* End of test report \*\*\*

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