

Job Ref. C&P/2023-07-03-015

: -PLEASE REFER TO NEXT PAGE(S)-

RESONAC MATERIALS MALAYSIA SDN BHD

NO.2 PERSIARAN BUDIMAN, SEKSYEN 23, 40300 SHAH ALAM, SELANGOR DARUL EHSAN, MALAYSIA.

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

SAMPLE DESCRIPTION : EPOXY MOLDING COMPOUND GE-300 SERIES

SAMPLE RECEIVED : 03-July-2023

TEST METHOD

TESTING PERIOD : 03-July-2023 to 11-July-2023

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

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/CP/013, Ver: 6.0, Effective Date: 07/07/2021

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Job Ref. C&P/2023-07-03-015

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 Parameter(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, determination of Lead by ICP-OES.	N.D.	2	Max 1000
Mercury (Hg)	mg/kg	With reference to IEC 62321-4:2013+A1:2017, determination of Mercury by ICP-OES.	N.D.	2	Max 1000
Hexavalent Chromium (CrVI)	mg/kg	With reference to IEC 62321-7-2:2017, determination of Hexavalent Chromium by Colorimetric Method using UV-Vis.	N.D.	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, determination of PBBs and PBDEs by GC-MS.	N.D.	5	-
Dibromobiphenyl	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	5	-
Tribromobiphenyl	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	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.	N.D.	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.	N.D.	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 Parameter(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	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	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.	N.D.	5	-
Hexabromodiphenyl ether	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	5	-
Heptabromodiphenyl ether	mg/kg	With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.	N.D.	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.	N.D.	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
- (e) The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863.
- (f) a. The sample is positive for CrVI if the CrVI concentration is greater than 0.13 μg/cm². The sample coating is considered to contain CrVI.
 - b. The sample is negative for CrVI if CrVI is N.D. (concentration less than 0.10 μg/cm²). The coating is considered a non-CrVI based coating.
 - c. The result between 0.10 µg/cm² and 0.13 µg/cm² is considered to be inconclusive unavoidable coating variations may influence the determination.

For corrosion protection coatings on metals: Information on storage conditions and production date of the tested sample is unavailable and thus results of Cr(VI) represent status of the sample at the time of testing.

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TECHNICAL MANAGER

IKM No. M/3452/6047/11/12

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Job Ref. C&P/2023-07-03-015

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 Parameter(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, determination of phthalates by GC-MS.	N.D.	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) The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863.

(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.

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TEST RESULTS BY CHEMICAL METHOD:

Test Part Description

Sample Description: -PLEASE REFER TO PAGE 1-

Test Parameter(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
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.	68	50
Halogen-Bromine (Br)	mg/kg	With reference to BS EN 14582:2016, analysis performed by IC method for Bromine content.	N.D.	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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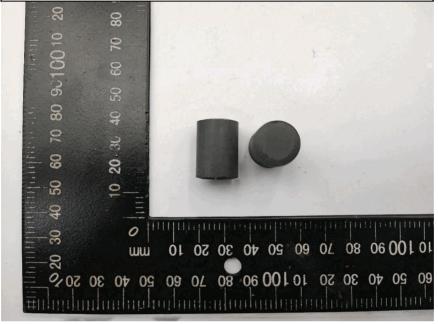
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Test Part Description:

Sample Description: -PLEASE REFER TO PAGE 1-

RESONAC MATERIALS MALAYSIA SDN BHD

CB26566



SGS authenticate the photo on original report only

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

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

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TEST REPORT:

No. CPSA/230715735-CB26566 Job Ref. C&P/2023-07-03-015

2. DETERMINATION OF LEAD CONTENT BY IEC 62321-52013

REPORTED DATE: 12-July-2023

Sample Receiving and Registration

Sample Preparation

Weigh sample (0.2-0.5g) into digestion vessel

Acid digestion (Microwave)

"Totally Dissolved"

Filtration

Analyses by ICP

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

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)

SIGNED FOR AND ON BEHALF OF

SIGNED FOLKAGE
SGS (MALAYSIA) SDN BHD 10871-TAY SIAM PINE TECHNICAL MANAGER IKM No. M/3452/6047/11/12

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TEST REPORT:

No. CPSA/230715735-CB26566 Job Ref. C&P/2023-07-03-015

DETERMINATION OF PHTHALATES WITH GC-MS BY IEC 62321-8:2017

Sample Cutting / Preparation

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Sample Measurement

 \downarrow

Solvent Extraction

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Concentrate / Dilute extracted solution

 \downarrow

GC-MS analysis



DATA

MICROWAVE ASSISTED ACID DIGESTION OF SILICEOUS AND ORGANICALLY BASED METRICES BY US EPA 3052

Sample Preparation

Weight sample (0.2-0.5g) into digestion vessel

Acid digestion

"Totally Dissolved"

Filtration

Analyses by ICP

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TEST REPORT:

No. CPSA/230715735-CB26566 Job Ref. C&P/2023-07-03-015

DETERMINATION OF HALOGEN CONTENT

Sample pre-treatment

Weighting and putting sample in cell

Combustion / Absorption

Dilution to fixed volume

Analyses by IC

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*** End of test report ***

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