

Test Report

No. CRSSA/08398-1/18 Date : 25/06/2018
CRS Ref. CRSSA/18/1592/Hitachi

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HITACHI CHEMICAL (SELANGOR) SDN. BHD.
NO. 2, PERSIARAN BUDIMAN, SEKSYEN 23,
40300 SHAH ALAM, SELANGOR DARUL EHSAN

The following merchandise was (were) submitted and identified by the client as:

Sample Description : EPOXY MOLDING COMPOUND
Style/Item No. : GE-1030 series
Sample Receiving Date : 19/06/2018
Testing Period : 19/06/2018 to 25/06/2018

Test Requested : Selected test(s) as requested by client
Test Method : Please refer to next page(s).
Test Results : Please refer to next page(s).
Analysts : Tan Mei Ann, Ling Yii Ming & Nurfarahima Ibrahim

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Test results:

Test Part Description :

Sample Description : EPOXY MOLDING COMPOUND
 Style/Item No. : GE-1030 series

RoHS Directive 2011/65/EU Annex II

Test Item(s):	Unit	Test Method	Results	MDL	Limit
Cadmium (Cd)	ppm	With reference to IEC 62321-5:2013 (Determination of Cd by ICP-OES)	N.D.	2	100
Lead (Pb)	ppm	With reference to IEC 62321-5:2013 (Determination of Pb by ICP-OES)	N.D.	2	1000
Mercury (Hg)	ppm	With reference to IEC 62321-4:2013/AMD 1:2017 (Determination of Hg by ICP-OES)	N.D.	2	1000
Hexavalent Chromium (CrVI)	ppm	With reference to IEC 62321-7-2:2017 (Determination of CrVI by UV-Vis)	N.D.	8	1000
Sum of PBBs	ppm	With reference to IEC 62321-6:2015 (Determination of PBB by GC-MS)	N.D.	-	1000
Monobromobiphenyl	ppm	With reference to IEC 62321-6:2015 (Determination of PBB by GC-MS)	N.D.	5	-
Dibromobiphenyl	ppm	With reference to IEC 62321-6:2015 (Determination of PBB by GC-MS)	N.D.	5	-
Tribromobiphenyl	ppm	With reference to IEC 62321-6:2015 (Determination of PBB by GC-MS)	N.D.	5	-
Tetrabromobiphenyl	ppm	With reference to IEC 62321-6:2015 (Determination of PBB by GC-MS)	N.D.	5	-
Pentabromobiphenyl	ppm	With reference to IEC 62321-6:2015 (Determination of PBB by GC-MS)	N.D.	5	-
Hexabromobiphenyl	ppm	With reference to IEC 62321-6:2015 (Determination of PBB by GC-MS)	N.D.	5	-
Heptabromobiphenyl	ppm	With reference to IEC 62321-6:2015 (Determination of PBB by GC-MS)	N.D.	5	-
Octabromobiphenyl	ppm	With reference to IEC 62321-6:2015 (Determination of PBB by GC-MS)	N.D.	5	-
Nonabromobiphenyl	ppm	With reference to IEC 62321-6:2015 (Determination of PBB by GC-MS)	N.D.	5	-
Decabromobiphenyl	ppm	With reference to IEC 62321-6:2015 (Determination of PBB by GC-MS)	N.D.	5	-

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Sum of PBDEs	ppm	With reference to IEC 62321-6:2015 (Determination of PBDE by GC-MS)	N.D.	-	1000
Monobromodiphenyl ether	ppm	With reference to IEC 62321-6:2015 (Determination of PBDE by GC-MS)	N.D.	5	-
Dibromodiphenyl ether	ppm	With reference to IEC 62321-6:2015 (Determination of PBDE by GC-MS)	N.D.	5	-
Tribromodiphenyl ether	ppm	With reference to IEC 62321-6:2015 (Determination of PBDE by GC-MS)	N.D.	5	-
Tetrabromodiphenyl ether	ppm	With reference to IEC 62321-6:2015 (Determination of PBDE by GC-MS)	N.D.	5	-
Pentabromodiphenyl ether	ppm	With reference to IEC 62321-6:2015 (Determination of PBDE by GC-MS)	N.D.	5	-
Hexabromodiphenyl ether	ppm	With reference to IEC 62321-6:2015 (Determination of PBDE by GC-MS)	N.D.	5	-
Heptabromodiphenyl ether	ppm	With reference to IEC 62321-6:2015 (Determination of PBDE by GC-MS)	N.D.	5	-
Octabromodiphenyl ether	ppm	With reference to IEC 62321-6:2015 (Determination of PBDE by GC-MS)	N.D.	5	-
Nonabromodiphenyl ether	ppm	With reference to IEC 62321-6:2015 (Determination of PBDE by GC-MS)	N.D.	5	-
Decabromodiphenyl ether	ppm	With reference to IEC 62321-6:2015 (Determination of PBDE by GC-MS)	N.D.	5	-

Note : (a) mg/kg = ppm ; (0.1wt% = 1000ppm)

(b) N.D. = Not Detected

(c) MDL = Method Detection Limit

(d) - = not regulated

(e) Testing based on original basis

(f) Upon Customer's request, this report has been issued in more than one original. Only the first original is a legally binding document and may be used for any legal purpose, including payment. (Original 1-2)

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Test results by chemical method:

Test Item (s) :	Unit	Method	Results	MDL
Antimony (Sb)	mg/kg	ICP-OES as per US EPA 3052 (acid digestion method)	N.D.	2
Halogen	---	---	---	---
Halogen-Fluorine (F)	mg/kg	With reference to BS EN 14582:2016. Analysis was performed by IC method for Fluorine content.	N.D.	50
Halogen-Chlorine (Cl)	mg/kg	With reference to BS EN 14582:2016. Analysis was performed by IC method for Chlorine content.	N.D.	50
Halogen-Bromine (Br)	mg/kg	With reference to BS EN 14582:2016. Analysis was performed by IC method for Bromine content.	N.D.	50
Halogen-Iodine (I)	mg/kg	With reference to BS EN 14582:2016. Analysis was performed by IC method for Iodine content.	N.D.	50

Test Part Description:

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 Style/Item No. : GE-1030 series

- Note :
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 - (c) MDL = Method Detection Limit
 - (d) --- = Not Conducted
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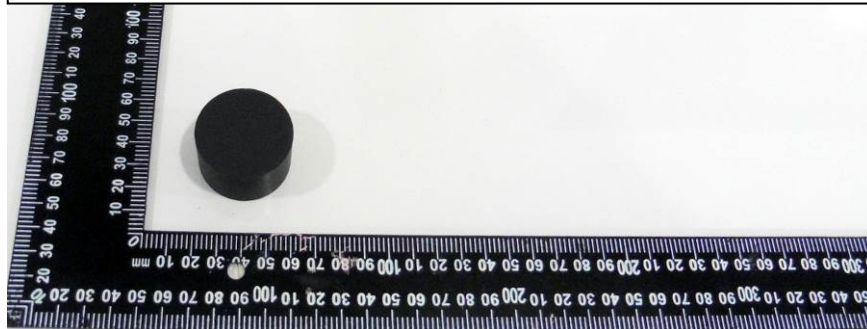
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Style/Item No. : GE-1030 series

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SGS authenticate the photo on original report only

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<p>1. DETERMINATION OF CADMIUM CONTENT BY IEC 62321-5 2013</p> <p>Sample Receiving and Registration ↓ Sample Preparation ↓ Weight sample (0.2-0.5g) into digestion vessel ↓ Acid digestion (Microwave) ↓ "Totally Dissolved" ↓ Filtration ↓ Analyses by ICP</p>	<p>2. DETERMINATION OF LEAD CONTENT BY IEC 62321-5 2013</p> <p>Sample Receiving and Registration ↓ Sample Preparation ↓ Weight sample (0.2-0.5g) into digestion vessel ↓ Acid digestion (Microwave) ↓ "Totally Dissolved" ↓ Filtration ↓ Analyses by ICP</p>
<p>3. DETERMINATION OF MERCURY CONTENT BY IEC 62321-4 2013/AMD 1 2017</p> <p>Sample Receiving and Registration ↓ Sample Preparation ↓ Weight sample (0.1-0.5g) into digestion vessel ↓ Acid digestion (Microwave) ↓ "Totally Dissolved" ↓ Filtration ↓ Analyses by ICP</p>	<p>4a. DETERMINATION OF HEXAVALENT CHROMIUM BY IEC 62321-7-2 2017 (Other Materials)</p> <p>Sample Preparation ↓ Digestion at 150~160°C ↓ Separating To Obtain Aqueous Phase ↓ pH Adjustment ↓ Add Diphenyl-Carbazide for Color Development ↓ Analyses by UV- Spectrophotometer (540 nm)</p>
<p>4b. DETERMINATION OF HEXAVALENT CHROMIUM BY IEC 62321-7-2 2017 (Soluble Polymers)</p> <p>Sample Preparation ↓ Add Digestion Solution ↓ Ultrasonicate Sample ↓ pH Adjustment ↓ Add Diphenyl-Carbazide for Color Development ↓ Analyses by UV- Spectrophotometer (540 nm)</p>	<p>5. DETERMINATION OF PBB/PBDE WITH GC-MS BY IEC 62321-6 2015</p> <p>Sample Preparation ↓ Weight 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)</p>

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**6. MICROWAVE ASSISTED ACID DIGESTION OF
SILICEOUS AND ORGANICALLY BASED METRICES
(US EPA 3052)**

Sample Preparation
↓
Weight sample (0.2-0.5g) into digestion vessel
↓
Acid digestion (HF and HNO₃) – Microwave
↓
"Totally Dissolved"
↓
Filtration
↓
Analyses by ICP

**7. DETERMINATION OF HALOGEN CONTENT
BY EN 14582 2016**

Sample pretreatment
↓
Weighting and putting sample in cell
↓
Combustion / Absorption
↓
Dilution to fixed volume
↓
Analyses by IC

**** End of Report ****

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