

**TEST REPORT:**No. CRSSA/191228378-CA25245  
Job Ref. CRS/2019-11-11-035**REPORTED DATE:** 18/12/2019**HITACHI CHEMICAL (MALAYSIA) SDN BHD**PLOT 501, PRAI INDUSTRIAL ESTATE,  
13600 PRAI, PENANG

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

SAMPLE DESCRIPTION : Epoxy Molding Compound  
Sample Name : CEL-9220HF 10 series

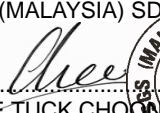
SAMPLE RECEIVED : 11/11/2019

TESTING PERIOD : 11/11/2019 to 18/12/2019

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  
CHEE TUCK CHOAN  
SECTION HEAD  
IKM NO. M/3983/6401/12/14

Test Report Form No.: SGS/TR/CRS/001, Ver: 5.0, Effective Date: 24/06/2019

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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
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 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	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 ; (0.1wt% = 1000ppm)  
 (b) N.D. = Not Detected  
 (c) MDL = Method Detection Limit  
 (d) - = Not regulated

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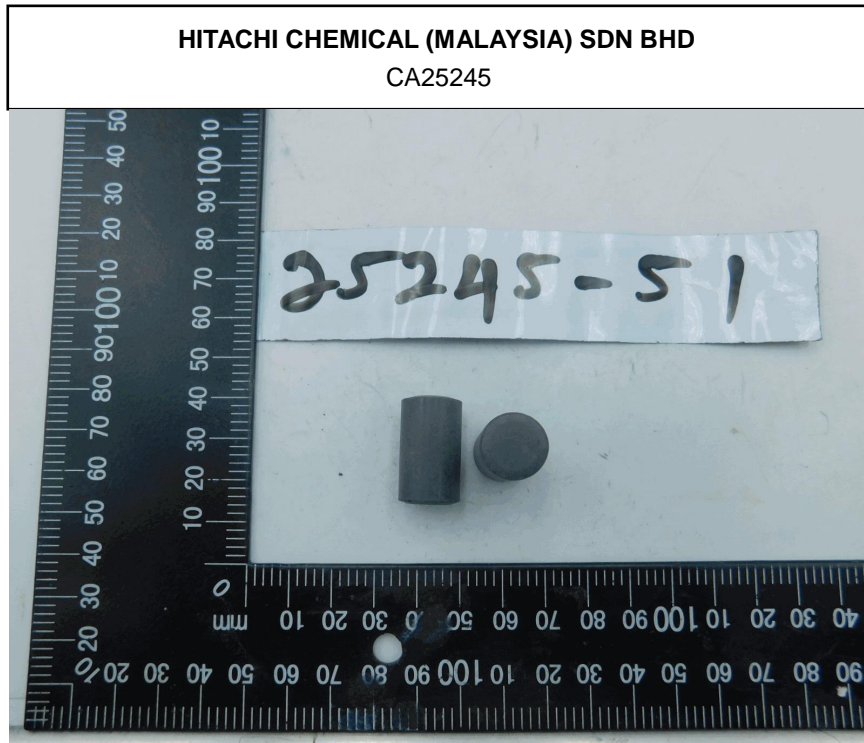
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SGS authenticate the photo on original report only

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

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

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