

**TEST REPORT:**

No. CPSA/220280724-CA83954  
Job Ref. C&P/2022-02-11-007

**REPORTED DATE:** 22-February-2022**SHOWA DENKO ELECTRONIC MATERIALS (KYUSHU) CO., LTD**

2307-2, YOSHIDA, YOSHINO GARI, KANZAKI,  
SAGA, 842-0031, JAPAN.

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

SAMPLE DESCRIPTION : EPOXY MOLDING COMPOUND GE-100 SERIES  
SAMPLE RECEIVED : 11-February-2022  
TESTING PERIOD : 11-February-2022 to 22-February-2022

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

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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
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**

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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) IEC 62321 series is equivalent to EN 62321 series.  
[https://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101:::FSP\\_ORG\\_ID,FSP\\_LANG\\_ID:1258637,25](https://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101:::FSP_ORG_ID,FSP_LANG_ID:1258637,25)

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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
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 :
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  - (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) IEC 62321 series is equivalent to EN 62321 series.  
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  - (g) 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
<b>Halogen</b>	-	-	-	-
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 (Cl)	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 performed by IC method for Bromine content.	N.D.	50
Halogen-Iodine (I)	mg/kg	With reference to BS EN 14582:2016, analysis performed by IC method for Iodine content.	N.D.	50

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

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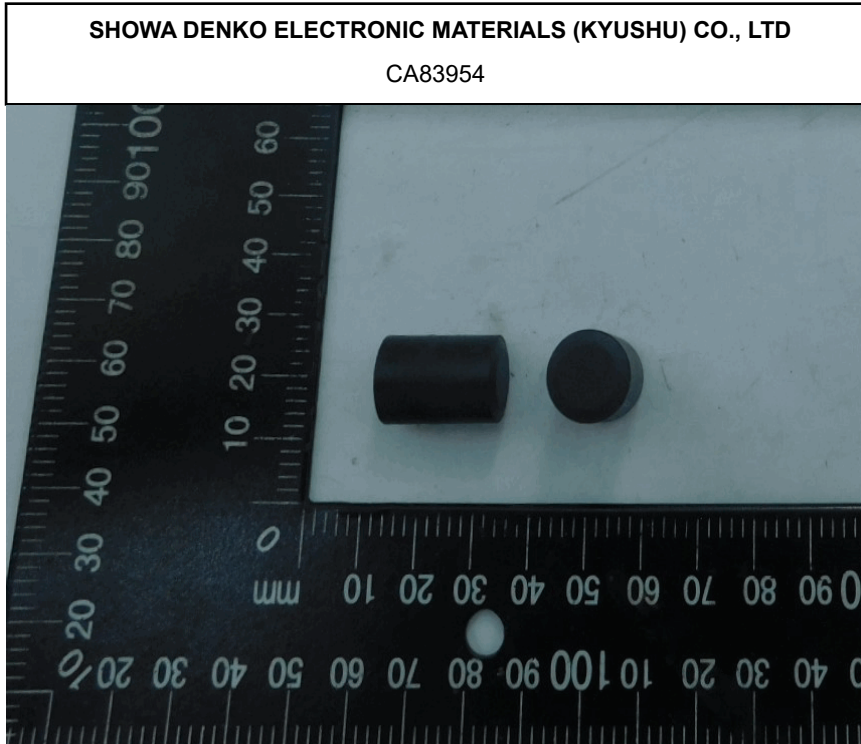
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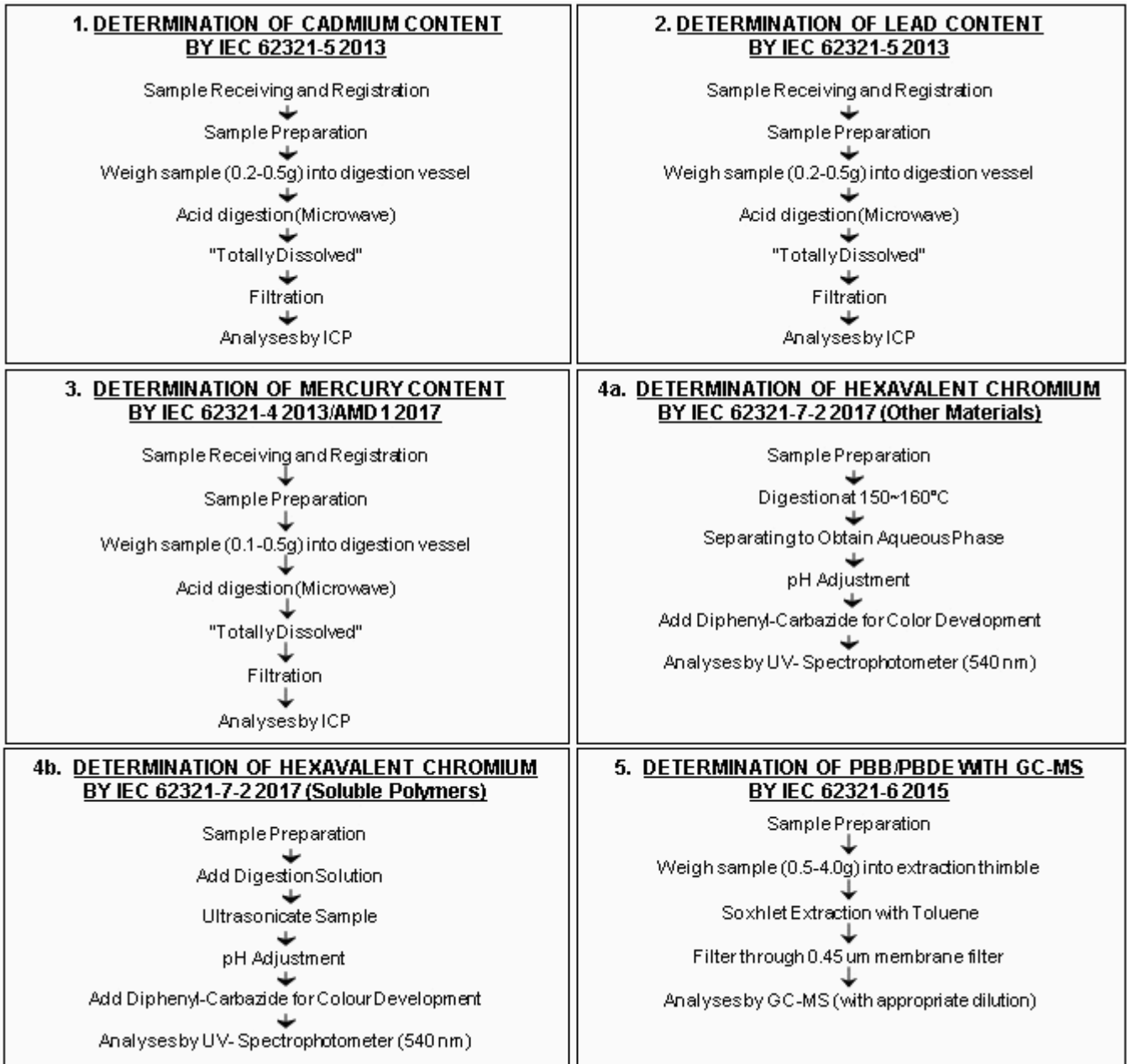
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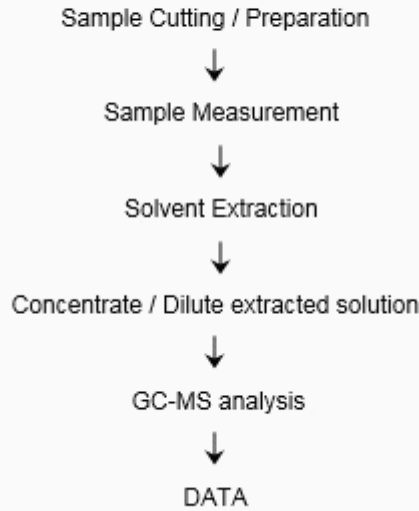
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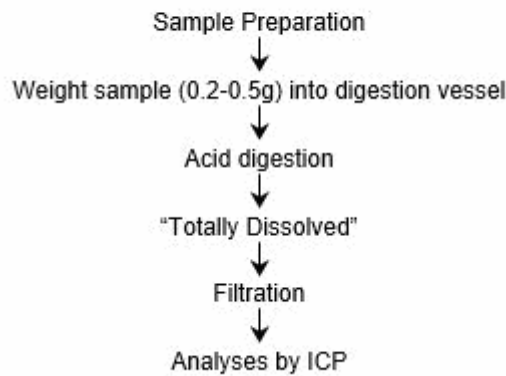
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**DETERMINATION OF PHTHALATES WITH GC-MS**  
**BY IEC 62321-8:2017**



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



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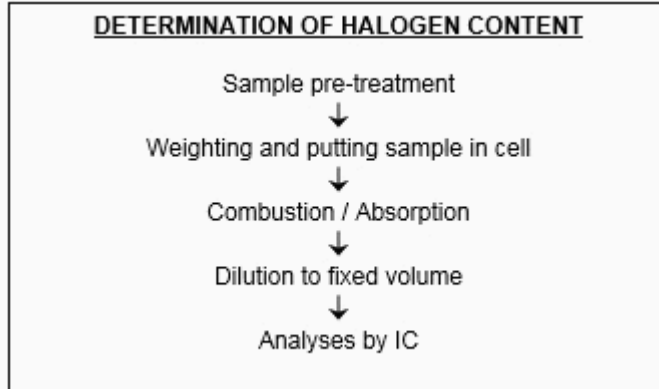
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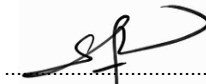
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