

Test Report

No. : KA/2019/11324A-05

Date : 2019/01/23

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SUMITOMO BAKELITE SINGAPORE PTE CO., LTD.
NO. 1 SENOKO SOUTH ROAD, SINGAPORE 758069

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

Sample Submitted By : SUMITOMO BAKELITE SINGAPORE PTE CO., LTD.
Sample Description : EPOXY MOLDING COMPOUND
Style/Item No. : EME-G700 TYPE E VER A
Sample Receiving Date : 2019/01/18
Testing Period : 2019/01/18 TO 2019/01/23

Test Requested :

- (1) As specified by client, with reference to RoHS 2011/65/EU Annex II and amending Directive (EU) 2015/863 to determine Cadmium, Lead, Mercury, Cr(VI), PBBs, PBDEs, DBP, BBP, DEHP, DIBP contents in the submitted sample.
- (2) Please refer to next pages for the other item(s).

Test Result(s) : Please refer to next page(s).

Conclusion :

- (1) Based on the performed tests on submitted samples, the test results of Cadmium, Lead, Mercury, Cr(VI), PBBs, PBDEs, DBP, BBP, DEHP, DIBP comply with the limits as set by RoHS and amending Directive (EU) 2015/863.


Ray Chang Ph.D. / Manager -
Signed for and on behalf of
SGS Taiwan Limited
Chemical Laboratory-Kaohsiung

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SUMITOMO BAKELITE SINGAPORE PTE CO., LTD.
NO. 1 SENOKO SOUTH ROAD, SINGAPORE 758069

Test Result(s)

PART NAME No.1 : BLACK EPOXY MOLDING COMPOUND

Test Item(s)	Unit	Method	MDL	Result	Limit	
				No.1		
Cadmium (Cd)	mg/kg	With reference to IEC 62321-5: 2013 and performed by ICP-AES.	2	n.d.	100	
Lead (Pb)	mg/kg	With reference to IEC 62321-5: 2013 and performed by ICP-AES.	2	n.d.	1000	
Mercury (Hg)	mg/kg	With reference to IEC 62321-4: 2013 and performed by ICP-AES.	2	n.d.	1000	
Hexavalent Chromium Cr(VI)	mg/kg	With reference to IEC 62321-7-2:2017 and performed by UV-VIS.	8	n.d.	1000	
Sum of PBBs	mg/kg	With reference to IEC 62321-6: 2015 and performed by GC/MS.	-	n.d.	1000	
Monobromobiphenyl	mg/kg		5	n.d.	-	
Dibromobiphenyl	mg/kg		5	n.d.	-	
Tribromobiphenyl	mg/kg		5	n.d.	-	
Tetrabromobiphenyl	mg/kg		5	n.d.	-	
Pentabromobiphenyl	mg/kg		5	n.d.	-	
Hexabromobiphenyl	mg/kg		5	n.d.	-	
Heptabromobiphenyl	mg/kg		5	n.d.	-	
Octabromobiphenyl	mg/kg		5	n.d.	-	
Nonabromobiphenyl	mg/kg		5	n.d.	-	
Decabromobiphenyl	mg/kg		5	n.d.	-	
Sum of PBDEs	mg/kg		With reference to IEC 62321-6: 2015 and performed by GC/MS.	-	n.d.	1000
Monobromodiphenyl ether	mg/kg			5	n.d.	-
Dibromodiphenyl ether	mg/kg	5		n.d.	-	
Tribromodiphenyl ether	mg/kg	5		n.d.	-	
Tetrabromodiphenyl ether	mg/kg	5		n.d.	-	
Pentabromodiphenyl ether	mg/kg	5		n.d.	-	
Hexabromodiphenyl ether	mg/kg	5		n.d.	-	
Heptabromodiphenyl ether	mg/kg	5		n.d.	-	
Octabromodiphenyl ether	mg/kg	5		n.d.	-	
Nonabromodiphenyl ether	mg/kg	5		n.d.	-	
Decabromodiphenyl ether	mg/kg	5	n.d.	-		

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NO. 1 SENOKO SOUTH ROAD, SINGAPORE 758069

Test Item(s)	Unit	Method	MDL	Result	Limit
				No.1	
Antimony (Sb)	mg/kg	With reference to US EPA Method 3052 for Antimony Content. Analysis was performed by ICP-AES.	2	n.d.	-
Beryllium (Be)	mg/kg	With reference to US EPA Method 3052 for Beryllium Content. Analysis was performed by ICP-AES.	2	n.d.	-
Arsenic (As)	mg/kg	With reference to US EPA 3052: 1996. Analysis was performed by ICP-AES.	2	n.d.	-
Hexabromocyclododecane (HBCDD) and all major diastereoisomers identified (α - HBCDD, β - HBCDD, γ - HBCDD) (CAS No.: 25637-99-4 and 3194-55-6 (134237-51-7, 134237-50-6, 134237-52-8))	mg/kg	With reference to IEC 62321: 2008 method. Analysis was performed by GC/MS.	5	n.d.	-
Perfluorooctane sulfonates (PFOS)	mg/kg	With reference to US EPA 3550C: 2007. Analysis was performed by LC/MS.	10	n.d.	-
PFOA (CAS No.: 335-67-1)	mg/kg	With reference to US EPA 3550C: 2007. Analysis was performed by LC/MS.	10	n.d.	-
Halogen					
Halogen-Fluorine (F) (CAS No.: 14762-94-8)	mg/kg	With reference to BS EN 14582:2016. Analysis was performed by IC.	50	n.d.	-
Halogen-Chlorine (Cl) (CAS No.: 22537-15-1)	mg/kg		50	n.d.	-
Halogen-Bromine (Br) (CAS No.: 10097-32-2)	mg/kg		50	n.d.	-
Halogen-Iodine (I) (CAS No.: 14362-44-8)	mg/kg		50	n.d.	-

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Test Item(s)	Unit	Method	MDL	Result	Limit
				No.1	
Phthalates					
BBP (Butyl Benzyl phthalate) (CAS No.: 85-68-7)	mg/kg	With reference to IEC 62321-8:2017. Analysis was performed by GC/MS.	50	n.d.	1000
DBP (Dibutyl phthalate) (CAS No.: 84-74-2)	mg/kg		50	n.d.	1000
DEHP (Di- (2-ethylhexyl) phthalate) (CAS No.: 117-81-7)	mg/kg		50	n.d.	1000
DIBP (Di-isobutyl phthalate) (CAS No.: 84-69-5)	mg/kg		50	n.d.	1000
DIDP (Di-isodecyl phthalate) (CAS No.: 26761-40-0; 68515-49-1)	mg/kg		50	n.d.	-
DINP (Di-isononyl phthalate) (CAS No.: 28553-12-0; 68515-48-0)	mg/kg		50	n.d.	-
DNOP (Di-n-octyl phthalate) (CAS No.: 117-84-0)	mg/kg		50	n.d.	-

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Note :

1. mg/kg = ppm ; 0.1wt% = 1000ppm
2. n.d. = Not Detected
3. MDL = Method Detection Limit
4. " - " = Not Regulated
5. This is the additional test report of KA/2019/11324 which was issued on 2019/01/23.

PFOS Reference Information : POPs - (EU) 757/2010

Outlawing PFOS as substances or preparations in concentrations above 0.001% (10ppm), in semi-finished products or articles or parts at a level above 0.1%(1000ppm), in textiles or other coated materials above 1µg/m².

PFOS refer to Perfluorooctanesulfonic acid and its derivatives including Perfluorooctanesulfonic acid, Perfluorooctane sulfonamide, N-Methylperfluorooctane sulfonamide, N-Ethylperfluorooctane sulfonamide, N-Methylperfluorooctane sulfonamidoethanol and N-Ethylperfluorooctane sulfonamidoethanol.

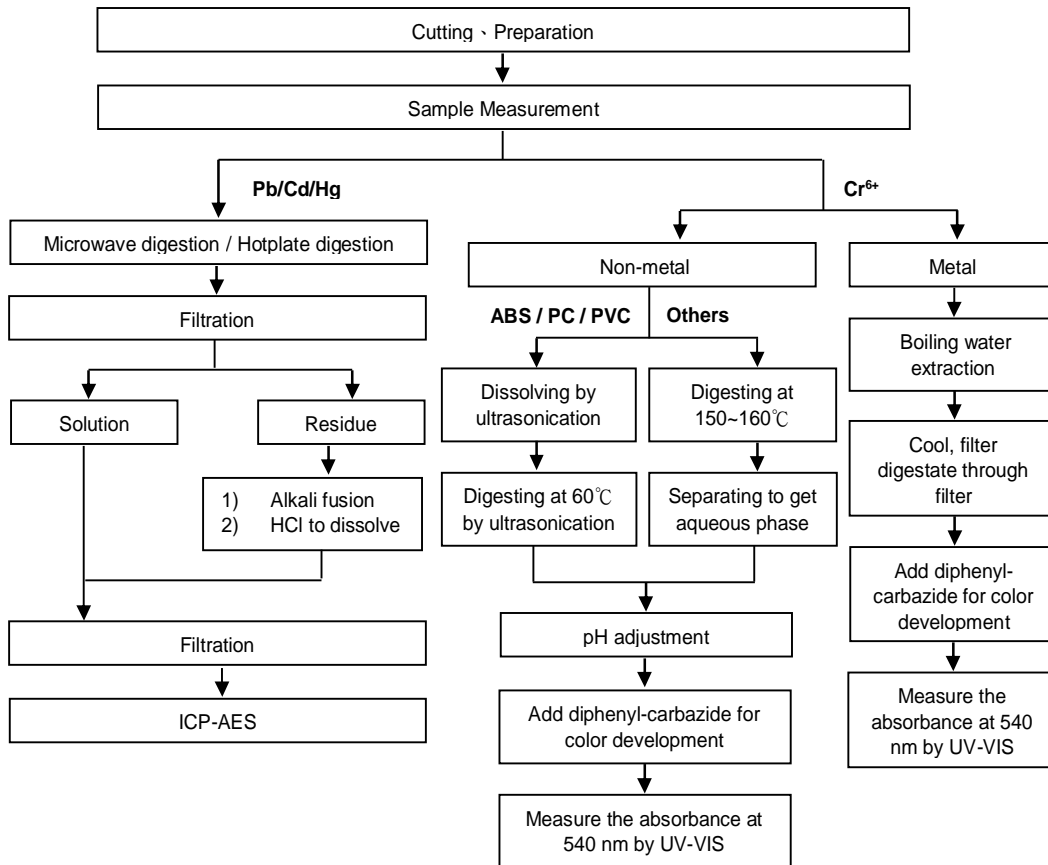
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SUMITOMO BAKELITE SINGAPORE PTE CO., LTD.
NO. 1 SENOKO SOUTH ROAD, SINGAPORE 758069

Analytical flow chart of Heavy Metal

These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr⁶⁺ test method excluded)

- Technician : Jony Liu
- Supervisor: Ray Chang

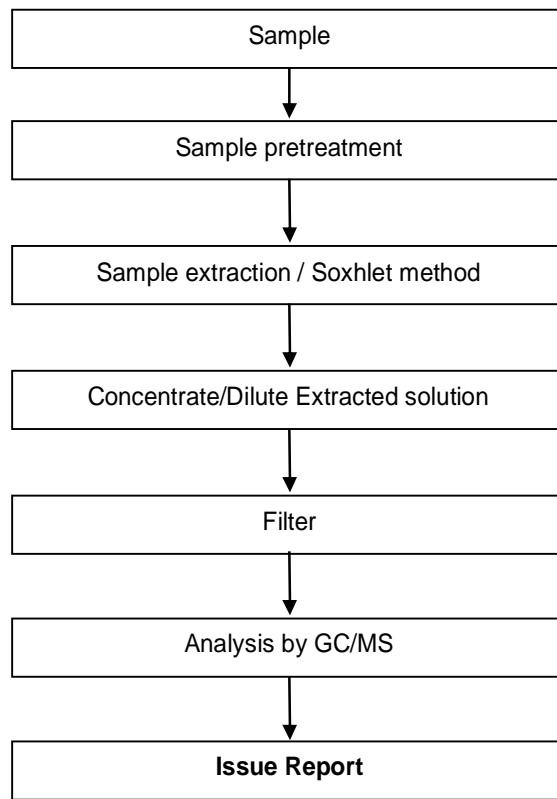


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SUMITOMO BAKELITE SINGAPORE PTE CO., LTD.
 NO. 1 SENOKO SOUTH ROAD, SINGAPORE 758069

PBB/PBDE analytical FLOW CHART

- Technician : Dorothy Chen
- Supervisor: Ray Chang



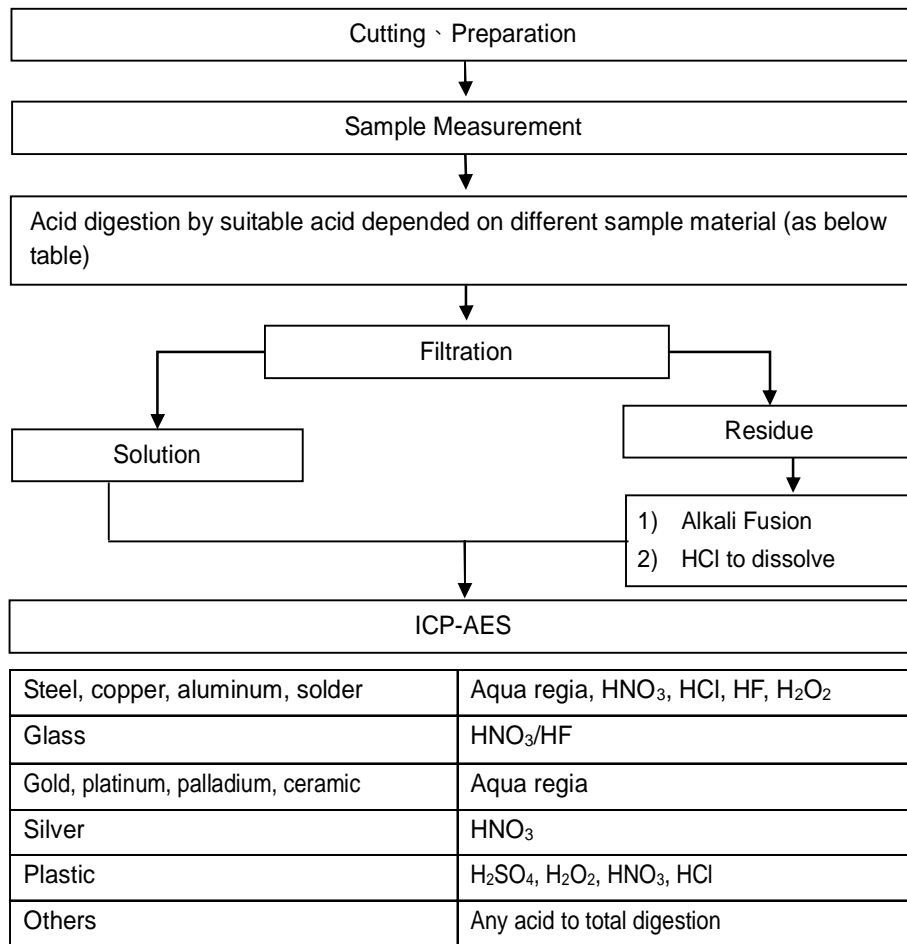
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NO. 1 SENOKO SOUTH ROAD, SINGAPORE 758069

Flow Chart of digestion for the elements analysis performed by ICP-AES

These samples were dissolved totally by pre-conditioning method according to below flow chart.

- Technician : Jony Liu
- Supervisor: Ray Chang

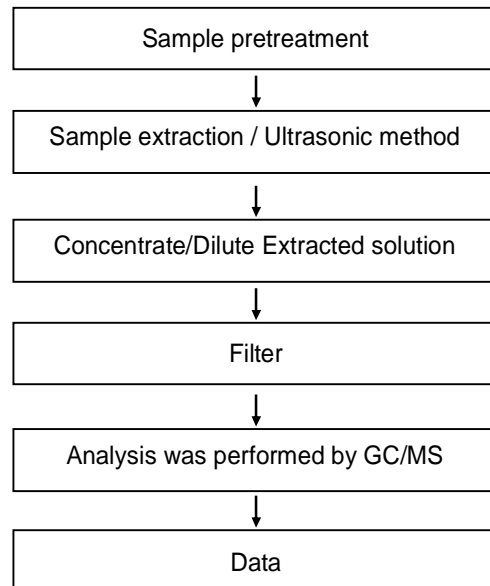


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SUMITOMO BAKELITE SINGAPORE PTE CO., LTD.
 NO. 1 SENOKO SOUTH ROAD, SINGAPORE 758069

HBCDD analytical flow chart

- Technician : Dorothy Chen
- Supervisor: Ray Chang

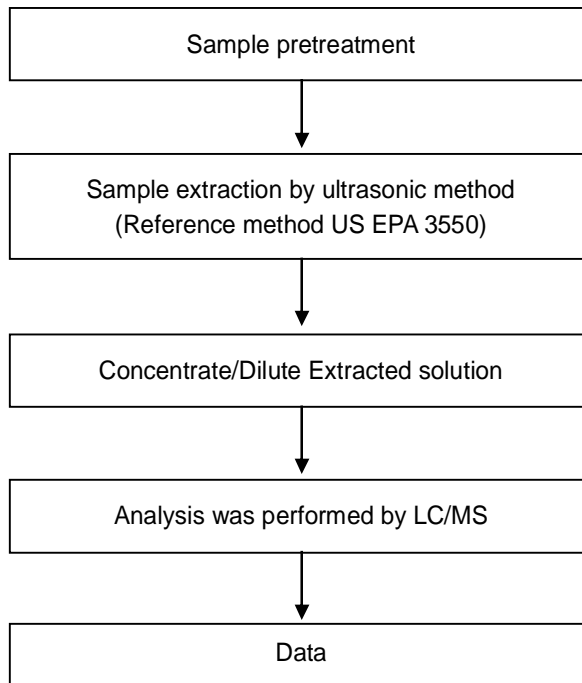


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 NO. 1 SENOKO SOUTH ROAD, SINGAPORE 758069

Analytical flow chart of PFOA/PFOS content

- Technician : Ginny Huang
- Supervisor: Ray Chang

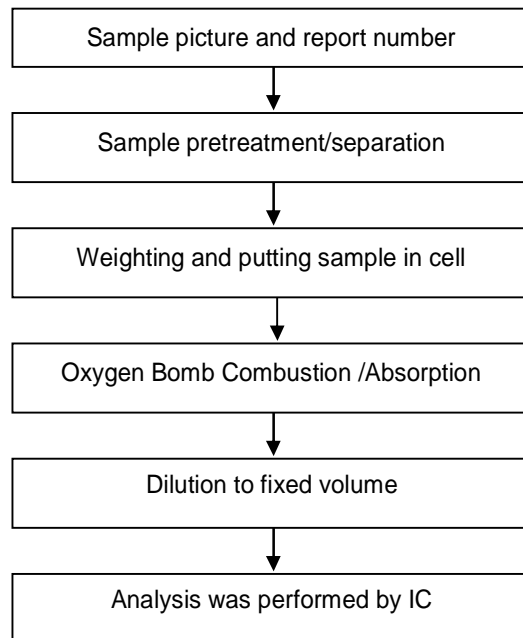


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Analytical flow chart of halogen content

- Technician : Jean Hung
- Supervisor: Ray Chang



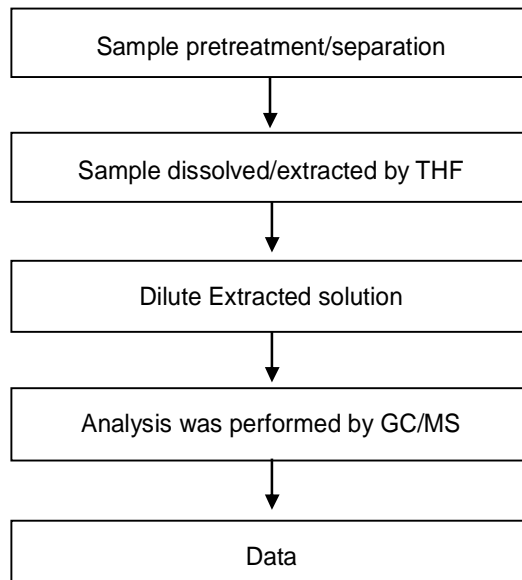
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SUMITOMO BAKELITE SINGAPORE PTE CO., LTD.
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Analytical flow chart of phthalate content

- Technician: Dorothy Chen
- Supervisor: Ray Chang

【Test method: IEC 62321-8】



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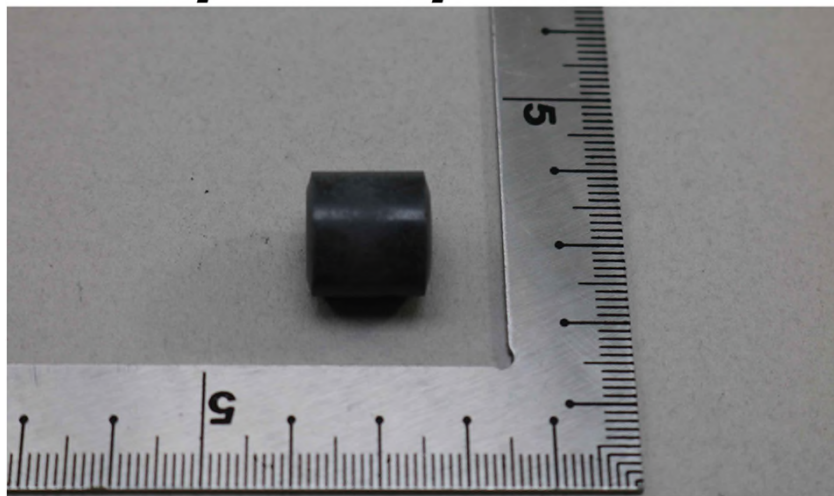
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SUMITOMO BAKELITE SINGAPORE PTE CO., LTD.
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* The tested sample / part is marked by an arrow if it's shown on the photo. *

KA/2019/11324



** End of Report **

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