

## Test Report

No.: EKR21100584

Date: 15-Jan-2021

Page: 1 of 12

SUMITOMO BAKELITE (TAIWAN) CO., LTD.

NO. 1, HWA SYI RD., TA FA INDUSTRIAL DISTRICT, TA LIAO, KAOHSIUNG, TAIWAN

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

Sample Submitted By : SUMITOMO BAKELITE (TAIWAN) CO., LTD.  
Sample Name : EPOXY MOLDING COMPOUND  
Style/Item No. : EME-G700 SERIES

=====  
Sample Receiving Date : 11-Jan-2021  
Testing Period : 11-Jan-2021 to 15-Jan-2021

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(s).  
(2) Please refer to next pages for the other item(s).

Test Results : Please refer to following pages.

Conclusion : (1) Based on the performed tests on submitted sample(s), the test results of Cadmium, Lead, Mercury, Cr(VI), PBBs, PBDEs, DBP, BBP, DEHP, DIBP comply with the limits as set by RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU.

*Ray Chang*

Ray Chang, Ph.D. Manager-Tech  
Signed for and on behalf of  
SGS TAIWAN LTD.  
Chemical Laboratory-Kaohsiung



PIN CODE: 0D03ADF3

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SUMITOMO BAKELITE (TAIWAN) CO., LTD.

NO. 1, HWA SYI RD., TA FA INDUSTRIAL DISTRICT, TA LIAO, KAOHSIUNG, TAIWAN

## TEST PART DESCRIPTION

No.1 : BLACK EPOXY MOLDING COMPOUND

## Test Result(s)

Test Item(s)	Method	Unit	MDL	Result	Limit
				No.1	
Cadmium (Cd) (CAS No.: 7440-43-9)	With reference to IEC 62321-5: 2013, analysis was performed by ICP-OES.	mg/kg	2	n.d.	100
Lead (Pb) (CAS No.: 7439-92-1)	With reference to IEC 62321-5: 2013, analysis was performed by ICP-OES.	mg/kg	2	n.d.	1000
Mercury (Hg) (CAS No.: 7439-97-6)	With reference to IEC 62321-4: 2013+ AMD1: 2017, analysis was performed by ICP-OES.	mg/kg	2	n.d.	1000
Hexavalent Chromium Cr(VI) (CAS No.: 18540-29-9)	With reference to IEC 62321-7-2: 2017, analysis was performed by UV-VIS.	mg/kg	8	n.d.	1000
Monobromobiphenyl	With reference to IEC 62321-6: 2015, analysis was performed by GC/MS.	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.	-
<b>Sum of PBBs</b>		mg/kg	-	n.d.	1000
Monobromodiphenyl ether		With reference to IEC 62321-6: 2015, analysis was performed by GC/MS.	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.	-
<b>Sum of PBDEs</b>	mg/kg		-	n.d.	1000

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SUMITOMO BAKELITE (TAIWAN) CO., LTD.

NO. 1, HWA SYI RD., TA FA INDUSTRIAL DISTRICT, TA LIAO, KAOHSIUNG, TAIWAN

Test Item(s)	Method	Unit	MDL	Result	Limit
				No.1	
Antimony (Sb) (CAS No.: 7440-36-0)	With reference to US EPA 3052: 1996, analysis was performed by ICP-OES.	mg/kg	2	n.d.	-
Beryllium (Be) (CAS No.: 7440-41-7)	With reference to US EPA 3052: 1996, analysis was performed by ICP-OES.	mg/kg	2	n.d.	-
Hexabromocyclododecane (HBCDD) and all major diastereoisomers identified ( $\alpha$ -HBCDD, $\beta$ -HBCDD, $\gamma$ -HBCDD) (CAS No.: 25637-99-4, 3194-55-6 (134237-51-7, 134237-50-6, 134237-52-8))	With reference to IEC 62321: 2008, analysis was performed by GC/MS.	mg/kg	5	n.d.	-
Perfluorooctanoic acid (PFOA) and it's salt (CAS No.: 335-67-1 and its salts)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.	-
Perfluorooctane sulfonate (PFOS) and it's salt (CAS No.: 1763-23-1 and its salts)	With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.	mg/kg	0.01	n.d.	-
Fluorine (F) (CAS No.: 14762-94-8)	With reference to BS EN 14582: 2016, analysis was performed by IC.	mg/kg	50	n.d.	-
Chlorine (Cl) (CAS No.: 22537-15-1)		mg/kg	50	84.9	-
Bromine (Br) (CAS No.: 10097-32-2)		mg/kg	50	n.d.	-
Iodine (I) (CAS No.: 14362-44-8)		mg/kg	50	n.d.	-
Dibutyl phthalate (DBP) (CAS No.: 84-74-2)	With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.	mg/kg	50	n.d.	1000
Di-(2-ethylhexyl) phthalate (DEHP) (CAS No.: 117-81-7)	With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.	mg/kg	50	n.d.	1000
Diisobutyl phthalate (DIBP) (CAS No.: 84-69-5)	With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.	mg/kg	50	n.d.	1000
Butyl benzyl phthalate (BBP) (CAS No.: 85-68-7)	With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.	mg/kg	50	n.d.	1000
Diisopentyl phthalate (DIPP) (CAS No.: 605-50-5)	With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.	mg/kg	50	n.d.	-
Diisononyl phthalate (DINP) (CAS No.: 28553-12-0, 68515-48-0)	With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.	mg/kg	50	n.d.	-
Di-n-octyl phthalate (DNOP) (CAS No.: 117-84-0)	With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.	mg/kg	50	n.d.	-
Di-n-hexyl phthalate (DNHP) (CAS No.: 84-75-3)	With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.	mg/kg	50	n.d.	-

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SUMITOMO BAKELITE (TAIWAN) CO., LTD.

NO. 1, HWA SYI RD., TA FA INDUSTRIAL DISTRICT, TA LIAO, KAOHSIUNG, TAIWAN

Test Item(s)	Method	Unit	MDL	Result	Limit
				No.1	
Bis-(2-methoxyethyl) phthalate (DMEP) (CAS No.: 117-82-8)	With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.	mg/kg	50	n.d.	-
Di-pentyl phthalate (DPP) (CAS No.: 131-18-0)	With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.	mg/kg	50	n.d.	-
1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich (DIHP) (CAS No.: 71888-89-6)	With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.	mg/kg	50	n.d.	-
1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters (DHNUP) (CAS No.: 68515-42-4)	With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.	mg/kg	50	n.d.	-
Diisodecyl phthalate (DIDP) (CAS No.: 26761-40-0, 68515-49-1)	With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.	mg/kg	50	n.d.	-

**Note :**

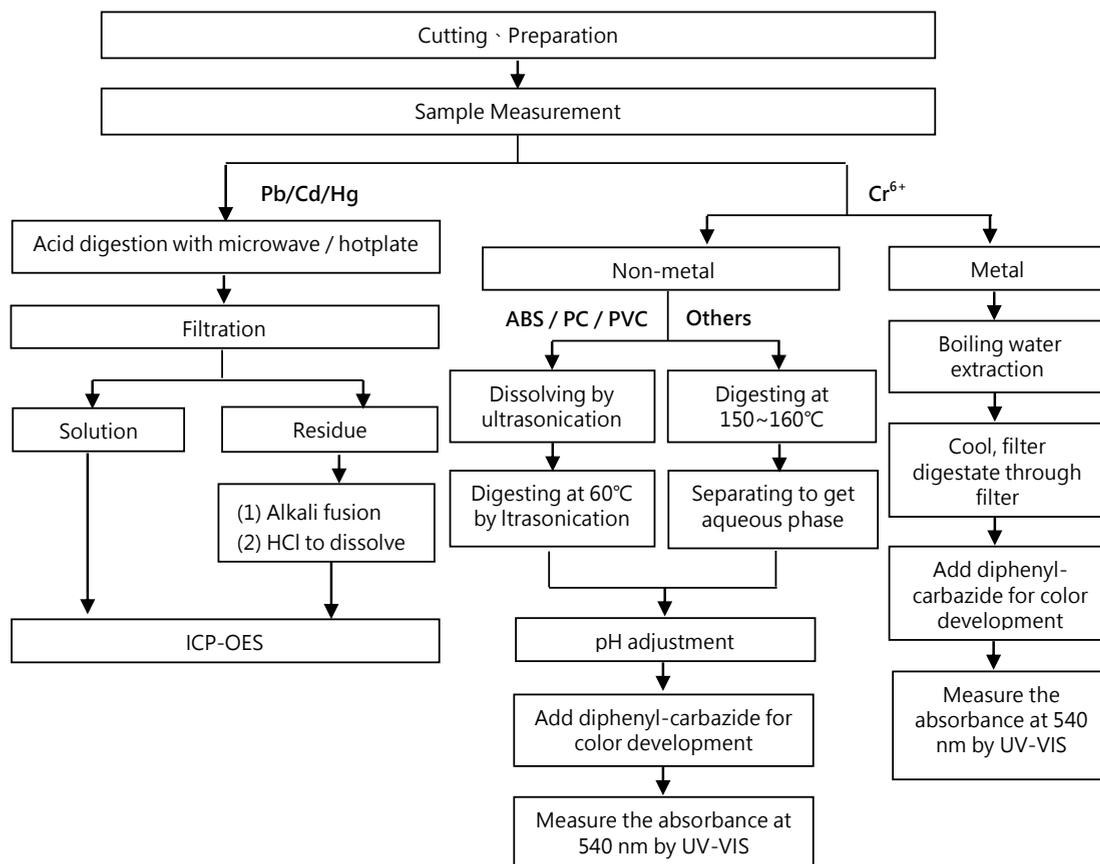
1. mg/kg = ppm ; 0.1wt% = 1000ppm
2. MDL = Method Detection Limit
3. n.d. = Not Detected ( Less than MDL)
4. "-" = Not Regulated
5. PFOS and its salts including :  
CAS No.: 29081-56-9, 2795-39-3, 29457-72-5, 70225-14-8, 56773-42-3, 251099-16-8, 307-35-7.
6. PFOA and its salts including :  
CAS No.: 3825-26-1, 335-95-5, 2395-00-8, 335-93-3, 335-66-0.
7. The statement of compliance conformity is based on comparison of testing results and limits.

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## Analytical flow chart of Heavy Metal

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

( Cr<sup>6+</sup> test method excluded )

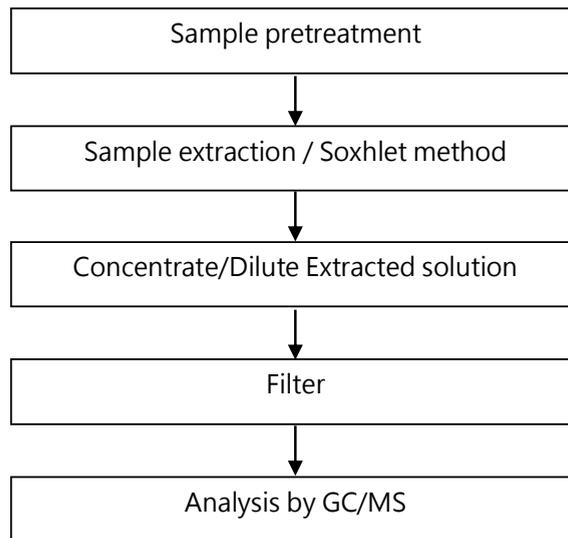


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SUMITOMO BAKELITE (TAIWAN) CO., LTD.

NO. 1, HWA SYI RD., TA FA INDUSTRIAL DISTRICT, TA LIAO, KAOHSIUNG, TAIWAN

## PBB/PBDE analytical FLOW CHART

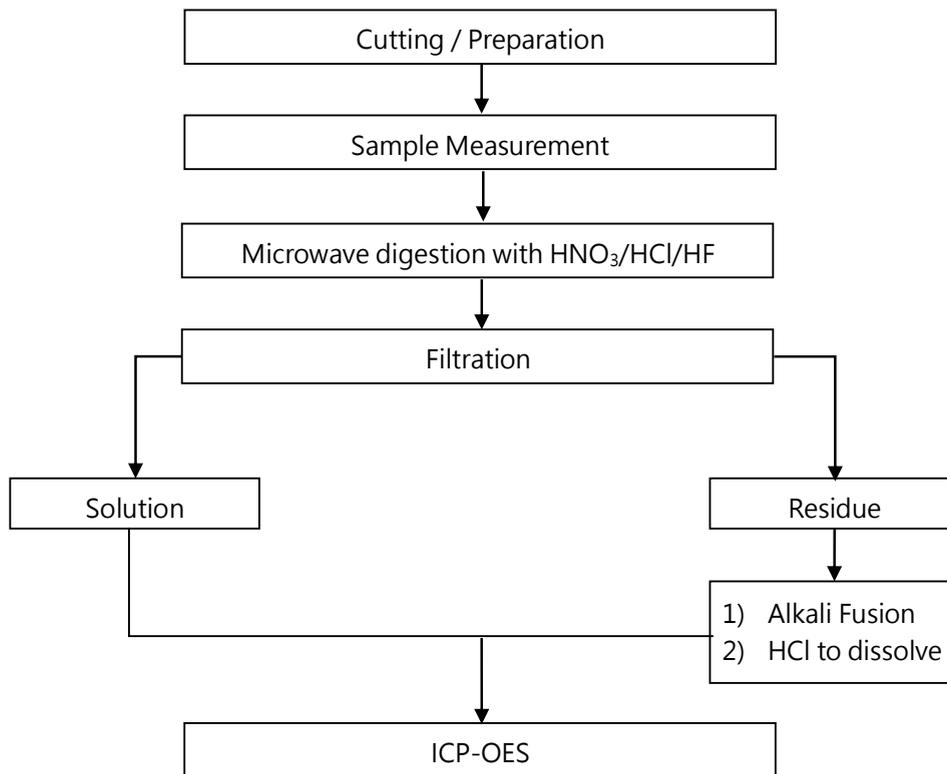


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### Analytical flow chart of Heavy Metal

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

【Reference method : US EPA 3051 、 US EPA 3052】



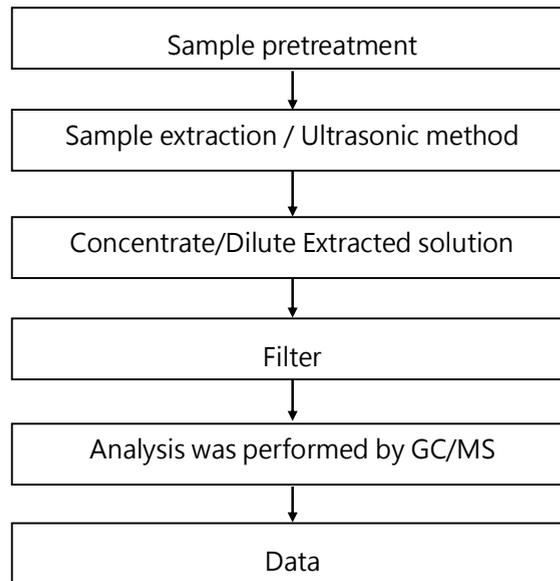
\* US EPA 3051 method does not add HF.

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SUMITOMO BAKELITE (TAIWAN) CO., LTD.

NO. 1, HWA SYI RD., TA FA INDUSTRIAL DISTRICT, TA LIAO, KAOHSIUNG, TAIWAN

### Analytical flow chart - HBCDD

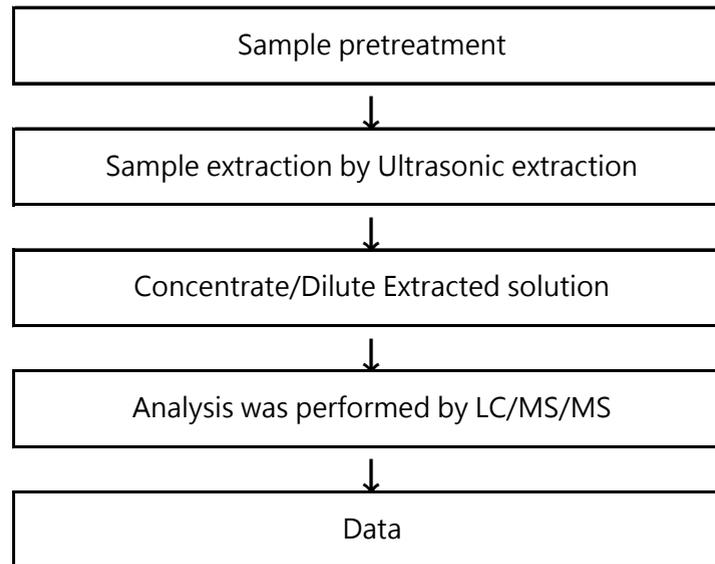


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SUMITOMO BAKELITE (TAIWAN) CO., LTD.

NO. 1, HWA SYI RD., TA FA INDUSTRIAL DISTRICT, TA LIAO, KAOHSIUNG, TAIWAN

### Analytical flow chart of PFOA/PFOS

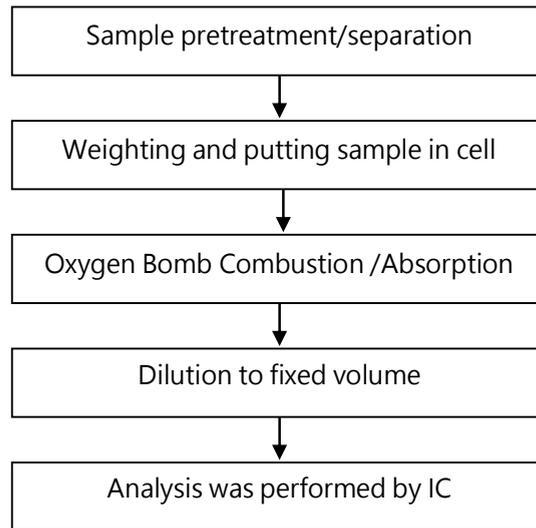


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SUMITOMO BAKELITE (TAIWAN) CO., LTD.

NO. 1, HWA SYI RD., TA FA INDUSTRIAL DISTRICT, TA LIAO, KAOHSIUNG, TAIWAN

### Analytical flow chart of Halogen



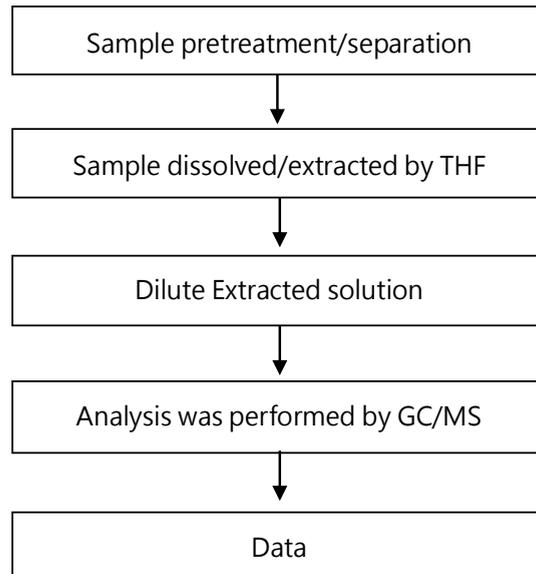
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SUMITOMO BAKELITE (TAIWAN) CO., LTD.

NO. 1, HWA SYI RD., TA FA INDUSTRIAL DISTRICT, TA LIAO, KAOHSIUNG, TAIWAN

### Analytical flow chart of phthalate content

【Test method: IEC 62321-8】



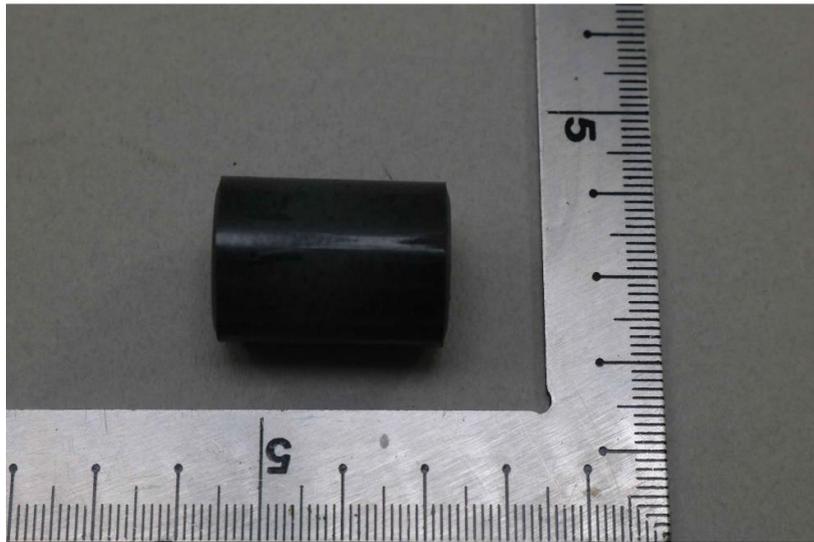
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NO. 1, HWA SYI RD., TA FA INDUSTRIAL DISTRICT, TA LIAO, KAOHSIUNG, TAIWAN

\* The tested sample / part is marked by an arrow if it's shown on the photo. \*

### EKR21100584



\*\* End of Report \*\*

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SUMITOMO BAKELITE (TAIWAN) CO., LTD.  
NO. 1, HWA SYI RD., TA FA INDUSTRIAL DISTRICT, TA LIAO, KAOHSIUNG, TAIWAN

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

Sample Submitted By : SUMITOMO BAKELITE (TAIWAN) CO., LTD.  
Sample Name : EPOXY MOLDING COMPOUND  
Style/Item No. : EME-G700 SERIES

=====

Sample Receiving Date : 11-Jan-2021  
Testing Period : 11-Jan-2021 to 15-Jan-2021

Test Requested : Testing item(s) is/are specified by client. Please refer to result table for testing item(s).

Test Results : Please refer to following pages.

*Ray Chang*  
Ray Chang, Ph.D. Manager-Ter  
Signed for and on behalf of  
SGS TAIWAN LTD.  
Chemical Laboratory-Kaohsiung



PIN CODE: C6ECAD02

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SUMITOMO BAKELITE (TAIWAN) CO., LTD.

NO. 1, HWA SYI RD., TA FA INDUSTRIAL DISTRICT, TA LIAO, KAOHSIUNG, TAIWAN

## TEST PART DESCRIPTION

No.1 : BLACK EPOXY MOLDING COMPOUND

## Test Result(s)

Test Item(s)	Method	Unit	MDL	Result
				No.1
Beryllium (Be) (CAS No.: 7440-41-7)	With reference to US EPA 3052: 1996, analysis was performed by ICP-OES.	mg/kg	2	n.d.
Arsenic (As) (CAS No.: 7440-38-2)	With reference to US EPA 3052: 1996, analysis was performed by ICP-OES.	mg/kg	2	n.d.
Polychlorinated biphenyls (PCBs)	With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.	mg/kg	0.5	n.d.
Polychlorinated naphthalene (PCNs)	With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.	mg/kg	5	n.d.
Polychlorinated terphenyls (PCTs)	With reference to US EPA 3550C: 2007, analysis was performed by GC/MS.	mg/kg	0.5	n.d.
Short Chain Chlorinated Paraffins(C10-C13) (SCCP) (CAS No.: 85535-84-8)	With reference to US EPA 3550C: 2007, analysis was performed by GC/ECD.	mg/kg	100	n.d.
Tributyl tin (TBT)	With reference to ISO 17353: 2004, analysis was performed by GC/FPD.	mg/kg	0.03	n.d.
Bis(tributyltin) oxide (TBTO) (CAS No.: 56-35-9)	Calculated from the result of Tributyl Tin (TBT).	mg/kg	0.03▲	n.d.
Triphenyl tin (TPHT)	With reference to ISO 17353: 2004, analysis was performed by GC/FPD.	mg/kg	0.03	n.d.
Diocetyl tin (DOT)	With reference to ISO 17353: 2004, analysis was performed by GC/FPD.	mg/kg	0.03	n.d.
Dibutyl tin (DBT)	With reference to ISO 17353: 2004, analysis was performed by GC/FPD.	mg/kg	0.03	n.d.
Polyvinyl chloride (PVC)	With reference to ASTM E1252: 2013, analysis was performed by FT-IR and Flame Test.	**	-	Negative

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# Test Report

No.: EKR21100585

Date: 15-Jan-2021

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SUMITOMO BAKELITE (TAIWAN) CO., LTD.

NO. 1, HWA SYI RD., TA FA INDUSTRIAL DISTRICT, TA LIAO, KAOHSIUNG, TAIWAN

## Note :

1. mg/kg = ppm ; 0.1wt% = 1000ppm
2. MDL = Method Detection Limit
3. n.d. = Not Detected ( Less than MDL)
4. "-" = Not Regulated
5. \*\*= Qualitative analysis (No Unit)
6. Negative = Undetectable ; Positive = Detectable
7. ▲ : The MDL was evaluated for element / tested substance.

Conversion Formula :  $AX = A \times F$

AX	A	F
Bis(tributyltin)oxide (TBTO)	Tributyl Tin (TBT)	1.024

Parameter Conversion Table : [https://eecloud.sgs.com/Region\\_TW/DocDownload.aspx#otherDoc](https://eecloud.sgs.com/Region_TW/DocDownload.aspx#otherDoc)

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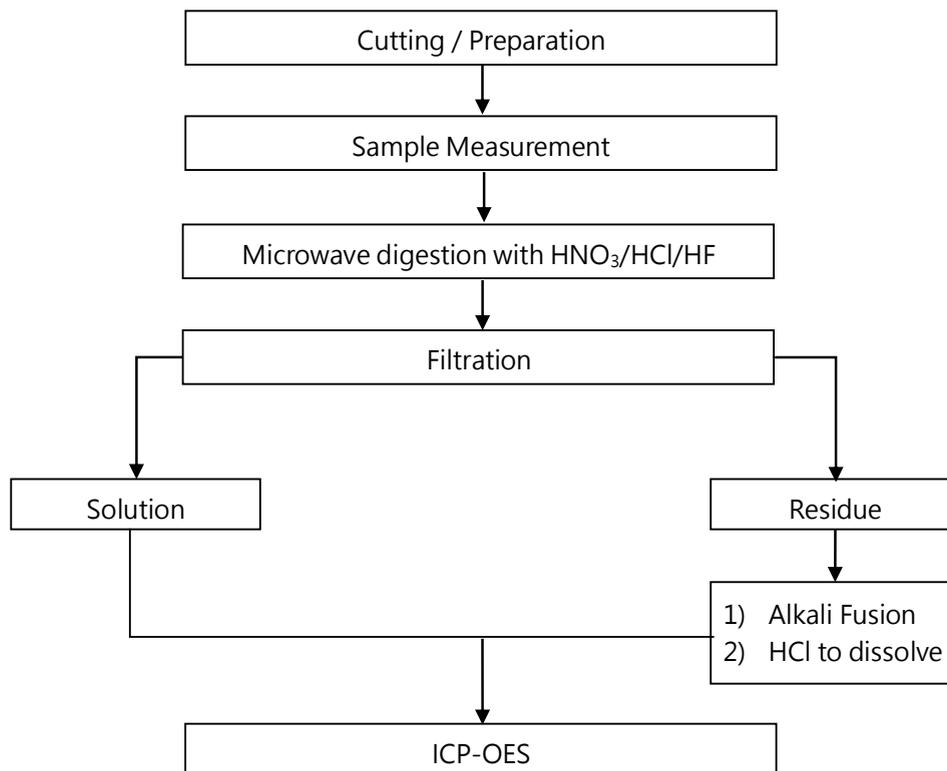
SUMITOMO BAKELITE (TAIWAN) CO., LTD.

NO. 1, HWA SYI RD., TA FA INDUSTRIAL DISTRICT, TA LIAO, KAOHSIUNG, TAIWAN

### Analytical flow chart of Heavy Metal

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

【Reference method : US EPA 3051 、US EPA 3052】



\* US EPA 3051 method does not add HF.

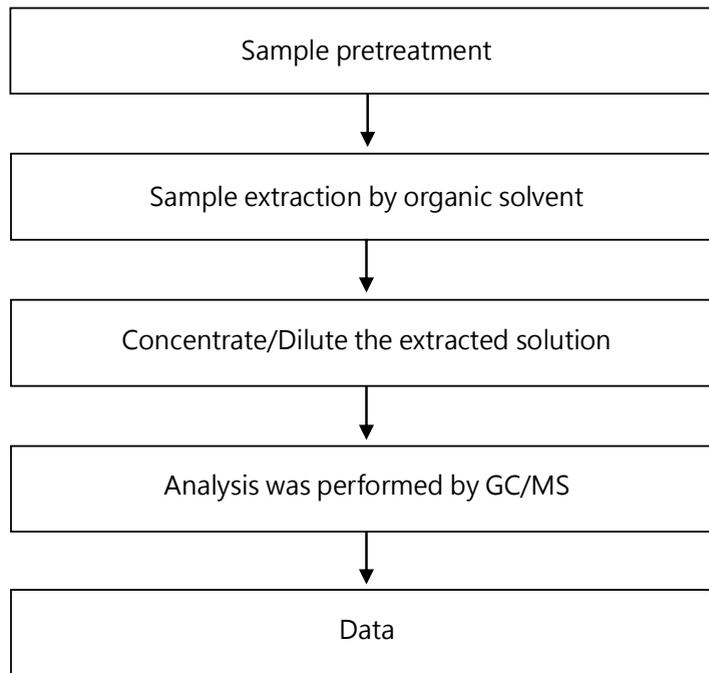
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NO. 1, HWA SYI RD., TA FA INDUSTRIAL DISTRICT, TA LIAO, KAOHSIUNG, TAIWAN

### Analytical flow chart

\* Apply to: PCBs, PCNs, PCTs

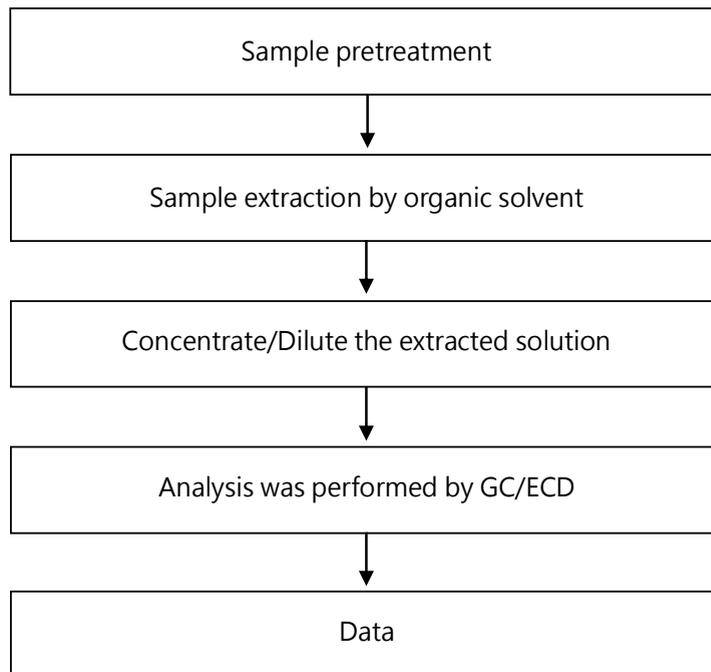


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NO. 1, HWA SYI RD., TA FA INDUSTRIAL DISTRICT, TA LIAO, KAOHSIUNG, TAIWAN

### Analytical flow chart - Chlorinated Paraffins

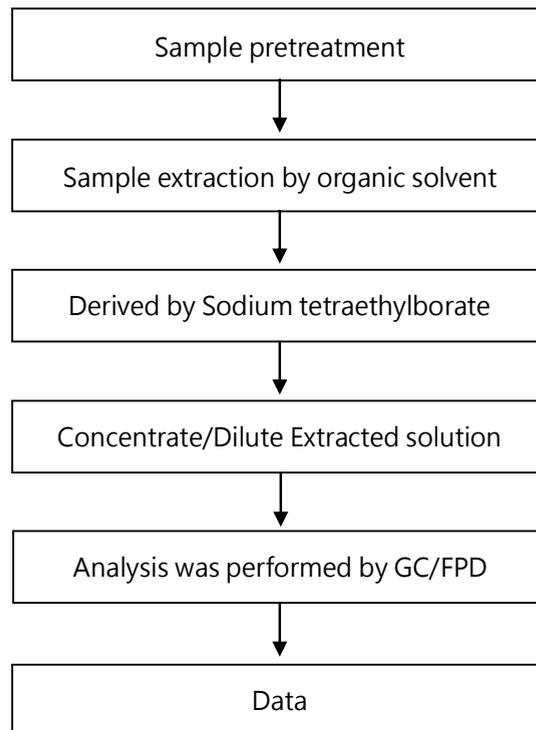


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### Analytical flow chart - Organic-Tin

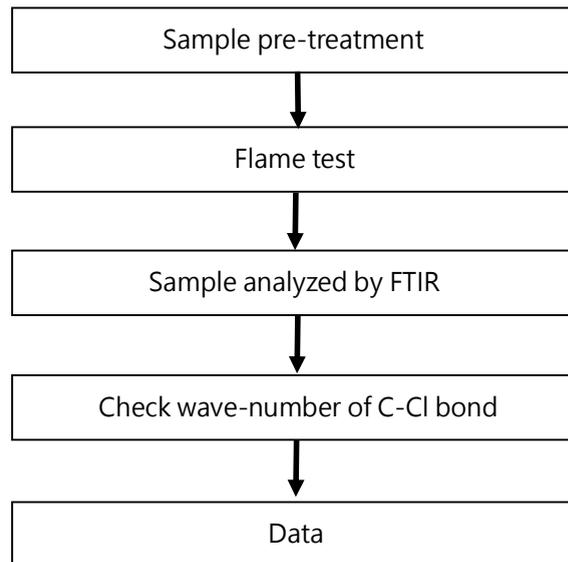


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### Analysis flow chart for determination of PVC in polymer material



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## Test Report

No.: EKR21100585

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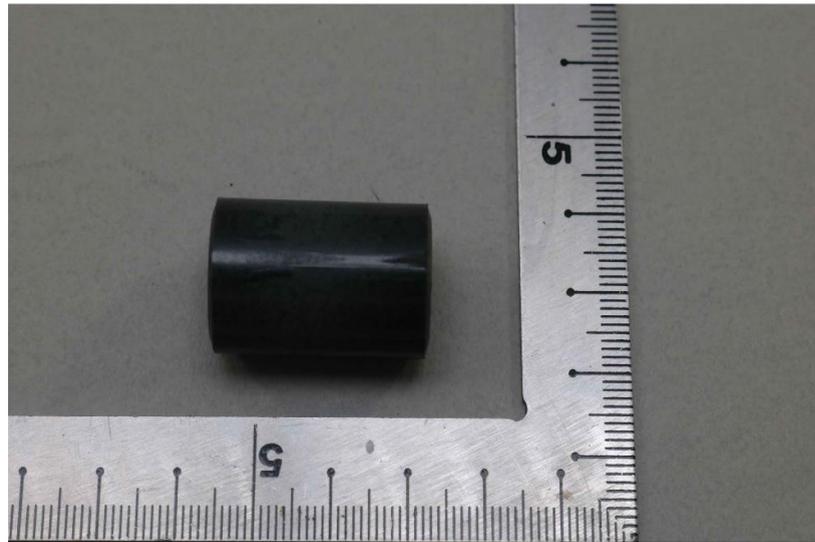
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SUMITOMO BAKELITE (TAIWAN) CO., LTD.

NO. 1, HWA SYI RD., TA FA INDUSTRIAL DISTRICT, TA LIAO, KAOHSIUNG, TAIWAN

\* The tested sample / part is marked by an arrow if it's shown on the photo. \*

### EKR21100585



\*\* End of Report \*\*

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