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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:

: SUMITOMO BAKELITE SINGAPORE PTE CO., LTD. Sample Submitted By

Sample Description : DIE ATTACH PASTE

Style/Item No. : CRM-1085A Sample Receiving Date : 2020/08/27

Testing Period : 2020/08/27 to 2020/09/02

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).

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

: (1) Based on the performed tests on submitted sample(s), the test results of Cadmium, Lead, Conclusion

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 Ph.D. / Manager Signed for and on beh **SGS Taiwan Limited**

Chemical Laboratory-Kao

PIN CODE: B0197441



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Test Result(s)

: SILVER DIE ATTACH PASTE PART NAME NO.1

Test Item (s)	Unit	Method	MDL	Result No.1	Limit
Cadmium (Cd)	mg/kg	With reference to IEC 62321-5: 2013 and performed by ICP-OES.	2	n.d.	100
Lead (Pb)	mg/kg	With reference to IEC 62321-5: 2013 and performed by ICP-OES.	2	n.d.	1000
Mercury (Hg)	mg/kg	With reference to IEC 62321-4:2013+ AMD1:2017 and performed by ICP-OES.	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		-	n.d.	1000
Monobromobiphenyl	mg/kg]	5	n.d.	-
Dibromobiphenyl	mg/kg		5	n.d.	-
Tribromobiphenyl	mg/kg]	5	n.d.	-
Tetrabromobiphenyl	mg/kg	With reference to IEO 00004 0:0045 and	5	n.d.	-
Pentabromobiphenyl	mg/kg	With reference to IEC 62321-6:2015 and performed by GC/MS.	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		-	n.d.	1000
Monobromodiphenyl ether	mg/kg]	5	n.d.	-
Dibromodiphenyl ether	mg/kg		5	n.d.	-
Tribromodiphenyl ether	mg/kg		5	n.d.	1
Tetrabromodiphenyl ether	mg/kg	With reference to IEC 62321-6:2015 and performed by GC/MS.	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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Test Item (s)	Unit	Method	MDL	Result No.1	Limit
Beryllium (Be)	mg/kg	With reference to US EPA 3052: 1996. Analysis was performed by ICP-OES.	2	n.d.	-
Arsenic (As)	mg/kg	With reference to US EPA 3052: 1996. Analysis was performed by ICP-OES.	2	n.d.	-
Antimony (Sb)	mg/kg	With reference to US EPA 3052: 1996. Analysis was performed by ICP-OES.	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. Analysis was performed by GC/MS.	5	n.d.	-
PFOS and its salts (CAS No.: 1763-23-1 and its salts)	mg/kg	With reference to US EPA 3550C: 2007. Analysis was performed by LC/MS.	10	n.d.	-
PFOA and its salts (CAS No.: 335-67-1 and its salts)	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 (CI) (CAS No.: 22537-15-1)	mg/kg	With reference to BS EN 14582:2016. Analysis was performed by IC.	50	72.0	-
Halogen-Bromine (Br) (CAS No.: 10097-32-2)	mg/kg	With reference to BS EN 14582:2016. Analysis was performed by IC.	50	n.d.	-
Halogen-lodine (I) (CAS No.: 14362-44-8)	mg/kg	With reference to BS EN 14582:2016. Analysis was performed by IC.	50	n.d.	-
Phthalates					
DBP (Dibutyl phthalate) (CAS No.: 84-74-2)	mg/kg	With reference to IEC 62321-8:2017. Analysis was performed by GC/MS.	50	n.d.	1000
DEHP (Di- (2-ethylhexyl) phthalate) (CAS No.: 117-81-7)	mg/kg	With reference to IEC 62321-8:2017. Analysis was performed by GC/MS.	50	n.d.	1000
DIBP (Di-isobutyl phthalate) (CAS No.: 84-69-5)	mg/kg	With reference to IEC 62321-8:2017. Analysis was performed by GC/MS.	50	n.d.	1000
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
DIPP (Diisopentyl Phthalat) (CAS No.: 605-50-5)	mg/kg	With reference to IEC 62321-8:2017. Analysis was performed by GC/MS.	50	n.d.	-



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T = 4 H = 12 (2)		Marth a d	MDI	Result	Limit
Test Item (s)	Unit	Method	MDL	No.1	
DINP (Di-isononyl phthalate) (CAS No.: 28553-12-0, 68515-48-0)	mg/kg	With reference to IEC 62321-8:2017. Analysis was performed by GC/MS.	50	n.d.	-
DNOP (Di-n-octyl phthalate) (CAS No.: 117-84-0)	mg/kg	With reference to IEC 62321-8:2017. Analysis was performed by GC/MS.	50	n.d.	-
DNHP (Di-n-hexyl phthalate) (CAS No.: 84-75-3)	mg/kg	With reference to IEC 62321-8:2017. Analysis was performed by GC/MS.	50	n.d.	-
DMEP (Bis (2-methoxyethyl) phthalate) (CAS No.: 117-82-8)	mg/kg	With reference to IEC 62321-8:2017. Analysis was performed by GC/MS.	50	n.d.	-
DPP (Di-pentyl phthalate) (CAS No.: 131-18-0)	mg/kg	With reference to IEC 62321-8:2017. Analysis was performed by GC/MS.	50	n.d.	-
DIHP (1,2-Benzenedicarboxylic acid, di- C6-8-branched alkyl esters, C7-rich) (CAS No.: 71888-89-6)	mg/kg	With reference to IEC 62321-8:2017. Analysis was performed by GC/MS.	50	n.d.	-
DHNUP (1,2-Benzenedicarboxylic acid, di- C7-11-branched and linear alkyl esters) (CAS No.: 68515-42-4)	mg/kg	With reference to IEC 62321-8:2017. Analysis was performed by GC/MS.	50	n.d.	-
DIDP (Di-isodecyl phthalate) (CAS No.: 26761-40-0; 68515-49-1)	mg/kg	With reference to IEC 62321-8:2017. Analysis was performed by GC/MS.	50	n.d.	-
Polycyclic Aromatic Hydrocarbons (PAHs)					
Anthracene (CAS No.: 120-12-7)	mg/kg		0.2	n.d.	-
Benzo[a]anthracene (CAS No.: 56-55-3)	mg/kg		0.2	n.d.	-
Benzo[a]pyrene (CAS No.: 50-32-8)	mg/kg		0.2	n.d.	-
Benzo[b]fluoranthene (CAS No.: 205-99-2)	mg/kg		0.2	n.d.	-
Benzo[g,h,i]perylene (CAS No.: 191-24-2)	mg/kg		0.2	n.d.	-
Benzo[k]fluoranthene (CAS No.: 207-08-9)	mg/kg		0.2	n.d.	-
Benzo[j]fluoranthene (CAS No.: 205-82-3)	mg/kg		0.2	n.d.	-
Benzo[e]pyrene (CAS No.: 192-97-2)	mg/kg	With reference to AfPS GS 2019:01 PAK.	0.2	n.d.	-
Chrysene (CAS No.: 218-01-9)	mg/kg	Analysis was performed by GC/MS.	0.2	n.d.	-
Dibenzo[a,h]anthracene (CAS No.: 53-70-3)	mg/kg		0.2	n.d.	-
Fluoranthene (CAS No.: 206-44-0)	mg/kg		0.2	n.d.	-
Indeno[1,2,3-c,d] pyrene (CAS No.: 193-39-5)	mg/kg		0.2	n.d.	-
Naphthalene (CAS No.: 91-20-3)	mg/kg		0.2	n.d.	-
Phenanthrene (CAS No.: 85-01-8)	mg/kg		0.2	n.d.	-
Pyrene (CAS No.: 129-00-0)	mg/kg]	0.2	n.d.	-
Sum of 15 PAHs	mg/kg]	-	n.d.	-
Acenaphthene (CAS No.: 83-32-9)	mg/kg	With reference to AfPS GS 2019:01 PAK.	0.2	n.d.	-
Acenaphthylene (CAS No.: 208-96-8)	mg/kg	Analysis was performed by GC/MS.	0.2	n.d.	-
Fluorene (CAS No.: 86-73-7)	mg/kg	, tharysis was performed by Go/Mo.	0.2	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. 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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SUMITOMO BAKELITE SINGAPORE PTE CO., LTD. NO. 1 SENOKO SOUTH ROAD, SINGAPORE 758069

AfPS (German commission for Product Safety): GS PAHs requirements

Parameter	Category 1	Category 2		Category 3		
	Materials intended to be	Materials that are not in Category		Materials not covered by Category		
	placed in the mouth, or	1, with intended or foreseeable		1 or 2, with intended or		
	materials in toys	long-term skin contact (> 30		foreseeable short-term skin		
	(Directive 2009/48/EC) or	seconds) or short-term repetitive		contact (≤ 30 seconds).		
	articles for children up to	contact with the skin.				
	3 years of age with intended long-term skin					
		a.	b.	a.	b.	
	contact (> 30 seconds).	Use by children	Other consumer	Use by children	Other consumer	
		under 14	products	under 14	products	
Naphthalene	< 1	< 2		< 10		
Phenanthrene						
Anthracene	< 1 Sum	< 5 Sum	< 10 Sum	< 20 Sum	< 50 Sum	
Fluoranthene] \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \					
Pyrene						
Benzo[a]anthracene	< 0.2	< 0.2	< 0.5	< 0.5	< 1	
Chrysene	< 0.2	< 0.2	< 0.5	< 0.5	< 1	
Benzo[b]fluoranthene	< 0.2	< 0.2	< 0.5	< 0.5	< 1	
Benzo[j]fluoranthene	< 0.2	< 0.2	< 0.5	< 0.5	< 1	
Benzo[k]fluoranthene	< 0.2	< 0.2	< 0.5	< 0.5	< 1	
Benzo[a]pyrene	< 0.2	< 0.2	< 0.5	< 0.5	< 1	
Benzo[e]pyrene	< 0.2	< 0.2	< 0.5	< 0.5	< 1	
Indeno[1,2,3-c,d] pyrene	< 0.2	< 0.2	< 0.5	< 0.5	< 1	
Dibenzo[a,h]anthracene	< 0.2	< 0.2	< 0.5	< 0.5	< 1	
Benzo[g,h,i]perylene	< 0.2	< 0.2	< 0.5	< 0.5	< 1	
Sum of 15 PAH	< 1	< 5	< 10	< 20	< 50	

Unit: mg/kg

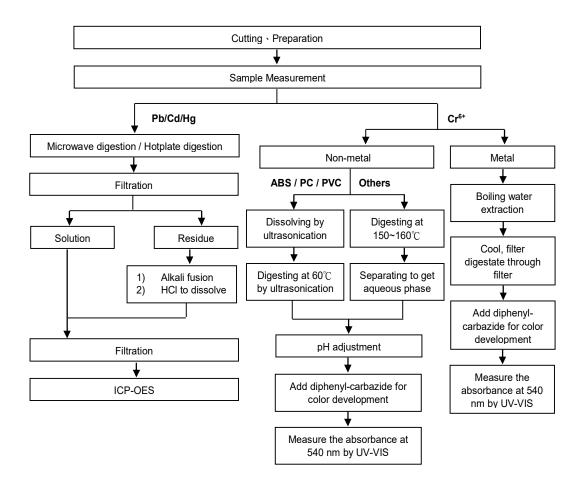


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Analytical flow chart of Heavy Metal

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

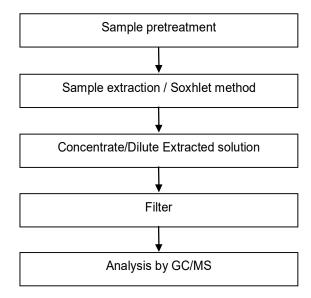




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SUMITOMO BAKELITE SINGAPORE PTE CO., LTD. NO. 1 SENOKO SOUTH ROAD, SINGAPORE 758069

PBB/PBDE analytical FLOW CHART



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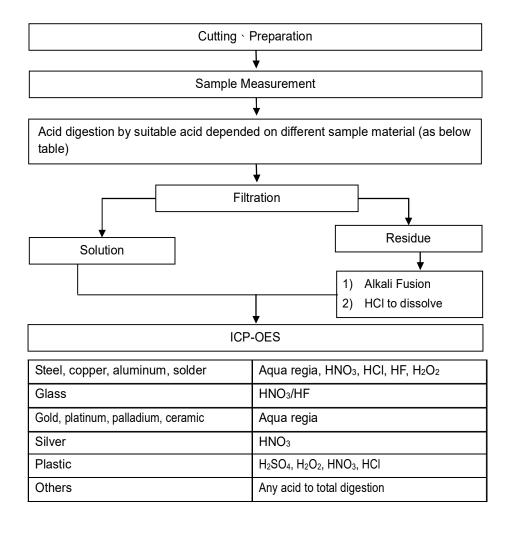


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SUMITOMO BAKELITE SINGAPORE PTE CO., LTD. NO. 1 SENOKO SOUTH ROAD. SINGAPORE 758069

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

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

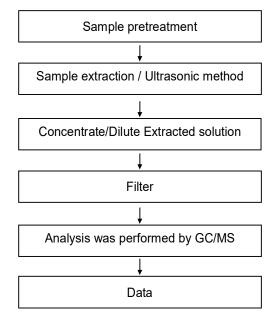




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SUMITOMO BAKELITE SINGAPORE PTE CO., LTD. NO. 1 SENOKO SOUTH ROAD, SINGAPORE 758069

HBCDD analytical flow chart



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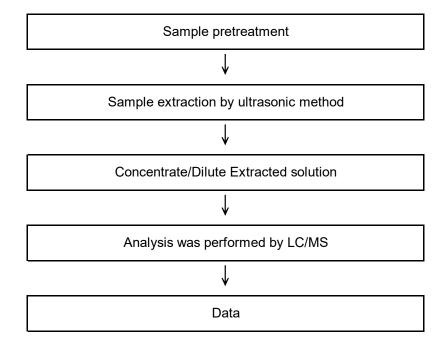
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SUMITOMO BAKELITE SINGAPORE PTE CO., LTD. NO. 1 SENOKO SOUTH ROAD, SINGAPORE 758069

Analytical flow chart of PFOA/PFOS



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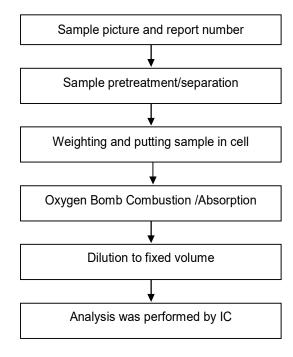
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Analytical flow chart of Halogen



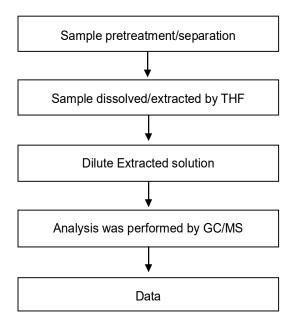


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SUMITOMO BAKELITE SINGAPORE PTE CO., LTD. NO. 1 SENOKO SOUTH ROAD, SINGAPORE 758069

Analytical flow chart of phthalate content

[Test method: IEC 62321-8]



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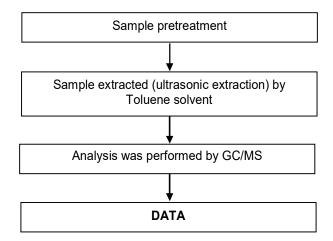
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PAHs (PolyAromaticHydrocarbons) analytical flow chart





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

KA/2020/81437



** End of Report **

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