

## Test Report

No.: SHAEC24013651307

Date: Jun 28, 2024

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Client Name:

Signed for and on behalf of  
SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.

Tom Ni

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Tom Ni  
Approved Signatory



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## Test Result(s):

### Test Part Description

SN ID	Sample No.	SGS Sample ID	Description
SN1	A2	SHA24-0136513-0001.C002	Colorful silicon wafer

### Remarks:

- (1) 1 mg/kg = 1 ppm = 0.0001%
- (2) MDL = Method Detection Limit
- (3) ND = Not Detected (< MDL)
- (4) "-" = Not Regulated

**EU RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU - Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBB), Polybrominated diphenyl ethers (PBDE), Bis(2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) and Diisobutyl phthalate (DIBP)**

**Test Method:** With reference to IEC 62321-4:2013+AMD1:2017, IEC 62321-5:2013, IEC 62321-7-2:2017, IEC 62321-6:2015 and IEC 62321-8:2017, analysis was performed by ICP-OES/AAS, UV-Vis and GC-MS.

Test Item(s)	Limit	Unit(s)	MDL	A2
Lead (Pb)	1000	mg/kg	2	ND
Mercury (Hg)	1000	mg/kg	2	ND

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Test Item(s)	Limit	Unit(s)	MDL	A2
Octabrominated diphenyl ether (OctaBDE)	-	mg/kg	5	ND
Nonabrominated diphenyl ether (NonaBDE)	-	mg/kg	5	ND
Decabrominated diphenyl ether (DecaBDE)	-	mg/kg	5	ND
Bis(2-ethylhexyl) phthalate (DEHP)	1000	mg/kg	50	ND
Butyl benzyl phthalate (BBP)	1000	mg/kg	50	ND
Dibutyl phthalate (DBP)	1000	mg/kg	50	ND
Diisobutyl phthalate (DIBP)	1000	mg/kg	50	ND

**Notes:**

- (1) The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863.
- (2) IEC 62321 series is equivalent to EN 62321 series.
- (3) 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.

**Halogen**

**Test Method:** With reference to EN 14582:2016, analysis was performed by IC.

Test Item(s)	Unit(s)	MDL	A2
Chlorine(Cl)	mg/kg	50	ND
Bromine(Br)	mg/kg	50	ND
Iodine(I)	mg/kg	50	ND

**Hexabromocyclododecane (HBCDD)**

**Test Method:** With reference to IEC 62321-9:2021, analysis was performed by GC-MS.

Test Item(s)	CAS No.	Unit(s)	MDL	A2
Hexabromocyclododecane (HBCDD)	134237-50-6 /134237-51-7 /134237-52-8 /25637-99-4 /3194-55-6	mg/kg	20	ND

**TBBP-A**

**Test Method:** With reference to US EPA 3540C:1996, analysis was performed by GC-MS/LC-MS.

Test Item(s)	CAS No.	Unit(s)	MDL	A2
TBBP-A	79-94-7	mg/kg	10	ND

**Perfluorooctane sulfonic acid (PFOS) and its derivatives and Perfluorooctanoic acid (PFOA) and its salts**

**Test Method:** Modified CEN/TS 15968:2010, analysis was performed by HPLC-MS or LC-MS/MS.

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Test Item(s)	CAS No.	Unit(s)	MDL	A2
<b>PFOS, its salts and related compounds</b>				
Sum of Perfluorooctane sulfonic acid (PFOS) and its derivatives	-	mg/kg	-	ND
Perfluorooctane sulfonic acid (PFOS), its salts <sup>^</sup>	1763-23-1	mg/kg	0.010	ND
N-ethylperfluoro-1-octanesulfonamide (N-EtFOSA)	4151-50-2	mg/kg	0.010	ND
N-methylperfluoro-1-octanesulfonamide (N-MeFOSA)	31506-32-8	mg/kg	0.010	ND
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol (N-EtFOSE)	1691-99-2	mg/kg	0.010	ND
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol (N-MeFOSE)	24448-09-7	mg/kg	0.010	ND
Perfluorooctane Sulfonamide (PFOSA), its salts <sup>^</sup>	754-91-6	mg/kg	0.010	ND
<b>PFOA, its salts</b>				
Perfluorooctanoic acid (PFOA), its salts <sup>^</sup>	335-67-1	mg/kg	0.010	ND

**Notes:**

1. <sup>^</sup>=Substances refer to its salts/derivative listed in below table.

Substance Name	CAS No.
<b>PFOS, its salts &amp; derivatives</b>	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1
Potassium Perfluorooctanesulfonate (PFOS-K)	2795-39-3
Perfluorooctanesulfonic acid, lithium salt (PFOS-Li)	29457-72-5
Sodium perfluorooctanesulfonate (PFOS-Na)	4021-47-0
Ammonium perfluorooctanesulfonate (PFOS-NH <sub>4</sub> )	29081-56-9
Perfluorooctane sulfonate diethanolamine salt (PFOS-NH <sub>2</sub> (C <sub>2</sub> H <sub>4</sub> OH) <sub>2</sub> )	70225-14-8
Perfluorooctanesulfonic acid,tetraethylammonium salt (PFOS-N(C <sub>2</sub> H <sub>5</sub> ) <sub>4</sub> )	56773-42-3
N-decyl-N,N-dimethyldecyl-1-aminium 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluorooctane-1-sulfonate (PFOS-N(C <sub>10</sub> H <sub>21</sub> ) <sub>2</sub> (CH <sub>3</sub> ) <sub>2</sub> )	251099-16-8
TetrabutylAmmonium perfluorooctanesulfonate (PFOS-N(C <sub>4</sub> H <sub>9</sub> ) <sub>4</sub> )	111873-33-7
Perfluorooctane Sulfonyl fluoride (PFOS-F)	307-35-7
Magnesium bis(heptadecafluorooctanesulphonate) (PFOS-Mg)	91036-71-4
Piperidine 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluorooctanesulfonate	71463-74-6
<b>PFOSA, its salts</b>	
Perfluorooctane Sulfonamide (PFOSA)	754-91-6
Perfluorooctanesulfonamide lithium salt (1:1) (PFOSA-Li)	76752-79-9
Perfluorooctanesulfonamide Sodium salt (1:1) (PFOSA-Na)	76752-78-8
Perfluorooctanesulfonamide Potassium salt (1:1) (PFOSA-K)	76752-70-0

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Perfluorooctanesulfonamide Ammonium salt (1:1) (PFOSA-NH <sub>4</sub> )	76752-72-2
<b>PFOA, its salts &amp; derivatives</b>	
Perfluorooctanoic acid (PFOA)	335-67-1
Sodium perfluorooctanoate (PFOA-Na)	335-95-5
Potassium perfluorooctanoate (PFOA-K)	2395-00-8
Silver perfluorooctanoate (PFOA-Ag)	335-93-3
Perfluorooctanoyl fluoride (PFOA-F)	335-66-0

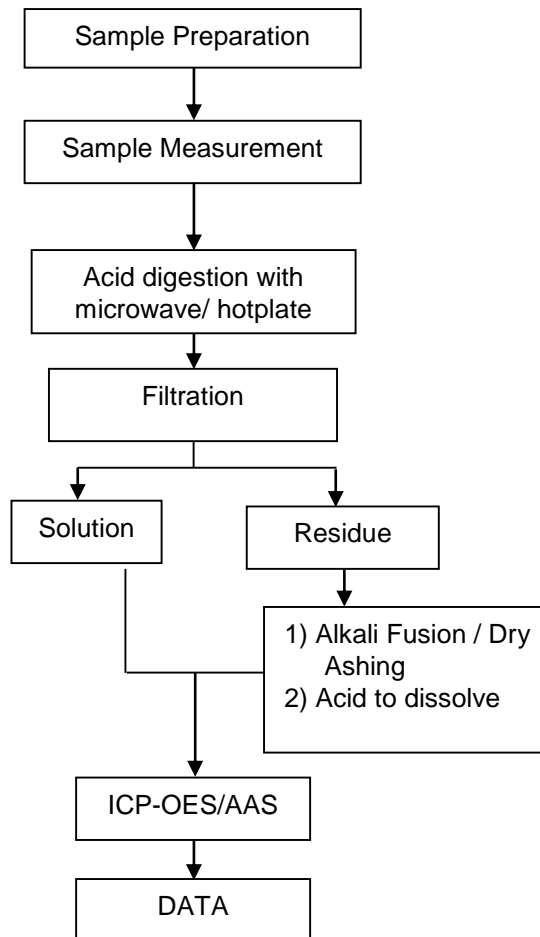
### ATTACHMENTS

#### Elements Testing Flow Chart

Name of the person who made testing: Meria Jin/Sielina Song

Name of the person in charge of testing: John Cheng

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

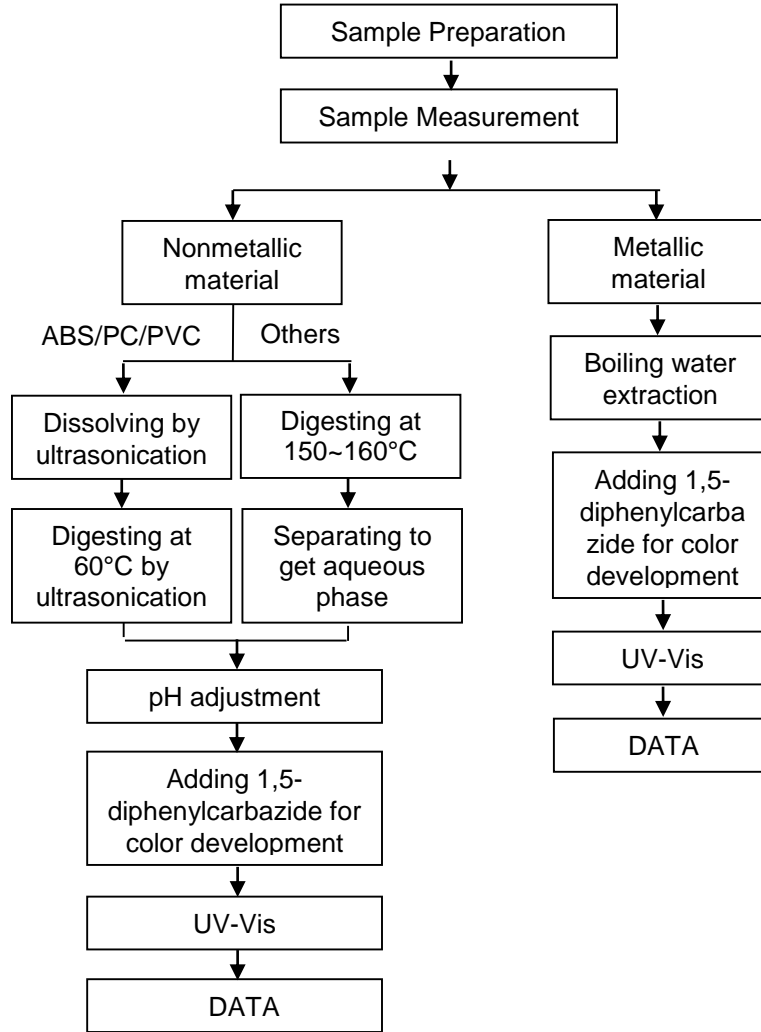


**ATTACHMENTS**

**Hexavalent Chromium (Cr(VI)) Testing Flow Chart**

Name of the person who made testing: Alex Wang

Name of the person in charge of testing: Xiaolong Yang

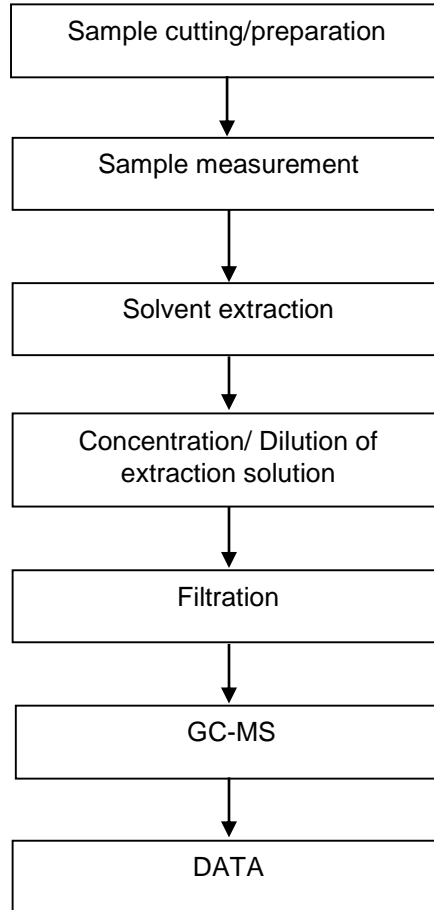


### ATTACHMENTS

#### PBB/PBDE Testing Flow Chart

Name of the person who made testing: Gary Xu

Name of the person in charge of testing: Carol Cui

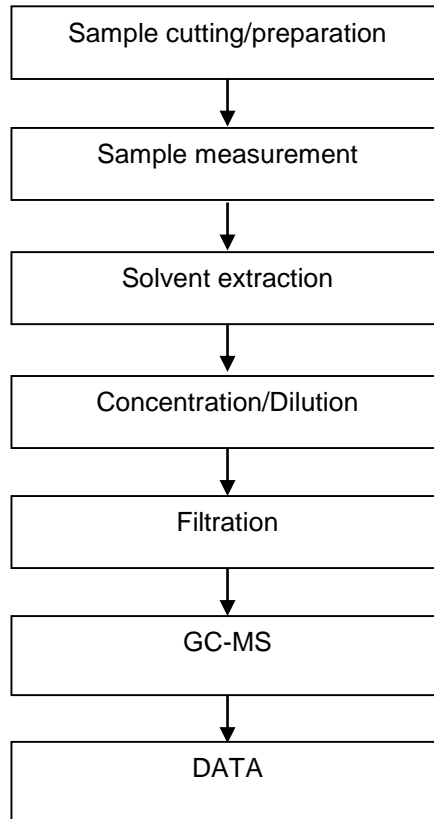


**ATTACHMENTS**

**Phthalates Testing Flow Chart**

Name of the person who made testing: Sherry Shi

Name of the person in charge of testing: Carol Cui

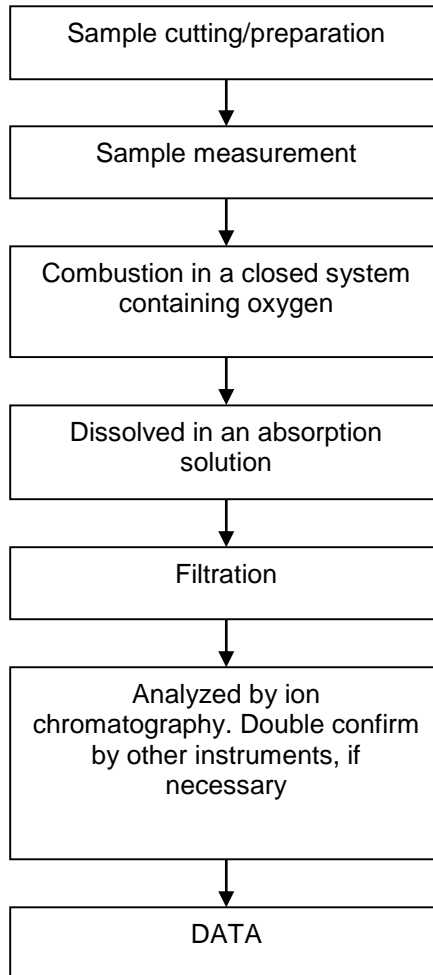


ATTACHMENTS

**Halogen Testing Flow Chart**

Name of the person who made testing: Andy Zhang

Name of the person in charge of testing: Gordon Mu

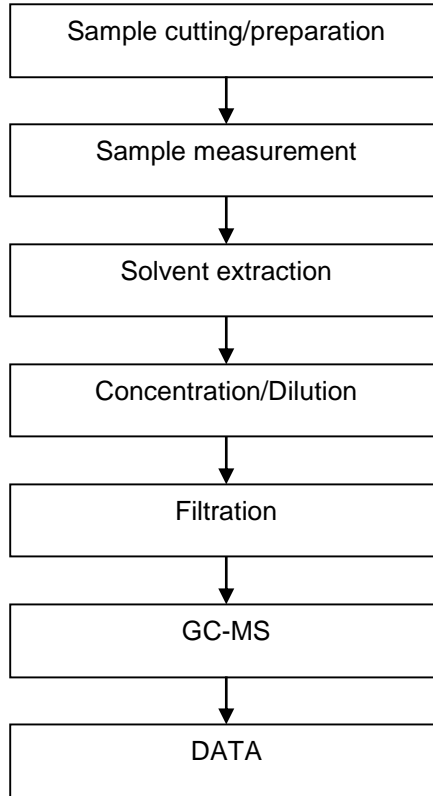


**ATTACHMENTS**

**HBCDD Testing Flow Chart**

Name of the person who made testing: Gary Xu

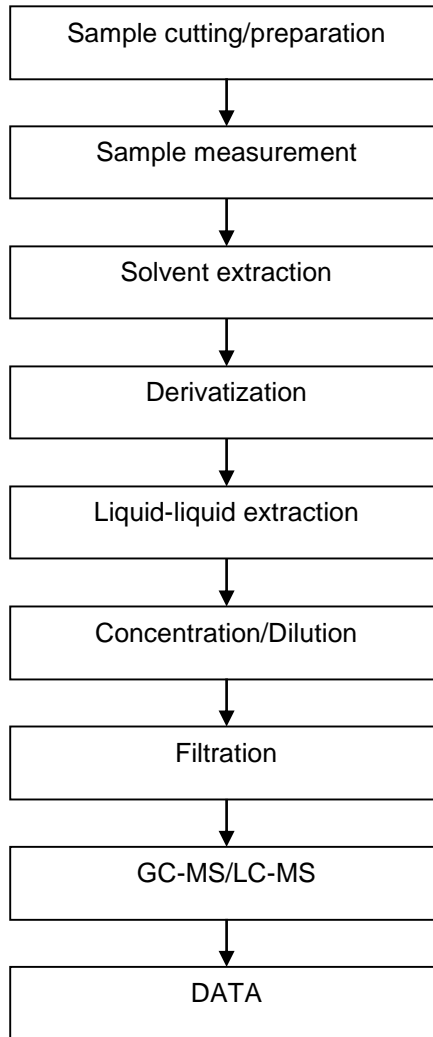
Name of the person in charge of testing: Carol Cui



ATTACHMENTS

TBBP-A Testing Flow Chart

Name of the person who made testing: Gary Xu  
Name of the person in charge of testing: Carol Cui

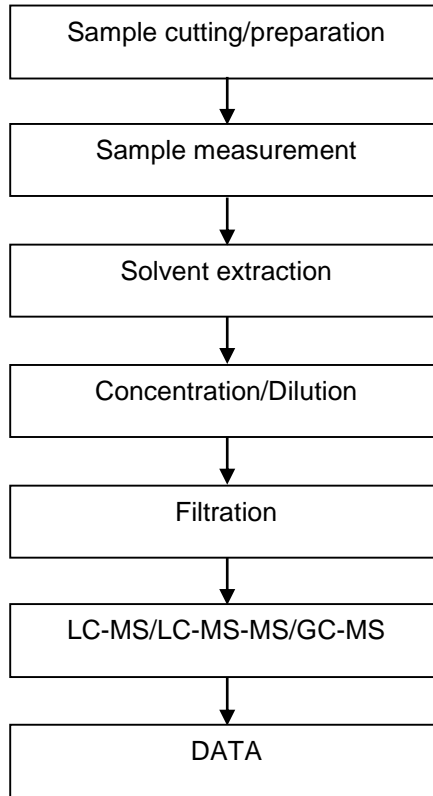


ATTACHMENTS

**PFASs/ PFOS/PFOA Testing Flow Chart**

Name of the person who made testing: Ance Chen

Name of the person in charge of testing: Liyas Wang



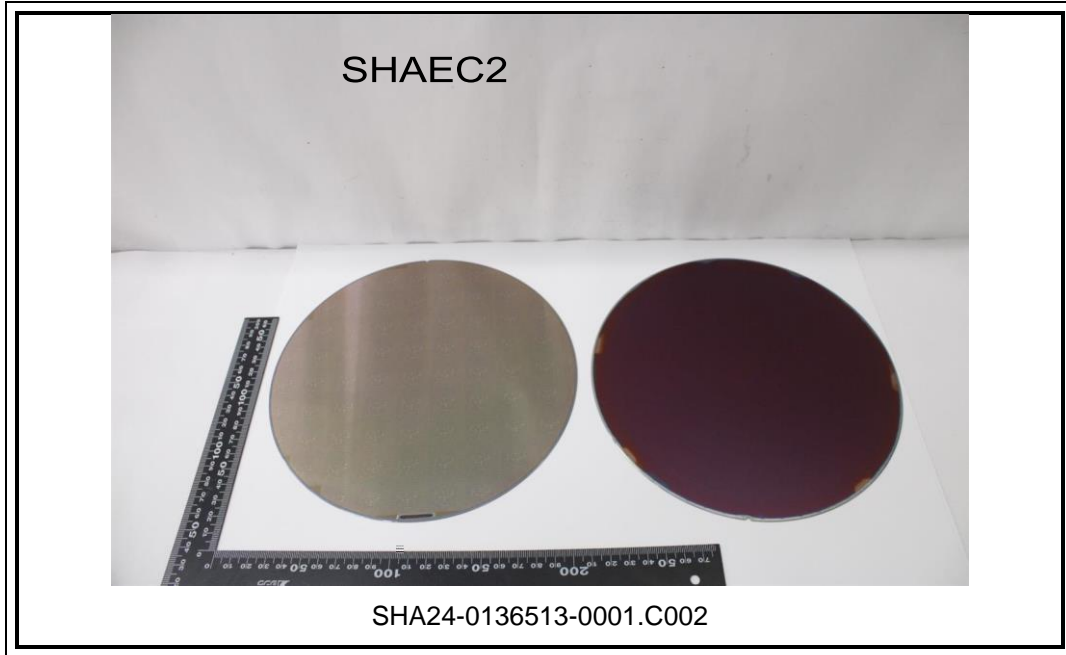
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Sample Photo:



SGS authenticate the photo on original report only  
\*\*\* End of Report \*\*\*