

Test Report

No. CANEC2120714001

Date: 12 Nov 2021

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SHENGYI TECHNOLOGY (SHAANXI) CO.,LTD

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CHINA

The following sample(s) was/were submitted and identified on behalf of the clients as : metal base copper clad laminate

SGS Job No. : CP21-059115 - GZ

Model No. : SAR10S

Date of Sample Received : 08 Nov 2021

Testing Period : 08 Nov 2021 - 12 Nov 2021

Test Requested : Selected test(s) as requested by client.

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

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

Conclusion : Based on the performed tests on submitted sample(s), the results of Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs) and Phthalates such as Bis(2-ethylhexyl) phthalate (DEHP) , Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) , and Diisobutyl phthalate (DIBP) comply with the limits as set by RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU.

Signed for and on behalf of
SGS-CSTC Standards Technical Services Co., Ltd. Guangzhou Branch

Allie Chen

Allie Chen
Approved Signatory

scan to see the report



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SGS-CSTC Standards Technical Services Co., Ltd.
Guangzhou Branch Testing Center Chemical Laboratory

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Test Results :

Test Part Description :

| Specimen No. | SGS Sample ID | Description |
|--------------|------------------|------------------------------|
| SN1 | CAN21-207140.001 | Copper clad silvery laminate |

Remarks :

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

RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU

Test Method : With reference to IEC 62321-4:2013+A1:2017, IEC 62321-5:2013, IEC 62321-7-2:2017 , IEC 62321-6:2015 and IEC 62321-8:2017, analyzed by ICP-OES , UV-Vis and GC-MS .

| Test Item(s) | Limit | Unit | MDL | 001 |
|----------------------------|-------|-------|-----|-----|
| Cadmium (Cd) | 100 | mg/kg | 2 | ND |
| Lead (Pb) | 1,000 | mg/kg | 2 | ND |
| Mercury (Hg) | 1,000 | mg/kg | 2 | ND |
| Hexavalent Chromium (CrVI) | 1,000 | mg/kg | 8 | ND |
| Sum of PBBs | 1,000 | mg/kg | - | ND |
| Monobromobiphenyl | - | mg/kg | 5 | ND |
| Dibromobiphenyl | - | mg/kg | 5 | ND |
| Tribromobiphenyl | - | mg/kg | 5 | ND |
| Tetrabromobiphenyl | - | mg/kg | 5 | ND |
| Pentabromobiphenyl | - | mg/kg | 5 | ND |
| Hexabromobiphenyl | - | mg/kg | 5 | ND |
| Heptabromobiphenyl | - | mg/kg | 5 | ND |
| Octabromobiphenyl | - | mg/kg | 5 | ND |
| Nonabromobiphenyl | - | mg/kg | 5 | ND |
| Decabromobiphenyl | - | mg/kg | 5 | ND |
| Sum of PBDEs | 1,000 | mg/kg | - | ND |
| Monobromodiphenyl ether | - | mg/kg | 5 | ND |
| Dibromodiphenyl ether | - | mg/kg | 5 | ND |
| Tribromodiphenyl ether | - | mg/kg | 5 | ND |
| Tetrabromodiphenyl ether | - | mg/kg | 5 | ND |
| Pentabromodiphenyl ether | - | mg/kg | 5 | ND |



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| Test Item(s) | Limit | Unit | MDL | 001 |
|-------------------------------------|-------|-------|-----|-----|
| Hexabromodiphenyl ether | - | mg/kg | 5 | ND |
| Heptabromodiphenyl ether | - | mg/kg | 5 | ND |
| Octabromodiphenyl ether | - | mg/kg | 5 | ND |
| Nonabromodiphenyl ether | - | mg/kg | 5 | ND |
| Decabromodiphenyl ether | - | mg/kg | 5 | ND |
| Dibutyl phthalate (DBP) | 1,000 | mg/kg | 50 | ND |
| Butyl benzyl phthalate (BBP) | 1,000 | mg/kg | 50 | ND |
| Bis (2-ethylhexyl) phthalate (DEHP) | 1,000 | mg/kg | 50 | ND |
| Diisobutyl Phthalates (DIBP) | 1,000 | 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

https://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101:::FSP_ORG_ID,FSP_LANG_ID:1258637,25

(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 | MDL | 001 |
|---------------|-------|-----|-----|
| Fluorine (F) | mg/kg | 50 | ND |
| Chlorine (Cl) | mg/kg | 50 | ND |
| Bromine (Br) | mg/kg | 50 | ND |
| Iodine (I) | mg/kg | 50 | ND |

Phthalate

Test Method : With reference to EN14372: 2004. Analysis was performed by GC-MS.

| Test Item(s) | CAS NO. | Unit | MDL | 001 |
|------------------------------------|----------------------------|--------|-------|-----|
| Dibutyl Phthalate (DBP) | 84-74-2 | %(w/w) | 0.003 | ND |
| Benzylbutyl Phthalate (BBP) | 85-68-7 | %(w/w) | 0.003 | ND |
| Bis(2-ethylhexyl) Phthalate (DEHP) | 117-81-7 | %(w/w) | 0.003 | ND |
| Diisononyl Phthalate (DINP) | 28553-12-0 / 68515-48-0 | %(w/w) | 0.010 | ND |



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| Test Item(s) | CAS NO. | Unit | MDL | 001 |
|---|----------------------------|--------|-------|-----|
| Di-n-octyl Phthalate (DNOP) | 117-84-0 | %(w/w) | 0.003 | ND |
| Diisodecyl Phthalate (DIDP) | 26761-40-0 / 68515-49-1 | %(w/w) | 0.010 | ND |
| Di-n-hexyl Phthalate (DnHP) | 84-75-3 | %(w/w) | 0.003 | ND |
| Diisobutyl Phthalate (DIBP) | 84-69-5 | %(w/w) | 0.003 | ND |
| 1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters (DHNUP) | 68515-42-4 | %(w/w) | 0.010 | ND |
| Bis(2-methoxyethyl) Phthalate (DMEP) | 117-82-8 | %(w/w) | 0.003 | ND |
| 1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich (DIHP) | 71888-89-6 | %(w/w) | 0.010 | ND |
| Diisopentyl Phthalate (DIPP) | 605-50-5 | %(w/w) | 0.003 | ND |
| n-pentyl Isopentyl Phthalate (nPIPP) | 776297-69-9 | %(w/w) | 0.003 | ND |
| 1,2-Benzenedicarboxylic acid, dipentyl ester, branched and linear (DPP) | 84777-06-0 | %(w/w) | 0.010 | ND |
| Dipentyl Phthalates (DPENP/DnPP) | 131-18-0 | %(w/w) | 0.003 | ND |
| 1,2-Benzenedicarboxylic acid, dihexyl ester branched and linear(DHP) | 68515-50-4 | %(w/w) | 0.010 | ND |
| Dimethyl Phthalate (DMP) | 131-11-3 | %(w/w) | 0.003 | ND |

Notes :

- (1) DBP,BBP,DEHP, DIBP Reference information: Entry 51 of Regulation (EU) 2018/2005 amending Annex XVII of REACH Regulation (EC) No 1907/2006:
- i) Shall not be used as substances or in mixtures, individually or in any combination of DBP, BBP, DEHP & DIBP, in concentrations equal to or greater than 0.1 % by weight of the plasticised material, in toys and childcare articles.
 - ii) Shall not be placed on the market in toys or childcare articles, individually or in any combination of DBP, BBP, DEHP, in concentrations equal to or greater than 0.1 % by weight of the plasticised material. In addition, DIBP shall not be placed on the market after 7 July 2020 in toys or childcare articles, individually or in any combination of DBP, BBP, DEHP & DIBP, in concentrations equal to or greater than 0.1 % by weight of the plasticised material.
 - iii) shall not be placed on the market after 7 July 2020 in articles, individually or in any combination of DBP, BBP, DEHP & DIBP, in concentrations equal to or greater than 0.1 % by weight of the plasticised material in the articles.
- Please refer to Regulation (EU) 2018/2005 to get more detail information
- (2) DINP, DNOP, DIDP Reference information: Entry 52 of Regulation (EU) 2015/326 amending Annex XVII of REACH Regulation (EC) No 1907/2006.
- i) Shall not be used as substances or in mixtures, in concentrations greater than 0.1 % by weight of the plasticised material, in toys and childcare articles which can be placed in the mouth by children.
 - ii) Such toys and childcare articles containing these phthalates in a concentration greater than 0.1 % by weight of the plasticised material shall not be placed on the market.
- Please refer to Regulation (EU) 2015/326 to get more detail information



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Perfluorooctanoic acid (PFOA) and its salts & Perfluorooctane sulfonates (PFOS) and its derivatives

Test Method : With reference to CEN/TS15968:2010, analysis was performed by LC-MS or LC-MS/MS.

| <u>Test Item(s)</u> | <u>CAS NO.</u> | <u>Unit</u> | <u>MDL</u> | <u>001</u> |
|---|----------------|-------------|------------|------------|
| Perfluorooctanoic acid (PFOA) and its salts+ | 335-67-1 | mg/kg | 0.010 | ND |
| Perfluorooctane sulfonates (PFOS) ^ | 1763-23-1 | mg/kg | 0.010 | ND |
| Perfluorooctane Sulfonamide (PFOSA) | 754-91-6 | mg/kg | 0.010 | ND |
| N-methylperfluoro-1-octanesulfonamide(MeFOSA) | 31506-32-8 | mg/kg | 0.010 | ND |
| N-ethylperfluoro-1-octanesulfonamide (EtFOSA) | 4151-50-2 | mg/kg | 0.010 | ND |
| 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol(MeFOSE) | 24448-09-7 | mg/kg | 0.010 | ND |
| 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol(EtFOSE) | 1691-99-2 | mg/kg | 0.010 | ND |
| Perfluorooctane sulfonates (PFOS) and its derivatives | - | mg/kg | - | ND |

Notes :

- (1) + PFOA and its salts including PFOA-Na (CAS No.: 335-95-5), PFOA-K (CAS No.: 2395-00-8), PFOA-Ag (CAS No.: 335-93-3), PFOA-F (CAS No.: 335-66-0) and APFO (CAS No.: 3825-26-1);
 (2) ^ PFOS including PFOS-K (CAS No.: 2795-39-3), PFOS-Li (CAS No.: 29457-72-5), PFOS-NH₄ (CAS No.: 29081-56-9), PFOS-NH(OH)₂ (CAS No.: 70225-14-8), PFOS-N(C₂H₅)₄ (CAS No.: 56773-42-3), PFOS-DDA(CAS No.:251099-16-8) and POSF (CAS No.: 307-35-7)

Hexabromocyclododecane (HBCDD)

Test Method : SGS in house method (GZTC CHEM-TOP-073, with reference to EPA 3550C:2007), analysis was performed by GC-MS.

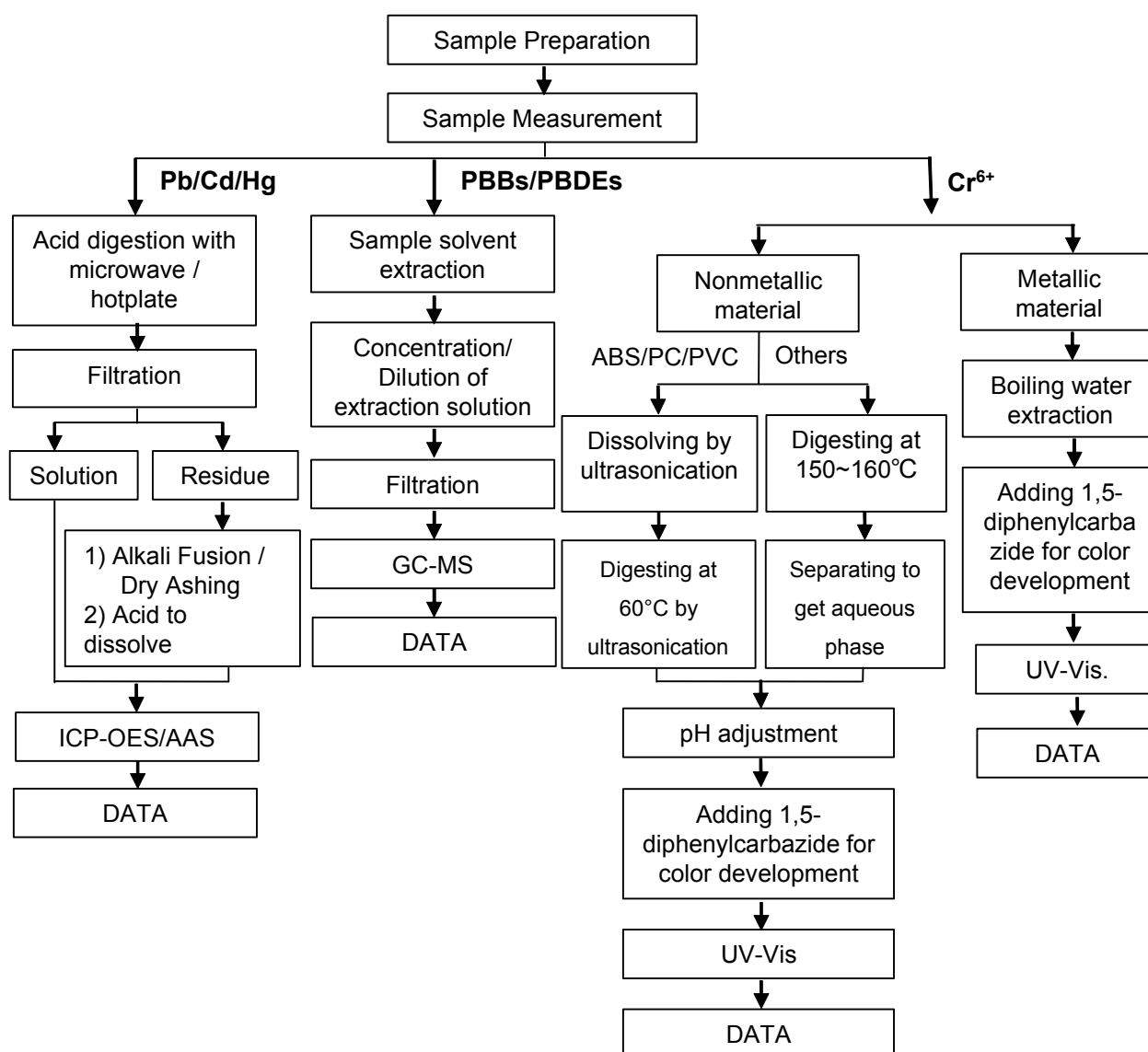
| <u>Test Item(s)</u> | <u>CAS NO.</u> | <u>Unit</u> | <u>MDL</u> | <u>001</u> |
|--|--|-------------|------------|------------|
| Hexabromocyclododecane (HBCDD) and all major diastereoisomers identified (α -HBCDD, β -HBCDD, γ -HBCDD) | 25637-99-4 3194-55-6 134237-50-6 134237-51-7 134237-52-8 | mg/kg | 10 | ND |



ATTACHMENTS

Pb/Cd/Hg/Cr⁶⁺/PBBs/PBDEs Testing Flow Chart

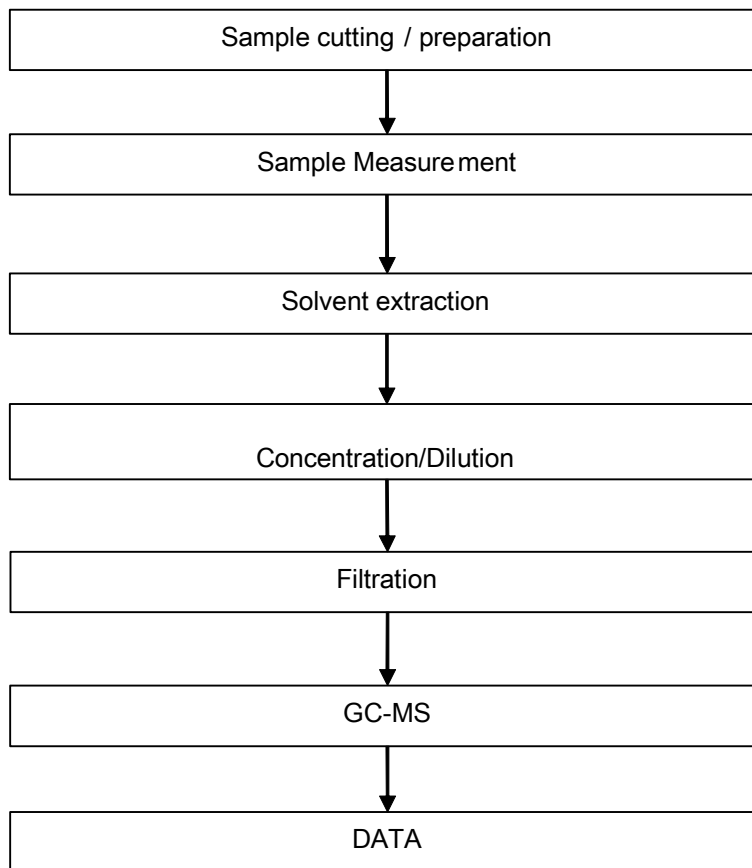
- 1) Name of the person who made testing: Edith Zhang / Sunny Hu
- 2) Name of the person in charge of testing: Bella Wang / Qiong Liu
- 3) These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr⁶⁺ and PBBs/PBDEs test method excluded).



ATTACHMENTS

Phthalates Testing Flow Chart

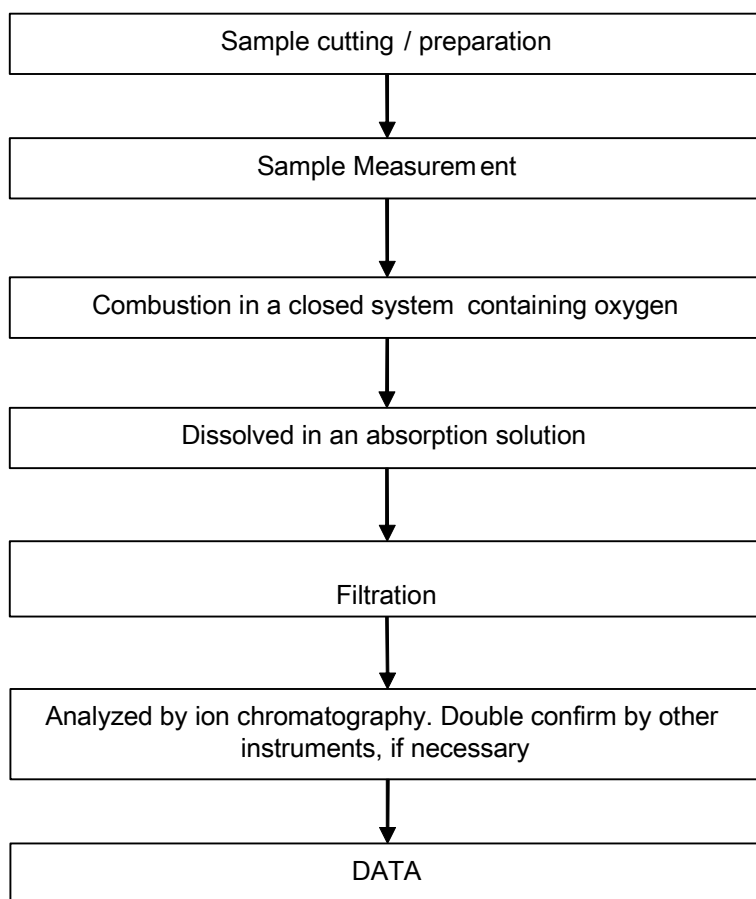
- 1) Name of the person who made testing: Sunny Hu
- 2) Name of the person in charge of testing: Qiong Liu



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Halogen Testing Flow Chart

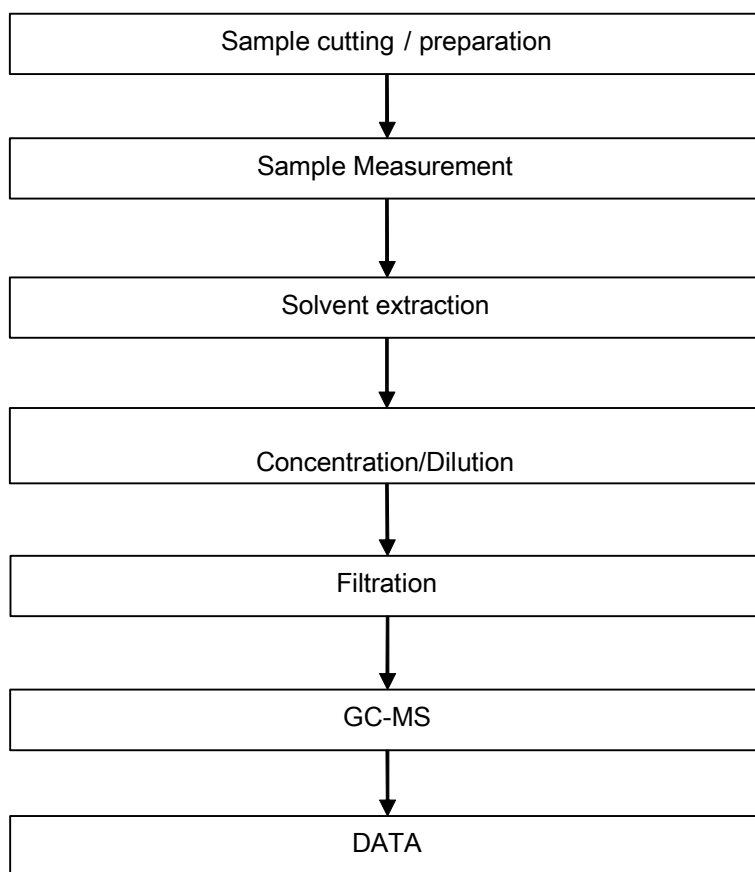
- 1) Name of the person who made testing: Bruce Xiao
- 2) Name of the person in charge of testing: Bella Wang



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HBCDD Testing Flow Chart

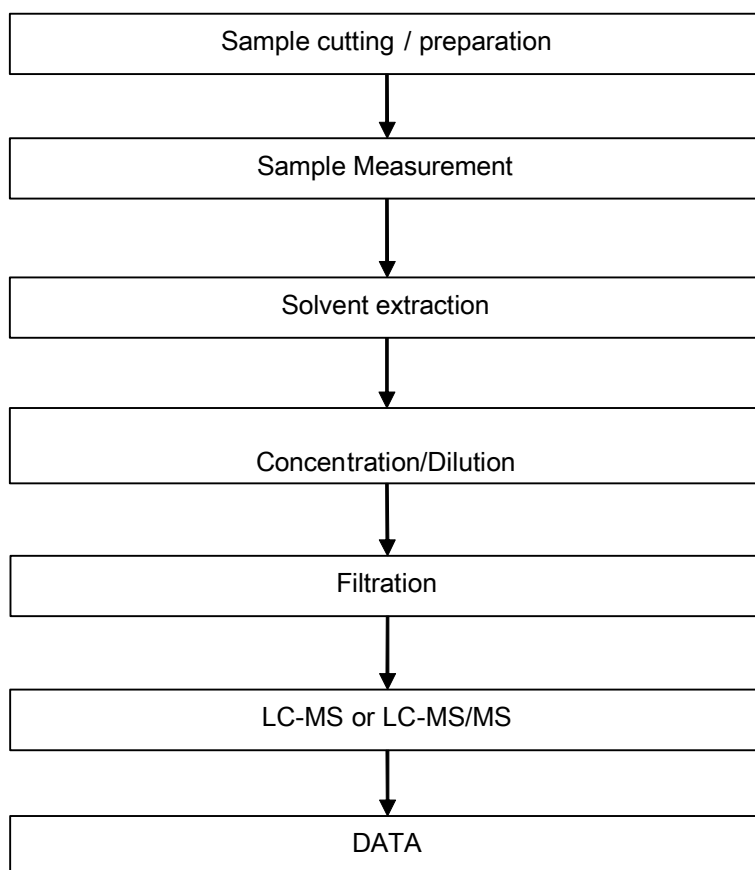
- 1) Name of the person who made testing: Sunny Hu
- 2) Name of the person in charge of testing: Qiong Liu



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PFOA / PFOS Testing Flow Chart

- 1) Name of the person who made testing: Olivia Li
- 2) Name of the person in charge of testing: Qiong Liu



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Sample photo:



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