

Test Report

No. CANEC1918574901

Date: 26 Sep 2019

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SHENGYI TECHNOLOGY CO., LTD.

5 WESTERN INDUSTRY ROAD, SONGSHAN LAKE, DONGGUAN CITY, GUANGDONG, P.R.
CHINA

The following sample(s) was/were submitted and identified on behalf of the clients as : Copper Clad Laminate

SGS Job No. : CP19-051801 - GZ

Model No. : SCGA-500 GF220

Date of Sample Received : 20 Sep 2019

Testing Period : 20 Sep 2019 - 26 Sep 2019

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

Zmguan

Zm guan
Approved Signatory



Test Results :

Test Part Description :

| Specimen No. | SGS Sample ID | Description |
|--------------|------------------|----------------------------------|
| SN1 | CAN19-185749.001 | Double-side copper-clad 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 .

| <u>Test Item(s)</u> | <u>Limit</u> | <u>Unit</u> | <u>MDL</u> | <u>001</u> |
|----------------------------|--------------|-------------|------------|------------|
| 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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Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN_Doccheck@sgs.com

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| <u>Test Item(s)</u> | <u>Limit</u> | <u>Unit</u> | <u>MDL</u> | <u>001</u> |
|-------------------------------------|--------------|-------------|------------|------------|
| 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.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
- (2) 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.
- (3) The restriction of DEHP, BBP, DBP and DIBP shall not apply to toys which are already subject to the restriction of DEHP, BBP, DBP and DIBP through entry 51 of Annex XVII to Regulation (EC) No 1907/2006.

Elementary Analysis

Test Method : SGS In-house method (GZTC CHEM-TOP-004-01, with reference to US EPA Method 3052:1996), analysis was performed by ICP-OES.

| <u>Test Item(s)</u> | <u>Unit</u> | <u>MDL</u> | <u>001</u> |
|---------------------|-------------|------------|------------|
| Antimony (Sb) | mg/kg | 10 | ND |
| Beryllium (Be) | mg/kg | 5 | ND |

Hexabromocyclododecane (HBCDD)

Test Method : With reference to IEC 62321:2008, analysis was performed by GC-MS.



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| <u>Test Item(s)</u> | <u>Unit</u> | <u>MDL</u> | <u>001</u> |
|--------------------------------|-------------|------------|------------|
| Hexabromocyclododecane (HBCDD) | mg/kg | 10 | ND |

Phthalate

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

| <u>Test Item(s)</u> | <u>CAS NO.</u> | <u>Unit</u> | <u>MDL</u> | <u>001</u> |
|---|----------------------------|-------------|------------|------------|
| 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 |
| 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) | 0.01 | 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) | 0.01 | 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) | 0.01 | 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) | 0.01 | ND |

Notes :

- (1) DBP, BBP, DEHP, DIBP Reference information: Entry 51 of Regulation (EU) No2018/2005 amending Annex XVII of REACH Regulation (EC) No 1907/2006:
- 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.
 - 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) No 2018/2005 to get more detail information.

(2) DINP, DNOP, DIDP Reference information: Entry 52 of Regulation (EC) No 552/2009 amending Annex XVII of REACH Regulation (EC) No 1907/2006 (previously restricted under Directive 2005/84/EC).

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 (EC) No 552/2009 to get more detail information.

PFOA & PFOS (Perfluorooctanoic acid & Perfluorooctane sulfonates)

Test Method : With reference to CEN/TS 15968:2010, analysis was performed by LC-MS or LC-MS/MS.

| Test Item(s) | CAS NO. | Unit | MDL | 001 |
|------------------------------------|----------|-------|------|-----|
| Perfluorooctanoic acid (PFOA) | 335-67-1 | mg/kg | 0.01 | ND |
| Perfluorooctane Sulfonates (PFOS)^ | | mg/kg | 0.01 | ND |

Notes :

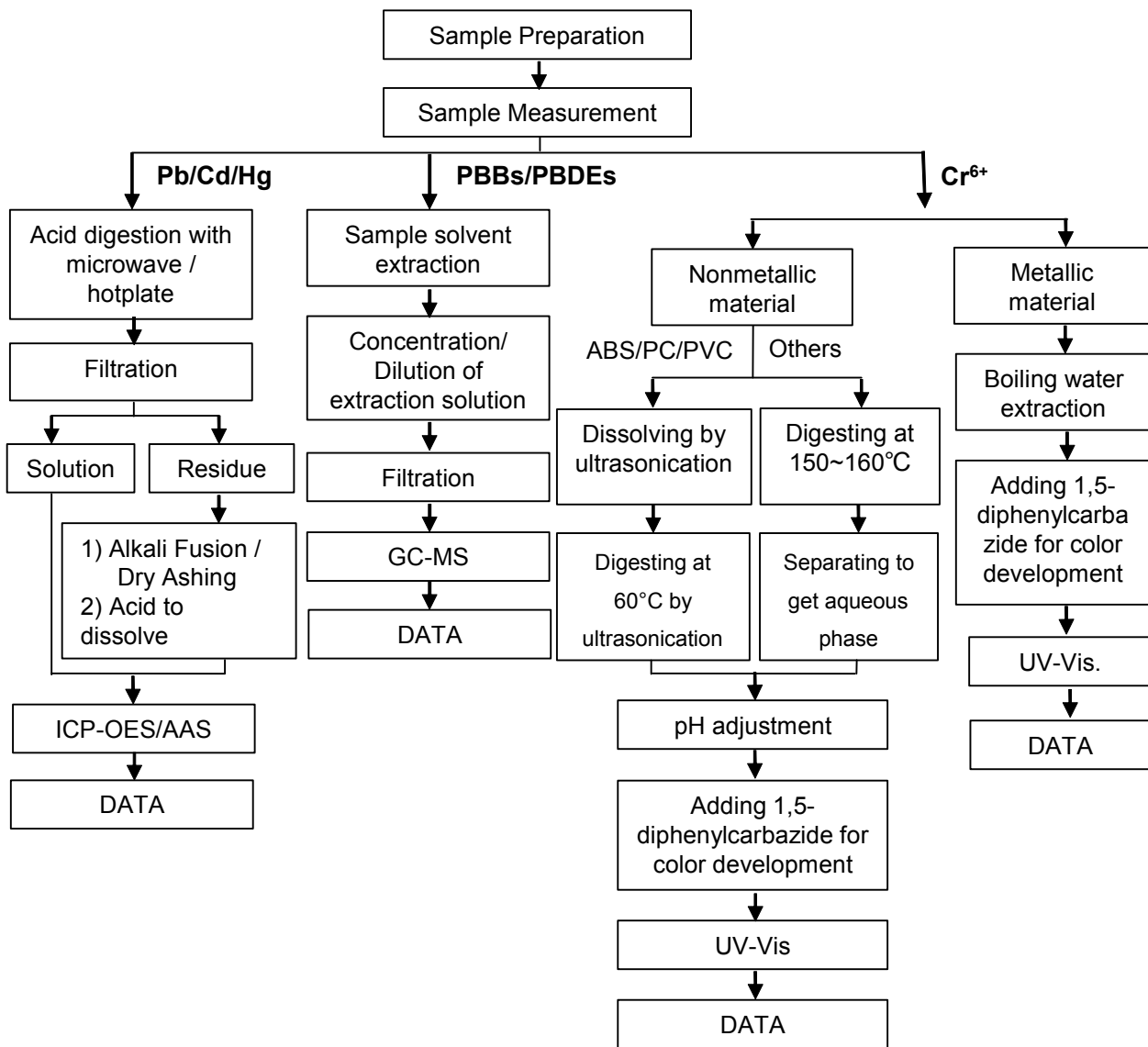
(1) ^: PFOS refer to Perfluorooctanesulfonic acid and its derivatives including Perfluorooctanesulfonic acid, Perfluorooctane sulfonamide, N-Methylperfluorooctane sulfonamide, N-Ethylperfluorooctane sulfonamide, N-Methylperfluorooctane sulfonamidoethanol and N-Ethylperfluorooctane sulfonamidoethanol.



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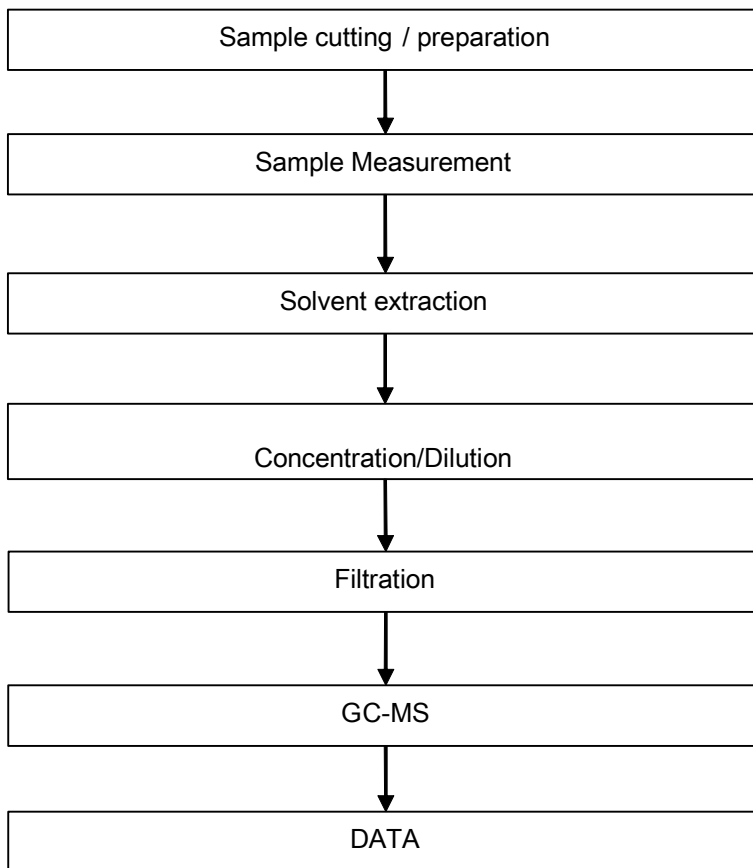
Pb/Cd/Hg/Cr⁶⁺/PBBs/PBDEs Testing Flow Chart

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



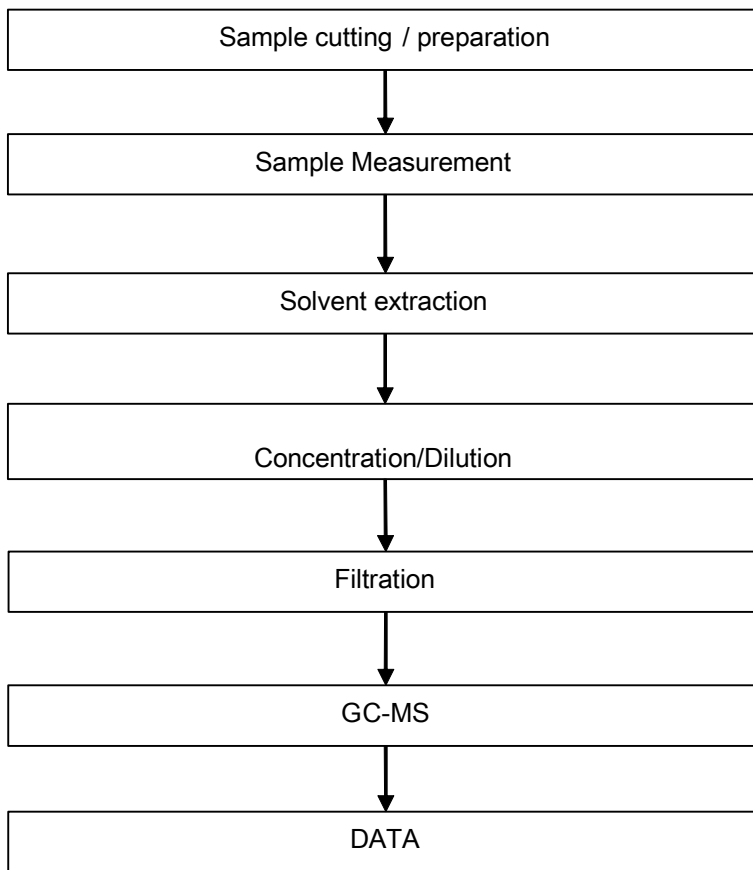
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Phthalates Testing Flow Chart



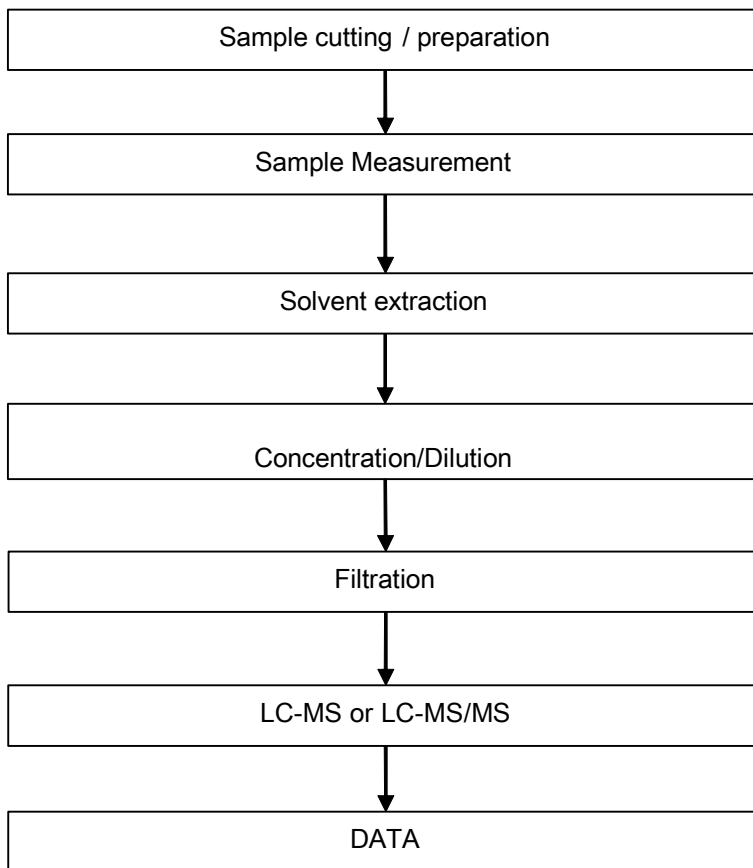
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HBCDD Testing Flow Chart



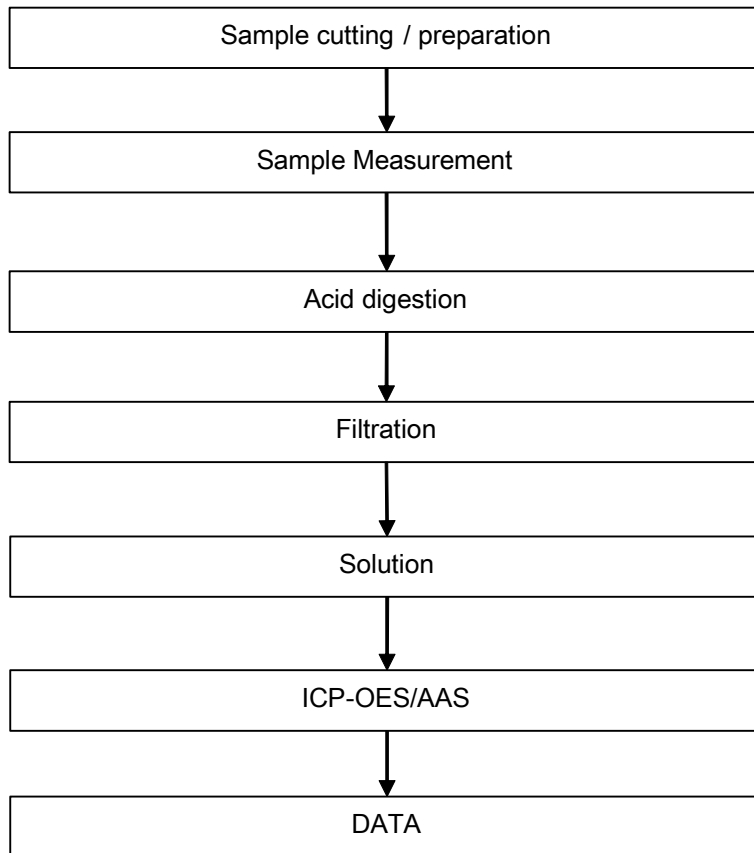
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PFOA / PFOS Testing Flow Chart

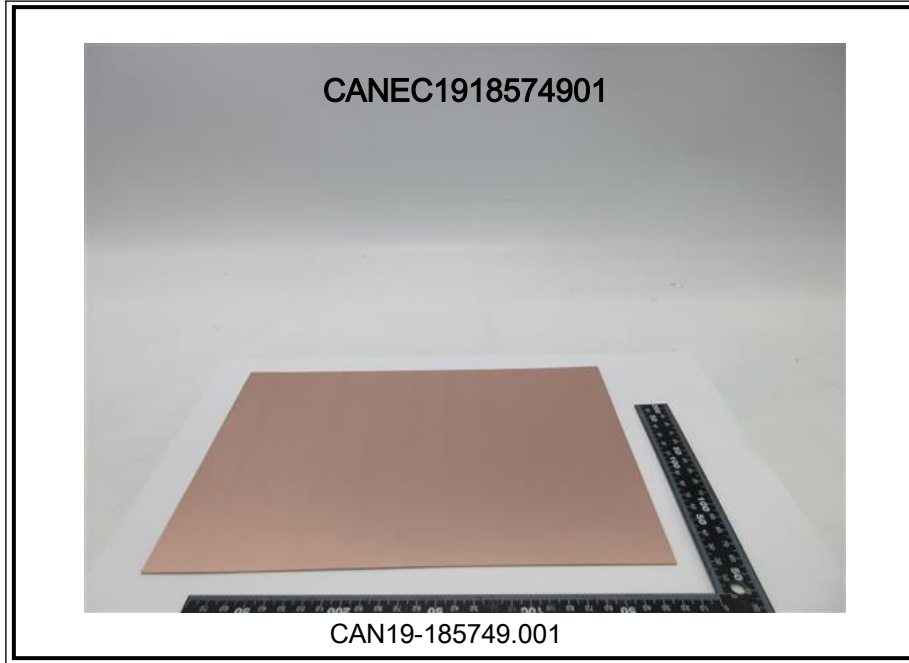


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Elementary Testing Flow Chart



Sample photo:



SGS authenticate the photo on original report only

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