

Test Report

No.: CANEC24001792312

Date: Feb 01, 2024

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Client Name: SHENGYI TECHNOLOGY(SHAANXI)CO., LTD.

Client Address: NO.8 YONGCHANG ROAD,QINDUDISTRICT, XIANYANG CITY,SHAANXI PROVINCE,CHINA

Sample Name: The Halogen Free Copper Clad Laminate

Model No.: S2155G

Client Ref. Information: S2155

The above sample(s) and information were provided by the client.

SGS Job No.: GZP24-002268

Sample Receiving Date: Jan 24, 2024

Testing Period: Jan 24, 2024 ~ Feb 01, 2024

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

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

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

| Test Requirement | Conclusion |
|---|-------------|
| 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) | Pass |
| Perfluorooctane Sulfonates (PFOS) and its derivatives and Perfluorooctanoic Acid (PFOA) and its salts | See Results |
| Halogen | See Results |
| Element(s) | See Results |
| Hexabromocyclododecane (HBCDD) | See Results |
| Phthalates | See Results |

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

Jany Zhong

Jany Zhong
Approved Signatory

scan to see the report



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Test Result(s):

Test Part Description:

| SN ID | Sample No. | SGS Sample ID | Description |
|-------|------------|-------------------------|----------------------------------|
| SN1 | A11 | CAN24-0017923-0001.C011 | Double-side copper-clad laminate |

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 | A11 |
|---|-------|---------|-----|-----|
| Lead (Pb) | 1000 | mg/kg | 2 | 7 |
| Mercury (Hg) | 1000 | mg/kg | 2 | ND |
| Cadmium (Cd) | 100 | mg/kg | 2 | ND |
| Hexavalent Chromium (Cr(VI)) | 1000 | mg/kg | 8 | ND |
| Polybrominated biphenyls (PBB) | 1000 | mg/kg | - | ND |
| Monobrominated biphenyl (MonoBB) | - | mg/kg | 5 | ND |
| Dibrominated biphenyl (DiBB) | - | mg/kg | 5 | ND |
| Tribrominated biphenyl (TriBB) | - | mg/kg | 5 | ND |
| Tetrabrominated biphenyl (TetraBB) | - | mg/kg | 5 | ND |
| Pentabrominated biphenyl (PentaBB) | - | mg/kg | 5 | ND |
| Hexabrominated biphenyl (HexaBB) | - | mg/kg | 5 | ND |
| Heptabrominated biphenyl (HeptaBB) | - | mg/kg | 5 | ND |
| Octabrominated biphenyl (OctaBB) | - | mg/kg | 5 | ND |
| Nonabrominated biphenyl (NonaBB) | - | mg/kg | 5 | ND |
| Decabrominated biphenyl (DecaBB) | - | mg/kg | 5 | ND |
| Polybrominated diphenyl ethers (PBDE) | 1000 | mg/kg | - | ND |
| Monobrominated diphenyl ether (MonoBDE) | - | mg/kg | 5 | ND |
| Dibrominated diphenyl ether (DiBDE) | - | mg/kg | 5 | ND |
| Tribrominated diphenyl ether (TriBDE) | - | mg/kg | 5 | ND |
| Tetrabrominated diphenyl ether (TetraBDE) | - | mg/kg | 5 | ND |
| Pentabrominated diphenyl ether (PentaBDE) | - | mg/kg | 5 | ND |
| Hexabrominated diphenyl ether (HexaBDE) | - | mg/kg | 5 | ND |
| Heptabrominated diphenyl ether (HeptaBDE) | - | mg/kg | 5 | ND |



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| Test Item(s) | Limit | Unit(s) | MDL | A11 |
|---|-------|---------|-----|-----|
| 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.

Perfluorooctane Sulfonates (PFOS) and its derivatives and Perfluorooctanoic Acid (PFOA) and its salts

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

| Test Item(s) | CAS No. | Unit(s) | MDL | A11 |
|---|------------|---------|-------|-----|
| PFOS and its derivatives | - | mg/kg | - | ND |
| Perfluorooctane Sulfonates (PFOS) and its salts* | 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) | 754-91-6 | mg/kg | 0.010 | ND |
| Perfluorooctanoic Acid (PFOA) and its salts* | 335-67-1 | mg/kg | 0.010 | ND |

Notes:

- (1) Perfluorooctanoic acid (PFOA) and its salts* including PFOA (CAS No. 335-67-1), APFO (CAS No. 3825-26-1), PFOA-Na (CAS No. 335-95-5), PFOA-K (CAS No. 2395-00-8), PFOA-Ag (CAS No. 335-93-3) and PFOA-F (CAS No. 335-66-0). The result of PFOA is used to represent PFOA and its salts.
- (2) Perfluorooctane sulfonates (PFOS) and its salts* including PFOS (CAS No. 1763-23-1), POSF(CAS No. 307-35-7), PFOS-K (CAS No. 2795-39-3), PFOS-NH₄ (CAS No. 29081-56-9), PFOS-N(C₁₀H₂₁)₂(CH₃)₂ (CAS No. 251099-16-8), PFOS-NH₂(C₂H₄OH)₂ (CAS No. 70225-14-8), PFOS-Li (CAS No. 29457-72-5), PFOS-N(C₂H₅)₄ (CAS No. 56773-42-3) and PFOS-Na (CAS No. 4021-47-0). The result of PFOS is used to represent PFOS and its salts.



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Halogen

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

| Test Item(s) | Unit(s) | MDL | A11 |
|--------------|---------|-----|-----|
| Fluorine(F) | mg/kg | 20 | 762 |
| Chlorine(Cl) | mg/kg | 50 | 257 |
| Bromine(Br) | mg/kg | 50 | ND |
| Iodine(I) | mg/kg | 50 | ND |

Element(s)

Test Method: With reference to US EPA 3052:1996, analysis was performed by ICP-OES/AAS.

| Test Item(s) | Unit(s) | MDL | A11 |
|---------------|---------|-----|-----|
| Beryllium(Be) | mg/kg | 5 | ND |
| Antimony(Sb) | mg/kg | 10 | 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 | A11 |
|--|--|---------|-----|-----|
| Hexabromocyclododecane (HBCDD) and all major diastereoisomers identified (α -HBCDD, β -HBCDD, γ -HBCDD) | 134237-50-6 /134237-51-7 /134237-52-8 /25637-99-4 /3194-55-6 | mg/kg | 20 | ND |

Phthalates

Test Method: With reference to EN 14372:2004, analysis was performed by GC-MS.

| Test Item(s) | CAS No. | Unit(s) | MDL | A11 |
|------------------------------------|---------------------------|---------|-------|-----|
| Dibutyl Phthalate(DBP) | 84-74-2 | % | 0.003 | ND |
| Benzyl Butyl Phthalate(BBP) | 85-68-7 | % | 0.003 | ND |
| Bis-(2-ethylhexyl) Phthalate(DEHP) | 117-81-7 | % | 0.003 | ND |
| Diisononyl Phthalate (DINP) | 28553-12-0 /68515-48-0 | % | 0.010 | ND |
| Di-n-Octyl Phthalate(DNOP) | 117-84-0 | % | 0.003 | ND |
| Diisodecyl Phthalate (DIDP) | 26761-40-0 /68515-49-1 | % | 0.010 | ND |
| Dimethyl Phthalate(DMP) | 131-11-3 | % | 0.003 | ND |
| Diisobutyl Phthalate(DIBP) | 84-69-5 | % | 0.003 | ND |
| Dipentyl Phthalates (DnPP) | 131-18-0 | % | 0.003 | ND |
| Di-n-Hexyl Phthalate(DnHP) | 84-75-3 | % | 0.003 | ND |
| Bis(2-methoxyethyl)phthalate(DMEP) | 117-82-8 | % | 0.003 | ND |
| Diisopentyl Phthalate(DIPP) | 605-50-5 | % | 0.003 | ND |



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| Test Item(s) | CAS No. | Unit(s) | MDL | A11 |
|---|-------------|---------|-------|-----|
| n-pentyl Isopentyl Phthalate(nPIPP) | 776297-69-9 | % | 0.003 | ND |
| 1,2-Benzenedicarboxylic Acid,di-C6-8-branched alkyl esters,C7-rich(DIHP) | 71888-89-6 | % | 0.010 | ND |
| 1,2-Benzenedicarboxylic Acid,Di-C7-11-Branched and Linear Alkyl Esters(DHNUP) | 68515-42-4 | % | 0.010 | ND |
| 1,2-Benzenedicarboxylic Acid,Dipentyl Ester,Branched and Linear | 84777-06-0 | % | 0.010 | ND |
| 1,2-benzenedicarboxylic Acid,dihexyl ester branched and linear(DHxP) | 68515-50-4 | % | 0.010 | ND |

Unless otherwise stated, the decision rule for conformity reporting is based on Binary Statement for Simple Acceptance Rule ($w=0$) stated in ILAC-G8:09/2019.



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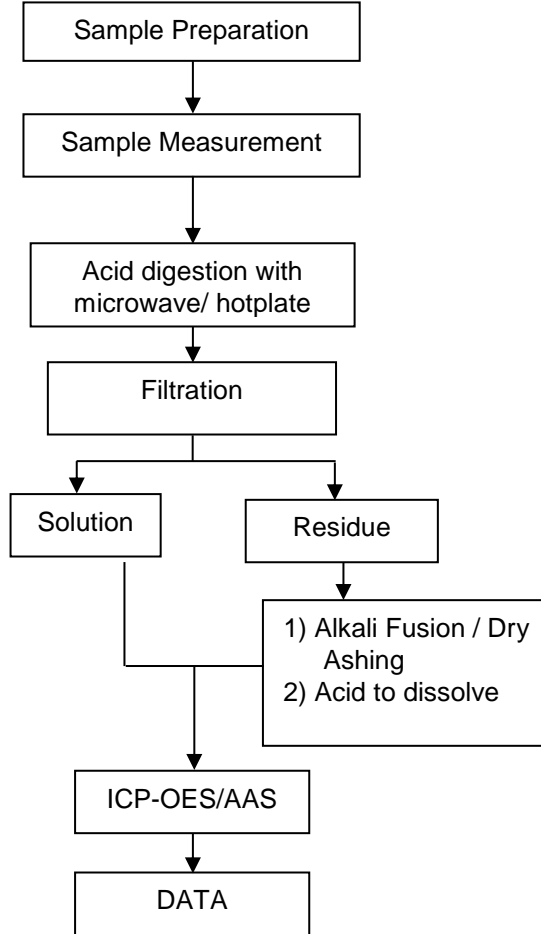
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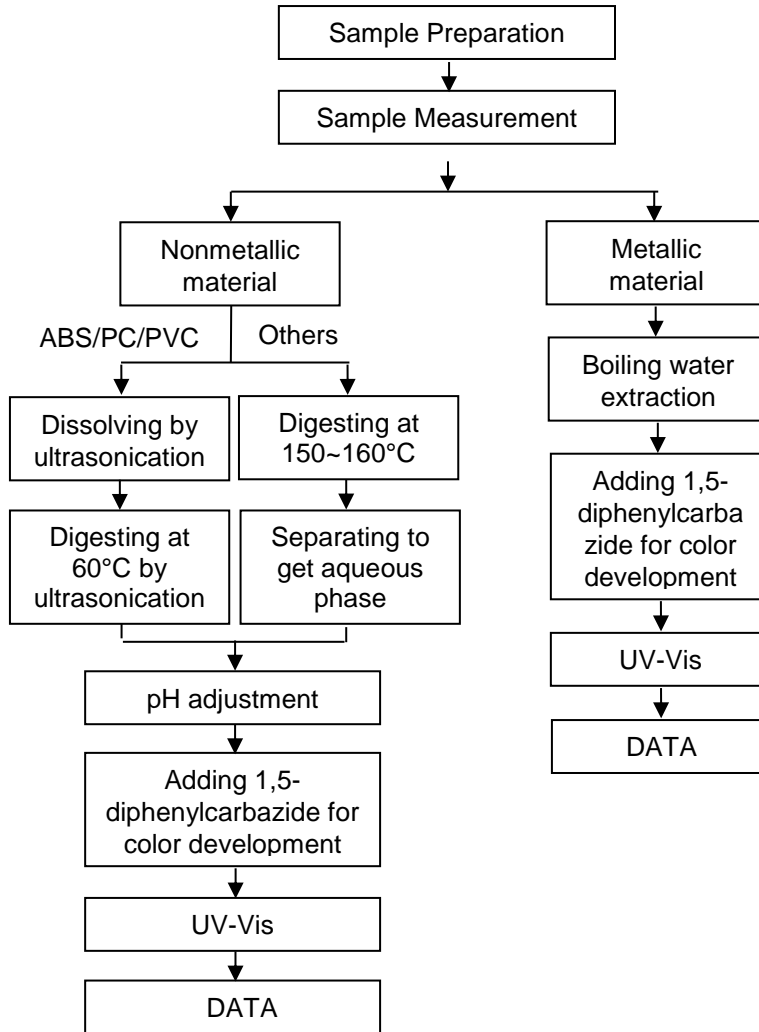
ATTACHMENTS

Elements Testing Flow Chart

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

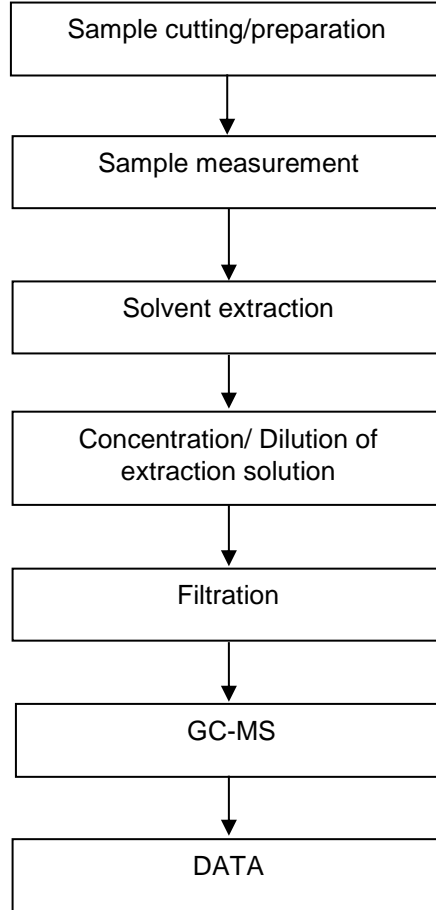


Hexavalent Chromium (Cr(VI)) Testing Flow Chart

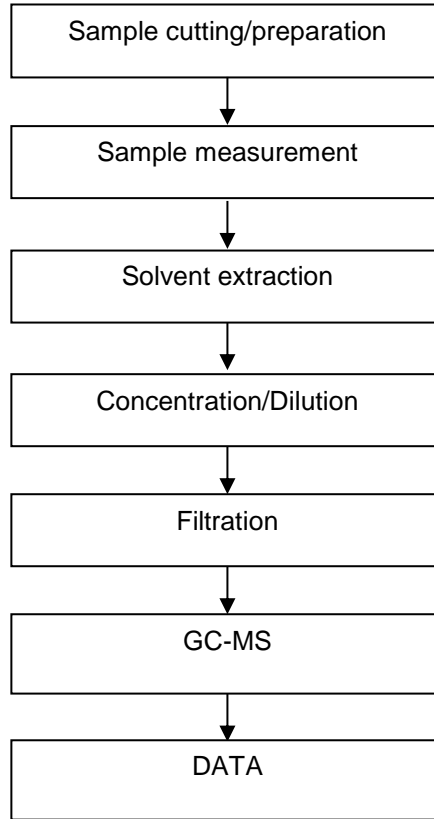


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PBB/PBDE Testing Flow Chart

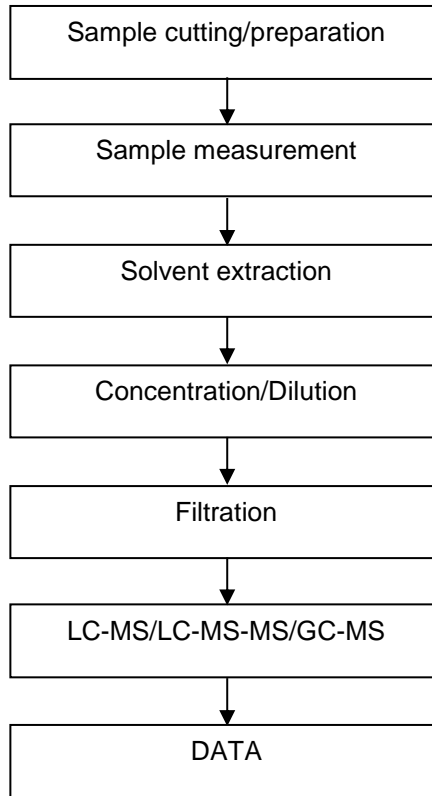


Phthalates Testing Flow Chart

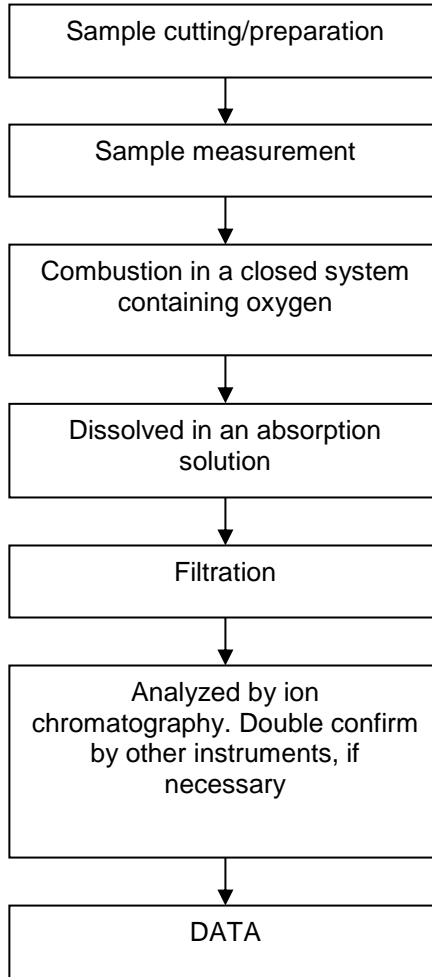


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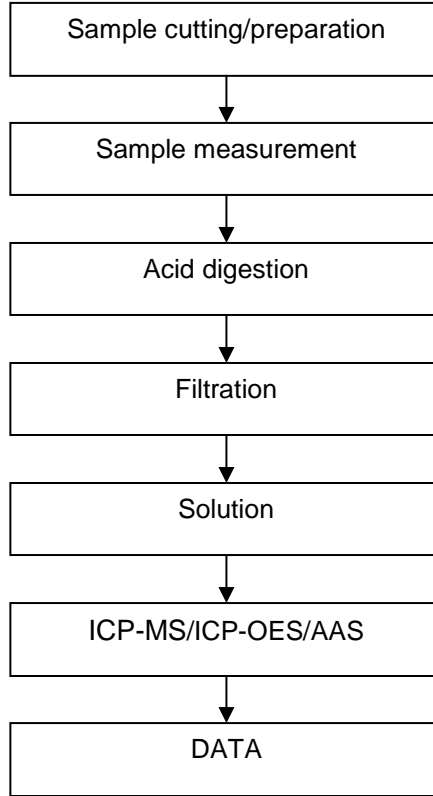
PFASs/ PFOS/PFOA Testing Flow Chart



Halogen Testing Flow Chart

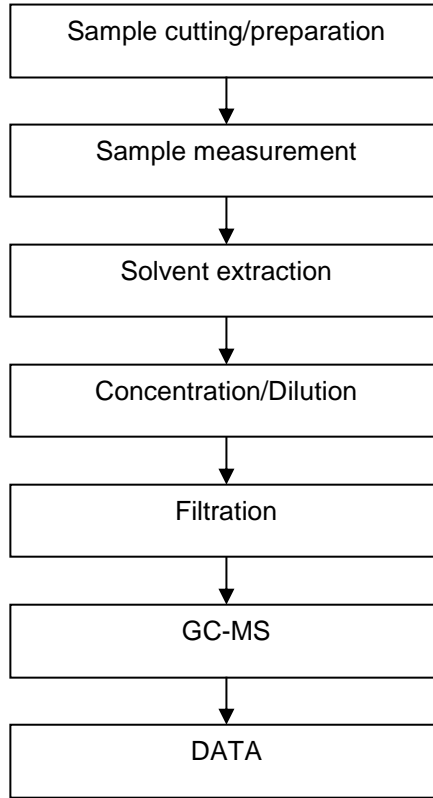


Elements Testing Flow Chart



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HBCDD Testing Flow Chart



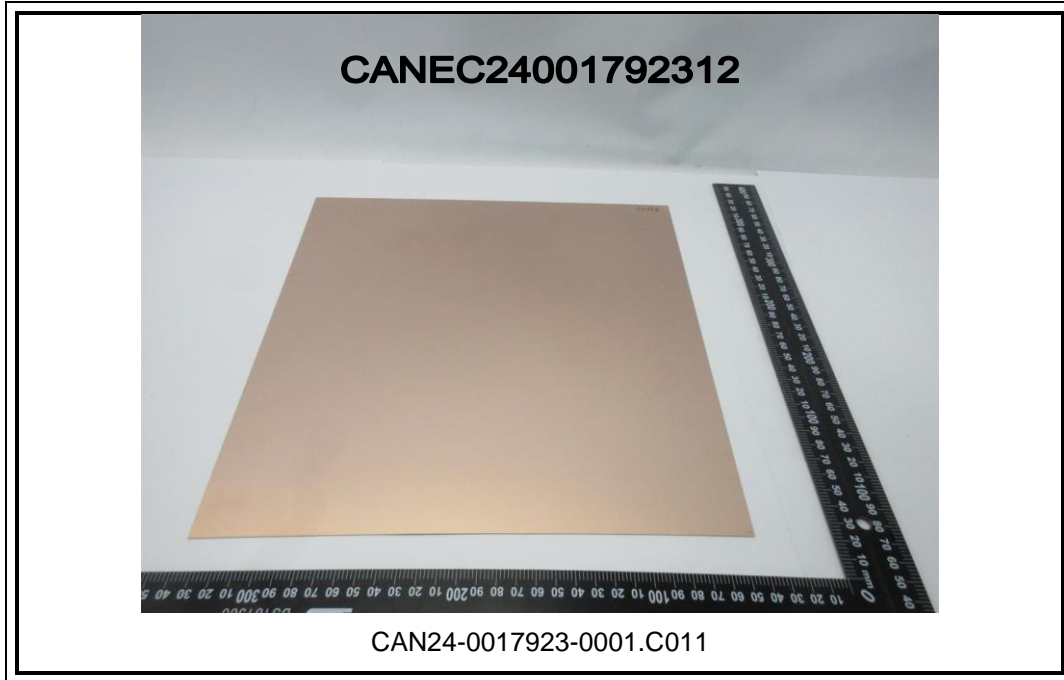
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Sample Photo:



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