

**LX MMA CORP.**

58, Yeosusandan 4-ro  
Yeosu-si, Jeollanam-do  
Korea



The following sample(s) was/were submitted and identified by/on behalf of the client as:-

**SGS File No.** : AYAA26-00904  
**Product Name** : CRYSTALUX(HP202)  
**Item No./Part No.** : N/A  
**Received Date** : 2026. 01. 07  
**Test Period** : 2026. 01. 07 to 2026. 01. 12  
**Test Results** : For further details, please refer to following page(s)



Monet Jeong

Technical Manager / SGS Korea Co., Ltd

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# Test Report No. F690101/LF-CTSAYAA26-00904

Issued Date : 2026. 01. 12

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Sample No. : AYAA26-00904.001  
Sample Description : CRYSTALUX(HP202)  
Item No./Part No. : N/A  
Materials : N/A

## Heavy Metals

| Test Items                   | Unit  | Test Method   | MDL | Results |
|------------------------------|-------|---|-----|---------|
| Cadmium (Cd)                 | mg/kg | With reference to IEC 62321-5 : 2013, by ICP-OES  | 0.5 | N.D.    |
| Lead (Pb)                    | mg/kg | With reference to IEC 62321-5 : 2013, by ICP-OES  | 5   | N.D.    |
| Mercury (Hg)                 | mg/kg | With reference to IEC 62321-4 : 2013+AMD1:2017CSV, by ICP-OES   | 2   | N.D.    |
| Hexavalent Chromium (Cr VI)+ | mg/kg | With reference to IEC 62321-7-2 : 2017, by UV-Vis and/or with reference to IEC 62321-5 : 2013, by ICP-OES | 8   | N.D.    |

## Total Metals

| Test Items     | Unit  | Test Method   | MDL | Results |
|----------------|-------|---|-----|---------|
| Beryllium (Be) | mg/kg | With reference to EPA 3052: 1996 / EPA 6010D: 2018, ICP-OES | 5   | N.D.    |
| Antimony (Sb)  | mg/kg | With reference to EPA 3052: 1996 / EPA 6010D: 2018, ICP-OES | 10  | N.D.    |

## Flame Retardants-PBBs/PBDEs

| Test Items              | Unit  | Test Method                                    | MDL | Results |
|-------------------------|-------|--|-----|---------|
| Monobromobiphenyl       | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5   | N.D.    |
| Dibromobiphenyl         | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5   | N.D.    |
| Tribromobiphenyl        | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5   | N.D.    |
| Tetrabromobiphenyl      | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5   | N.D.    |
| Pentabromobiphenyl      | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5   | N.D.    |
| Hexabromobiphenyl       | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5   | N.D.    |
| Heptabromobiphenyl      | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5   | N.D.    |
| Octabromobiphenyl       | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5   | N.D.    |
| Nonabromobiphenyl       | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5   | N.D.    |
| Decabromobiphenyl       | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5   | N.D.    |
| Monobromodiphenyl ether | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5   | N.D.    |
| Dibromodiphenyl ether   | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5   | N.D.    |
| Tribromodiphenyl ether  | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5   | N.D.    |

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**Sample No.** : AYAA26-00904.001  
**Sample Description** : CRYSTALUX(HP202)  
**Item No./Part No.** : N/A  
**Materials** : N/A

**Flame Retardants-PBBs/PBDEs**

| Test Items               | Unit  | Test Method                                    | MDL | Results |
|--------------------------|-------|--|-----|---------|
| Tetrabromodiphenyl ether | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5   | N.D.    |
| Pentabromodiphenyl ether | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5   | N.D.    |
| Hexabromodiphenyl ether  | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5   | N.D.    |
| Heptabromodiphenyl ether | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5   | N.D.    |
| Octabromodiphenyl ether  | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5   | N.D.    |
| Nonabromodiphenyl ether  | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5   | N.D.    |
| Decabromodiphenyl ether  | mg/kg | With reference to IEC 62321-6 : 2015, by GC-MS | 5   | N.D.    |

**Phthalates**

| Test Items  | Unit  | Test Method                                    | MDL | Results |
|---|-------|--|-----|---------|
| Di-methyl phthalate (DMP)                               | mg/kg | With reference to IEC 62321-8 : 2017, by GC-MS | 50  | N.D.    |
| Di-ethyl phthalate (DEP)                                | mg/kg | With reference to IEC 62321-8 : 2017, by GC-MS | 50  | N.D.    |
| Di-isobutyl phthalate (DIBP)                            | mg/kg | With reference to IEC 62321-8 : 2017, by GC-MS | 50  | N.D.    |
| Di-butyl phthalate (DBP)                                | mg/kg | With reference to IEC 62321-8 : 2017, by GC-MS | 50  | N.D.    |
| Bis(2-methoxyethyl) phthalate (BMP, BMEP, DMEP)         | mg/kg | With reference to IEC 62321-8 : 2017, by GC-MS | 50  | N.D.    |
| Di-iso-pentyl phthalate (DIPP)                          | mg/kg | With reference to IEC 62321-8 : 2017, by GC-MS | 50  | N.D.    |
| n-Pentyl-isopentyl phthalate (iPnPP)                    | mg/kg | With reference to IEC 62321-8 : 2017, by GC-MS | 50  | N.D.    |
| Di-n-pentyl phthalate (DPP, DnPP)                       | mg/kg | With reference to IEC 62321-8 : 2017, by GC-MS | 50  | N.D.    |
| Di-n-hexyl phthalate (DNHP)                             | mg/kg | With reference to IEC 62321-8 : 2017, by GC-MS | 50  | N.D.    |
| Benzyl butyl phthalate (BBP)                            | mg/kg | With reference to IEC 62321-8 : 2017, by GC-MS | 50  | N.D.    |
| [di(C6-C8 alkyl)phthalate] branched (DIHP)              | mg/kg | With reference to IEC 62321-8 : 2017, by GC-MS | 50  | N.D.    |
| Di-(2-ethylhexyl) phthalate (DEHP)                      | mg/kg | With reference to IEC 62321-8 : 2017, by GC-MS | 50  | N.D.    |
| Di-n-octyl phthalate (DNOP)                             | mg/kg | With reference to IEC 62321-8 : 2017, by GC-MS | 50  | N.D.    |
| Di-isononyl phthalate (DINP)                            | mg/kg | With reference to IEC 62321-8 : 2017, by GC-MS | 50  | N.D.    |
| Di-isodecyl phthalate (DIDP)                            | mg/kg | With reference to IEC 62321-8 : 2017, by GC-MS | 50  | N.D.    |
| [di(C7-C11 alkyl)phthalate] linear and branched (DHNUP) | mg/kg | With reference to IEC 62321-8 : 2017, by GC-MS | 50  | N.D.    |

**Polymer Identification**

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# Test Report No. F690101/LF-CTSAYAA26-00904

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Sample No. : AYAA26-00904.001  
Sample Description : CRYSTALUX(HP202)  
Item No./Part No. : N/A  
Materials : N/A

## Polymer Identification

| Test Items | Unit | Test Method | MDL | Results  |
|------------|------|-------------|-----|----------|
| PVC        | **   | FT-IR       | -   | Negative |

## Halogen Content

| Test Items   | Unit  | Test Method                                     | MDL | Results |
|--------------|-------|---|-----|---------|
| Fluorine(F)  | mg/kg | With reference to IEC 62321-3-2 : 2020, by C-IC | 30  | N.D.    |
| Chlorine(Cl) | mg/kg | With reference to IEC 62321-3-2 : 2020, by C-IC | 30  | N.D.    |
| Bromine(Br)  | mg/kg | With reference to IEC 62321-3-2 : 2020, by C-IC | 30  | N.D.    |
| Iodine(I)    | mg/kg | With reference to IEC 62321-3-2 : 2020, by C-IC | 30  | N.D.    |

## PFAS (Per- and polyfluoroalkyl substances)

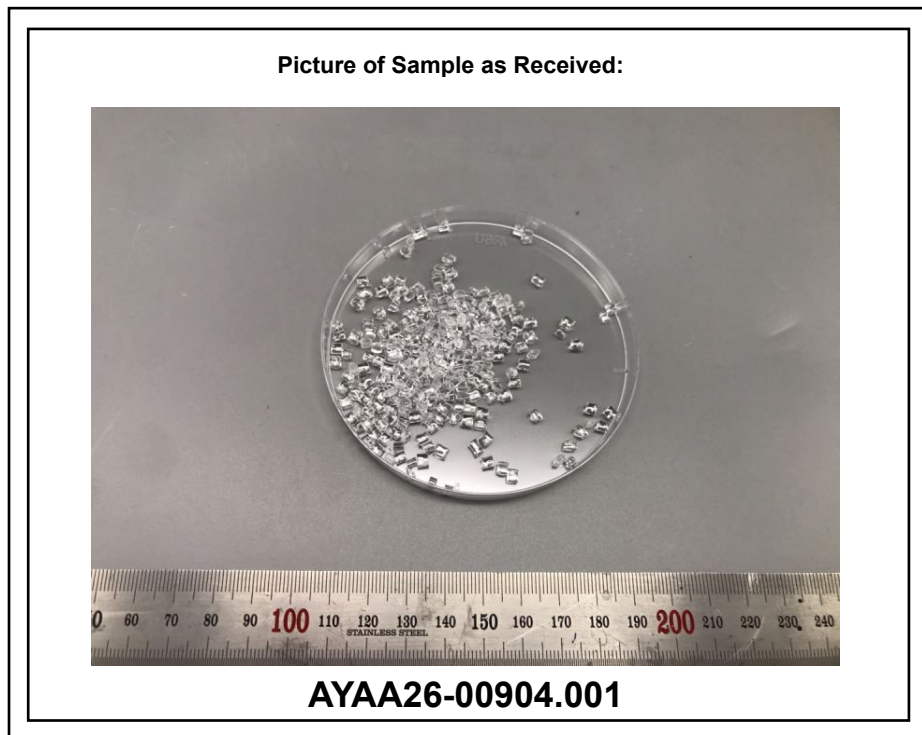
| Test Items                          | Unit  | Test Method   | MDL | Results |
|-------------------------------------|-------|---|-----|---------|
| Perfluorootanoic acid (PFOA)        | µg/kg | With reference to EN 17681-1:2025, HPLC-MS-MS/GC-MS | 10  | N.D.    |
| Perfluorooctanesulfonic Acid (PFOS) | µg/kg | With reference to EN 17681-1:2025, HPLC-MS-MS/GC-MS | 10  | N.D.    |

## Flame Retardants

| Test Items                     | Unit  | Test Method                        | MDL | Results |
|--------------------------------|-------|------------------------------------|-----|---------|
| Hexabromocyclododecane (HBCDD) | mg/kg | With reference to EPA 3540C, LC/MS | 5   | N.D.    |

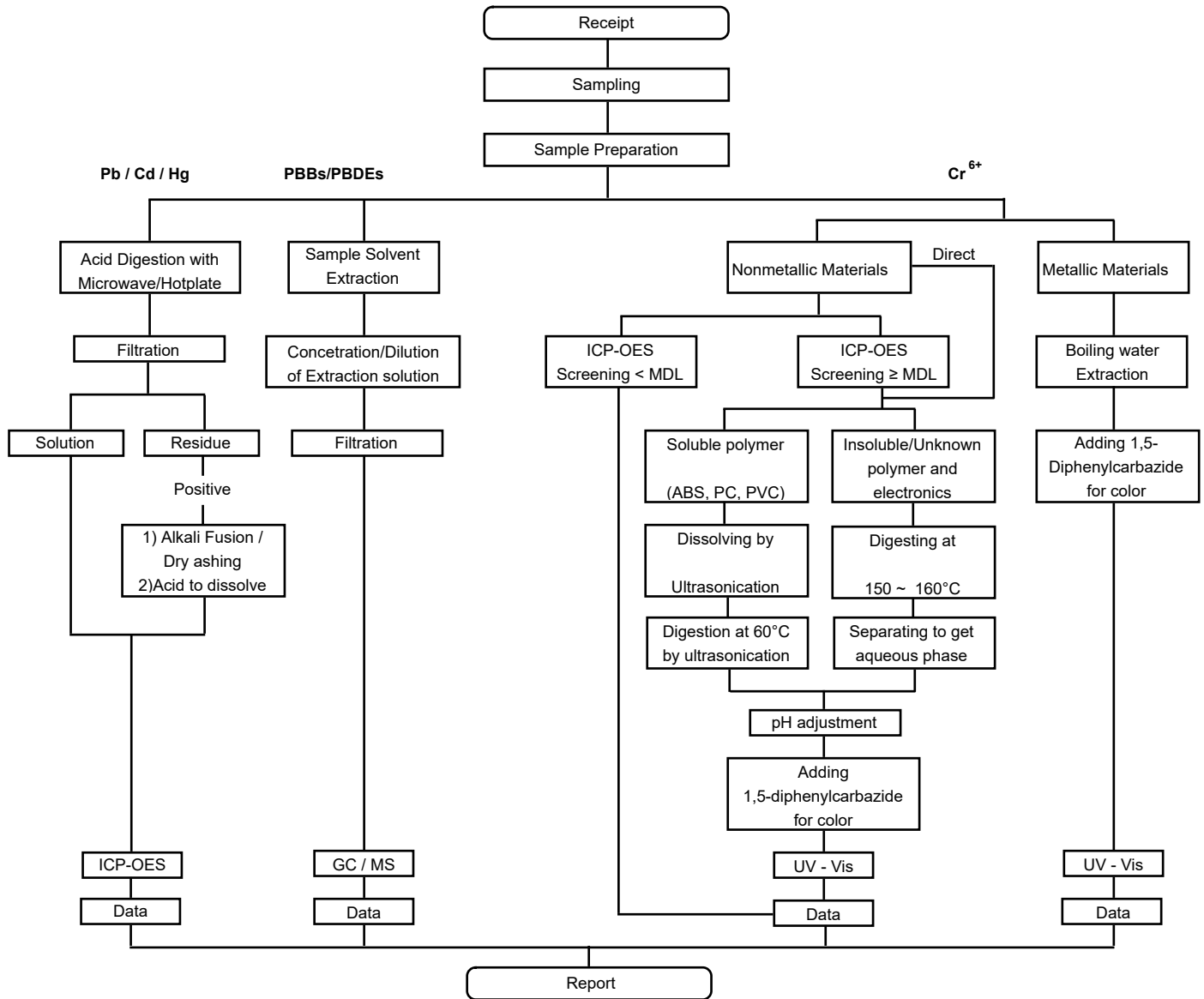
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- NOTE:
- (1) N.D. = Not detected. (<MDL)
  - (2) mg/kg = ppm, ug/kg = ppb, mg/L = ppm
  - (3) MDL = Method Detection Limit
  - (4) - = No regulation
  - (5) \*\* = Qualitative analysis (No Unit)
  - (6) Negative = Undetectable / Positive = Detectable
  - (7) + = a. The result of Hexavalent Chromium (Cr(VI)) is "ND" as the result of Chromium (Cr) is "ND", and confirmation test of Hexavalent Chromium (Cr(VI)) is not required.  
b. If the content of Total Chromium (Cr) is greater than the MDL of Hexavalent Chromium (Cr(VI)), it is the result of hexavalent Chromium by UV-VIS.
  - (8) ++ = a. The sample is positive for Cr VI if the Cr VI concentration is greater than 0.13 ug/cm<sup>2</sup>. The sample coating is considered to contain Cr VI.  
b. The sample is negative for Cr VI if Cr VI is ND(concentration less than 0.10 ug/cm<sup>2</sup>). The coating is considered a non-Cr VI based coating.  
c. The result between 0.10 ug/cm<sup>2</sup> and 0.13 ug/cm<sup>2</sup> is considered to be inconclusive – unavoidable coating variations may influence the determination.



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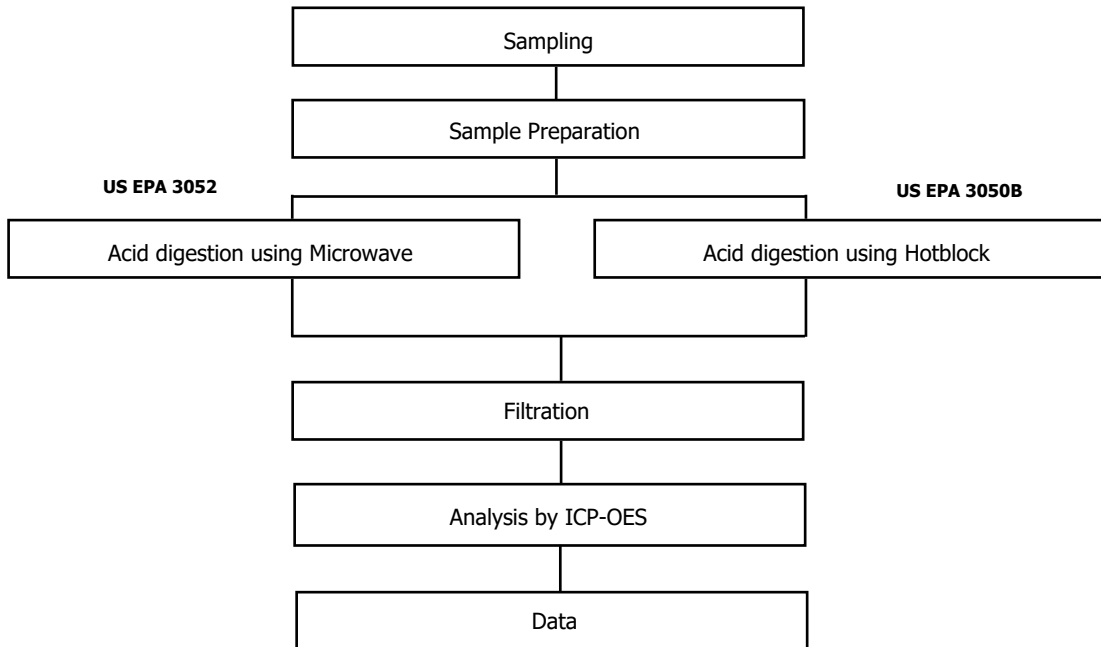
Flow Chart for RoHS Pb / Cd / Hg / Cr<sup>6+</sup> / PBBs&PBDEs Test



The samples were dissolved totally at the acid digestion step of the above flow chart for Cd, Pb, Hg.

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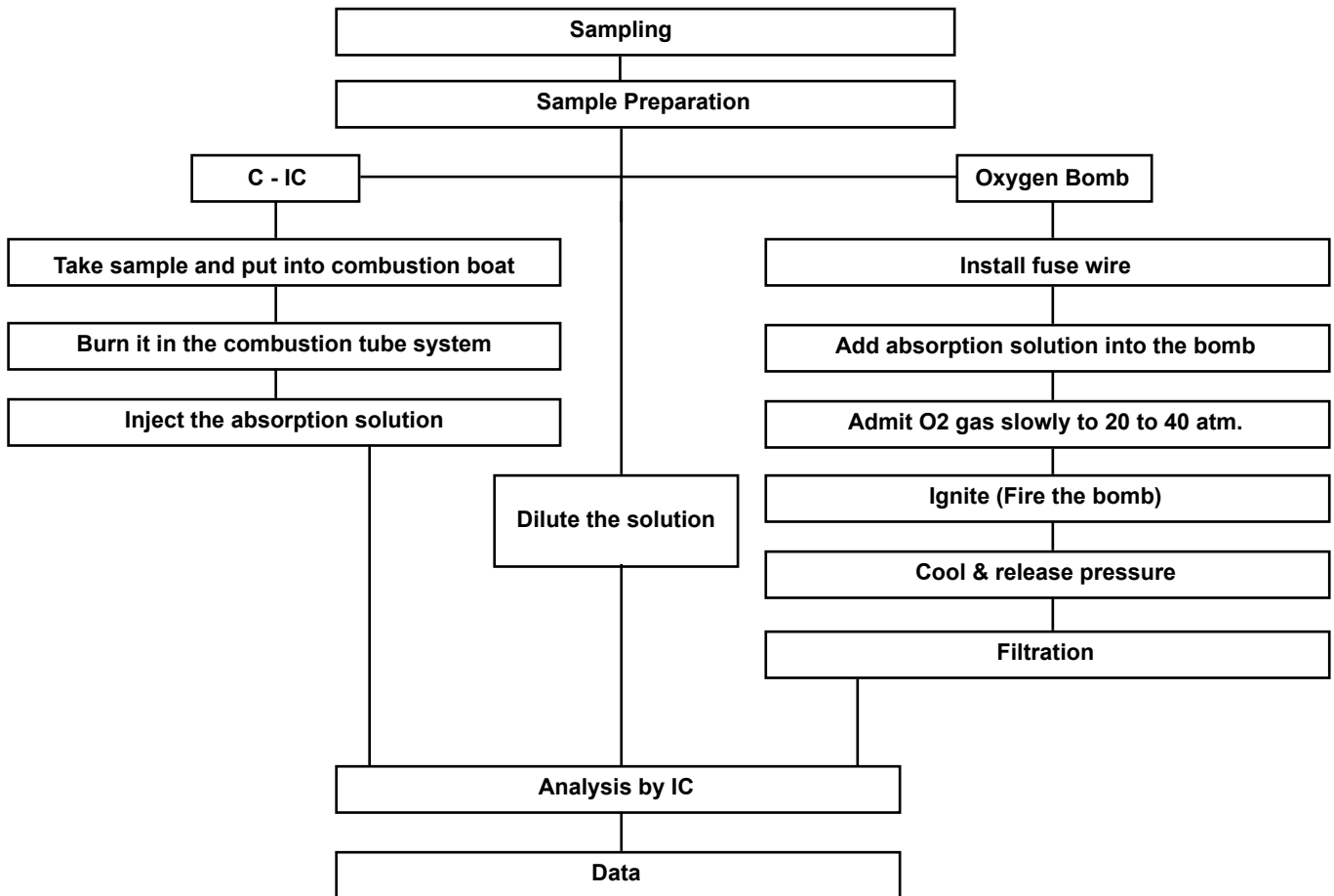
**Flow Chart for Heavy metal**



|                              |   |
|------------------------------|---|
| Major Inorganic Heavy Metals | Antimony(Sb) , Beryllium(Be) , Phosphorus(P) , Arsenic(As) etc. |
|------------------------------|---|

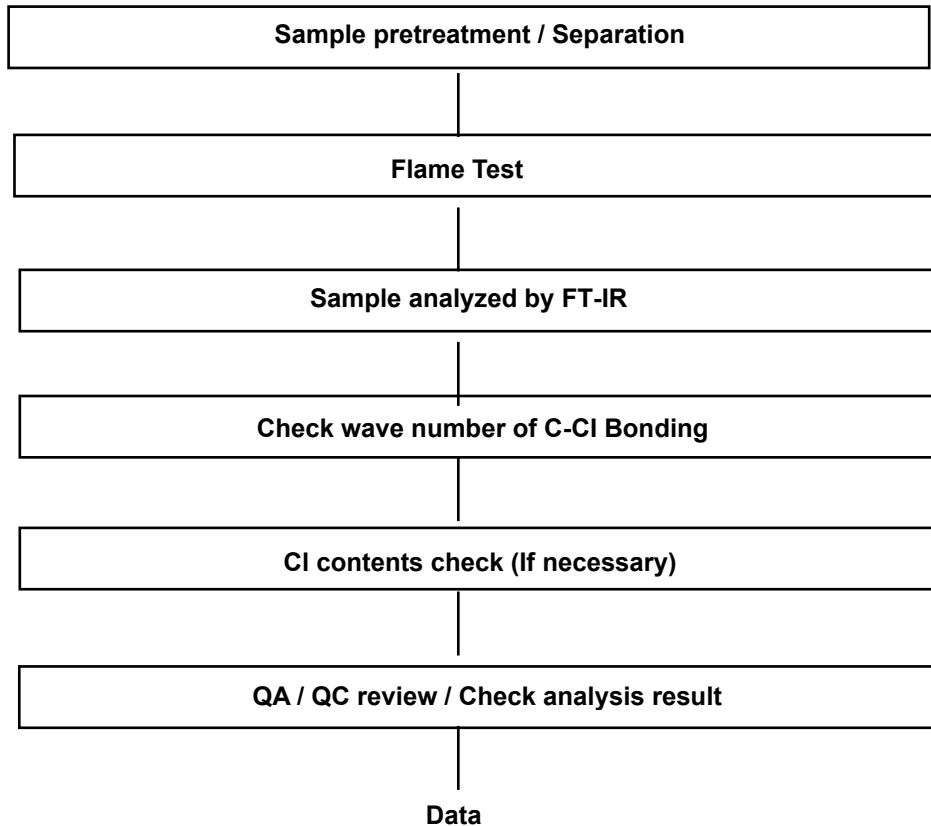
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### Flow Chart for Halogen Test



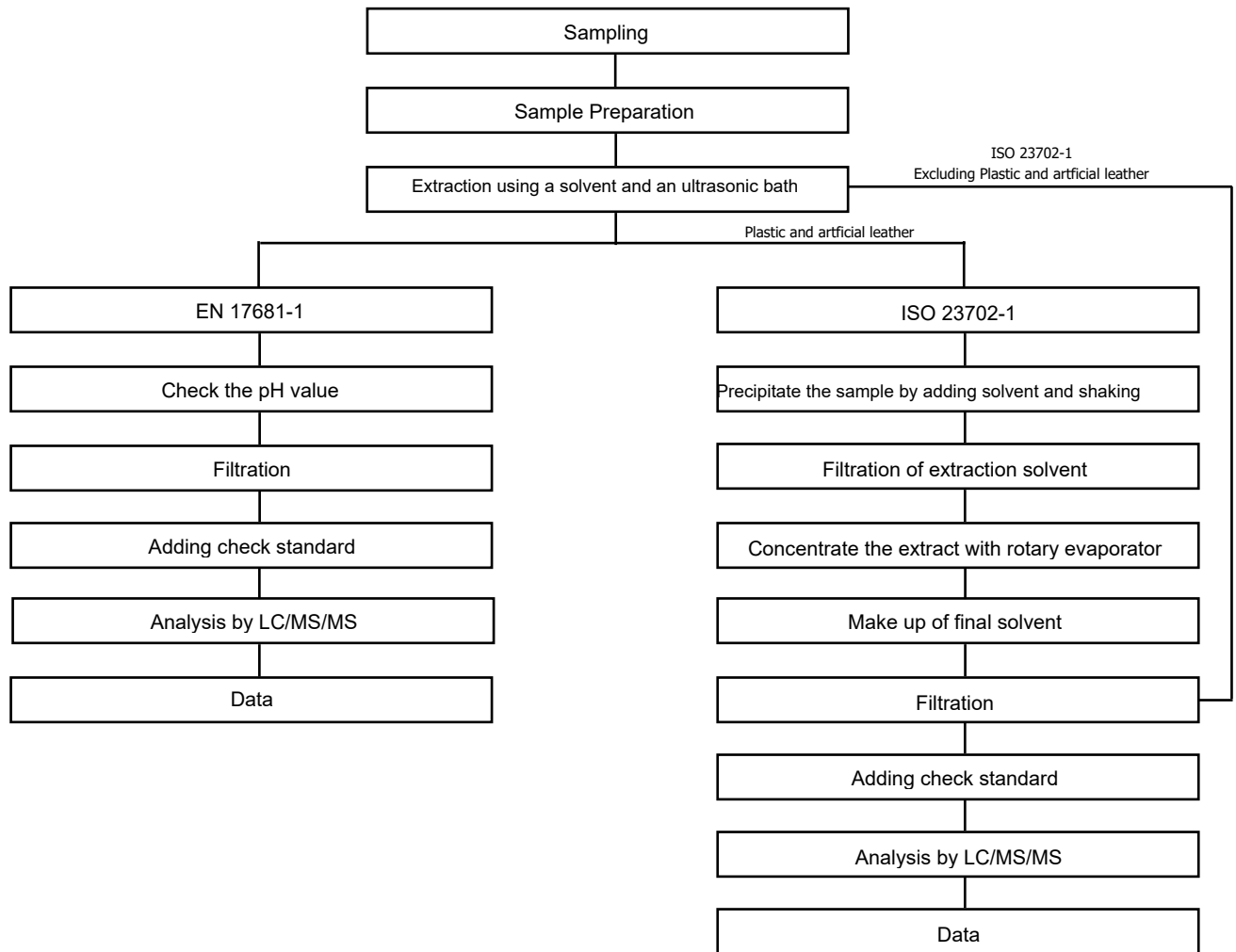
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### Flow Chart for PVC Test



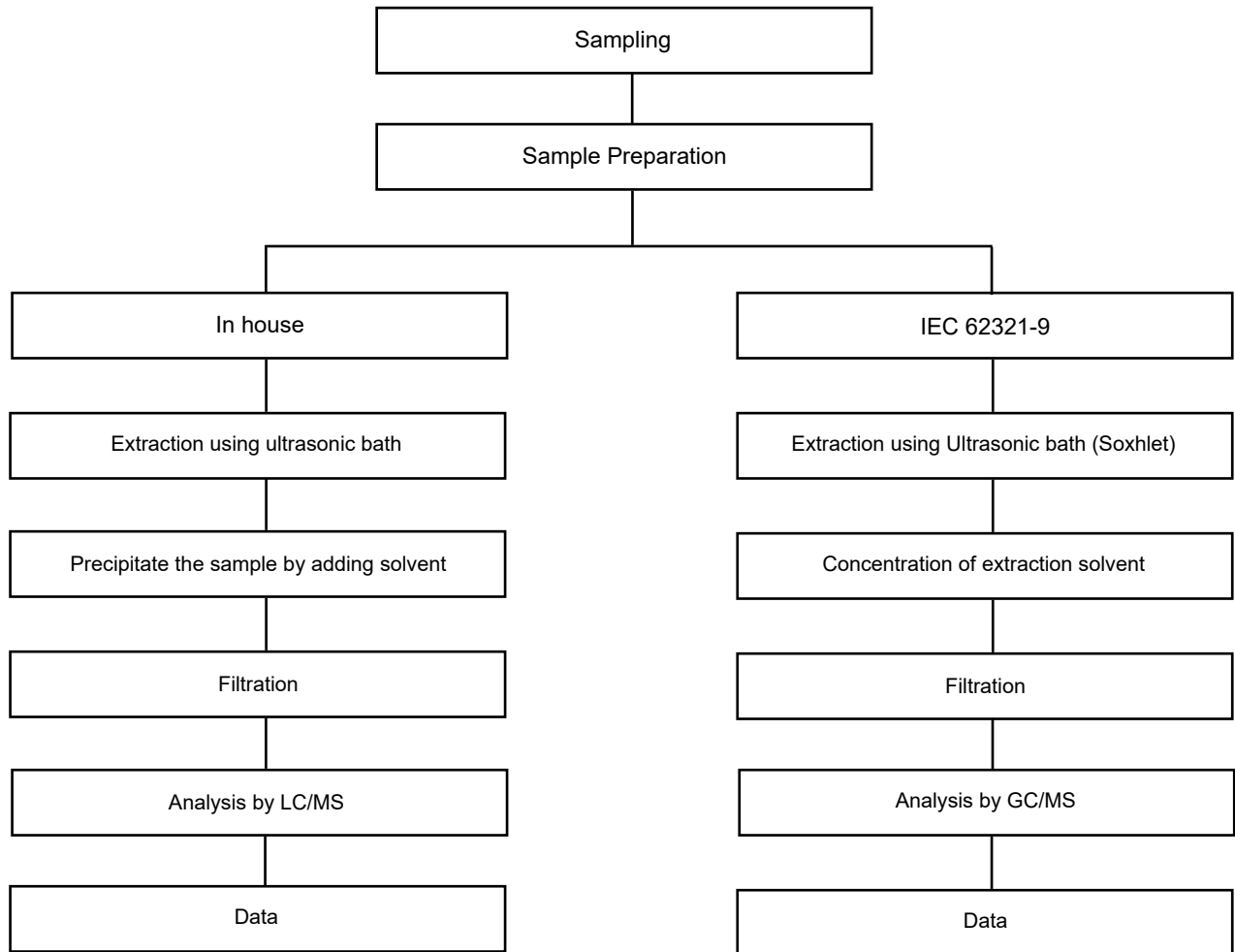
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**Flow Chart for PFAS  
(All material)**



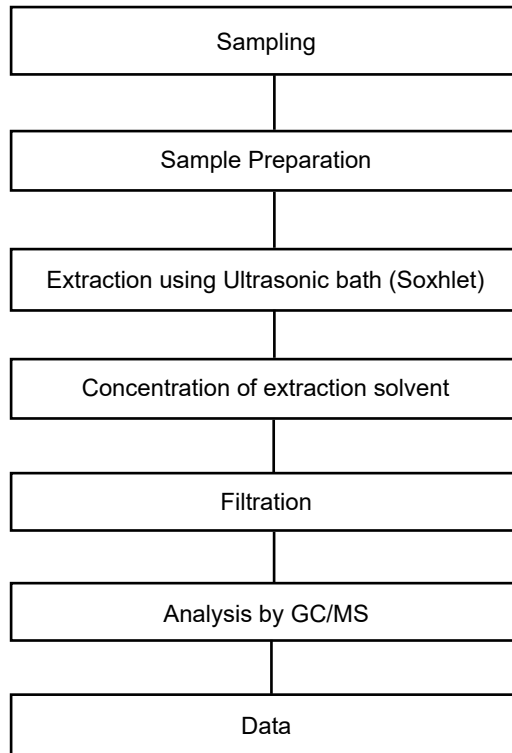
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Flow Chart for HBCDD



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Flow Chart for IEC Phthalates



\*\*\* End of Report \*\*\*

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