

## Test Report

No. : CE/2010/B2286 Date : 2010/11/18 Page : 1 of 14

CHANG CHUN PLASTICS CO., LTD.  
(CHANG CHUN SB (CHANG SHU) CO., LTD.)  
NO. 8, CHUNG HWA ROAD, HSINCHU INDUSTRIAL DISTRICT, TAIWAN  
(CHANGCHUN RD., RIVERSIDE INDUSTRIAL PARK, CHANGSHU ECONOMIC DEVELOPMENT ZONE,  
JIANGSU, CHINA)



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

Sample Description : EPOXY MOLDING COMPOUND  
Style/Item No. : EME-E110G、EME-E120G、EME-E190、EME-E210、EME-E220、EME-E280、  
EME-E115、EME-E125、EG-100、EG-200、ER110、ER120 SERIES。◦  
Buyer/Order No. : TSU KONG CO., LTD.  
Sample Receiving Date : 2010/11/10  
Testing Period : 2010/11/10 TO 2010/11/18

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

Conclusion : 1. Base upon the performed tests by submitted samples, the test results of PAHs comply with the PAHs requirement according to (Category 1) of ZEK 01.2-08 of German ZLS and its amendments.  
2. Based upon the performed tests by submitted samples, the test results of Cadmium, Lead, Mercury, Hexavalent Chromium Cr(VI), PBBs and PBDEs comply with the limits of RoHS Directive 2002/95/EC and its subsequent amendments.

  
  
Chenyu Kung / Operation Manager  
Signed for and on behalf of  
SGS TAIWAN LTD.  
Chemical Laboratory – Taipei

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## Test Result(s)

PART NAME No.1 : BLACK GRAIN

| Test Item (s):  | Unit  | Method  | MDL | Result | Limit |
|---|-------|---|-----|--------|-------|
|   |       |   |     | No.1   |       |
| Cadmium (Cd)  | mg/kg | With reference to IEC 62321: 2008 and performed by ICP-AES.                                     | 2   | n.d.   | 100   |
| Lead (Pb)   | mg/kg | With reference to IEC 62321: 2008 and performed by ICP-AES.                                     | 2   | n.d.   | 1000  |
| Mercury (Hg)  | mg/kg | With reference to IEC 62321: 2008 and performed by ICP-AES.                                     | 2   | n.d.   | 1000  |
| Hexavalent Chromium Cr(VI) by alkaline extraction                                     | mg/kg | With reference to IEC 62321: 2008 and performed by UV-VIS.                                      | 2   | n.d.   | 1000  |
| Antimony (Sb)   | mg/kg | With reference to US EPA Method 3050B for Antimony Content. Analysis was performed by ICP-AES.  | 2   | n.d.   | -     |
| Phosphorus (P)  | mg/kg | With reference to US EPA Method 3052 for Phosphorus Content. Analysis was performed by ICP-AES. | 2   | 152    | -     |
| Perfluorooctane sulfonates (PFOS)<br>PFOS – Acid<br>PFOS – Metal Salt<br>PFOS – Amide | mg/kg | With reference to US EPA 3540C: 1996 method for PFOS Content. Analysis was performed by LC/MS.  | 10  | n.d.   | -     |
| PFOA (CAS No.: 000335-67-1)   | mg/kg | With reference to US EPA 3540C: 1996 method for PFOA Content. Analysis was performed by LC/MS.  | 10  | n.d.   | -     |
| Tetrabromobisphenol A (TBBP-A) (CAS No.: 000079-94-7)                                 | mg/kg | With reference to DIN 53313. Analysis was performed by GC/MS.                                   | 10  | n.d.   | -     |
| Bisphenol A (CAS No.: 000080-05-7)  | mg/kg | With reference to RSTS-HL-229-1 method. Analysis was performed by LC/MS.                        | 1   | 20.8   | -     |

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| Test Item (s):                               | Unit  | Method  | MDL | Result | Limit |
|--|-------|---|-----|--------|-------|
|  |       |   |     | No.1   |       |
| <b>Sum of PBBs</b>                           | mg/kg | With reference to IEC 62321: 2008 and performed by GC/MS.         | -   | n.d.   | 1000  |
| Monobromobiphenyl                            |       |   | 5   | n.d.   | -     |
| Dibromobiphenyl                              |       |   | 5   | n.d.   | -     |
| Tribromobiphenyl                             |       |   | 5   | n.d.   | -     |
| Tetrabromobiphenyl                           |       |   | 5   | n.d.   | -     |
| Pentabromobiphenyl                           |       |   | 5   | n.d.   | -     |
| Hexabromobiphenyl                            |       |   | 5   | n.d.   | -     |
| Heptabromobiphenyl                           |       |   | 5   | n.d.   | -     |
| Octabromobiphenyl                            |       |   | 5   | n.d.   | -     |
| Nonabromobiphenyl                            |       |   | 5   | n.d.   | -     |
| Decabromobiphenyl                            |       |   | 5   | n.d.   | -     |
| <b>Sum of PBDEs</b>                          |       |   | -   | n.d.   | 1000  |
| Monobromodiphenyl ether                      |       |   | 5   | n.d.   | -     |
| Dibromodiphenyl ether                        |       |   | 5   | n.d.   | -     |
| Tribromodiphenyl ether                       |       |   | 5   | n.d.   | -     |
| Tetrabromodiphenyl ether                     |       |   | 5   | n.d.   | -     |
| Pentabromodiphenyl ether                     |       |   | 5   | n.d.   | -     |
| Hexabromodiphenyl ether                      |       |   | 5   | n.d.   | -     |
| Heptabromodiphenyl ether                     |       |   | 5   | n.d.   | -     |
| Octabromodiphenyl ether                      |       |   | 5   | n.d.   | -     |
| Nonabromodiphenyl ether                      | 5     | n.d.  | -   |        |       |
| Decabromodiphenyl ether                      | 5     | n.d.  | -   |        |       |
| <b>Halogen</b>                               |       |   |     |        |       |
| Halogen-Fluorine (F) (CAS No.: 014762-94-8)  | mg/kg | With reference to BS EN 14582:2007. Analysis was performed by IC. | 50  | n.d.   | -     |
| Halogen-Chlorine (Cl) (CAS No.: 022537-15-1) | mg/kg | With reference to BS EN 14582:2007. Analysis was performed by IC. | 50  | 124    | -     |
| Halogen-Bromine (Br) (CAS No.: 010097-32-2)  | mg/kg | With reference to BS EN 14582:2007. Analysis was performed by IC. | 50  | n.d.   | -     |
| Halogen-Iodine (I) (CAS No.: 014362-44-8)    | mg/kg | With reference to BS EN 14582:2007. Analysis was performed by IC. | 50  | n.d.   | -     |

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| Test Item (s):                                  | Unit  | Method  | MDL | Result | Limit |
|---|-------|---|-----|--------|-------|
|   |       |   |     | No.1   |       |
| <b>Polynuclear Aromatic Hydrocarbons (PAHs)</b> |       |   |     |        |       |
| Acenaphthene (CAS No.: 000083-32-9)             | mg/kg | With reference to ZLS standard ZEK 01.2-08 method. Analysis was performed by GC/MS. | 0.2 | n.d.   | -     |
| Acenaphthylene (CAS No.: 000208-96-8)           |       |   | 0.2 | n.d.   | -     |
| Anthracene (CAS No.: 000120-12-7)               |       |   | 0.2 | n.d.   | -     |
| Benzo[a]anthracene (CAS No.: 000056-55-3)       |       |   | 0.2 | n.d.   | -     |
| Benzo[a]pyrene (CAS No.: 000050-32-8)           |       |   | 0.2 | n.d.   | -     |
| Benzo[b]fluoranthene (CAS No.: 000205-99-2)     |       |   | 0.2 | n.d.   | -     |
| Benzo[g,h,i]perylene (CAS No.: 000191-24-2)     |       |   | 0.2 | n.d.   | -     |
| Benzo[k]fluoranthene (CAS No.: 000207-08-9)     |       |   | 0.2 | n.d.   | -     |
| Chrysene (CAS No.: 000218-01-9)                 |       |   | 0.2 | n.d.   | -     |
| Dibenzo[a,h]anthracene (CAS No.: 000053-70-3)   |       |   | 0.2 | n.d.   | -     |
| Fluoranthene (CAS No.: 000206-44-0)             |       |   | 0.2 | n.d.   | -     |
| Fluorene (CAS No.: 000086-73-7)                 |       |   | 0.2 | n.d.   | -     |
| Indeno[1,2,3-c,d] pyrene (CAS No.: 000193-39-5) |       |   | 0.2 | n.d.   | -     |
| Naphthalene (CAS No.: 000091-20-3)              |       |   | 0.2 | n.d.   | -     |
| Phenanthrene (CAS No.: 000085-01-8)             |       |   | 0.2 | n.d.   | -     |
| Pyrene (CAS No.: 000129-00-0)                   |       |   | 0.2 | n.d.   | -     |
| Sum of 16 PAHs                                  | -     | n.d.  | -   |        |       |

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**Note :**

1. mg/kg = ppm : 0.1wt% = 1000ppm
2. n.d. = Not Detected
3. MDL = Method Detection Limit
4. " - " = Not Regulated

**Reference information for PAHs:**

**Requirement of ZEK 01.2-08 : Restraining maximum values for products**

| Parameter                  | Category 1  | Category 2   | Category 3   |
|----------------------------|---|--|--|
|                            | Materials in contact with foodstuff or materials which are meant to put in the mouth as well as toys for children <36 months. | Materials with foreseeable skin contact >30 s (prolonged skin contact) and toys not covered by category 1. | Materials with foreseeable skin contact <30 s (short time skin contact) or without skin contact. |
| Benzo[a]pyrene (mg/kg)     | <MDL (<0.2)**   | 1  | 20   |
| Sum of 16 EPA-PAH (mg/kg)* | <MDL (<0.2)**   | 10   | 200  |

**Remark :**

\* = Only PAH substances >0.2 mg/kg are taken into account while calculating the sum of PAHs

\*\* = In case that the maximum values exceed the limits of category 1, but are within the limits of category 2, one may confirm the suitability of the tested material for contact with foodstuff or oral mucosa by additional specific migration tests of PAH components based on DIN EN 1186ff and §64 LFGB 80.30-1. The conclusion of the migration test results must be made based on food law criteria.

**PFOS Reference Information : Directive 2006/122/EC**

(1) May not be placed on the market or used as a substance or constituent of preparations in a concentration equal to or higher than 0.005 % by mass.

(2) May not be placed on the market in semi-finished products or articles, or parts thereof, if the concentration of PFOS is equal to or higher than 0.1 % by mass calculated with reference to the mass of structurally or microstructurally distinct parts that contain PFOS or, for textiles or other coated materials, if the amount of PFOS is equal to or higher than 1µg/m<sup>2</sup> of the coated material.

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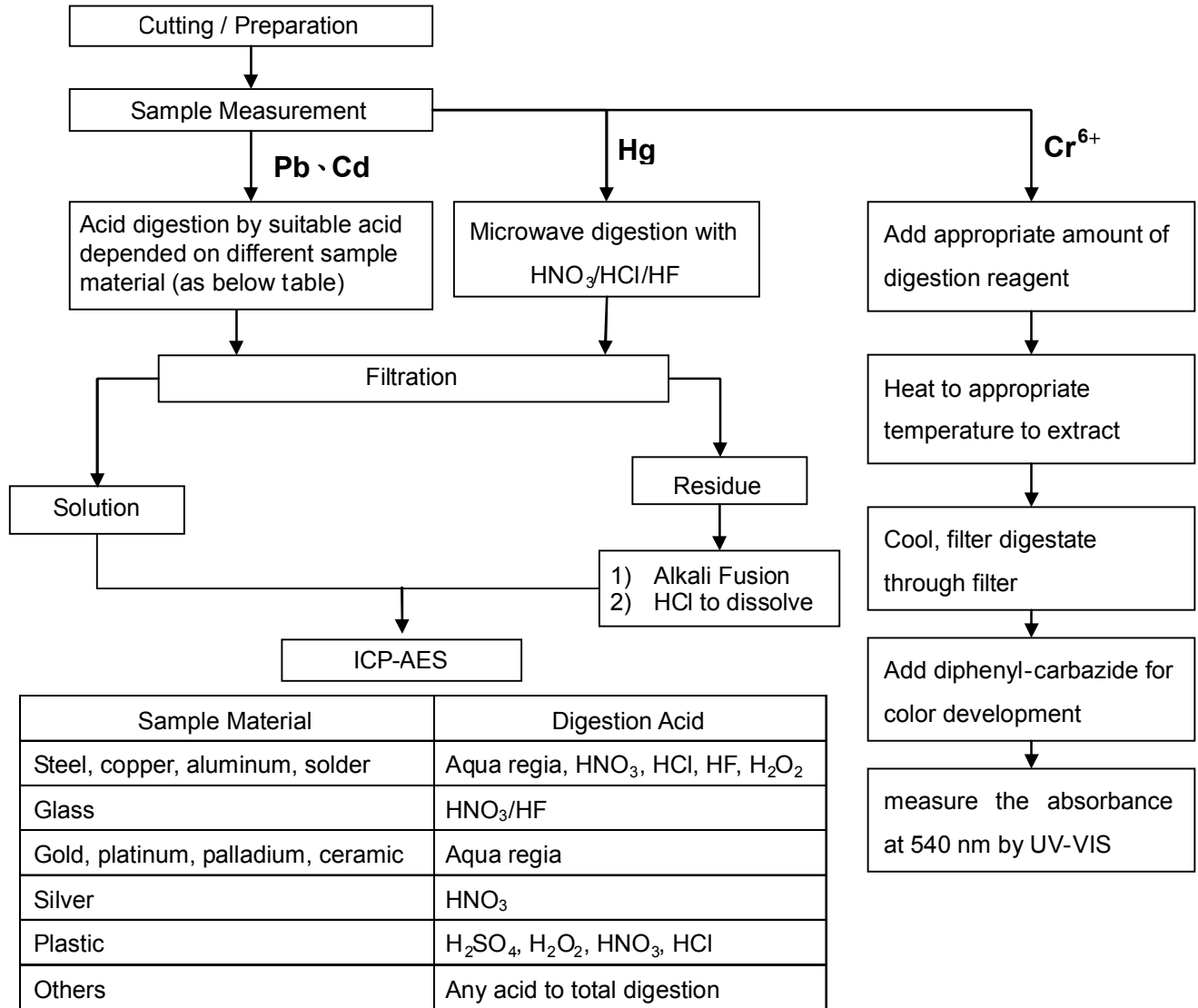
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- 1) These samples were dissolved totally by pre-conditioning method according to below flow chart.  
 (Cr<sup>6+</sup> test method excluded)
- 2) Name of the person who made measurement: Climbgreat Yang
- 3) Name of the person in charge of measurement: Troy Chang



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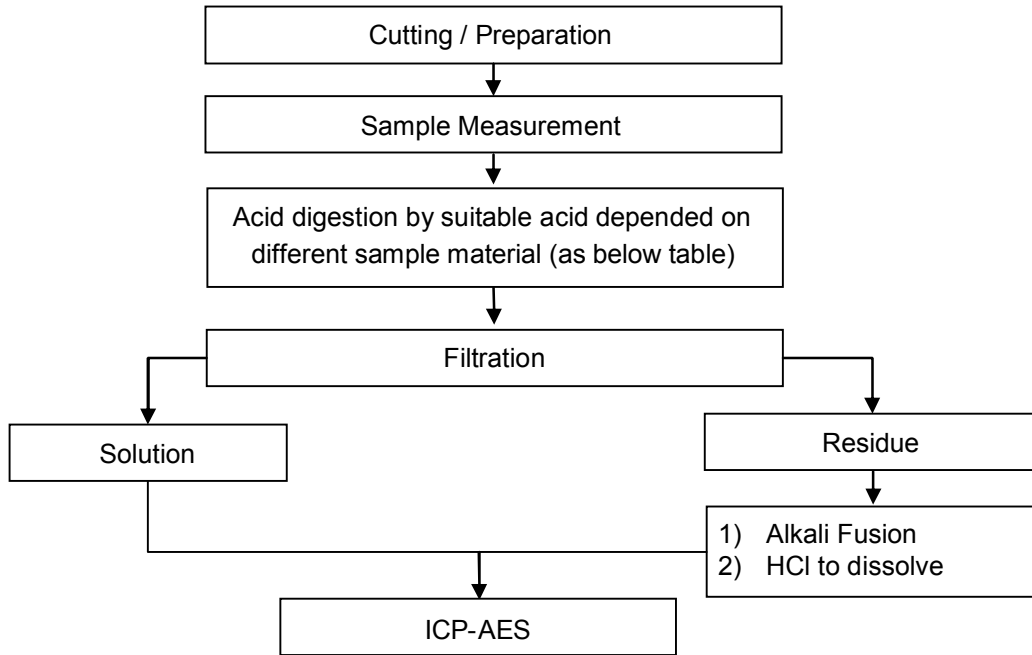
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 JIANGSU, CHINA)

- 1) These samples were dissolved totally by pre-conditioning method according to below flow chart.
- 2) Name of the person who made measurement: Climbgreat Yang
- 3) Name of the person in charge of measurement: Troy Chang

### Flow Chart of digestion for the elements analysis performed by ICP-AES



|                                    |   |
|------------------------------------|---|
| Steel, copper, aluminum, solder    | Aqua regia, HNO <sub>3</sub> , HCl, HF, H <sub>2</sub> O <sub>2</sub>                   |
| Glass                              | HNO <sub>3</sub> /HF  |
| Gold, platinum, palladium, ceramic | Aqua regia  |
| Silver                             | HNO <sub>3</sub>  |
| Plastic                            | H <sub>2</sub> SO <sub>4</sub> , H <sub>2</sub> O <sub>2</sub> , HNO <sub>3</sub> , HCl |
| Others                             | Any acid to total digestion   |

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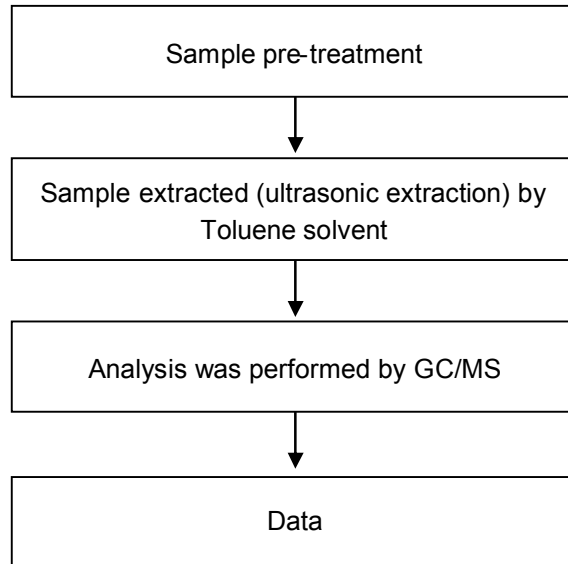
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### PAHs (Polynuclear Aromatic Hydrocarbons) analytical flow chart

- 1) Name of the person who made measurement: Andy Shu
- 2) Name of the person in charge of measurement: Shinjyh Chen



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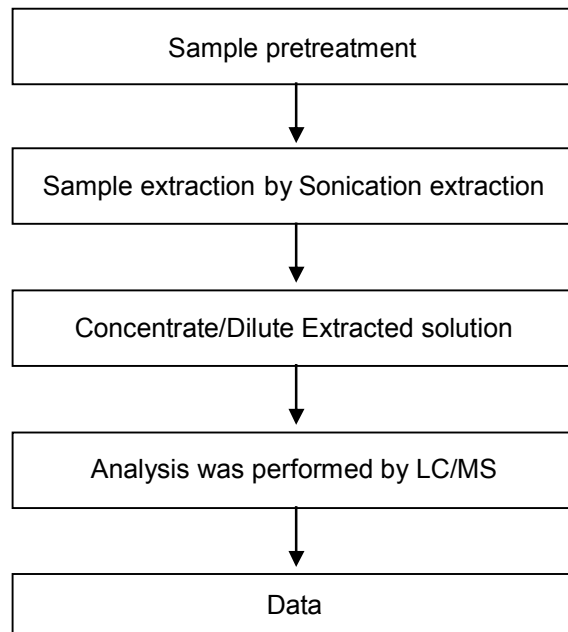


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### Analytical flow chart

- 1) Name of the person who made measurement: Scott Ku
- 2) Name of the person in charge of measurement: Troy Chang

■ Test Items: Bisphenol A



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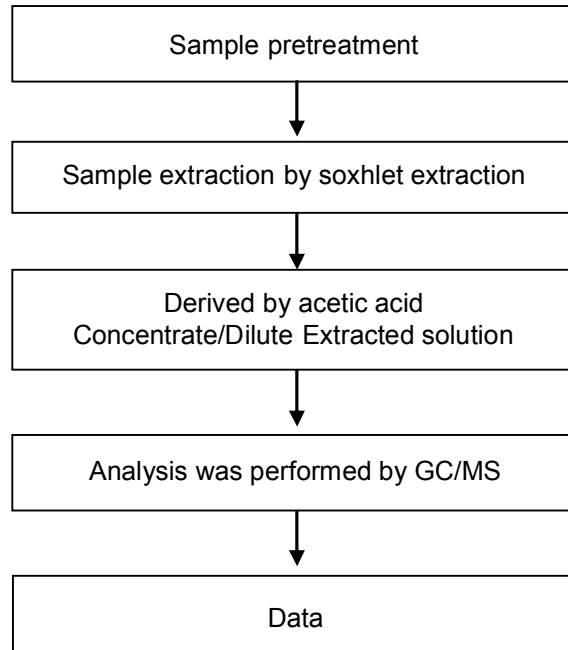


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### Analytical flow chart

- 1) Name of the person who made measurement: Lydia Fu
- 2) Name of the person in charge of measurement: Shinjyh Chen

■ Test Items: TBBP-A 、 Bisphenol A



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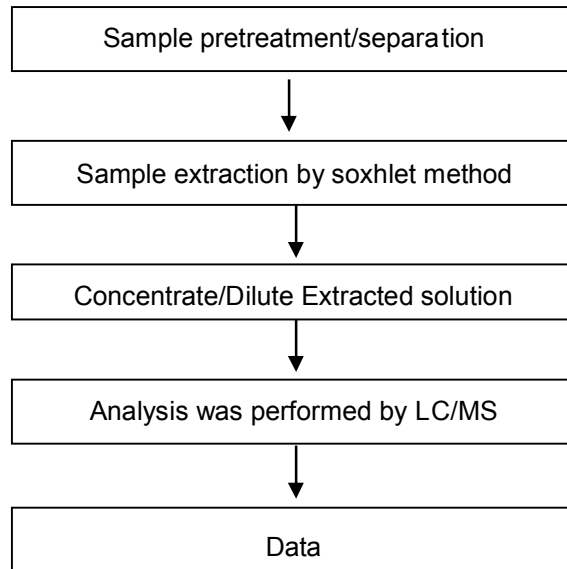


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### Analytical flow chart of Soxhlet extraction (LC/MS) procedure

- 1) Name of the person who made measurement: Lydia Fu
- 2) Name of the person in charge of measurement: Shinjyh Chen

■ Test Items: PFOS/PFOA、Benzotriazole



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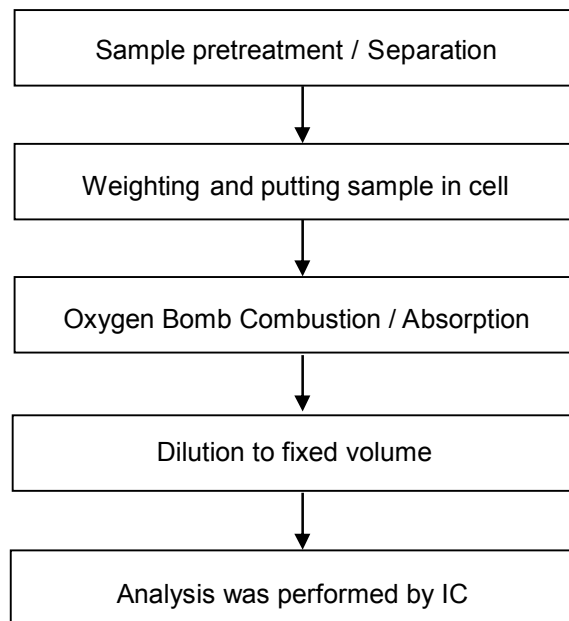
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### Analytical flow chart of halogen content

- 1) Name of the person who made measurement: Rita Chen
- 2) Name of the person in charge of measurement: Troy Chang



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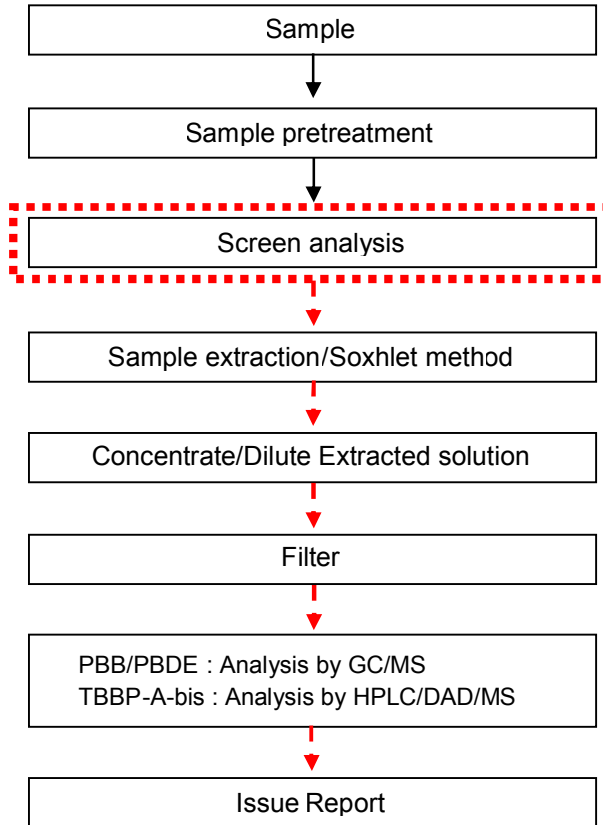
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### Analytical flow chart

- 1) Name of the person who made measurement: Roman Wong
- 2) Name of the person in charge of measurement: Troy Chang

■ Test Items: PBB/PBDE, TBBP-A-bis

First testing process —> Optional screen process ..... Confirmation process ->



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

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