

## Test Report

No. CANEC1613995507

Date: 25 Jul 2016

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KINGBOARD LAMINATES HOLDINGS LIMITED

2/F., HARBOUR VIEW 1, NO. 12 SCIENCE PARK EAST AVENUE, PHASE II HONG KONG SCIENCE PARK, SHATIN, N.T., HONG KONG

The following sample(s) was/were submitted and identified on behalf of the clients as : KB-6165GC

SGS Job No. : CP16-045773 - GZ

Model No. : KB-6165GC

Client Ref. Info. : KB-6165G

Date of Sample Received : 18 Jul 2016

Testing Period : 18 Jul 2016 - 22 Jul 2016


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



Merry Lv  
Approved Signatory



Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
SN1	CAN16-139955.003	Yellow sheet

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 :
- (1)With reference to IEC 62321-5:2013, determination of Cadmium by ICP-OES.
  - (2)With reference to IEC 62321-5:2013, determination of Lead by ICP-OES.
  - (3)With reference to IEC 62321-4:2013, determination of Mercury by ICP-OES.
  - (4)With reference to IEC 62321:2008, determination of Hexavalent Chromium by Colorimetric Method using UV-Vis.
  - (5)With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.
  - (6)With reference to IEC 62321-8:2013 (111/321/CD) , determination of phthalates by GC-MS.

Test Item(s)	Limit	Unit	MDL	003
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1,000	mg/kg	2	11
Mercury (Hg)	1,000	mg/kg	2	ND
Hexavalent Chromium (CrVI)	1,000	mg/kg	2	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



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<u>Test Item(s)</u>	<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>003</u>
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
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)	1000	mg/kg	50	ND
Butyl benzyl phthalate (BBP)	1000	mg/kg	50	ND
Bis (2-ethylhexyl) phthalate (DEHP)	1000	mg/kg	50	ND
Diisobutyl Phthalates (DIBP)	1000	mg/kg	50	ND

Notes :

(1) The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863.

### Elementary Analysis

Test Method : 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>003</u>
Arsenic (As)	mg/kg	10	ND
Beryllium (Be)	mg/kg	5	ND
Antimony (Sb)	mg/kg	10	ND

### Halogen

Test Method : With reference to EN 14582: 2007, analysis was performed by Ion Chromatograph (IC).

<u>Test Item(s)</u>	<u>Unit</u>	<u>MDL</u>	<u>003</u>
Fluorine (F)	mg/kg	50	2202
Chlorine (Cl)	mg/kg	50	289
Bromine (Br)	mg/kg	50	ND
Iodine (I)	mg/kg	50	ND



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**Tetrabromobisphenol A (TBBP-A)**

Test Method : With reference to US EPA Method 3540C:1996, analysis was performed by GC-MS&HPLC-MS.

<u>Test Item(s)</u>	<u>Unit</u>	<u>MDL</u>	<u>003</u>
Tetrabromobisphenol A (TBBP-A)	mg/kg	10	ND

**Red Phosphor**

Test Method : With reference to SGS In-house method (GZTC CHEM-TOP-215-01), analysis was performed by PY-GC/MS& ICP-OES

<u>Test Item(s)</u>	<u>Unit</u>	<u>MDL</u>	<u>003</u>
Red phosphorus	mg/kg	500	ND

**Hexabromocyclododecane (HBCDD)**

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

<u>Test Item(s)</u>	<u>Unit</u>	<u>MDL</u>	<u>003</u>
Hexabromocyclododecane (HBCDD)	mg/kg	10	ND

**PFOS (Perfluorooctane Sulfonates) and PFOA (Perfluorooctanoic Acid)**

Test Method : With reference to US EPA Method 3550C: 2007, analysis was performed by HPLC-MS.

<u>Test Item(s)</u>	<u>CAS NO.</u>	<u>Unit</u>	<u>MDL</u>	<u>003</u>
Perfluorooctanoic Acid (PFOA)	335-67-1	mg/kg	10	ND
Perfluorooctane Sulfonates (PFOS)^	-	mg/kg	10	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.



### 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>003</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
Dimethyl Phthalate (DMP)	131-11-3	%(w/w)	0.003	ND
Diethyl Phthalate (DEP)	84-66-2	%(w/w)	0.003	ND
Dipropyl Phthalate (DPrP)	131-16-8	%(w/w)	0.003	ND
Diisobutyl Phthalate (DIBP)	84-69-5	%(w/w)	0.003	ND
Di-n-pentyl Phthalate (DnPP)	131-18-0	%(w/w)	0.003	ND
Di-n-hexyl Phthalate (DnHP)	84-75-3	%(w/w)	0.003	ND
Dicyclohexyl Phthalate (DCHP)	84-61-7	%(w/w)	0.003	ND
Diphenyl Phthalate (DPhP)	84-62-8	%(w/w)	0.003	ND
Dibenzyl Phthalate (DBzP)	523-31-9	%(w/w)	0.003	ND
Dinonyl Phthalate (DNP)	84-76-4	%(w/w)	0.003	ND
Diisooctyl Phthalate (DIOP)	27554-26-3	%(w/w)	0.010	ND
Bis(2-methoxyethyl) Phthalate (DMEP)	117-82-8	%(w/w)	0.003	ND
Diallyl Phthalate (DAP)	131-17-9	%(w/w)	0.003	ND
n-decyl, n-octyl Phthalate (nDnOP)	119-07-3	%(w/w)	0.003	ND
Di-n-decyl Phthalate (DnDP)	84-77-5	%(w/w)	0.003	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, di-C6-8-branched alkyl esters, C7-rich (DIHP)	71888-89-6	%(w/w)	0.010	ND
1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters (DHNU)	68515-42-4	%(w/w)	0.010	ND
Di(2-ethylhexyl)adipate (DEHA)	103-23-1	%(w/w)	0.003	ND
Bis(4-methyl-2-pentyl) Phthalate (BMPP)	146-50-9	%(w/w)	0.003	ND
Bis(2-ethoxyethyl) Phthalate (DEEP)	605-54-9	%(w/w)	0.003	ND
Bis(2-n-butoxyethyl) Phthalate (DBEP)	117-83-9	%(w/w)	0.003	ND
Diundecyl Phthalate (DUDP)	3648-20-2	%(w/w)	0.003	ND



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<u>Test Item(s)</u>	<u>CAS NO.</u>	<u>Unit</u>	<u>MDL</u>	<u>003</u>
Diisononyl adipate (DINA)	33703-08-1	%(w/w)	0.010	ND
Ditridecyl Phthalate (DTDP)	119-06-2	%(w/w)	0.003	ND
Trioctyl trimellitate (TOTM)	3319-31-1	%(w/w)	0.003	ND
Diocetyl Terephthalate (DOTP)	6422-86-2	%(w/w)	0.003	ND
Di-n-heptyl Phthalate (DnHpP)	3648-21-3	%(w/w)	0.003	ND
Acetyltributylcitrate (Citroflex, ATBC)	77-90-7	%(w/w)	0.010	ND
1,2-Benzenedicarboxylic acid, dipentyl ester, branched and linear (DPP)	84777-06-0	%(w/w)	0.010	ND
1,2-benzenedicarboxylic acid, di-C6-10-alkyl esters;	68515-51-5/68648	%(w/w)	0.010	ND
1,2-benzenedicarboxylic acid, mixed decyl and hexyl and octyl diesters with ≥ 0.3% of dihexyl phthalate	-93-1			
Di(2-propylheptyl) Phthalate(DPHpP)	53306-54-0	%(w/w)	0.010	ND

**Notes :**

- (1)DBP,BBP,DEHP Reference information: Entry 51 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.
  - ii) 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
- (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



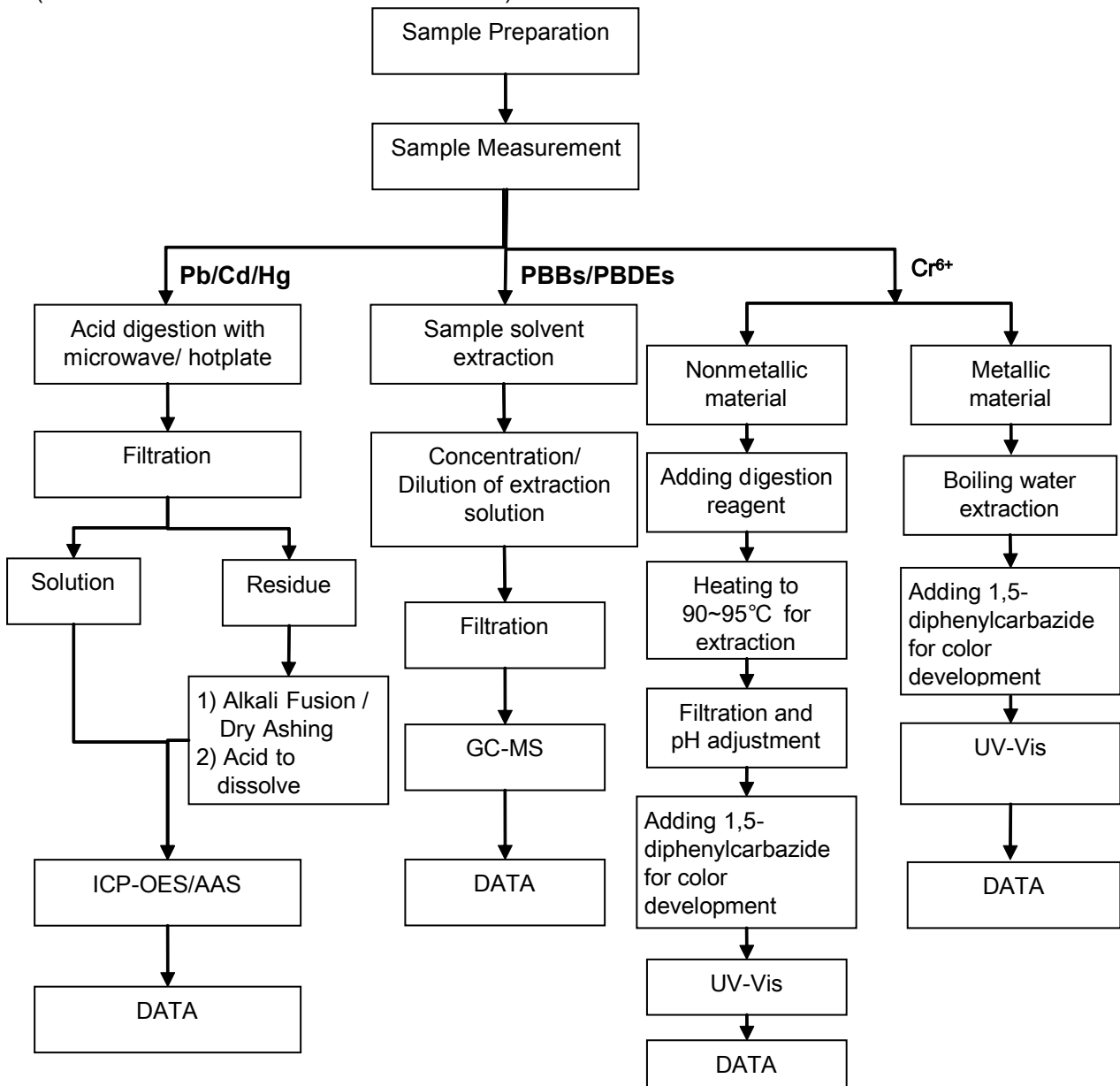
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**Pb/Cd/Hg/Cr<sup>6+</sup>/PBBs/PBDEs Testing Flow Chart**

- 1) Name of the person who made testing: Bruce Xiao / Sunny Hu
- 2) Name of the person in charge of testing: Bella Wang / Cutey Yu
- 3) These samples were dissolved totally by pre-conditioning method according to below flow chart (Cr<sup>6+</sup> and PBBs/PBDEs test method excluded).



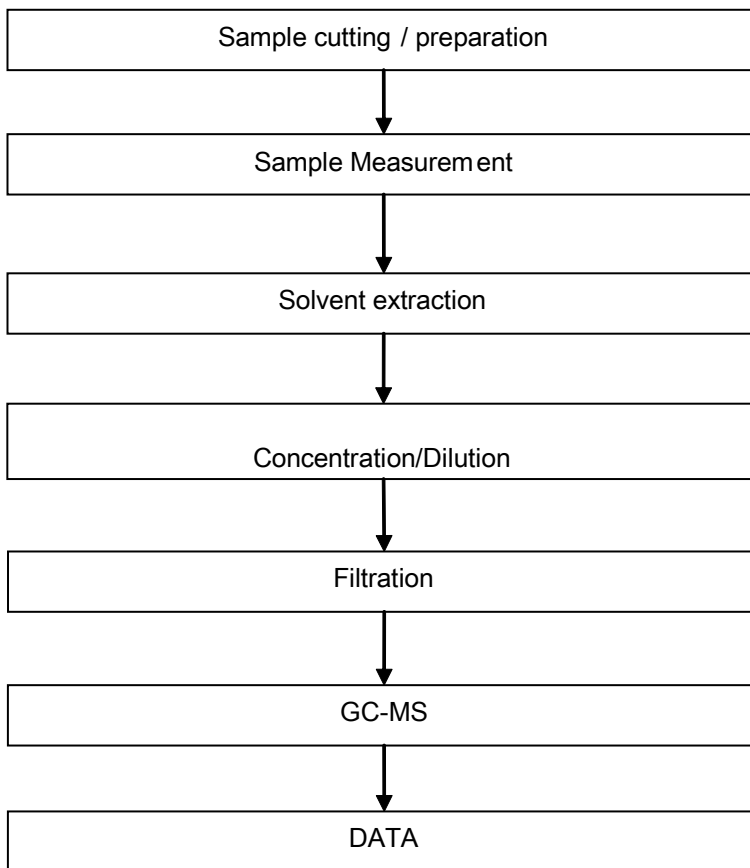
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Phthalates Testing Flow Chart

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

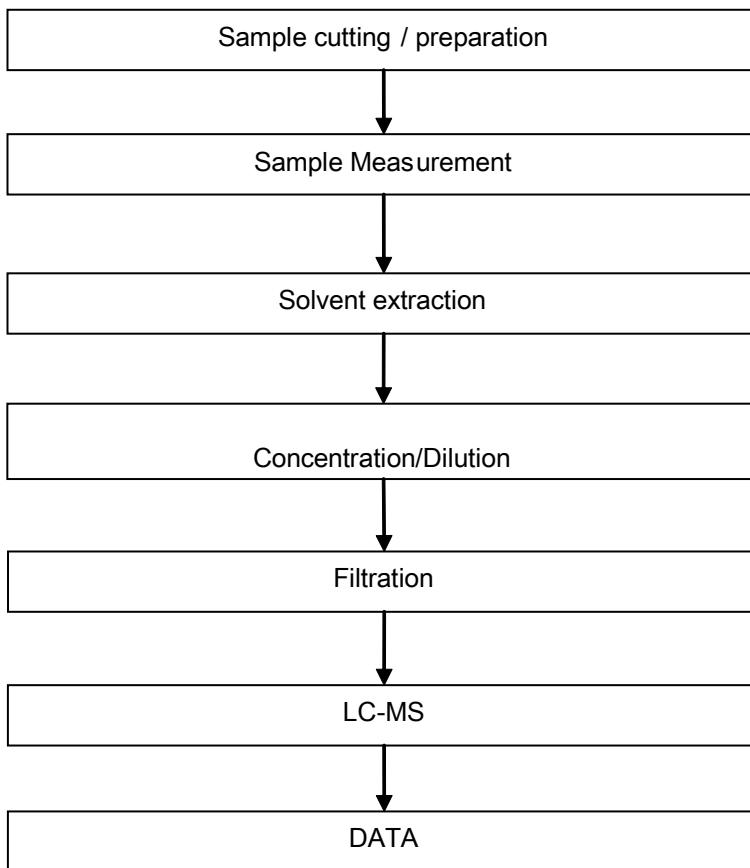




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PFOA / PFOS Testing Flow Chart

- 1) Name of the person who made testing: Zhihong Wang
- 2) Name of the person in charge of testing: Cutey Yu



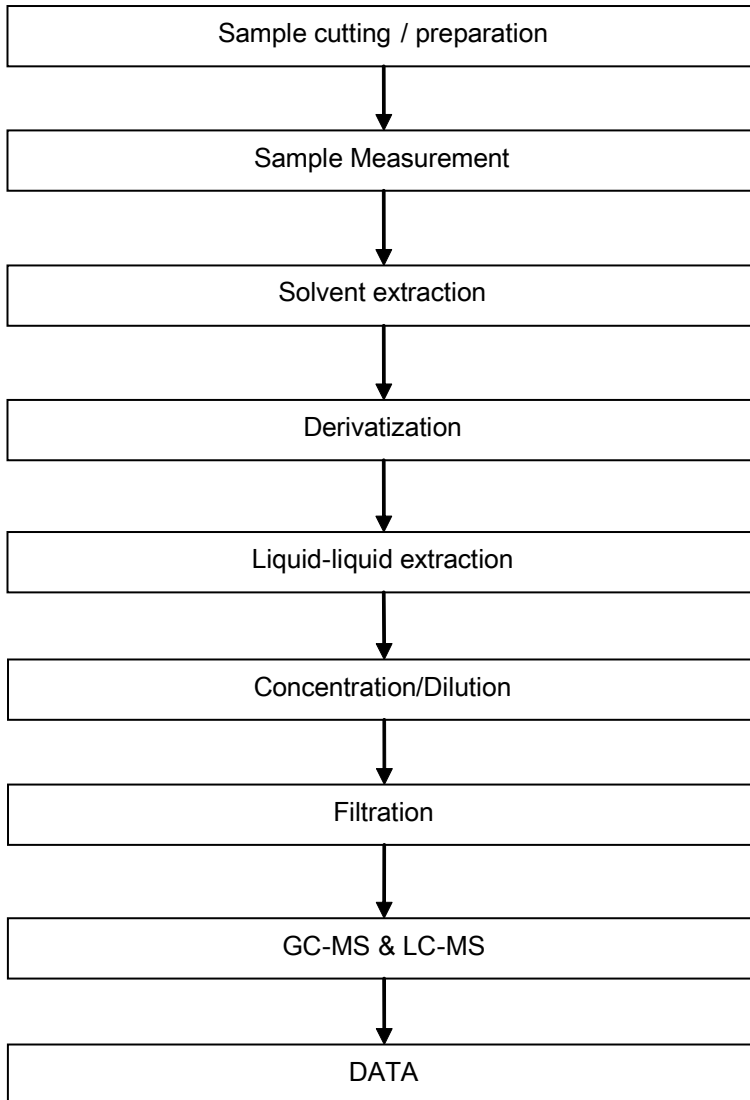
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TBBP-A Testing Flow Chart

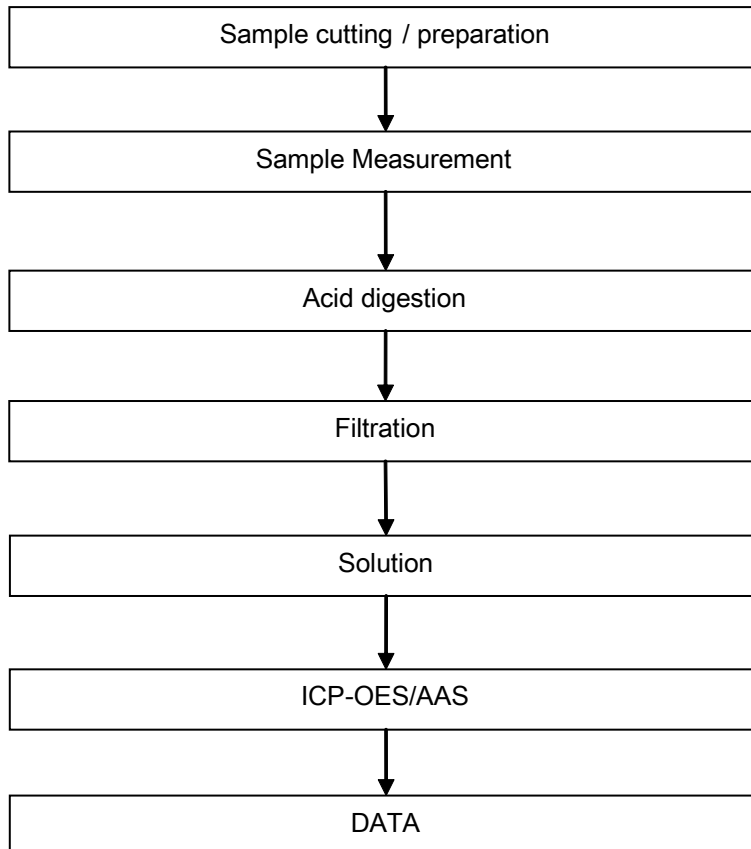
- 1) Name of the person who made testing: Erin Guo
- 2) Name of the person in charge of testing: Cutey Yu



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### Elementary Testing Flow Chart

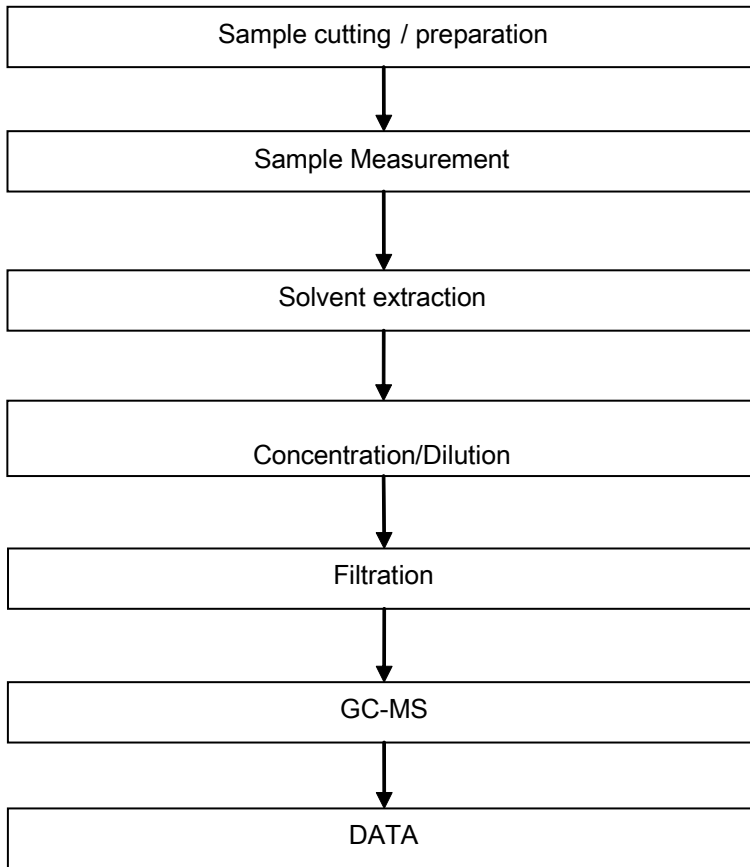
- 1) Name of the person who made testing : Bruce Xiao
- 2) Name of the person in charge of testing : Bella Wang



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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: Cutey Yu



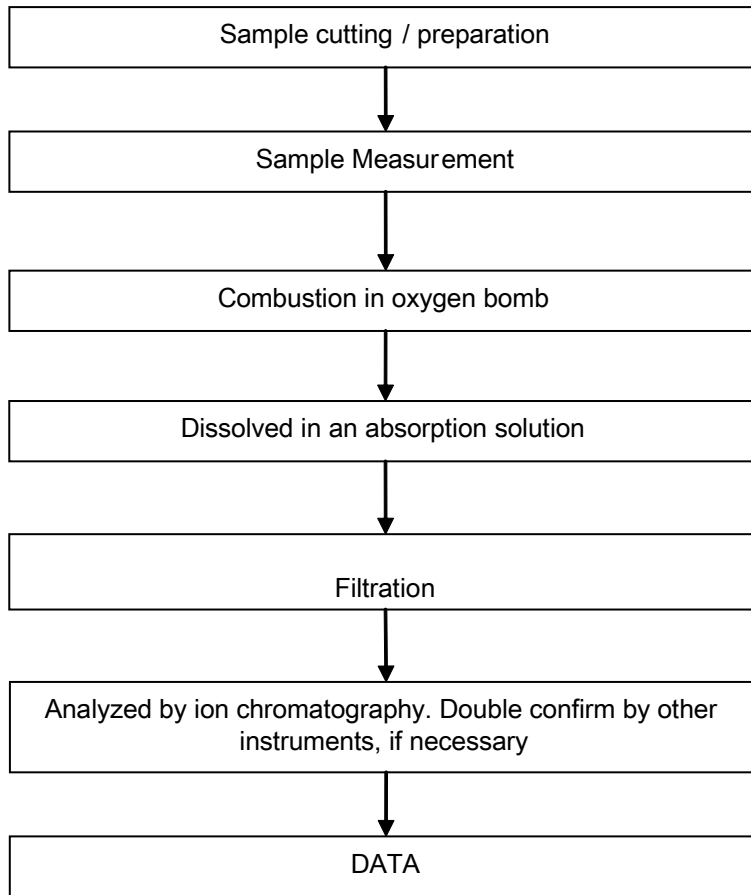
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Halogen Testing Flow Chart

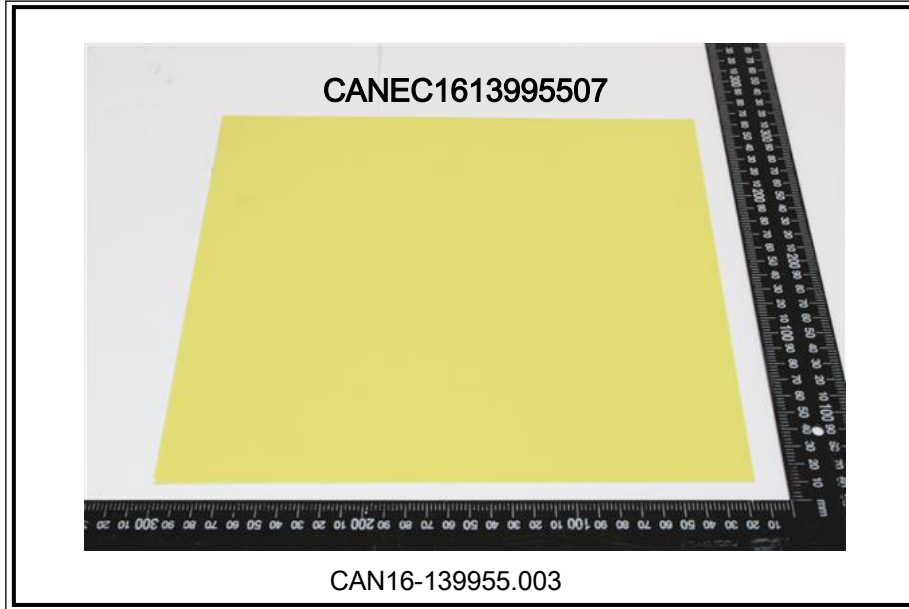
- 1) Name of the person who made testing: Hanming Xiao
- 2) Name of the person in charge of testing: Bella Wang



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