

Test Report

No. CANEC1804490809

Date: 23 Mar 2018

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CHONGQING YUNTIANHUA TIANJUXINCAI CO.,LTD

HUANAN RD 3#, ECONOMIC DEVELOPMENT ZONE, CHANGSHOU DISTRICT, CHONGQING, P.R.CHINA

The following sample(s) was/were submitted and identified on behalf of the clients as : Acetal Copolyme

SGS Job No. : CQ18848848EC - CQ

Model No. : M90

Client Ref. Info. : M25/M60/M90-01/CM90/M120/270/M350/M450

Main Substance : trioxymethylene.dioxolame

Manufacturer : CHONGQING YUNTIANHUA TIANJUXINCAI CO.,LTD

Country of Origin : CHANGSHOU

Date of Sample Received : 16 Mar 2018

Testing Period : 16 Mar 2018 - 23 Mar 2018

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.

When tested as specified, Migration of certain elements of the submitted sample(s) do not exceed the limit of the European Standard EN 71-3:2013+A2:2017.

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



Kenny Wang
Approved Signatory



SGS-CSTC Standards Technical Services Co., Ltd.
Guangzhou Branch Testing Center Chemical Laboratory.

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Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
SN1	CAN18-044908.003	White grains

Remarks :

- (1) 1 mg/kg = 1 ppm = 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, IEC62321-5:2013, IEC62321-7-2:2017 , IEC 62321-6:2015 and IEC62321-8:2017, analyzed by ICP-OES , UV-Vis and GC-MS .

Test Item(s)	Limit	Unit	MDL	003
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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Test Item(s)	Limit	Unit	MDL	003
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.IEC 62321 series is equivalent to EN 62321 series
http://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101:::FSP_ORG_ID,FSP_LANG_ID:1258637,25

EN 71-3:2013+A2:2017-Migration of Certain Elements (Category III: Scrapped-off toy material)

Test Method : With reference to EN 71-3:2013+A2:2017. Analysis was performed by ICP-OES.

Test Item(s)	Limit	Unit	MDL	003
Soluble Aluminum(Al)	70,000	mg/kg	50	ND
Soluble Antimony (Sb)	560	mg/kg	10	ND
Soluble Arsenic (As)	47	mg/kg	10	ND
Soluble Barium (Ba)	18,750	mg/kg	50	ND
Soluble Boron(B)	15,000	mg/kg	50	ND
Soluble Cadmium (Cd)	17	mg/kg	5	ND
Soluble Chromium (III) (Cr (III))	460	mg/kg	5	ND
Soluble Chromium (VI) (Cr (VI))	0.2	mg/kg	0.18	ND
Soluble Cobalt(Co)	130	mg/kg	10	ND
Soluble Copper(Cu)	7,700	mg/kg	50	ND
Soluble Lead (Pb)	160	mg/kg	10	ND
Soluble Manganese(Mn)	15,000	mg/kg	50	ND
Soluble Mercury (Hg)	94	mg/kg	10	ND
Soluble Nickel(Ni)	930	mg/kg	10	ND
Soluble Organic Tin	12	mg/kg	-	ND
Soluble Selenium (Se)	460	mg/kg	10	ND
Soluble Strontium(Sr)	56,000	mg/kg	50	ND
Soluble Tin(Sn)	180,000	mg/kg	4.9	ND



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<u>Test Item(s)</u>	<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>003</u>
Soluble Zinc (Zn)	46,000	mg/kg	50	ND

Notes :

- 1.Soluble Chromium (III)= Soluble Total Chromium- Soluble Chromium (VI)
2. Confirmation test of soluble chromium (III) & chromium (VI) is not required in case of soluble chromium does not exceed their requirements as specified in EN 71-3:2013+A2:2017.
3. Confirmation test of soluble organic tin is not required in case of soluble tin, after conversion, does not exceed the soluble organic tin requirement as specified in EN 71-3:2013+A2:2017.

Halogen

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

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

Tetrabromobisphenol A (TBBP-A)

Test Method : SGS In-house method (GZTC CHEM-TOP-065, 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

Dimethyl Fumarate (DMF)

Test Method : SGS In house method(GZTC CHEM-TOP-095), alalysis was performed by GC-MS

<u>Test Item(s)</u>	<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>003</u>
Dimethyl fumarate(DMF)	0.1	mg/kg	0.1	ND
Comment				PASS

Notes :

- (1) The maximum permissible limit is quoted from the document Commission Regulation (EU) No 412/2012 amending Annex XVII of REACH Regulation (EC) No 1907/2006 (previously restricted under Commission Decision 2012/48/EU)



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Phthalate

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

Test Item(s)	CAS NO.	Unit	MDL	003
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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Test Item(s)	CAS NO.	Unit	MDL	003
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
Di(2-propylheptyl) Phthalate(DPHpP)	53306-54-0	%(w/w)	0.010	ND
1,2-Benzenedicarboxylic acid, dihexyl ester branched and linear(DHP)	68515-50-4	%(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			
1,2-Cyclohexane dicarboxylic acid, di-isononyl ester (DINCH)	166412-78-8	%(w/w)	0.010	ND
Acetyltributylcitrate (Citroflex, ATBC)	77-90-7	%(w/w)	0.010	ND
Di-iso-hexylphthalate (DIHxP)	71850-09-4	%(w/w)	0.010	ND
Hexahydromethylphthalic anhydride,Hexahydro-4-methylphthalic anhydride,Hexahydro-1-methylphthalic anhydride,Hexahydro-3-methylphthalic anhydride (MHPA)	☆	%(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

Polycyclic Aromatic Hydrocarbons (PAHs)

Test Method : With reference to AfPS GS 2014:01 PAK, analysis was performed by GC-MS.



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Naphthalene(NAP)	91-20-3	mg/kg	0.1	ND
Acenaphthylene(ANY)	208-96-8	mg/kg	0.1	ND
Acenaphthene(ANA)	83-32-9	mg/kg	0.1	ND
Fluorene(FLU)	86-73-7	mg/kg	0.1	ND
Phenanthrene(PHE)	85-01-8	mg/kg	0.1	ND
Anthracene(ANT)	120-12-7	mg/kg	0.1	ND
Fluoranthene(FLT)	206-44-0	mg/kg	0.1	ND
Pyrene(PYR)	129-00-0	mg/kg	0.1	ND
Benzo(a)anthracene(BaA)	56-55-3	mg/kg	0.1	ND
Chrysene(CHR)	218-01-9	mg/kg	0.1	ND
Benzo(b)fluoranthene(BbF)	205-99-2	mg/kg	0.1	ND
Benzo(j)fluoranthene(BjF)	205-82-3	mg/kg	0.1	ND
Benzo(k)fluoranthene(BkF)	207-08-9	mg/kg	0.1	ND
Benzo(a)pyrene(BaP)	50-32-8	mg/kg	0.1	ND
Benzo(e)pyrene(BeP)	192-97-2	mg/kg	0.1	ND
Indeno(1,2,3-c,d)pyrene(IPY)	193-39-5	mg/kg	0.1	ND
Dibenzo(a,h)anthracene(DBA)	53-70-3	mg/kg	0.1	ND
Benzo(g,h,i)perylene(BPE)	191-24-2	mg/kg	0.1	ND
Sum of 7 PAHs Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Pyrene, Anthracene, Fluoranthene	-	mg/kg	-	ND
Sum of 18 PAHs	-	mg/kg	-	ND



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AFPS (German commission for Product Safety) : GS PAHs requirements

Parameter	Category 1	Category 2		Category 3	
	Material indented to be put in the mouth or toys with intended skin contact (longer than 30 s).	Materials not falling under category 1 with foreseeable contact to skin for longer than 30 s (long-term skin) or frequent contact.		Materials not falling under category 1 or 2 with foreseeable contact to skin for less than 30 s (short-term skin contact).	
		Toy under 2009/48/EC	Other products under ProdSG	Toy under 2009/48/EC	Other products under ProdSG
Benzo(a)pyrene mg/kg	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo(e)pyrene Mg/kg	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo(a)anthracene mg/kg	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo(b)fluoranthene mg/kg	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo(j)fluoranthene mg/kg	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo(k)fluoranthene mg/kg	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Chrysene mg/kg	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Dibenzo(a,h)anthracene mg/kg	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo(g,h,i)perylene mg/kg	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Indeno(1,2,3-cd)pyrene mg/kg	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Acenaphthylene, Acenaphthene, fluorene, phenanthrene, pyrene, anthracene, fluoranthene, mg/kg	< 1 Sum	< 5 Sum	< 10 Sum	< 20 Sum	< 50 Sum
Naphthalene, mg/kg	< 1	< 2		< 10	
Sum of 18 PAHs	<1	< 5	< 10	< 20	< 50

Polychlorinated Biphenyls (PCBs)

Test Method : SGS In-house method (GZTC CHEM-TOP-032-01), analysis was performed by GC-MS.

Test Item(s)	CAS NO.	Unit	MDL	003
2,4,4'-Trichlorobiphenyl (PCB 28)	7012-37-5	mg/kg	0.5	ND
2,2',5,5'-Tetrachloro-biphenyl (PCB 52)	35693-99-3	mg/kg	0.5	ND
2,2',4,5,5'-Pentachloro-biphenyl (PCB 101)	37680-73-2	mg/kg	0.5	ND
2,3',4,4',5-Pentachlorobiphenyl (PCB 118)	31508-00-6	mg/kg	0.5	ND



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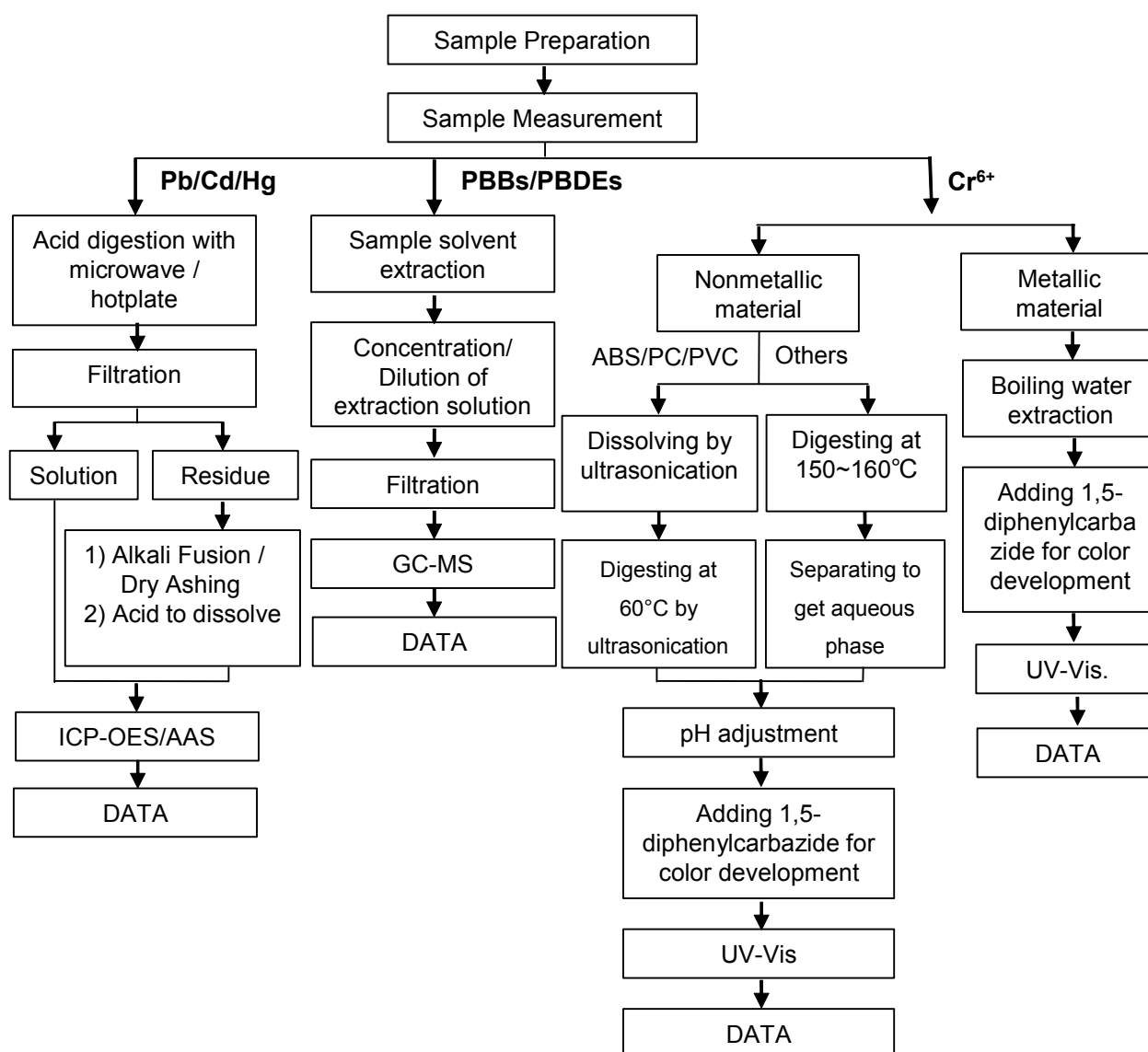
<u>Test Item(s)</u>	<u>CAS NO.</u>	<u>Unit</u>	<u>MDL</u>	<u>003</u>
2,2',3,4,4',5'-Hexachloro-biphenyl (PCB 138)	35065-28-2	mg/kg	0.5	ND
2,2',4,4',5,5'-Hexachloro-biphenyl (PCB 153)	35065-27-1	mg/kg	0.5	ND
2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180)	35065-29-3	mg/kg	0.5	ND



ATTACHMENTS

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

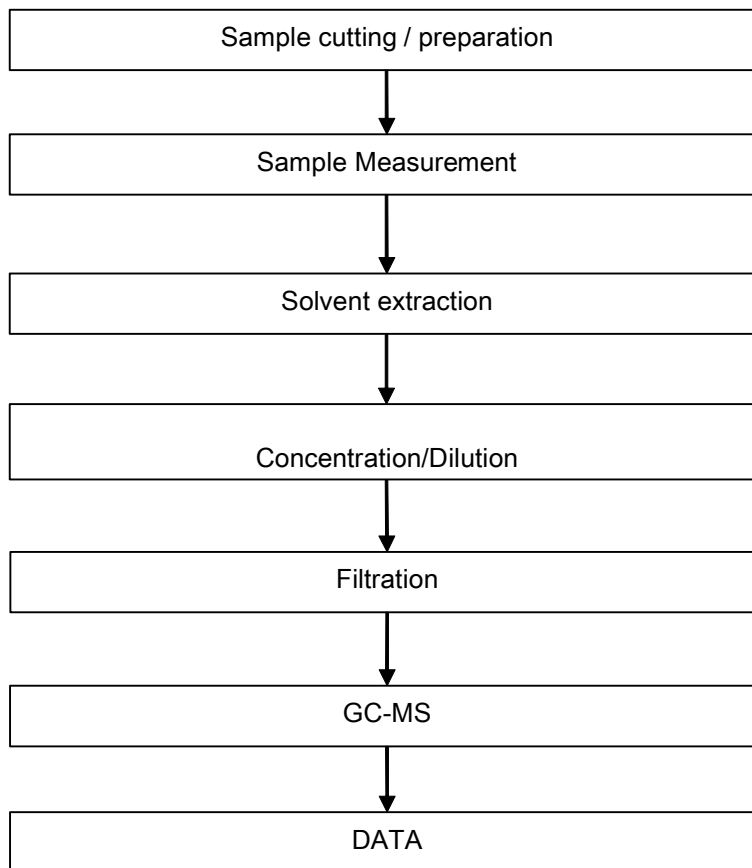
- 1) Name of the person who made testing: Edith Zhang / Sunny Hu
- 2) Name of the person in charge of testing: Bella Wang / Qiong Liu
- 3) These samples were dissolved totally by pre-conditioning method according to below flow chart.
(Cr⁶⁺ and PBBs/PBDEs test method excluded).



ATTACHMENTS

Phthalates Testing Flow Chart

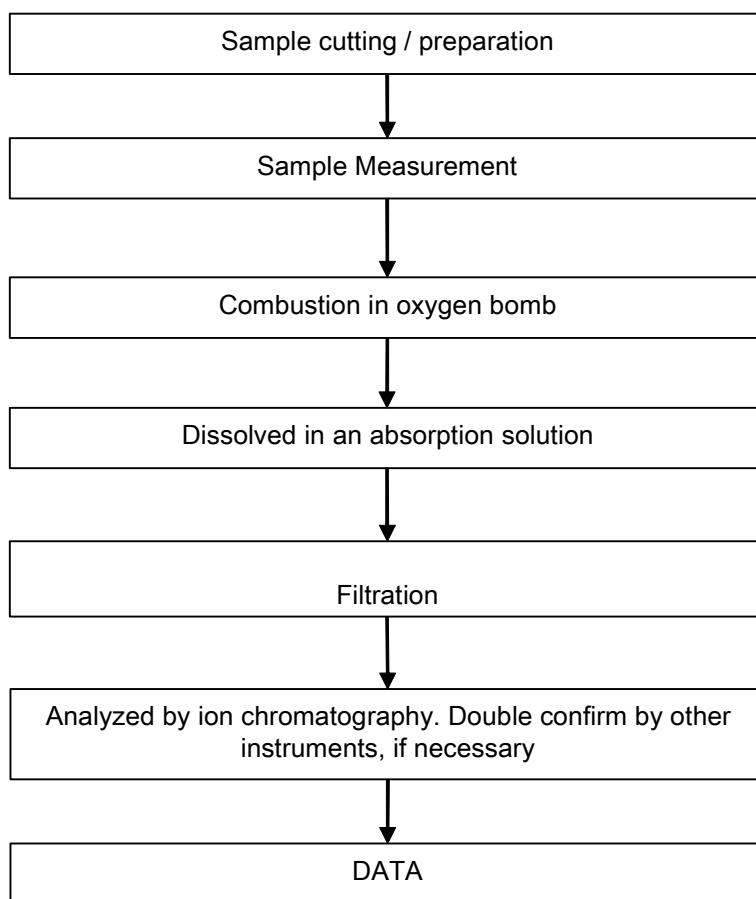
- 1) Name of the person who made testing: Sunny Hu
- 2) Name of the person in charge of testing: Qiong Liu



ATTACHMENTS

Halogen Testing Flow Chart

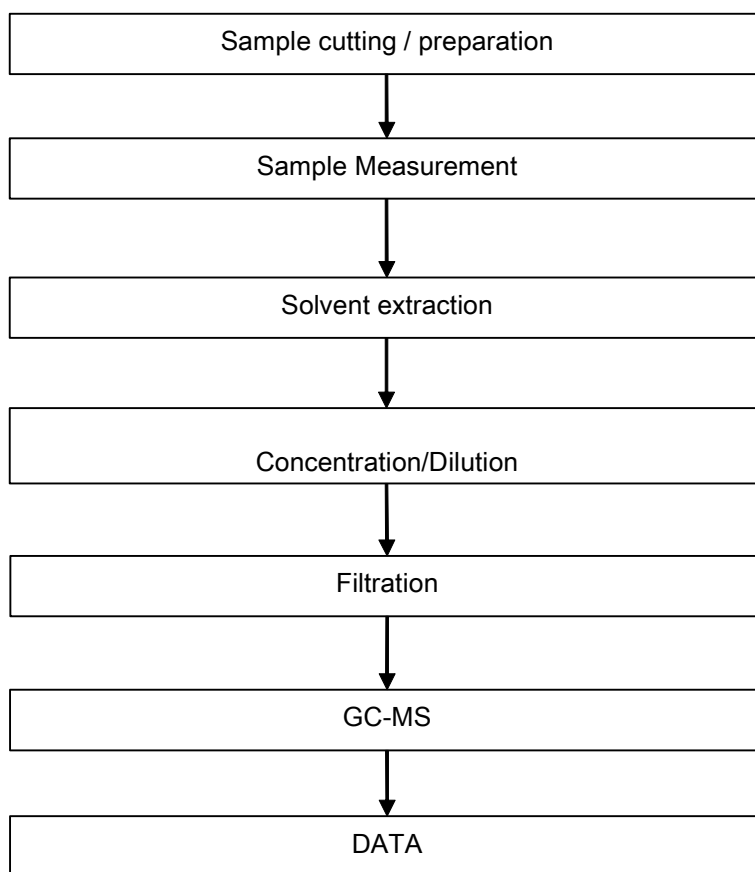
- 1) Name of the person who made testing: Bruce Xiao
- 2) Name of the person in charge of testing: Bella Wang



ATTACHMENTS

PAHs Testing Flow Chart

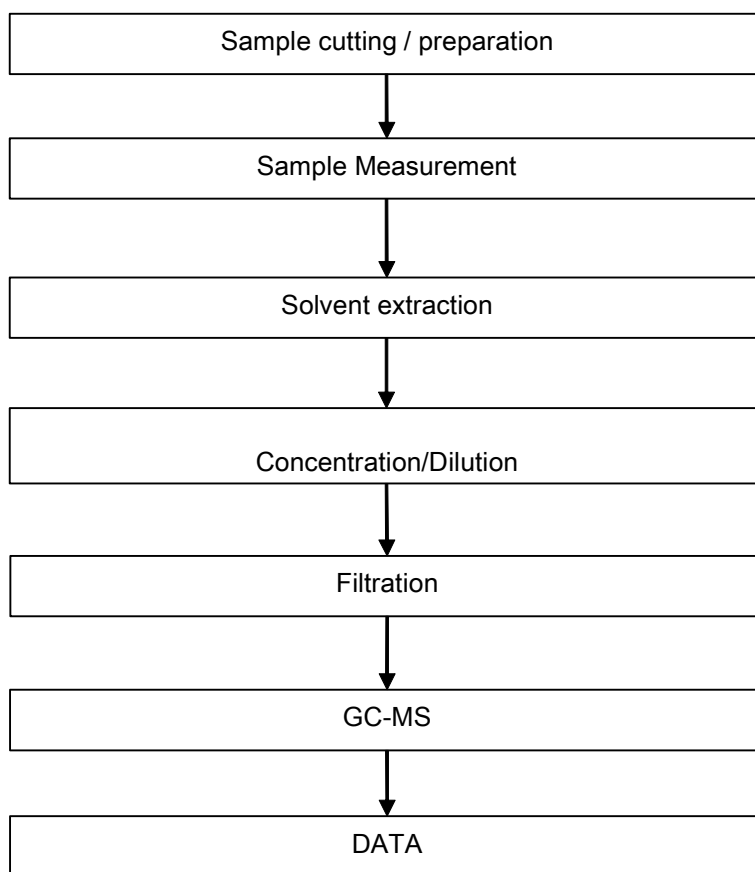
- 1) Name of the person who made testing: Sunny Hu
- 2) Name of the person in charge of testing: Qiong Liu



ATTACHMENTS

Dimethyl Fumarate Testing Flow Chart

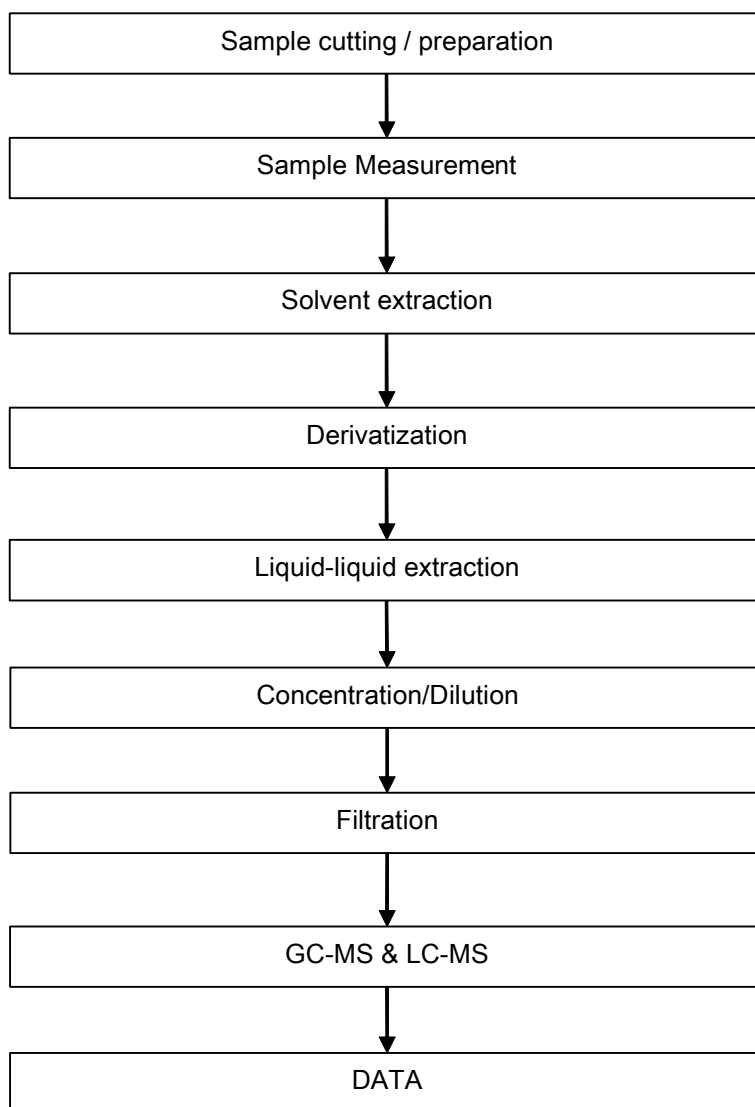
- 1) Name of the person who made testing: Sunny Hu
- 2) Name of the person in charge of testing: Qiong Liu



ATTACHMENTS

TBBP-A Testing Flow Chart

- 1) Name of the person who made testing: Judy Zhang
- 2) Name of the person in charge of testing: Qiong Liu



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Sample photo:



SGS authenticate the photo on original report only

*** End of Report ***

