

承认书

SPECIFICATION FOR APPROVAL

客 户

CUSTOMER _____

品 名

PART NAME

2.0mm spacing pressure welding bar connectors

料 号

PART NO.

PHS-LT-NA

样品提供(SAMPLE PROVIDE)		
工程 Engineering	业务 Sales	核准 Approval

客户承认(CUSTOMER APPROVAL)		
工程 Engineering	品管 Q.C	核准 Approval

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PHS SERIES

Scope: This specification covers the 2.0mm spacing WIRE TO BOARD Connector series.

Index:	Page
1. Product name and part number	2
2. Ratings and applicable wires	2
3. Performance	2
3-1. Electrical performance	2
3-1-1. Contact resistance	2
3-1-2. Insulation resistance	2
3-1-3. Dielectric strength	2
3-1-4. Contact resistance on crimped portion	2
3-2. Mechanical performance	3
3-2-1. Insertion force and withdrawal force	3
3-2-2. Crimping pull out force	3
3-2-3. Terminal insertion force	3
3-2-4. Terminal/Housing retention force	3
3-2-5. Pin retention force	3
3-3. Environmental performance and others	3
3-3-1. Repeated insertion/withdrawal	3
3-3-2. Temperature rise	3
3-3-3. Vibration	4
3-3-4. Shock	4
3-3-5. Heat resistance	4
3-3-6. Cold resistance	4
3-3-7. Humidity	4
3-3-8. Temperature cycling	4
3-3-9. Salt spray	5
3-3-10. Solderability	5
3-3-11. Resistance to soldering heat	5
4. Insertion force and withdrawal force	5
5. Product shape, dimensions and materials	5

Note: 以上测试视公司之测试条件/能力而定。

FILE NO	ENS008	APPROVAL	CHECK	DRAWING
ECR/N B	New spec			

[1. Product name and part number]

Product Name	Part Number
Terminal	PHS-T
Housing	PHS-NY
Wafer Assembly ST. (DIP)	PHS-NA
Wafer Assembly R.A (DIP)	PHS-NAW/PHS-NAWD/PHS-WT-NA-B

[2. Ratings and applicable wires]

ITEM	STANDARD
Rated Voltage(max.)	125V DC,AC(rms)
Rated Current(max.)	2A (AWG #22)
Applicable wires	AWG#30~#22
Insulation O.D	Ø1.60mm(max.)
Ambient Temperature	-25°C~+85°C*

* : Including terminal temperature rise.

[3. Performance]

3-1. Electrical Performance

ITEM		Test condition	Requirement
3-1-1	Contact resistance	Mate connectors, measure by dry circuit, 20mV MAX., 10mA. Mated Length : 50mm (AWG #22) (Based upon JIS C5402 5.4)	20mΩ(max.)
3-1-2	Insulation resistance	Mate connectors, apply 500V DC between adjacent terminals or ground. (Based upon JIS C5402 5.2/MIL-STD-202 method 302 condition B)	1000MΩ(min.)
3-1-3	Dielectric strength	Mate connectors, apply 1000V AC for 1 minute between adjacent terminal or ground. (Based upon JIS C5402 5.1/MIL-ST-202 Method 301)	No breakdown and flashover
3-1-4	Contact resistance on crimped portion	Crimp the maximum applicable wire on to the terminal, measure by dry circuit, 20mV MAX., 10mA. Wire Length : 50mm (AWG #22)	20mΩ(max.)

3-2. Mechanical Performance

ITEM		Test condition	Requirement						
3-2-1	Insertion force and withdrawal force	Insert and withdraw connectors at a speed of 25±3mm/minute	Refer to paragraph 5						
3-2-2	Crimping pull out force	Fix the crimped terminal, apply axial pull out force on the wire at a speed of 25±3mm/minute (Based upon JIS C5402 6.8)	Wire size	#22	#24	#26	#28	#30	
			1	width	1.35±0.1				
			height	0.90 ~1.00	0.90 ~1.00	0.80 ~0.90	0.70 ~0.80	0.60 ~0.70	
			2	width	1.55±0.1				
			height	1.80	1.60	1.50	1.40	1.30	
Crimp strength	4.0kg min	3.0kg min	1.8kg min	1.1kg min	0.6kg min				
			1: CONDUCTOR(mm) 2: INSULATION(mm)						
3-2-3	Terminal insertion force	Insert the crimped terminal into the housing at a speed of 25±3mm/minute	1.2kgf (max.)						
3-2-4	Terminal/Housing retention force	Apply axial pull out force at a speed of 25±3mm/minute on the terminal assembled in the housing.	1.3kgf (min.)						
3-2-5	Pin retention force	Apply axial push force at a speed of 25±3mm/minute on the contact pin assembled in the base wafer.	1.0kgf (min.)						

3-3. Environmental Performance and Others

ITEM		Test condition	Requirement	
3-3-1	Repeated insertion/withdrawal	Mate connector up to 30 cycles repeatedly at a rate of 10 cycles/ minute. After which test the contact resistance	Contact resistance	40mΩ (max.)
3-3-2	Temperature rise	Apply rated current load on mated connector in series-connection. Measure change of temperature on contact using thermocouples for 4 hours. (Based upon UL 1977)		30°C (max.)

3-3-3	Vibration	Amplitude: 1.52mm Sweep time: 10-55-10Hz/minute Duration: 2 Hours in each X、Y、Z axlals (Based upon MIL-STD-202 method 201)	Appearance	No Damage
			Contact Resistance	40mΩ (max.)
			Discontinui-ty	1μ sec (max.)
3-3-4	Shock	50G, 3 strokes in each X、Y、Z. axlals. (based upon JIS C0041)	Appearance	No Damage
			Contact Resistance	40mΩ (max.)
			Discontinui-ty	1μ sec (max.)
3-3-5	Heat resistance	Mated connector shall be placed in an oven for 96±4 hours at +85±2°C. (based upon JIS C5402 7.8)	Appearance	No Damage
			Contact Resistance	40mΩ (max.)
3-3-6	Cold resistance	Mated connector shall be placed in a temperature chamber for 96±4 hours at -25±3°C (based upon JIS C5402 7.9)	Appearance	No Damage
			Contact Resistance	40mΩ (max.)
3-3-7	Humidity	Mated connector shall be placed in a humidity chamber on the following conditions. Temperature: 40±2°C Relative humidity: 90~95% Duration : 240 Hours (Based upon MIL-STD-202 Method 103 conditions.A)	Appearance	No Damage
			Contact Resistance	40mΩ (max.)
			Dielectric strength	Must meet 3-1-3
			Insulation resistance	100MΩ (min.)
3-3-8	Temperature cycling	Mated connector shall be set to temperature cycling for 5 cycles of which 1 cycle consists of: 1>.+25°C ~ 3 minutes 2>.-25°C ~ 30 minutes 3>.+25°C ~ 3 minutes 4>.+85°C ~ 30 minutes (Based upon JIS C5402 7.2)	Appearance	No Damage
			Contact Resistance	40mΩ (max.)
			Dielectric strength	Must meet 3-1-3
			Insulation resistance	100MΩ (min.)

3-3-9	Salt spray	Mated connector shall be placed in a salt spray chamber on the following conditions. Salt Solution Density : 5±1% Temperature : 35±2°C Duration : First punch,Second plate:24±4Hours First plate,Second punch:8±2 Hours Remarks : we make sure the important area	Appearance	No Damage
			Contact Resistance	40mΩ (max.)
3-3-10	Solderability	Immerse fluxed soldered section of contact pin into a solder bath for 3±0.5sec, temperature: 230±5°C	95% of immersed area must show no voids nor pin holes.	
3-3-11	Resistance to soldering heat	Mated connector shall be dipped on solder bath for 5±1sec, temperature: 260±5°C	No Damage in appearance	

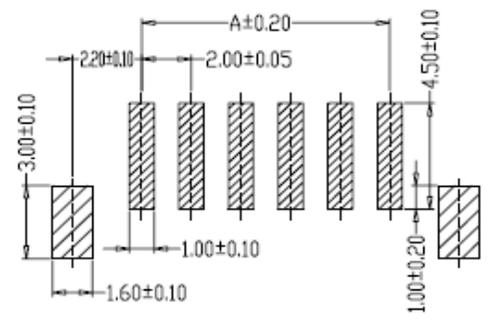
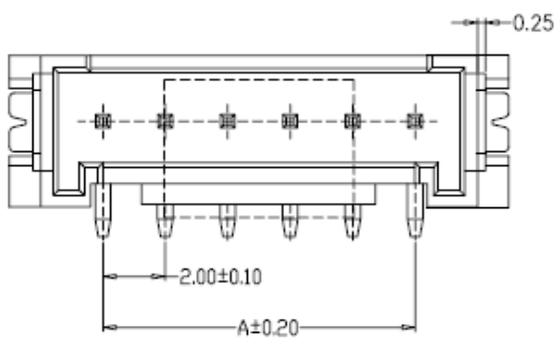
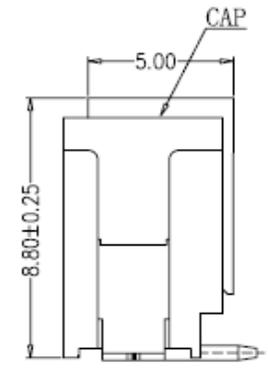
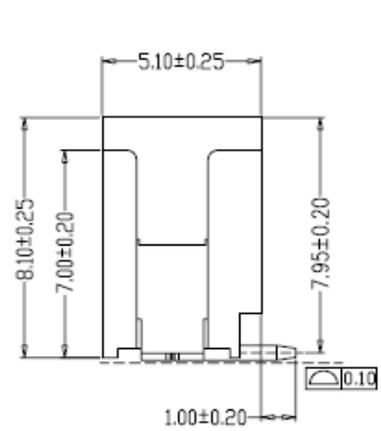
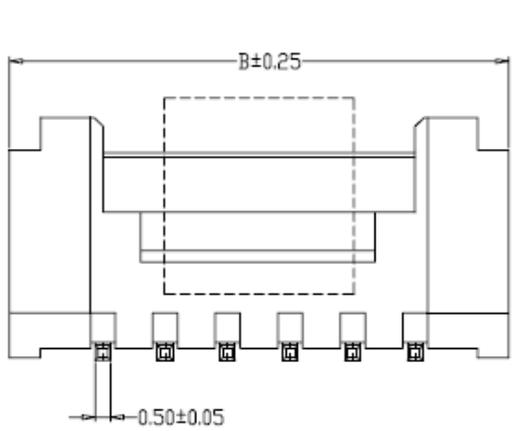
[4. Insertion force and withdrawal force]

[UNIT:Kgf]

Circuits	Insertion (MAX.)	Withdrawal (MIN.)		
	Initial	Initial	10th	30th
2	1.2	0.40	0.30	0.30
3	1.8	0.60	0.45	0.45
4	2.4	0.80	0.60	0.60
5	3.0	1.00	0.75	0.75
6	3.6	1.20	0.90	0.90
7	4.2	1.50	1.05	1.05
8	4.8	1.70	1.20	1.20
9	5.4	1.90	1.35	1.35
10	6.0	2.10	1.50	1.50
11	6.6	2.30	1.65	1.65
12	7.2	2.50	1.80	1.80
13	7.8	2.80	1.95	1.95
14	8.4	3.00	2.10	2.10
15	9.0	3.20	2.25	2.25
16	9.6	3.40	2.40	2.40

[5. Product shape, Dimensions and materials]

Refer to the drawing



PCB LAYOUT

SPECIFICATIONS

- 1、 Current Rating: 2A AC, DC
 - 2、 Voltage Rating: 250V AC, DC
 - 3、 Temperatuer Range: -25℃~+85℃
 - 4、 Contact Resistance: 20mΩ Max
 - 5、 Insulation Resistance: 1000MΩ Min
 - 6、 Withstanding Voltang: 1000V AC/minute
 - 7、 Material: Wafer LCP, UL94V-0
- PIN Brass Tin-plated
Solder Phosphoric bronze Tin-plated

编号	尺寸 (mm)	
	A	B
PHS-LT-2A	2.00	8.00
PHS-LT-3A	4.00	10.00
PHS-LT-4A	6.00	12.00
PHS-LT-5A	8.00	14.00
PHS-LT-6A	10.00	16.00
PHS-LT-7A	12.00	18.00
PHS-LT-8A	14.00	20.00
PHS-LT-9A	16.00	22.00
PHS-LT-10A	18.00	24.00
PHS-LT-11A	20.00	26.00
PHS-LT-12A	22.00	28.00
PHS-LT-20A	38.00	44.00



GENERAL TOLERANCE	
XX. ±0.40	
X. ±0.30	
.X ±0.25	X.* ± 2°
.XX ±0.15	.X.* ± 1°

SCALE:	4:1
UNIT:	mm
SIZE:	A4

DRAWN:	
CHECK:	
APPROVE:	

DATE:	
DATE:	
DATE:	

DOC. NO:	
PARTS NO:	PHS-LT-NA

TITLE:	工程图
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REV.	A
SHEET:	1/1

Test Report

No. CANEC1614189809

Date: 01 Aug 2016

Page 1 of 15

DONGGUAN JINDA ELECTRONICS CO.,LTD

5#,ROAD NORTH,PUXINHU COUNTRY,TANGXIA TOWN,DONGGUAN,GUANGDONG
CHINA

The following sample(s) was/were submitted and identified on behalf of the clients as : LCP NATURAL(in Chinese as LCP 本色)

SGS Job No. : CP16-046463 - SZ

Date of Sample Received : 20 Jul 2016

Testing Period : 20 Jul 2016 - 01 Aug 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

Echo

Echo Yeung
Approved Signatory



Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
SN1	CAN16-141898.005	Gray plastic

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 :
- (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	005
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	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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Test Report

No. CANEC1614189809

Date: 01 Aug 2016

Page 3 of 15

<u>Test Item(s)</u>	<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>005</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>005</u>
Antimony (Sb)	mg/kg	10	ND
Beryllium (Be)	mg/kg	5	ND

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>005</u>
Tetrabromobisphenol A (TBBP-A)	mg/kg	10	ND

Dimethyl Fumarate (DMF)

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



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Test Report

No. CANEC1614189809

Date: 01 Aug 2016

Page 4 of 15

<u>Test Item(s)</u>	<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>005</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)

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>005</u>
Hexabromocyclododecane (HBCDD)	mg/kg	10	ND

Polycyclic Aromatic Hydrocarbons (PAHs)

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

<u>Test Item(s)</u>	<u>CAS NO.</u>	<u>Unit</u>	<u>MDL</u>	<u>005</u>
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



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Test Report

No. CANEC1614189809

Date: 01 Aug 2016

Page 5 of 15

Test Item(s)	CAS NO.	Unit	MDL	005
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

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

Parameter	Category 1 Material indented to be put in the mouth or toys with intended skin contact (longer than 30 s).	Category 2		Category 3	
		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

PFOA & PFOS (Perfluorooctanoic acid & Perfluorooctane sulfonates)

Test Method : With reference to CEN/TS15968:2010, analysis was performed by LC-MS.



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Test Report

No. CANEC1614189809

Date: 01 Aug 2016

Page 6 of 15

<u>Test Item(s)</u>	<u>CAS NO.</u>	<u>Unit</u>	<u>MDL</u>	<u>005</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(s)

Test Method : With reference to IEC 62321-8 (111/321/CD) , determination of phthalates by GC-MS.

<u>Test Item(s)</u>	<u>CAS NO.</u>	<u>Unit</u>	<u>MDL</u>	<u>005</u>
Dibutyl phthalate (DBP)	84-74-2	%(w/w)	0.005	ND
Butyl benzyl phthalate (BBP)	85-68-7	%(w/w)	0.005	ND
Bis (2-ethylhexyl) phthalate (DEHP)	117-81-7	%(w/w)	0.005	ND
Diisobutyl Phthalates (DIBP)	84-69-5	%(w/w)	0.005	ND
Diisononyl Phthalate (DINP)	28553-12-0 / 68515-48-0	%(w/w)	0.005	ND
Di-n-octyl Phthalate (DNOP)	117-84-0	%(w/w)	0.005	ND
Dimethyl Phthalate (DMP)	131-11-3	%(w/w)	0.005	ND
Diethyl Phthalate (DEP)	84-66-2	%(w/w)	0.005	ND
Dinonyl Phthalate (DNP)	84-76-4	%(w/w)	0.005	ND



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Test Report

No. CANEC1614189809

Date: 01 Aug 2016

Page 7 of 15

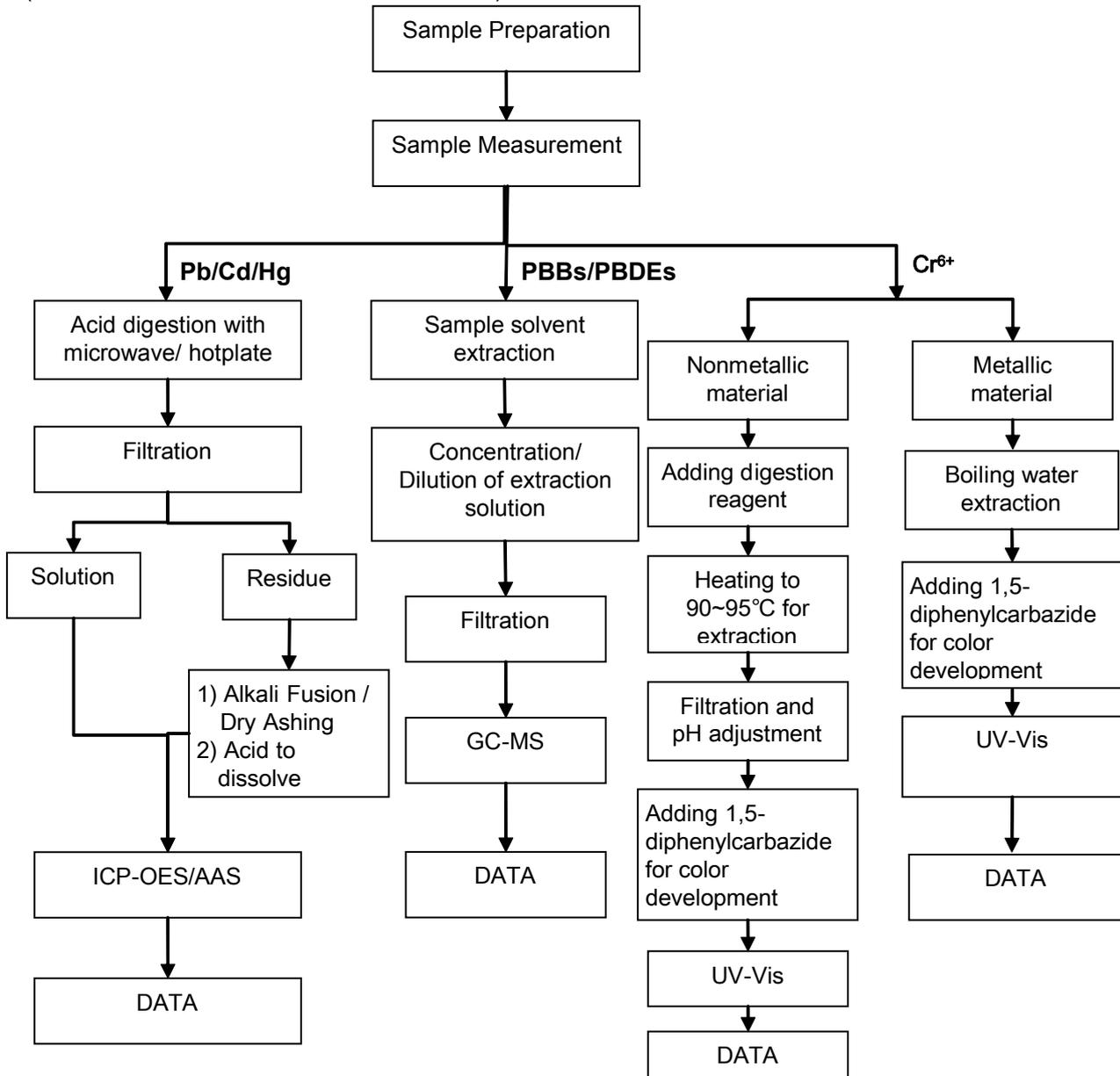
<u>Test Item(s)</u>	<u>CAS NO.</u>	<u>Unit</u>	<u>MDL</u>	<u>005</u>
Diisooctyl Phthalate (DIOP)	27554-26-3	%(w/w)	0.005	ND
Dipropyl Phthalate (DPrP)	131-16-8	%(w/w)	0.005	ND
Dicyclohexyl Phthalate (DCHP)	84-61-7	%(w/w)	0.005	ND
Di-n-pentyl Phthalate (DnPP)	131-18-0	%(w/w)	0.005	ND
Dibenzyl Phthalate (DBzP)	523-31-9	%(w/w)	0.005	ND
Diphenyl Phthalate (DPhP)	84-62-8	%(w/w)	0.005	ND
Di-n-hexyl Phthalate (DnHP)	84-75-3	%(w/w)	0.005	ND
Diisodecyl Phthalate (DIDP)	26761-40-0 / 68515-49-1	%(w/w)	0.005	ND



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

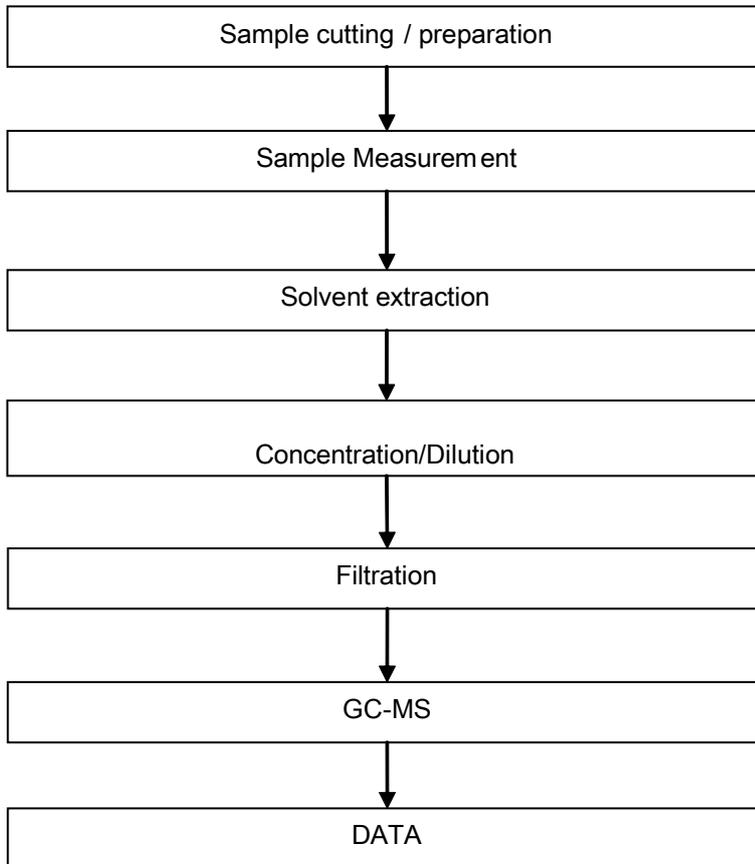
- 1) Name of the person who made testing: Bruce Xiao / Sunny Hu
- 2) Name of the person in charge of testing: Bella Wang / Cutey Yu
- 3) These samples were dissolved totally by pre-conditioning method according to below flow chart (Cr⁶⁺ and PBBs/PBDEs test method excluded).



ATTACHMENTS

Phthalates Testing Flow Chart

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



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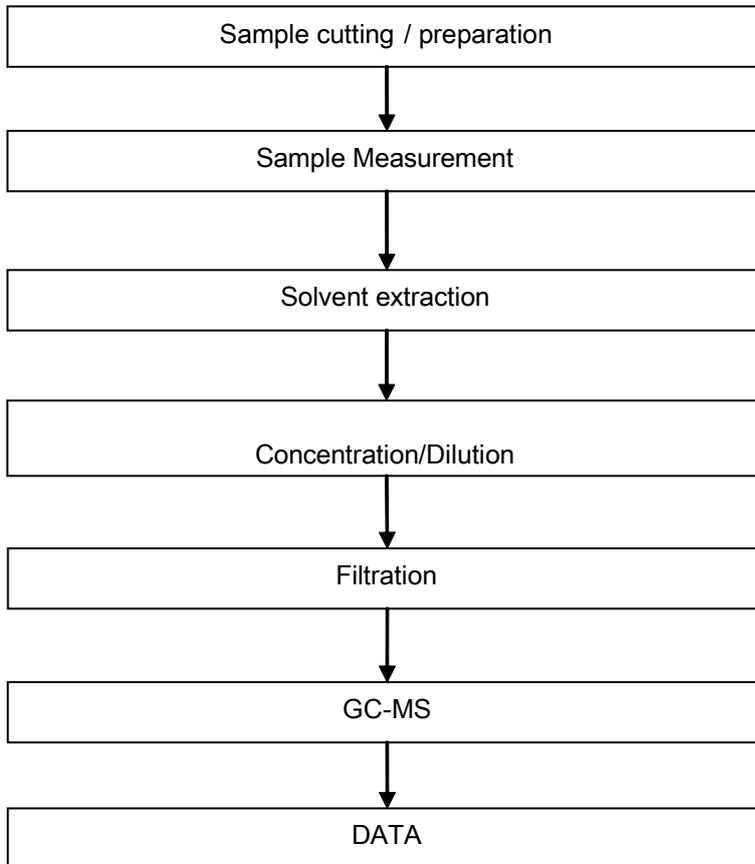
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HBCDD Testing Flow Chart

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



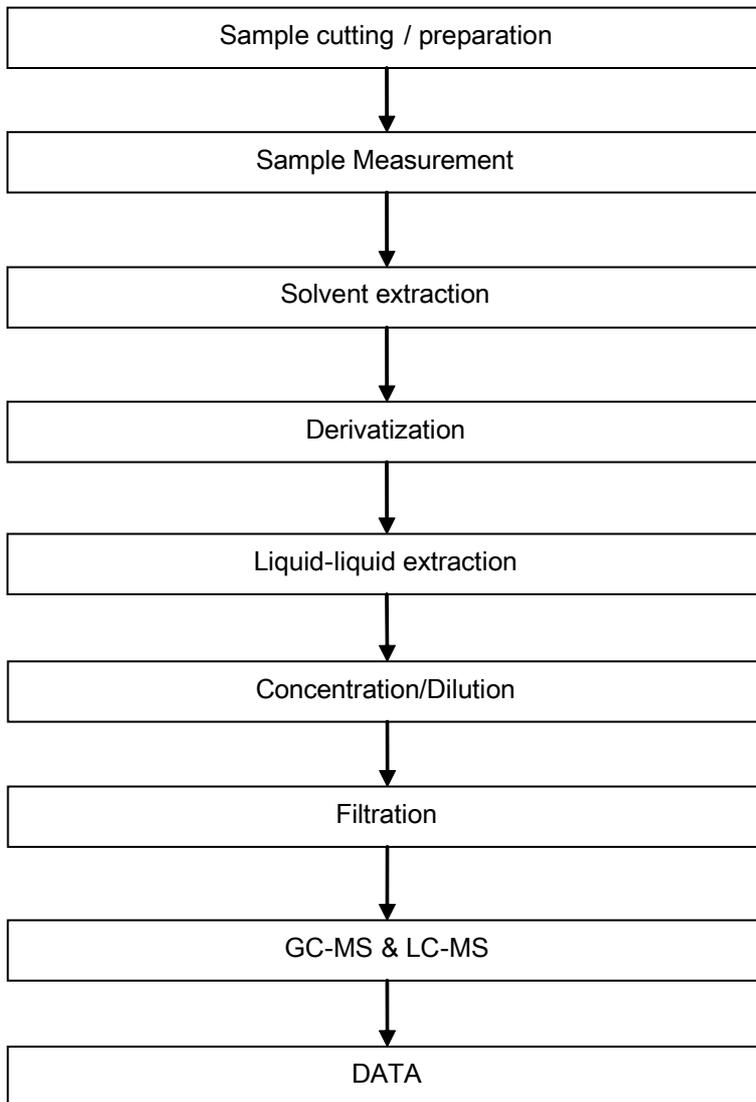
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TBBP-A Testing Flow Chart

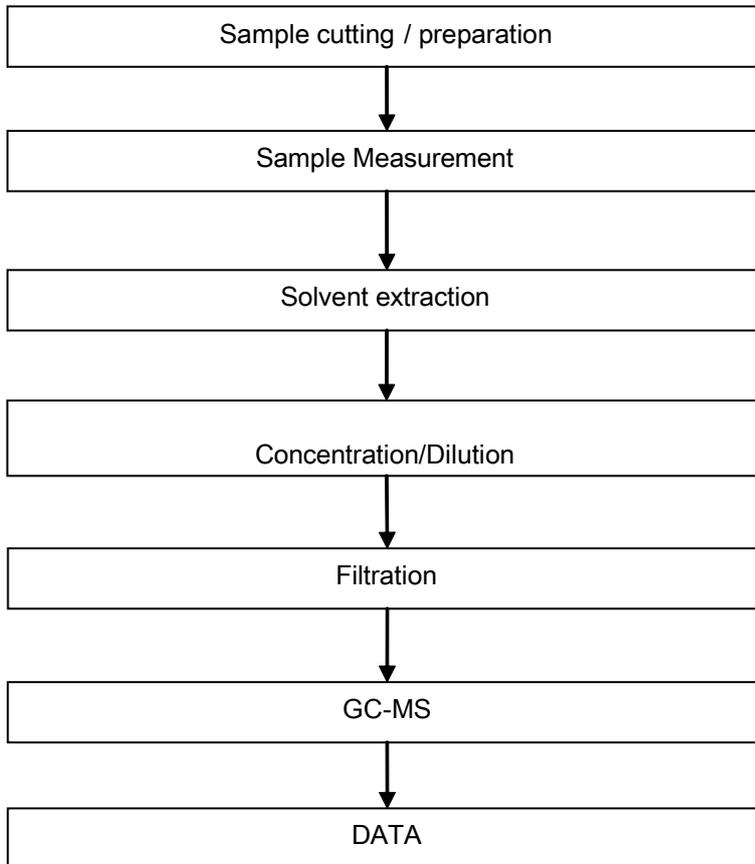
- 1) Name of the person who made testing: Erin Guo
- 2) Name of the person in charge of testing: Cutey Yu



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PAHs Testing Flow Chart

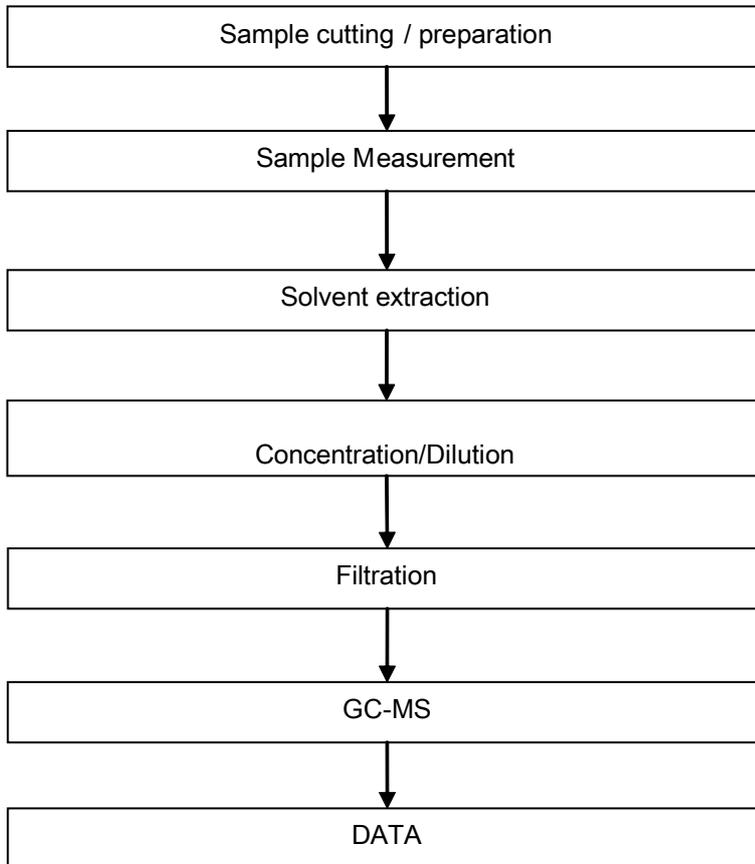
- 1) Name of the person who made testing: Sunny Hu
- 2) Name of the person in charge of testing: Cutey Yu



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Dimethyl Fumarate 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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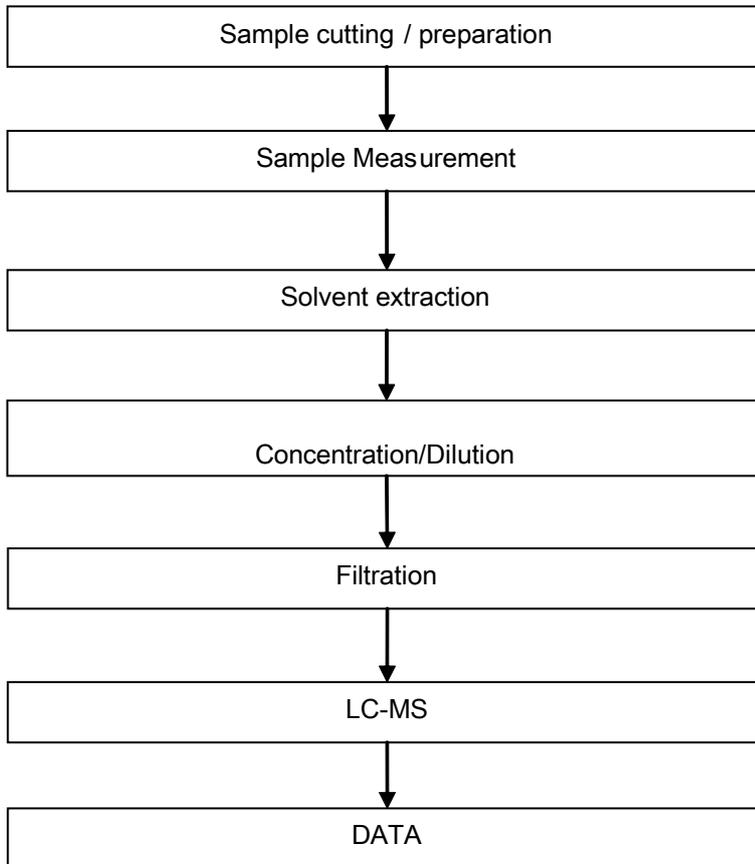
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PFOA / PFOS Testing Flow Chart

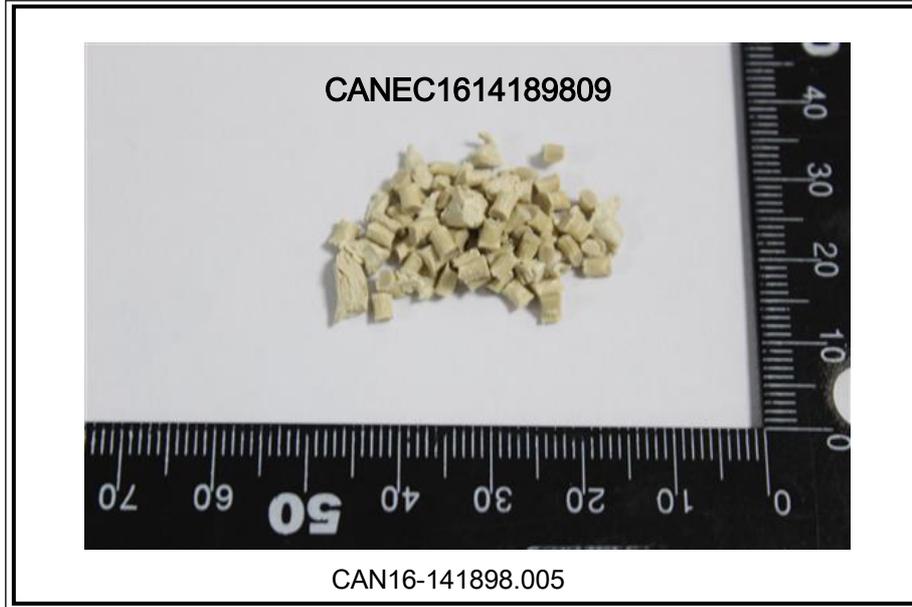
- 1) Name of the person who made testing: Zhihong Wang
- 2) Name of the person in charge of testing: Cutey Yu



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Sample photo:



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Test Report

No. CANEC1614146502

Date: 05 Aug 2016

Page 1 of 7

DONGGUAN JINDA ELECTRONICS CO.,LTD

5#,ROAD NORTH,PUXINHU COUNTRY,TANGXIA TOWN,DONGGUAN,GUANGDONG
CHINA

The following sample(s) was/were submitted and identified on behalf of the clients as : Phosphor copper electroplate tin terminal(in Chinese as 磷铜镀锡端子)

SGS Job No. : CP16-046303 - SZ

Date of Sample Received : 20 Jul 2016

Testing Period : 20 Jul 2016 - 04 Aug 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 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

Echo

Echo Yeung
Approved Signatory



Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
SN1	CAN16-141465.001	Silvery plated metal

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 : (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 62321-7-1:2015 , determination of Hexavalent Chromium by Colorimetric Method using UV-Vis.

Test Item(s)	Limit	Unit	MDL	001
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1,000	mg/kg	2	18
Mercury (Hg)	1,000	mg/kg	2	ND
Hexavalent Chromium (Cr(VI))▼	-	µg/cm ²	0.10	ND

Notes :

- (1) The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863.
- (2) ▼= a. The sample is positive for CrVI if the CrVI concentration is greater than 0.13 µg/cm2. The sample coating is considered to contain CrVI
 - b. The sample is negative for CrVI if CrVI is ND (concentration less than 0.10 µg/cm2). The coating is considered a non-CrVI based coating
 - c. The result between 0.10 µg/cm2 and 0.13 µg/cm2 is considered to be inconclusive - unavoidable coating variations may influence the determination

Information on storage conditions and production date of the tested sample is unavailable and thus Cr(VI) results represent status of the sample at the time of testing.

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



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Elementary Analysis

Test Method : With reference to US EPA method 3050B:1996, analysis was performed by ICP-OES.

<u>Test Item(s)</u>	<u>Unit</u>	<u>MDL</u>	<u>001</u>
Antimony (Sb)	mg/kg	10	ND
Beryllium (Be)	mg/kg	5	ND

PFOA & PFOS (Perfluorooctanoic acid & Perfluorooctane sulfonates)

Test Method : With reference to CEN/TS15968:2010, analysis was performed by LC-MS.

<u>Test Item(s)</u>	<u>CAS NO.</u>	<u>Unit</u>	<u>MDL</u>	<u>001</u>
Perfluorooctanoic acid (PFOA)	335-67-1	µg/m ²	1.0	ND
Perfluorooctane Sulfonates (PFOS)^	-	µg/m ²	1.0	ND

Notes :

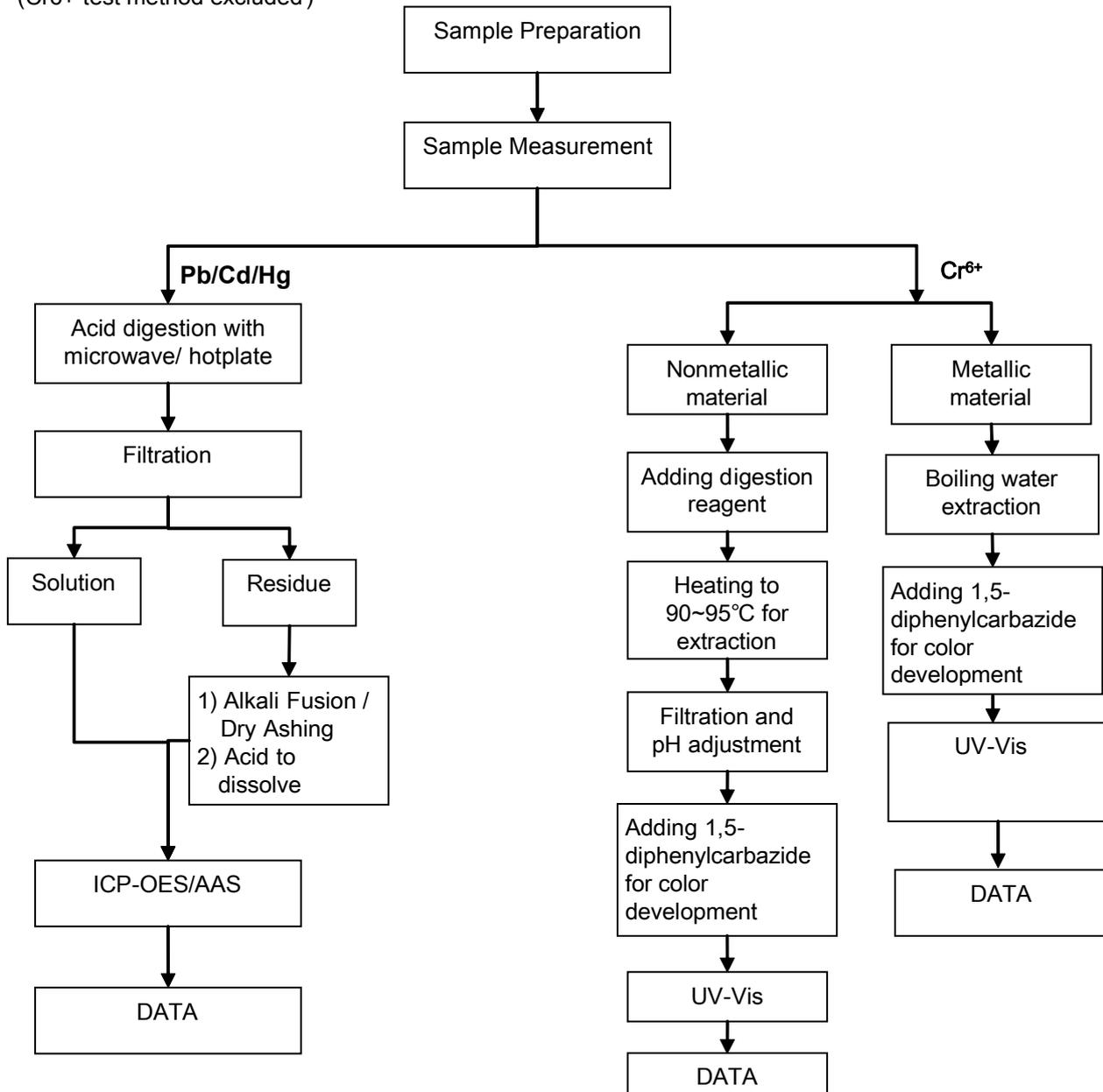
(1) ^ PFOS refer to Perfluorooctanesulfonic acid and its derivatives including Perfluorooctanesulfonic acid, Perfluorooctane sulfonamide, N-Methylperfluorooctane sulfonamide, N-Ethylperfluorooctane sulfonamide, N-Methylperfluorooctane sulfonamidoethanol and N-Ethylperfluorooctane sulfonamidoethanol.



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Pb/Cd/Hg/Cr⁶⁺ Testing Flow Chart

- 1) Name of the person who made testing: Bruce Xiao
- 2) Name of the person in charge of testing: Bella Wang
- 3) These samples were dissolved totally by pre -conditioning method according to below flow chart. (Cr⁶⁺ test method excluded)



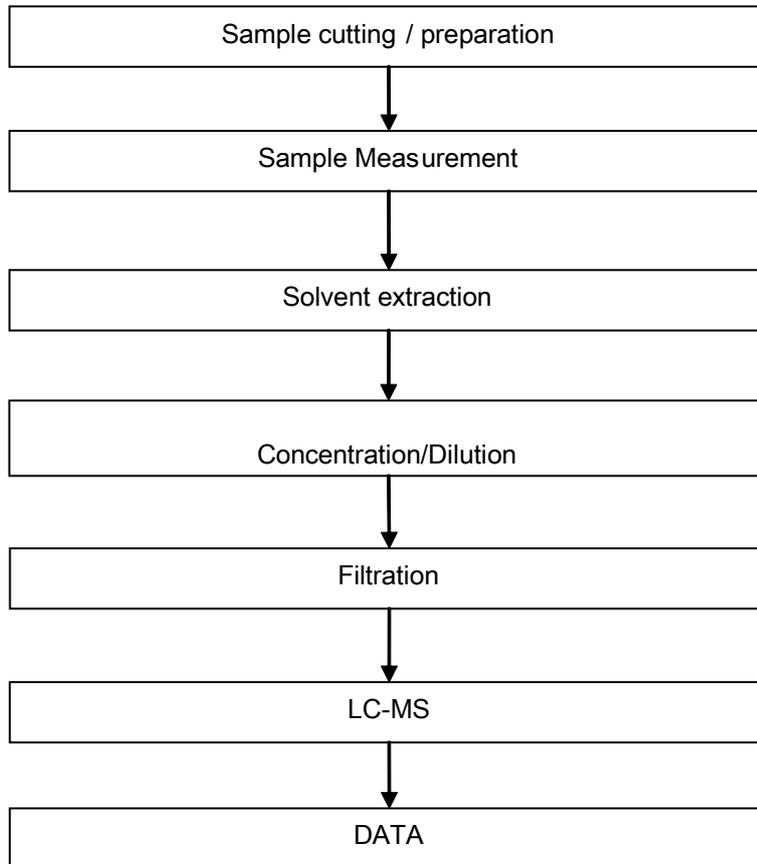
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PFOA / PFOS Testing Flow Chart

- 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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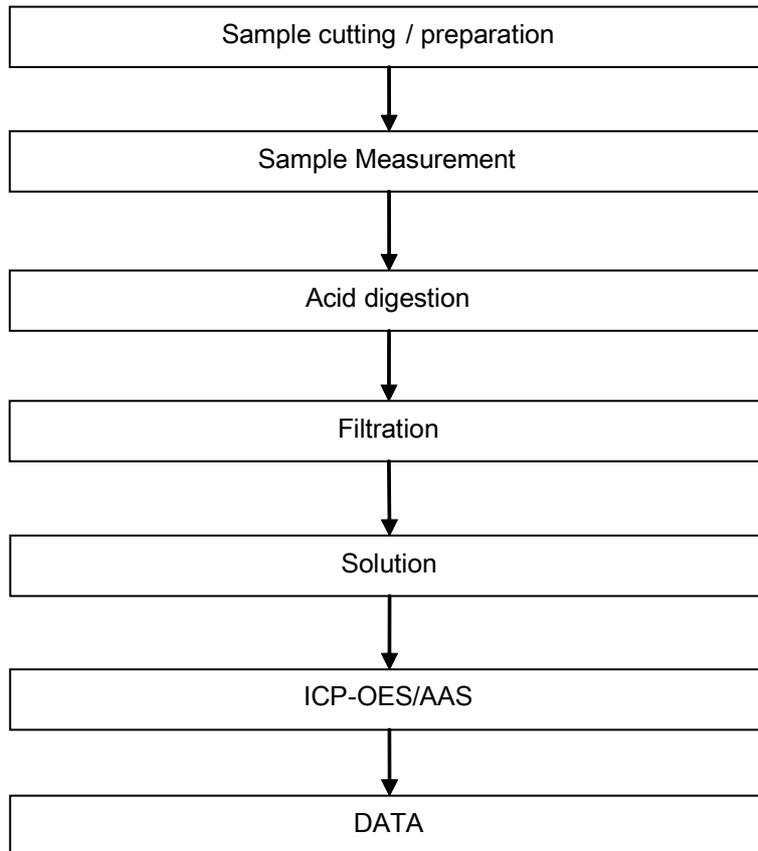
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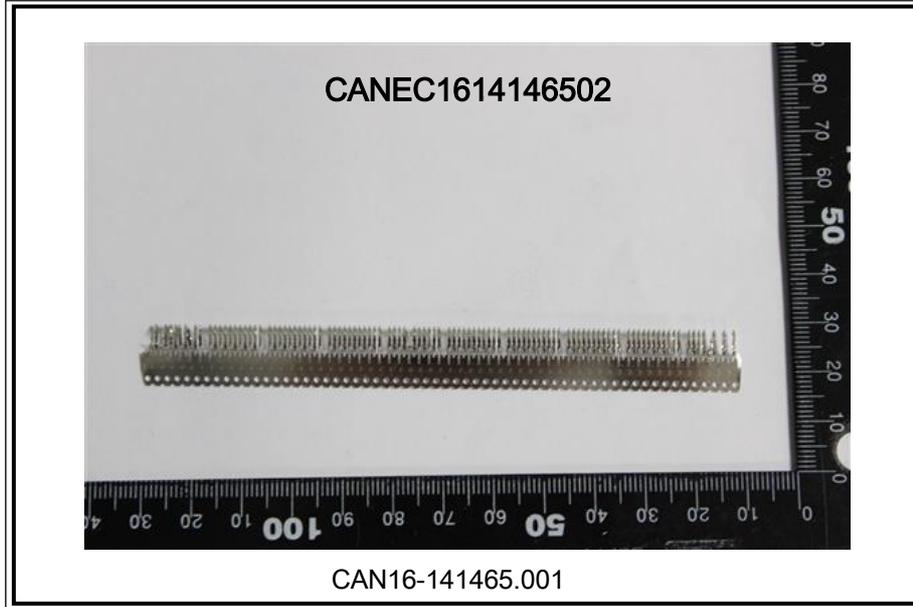
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Elementary Testing Flow Chart

- 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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