PH SERIES

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

Index: Page

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

[1. Product name and part number]

Product Name	Part Number
Terminal	PH2.0-T
Housing	PH-NY
Wafer Assembly ST. (DIP/SMT)	PH-NA/PH-LT-NA
Wafer Assembly R.A (DIP/SMT)	PH-NAW/PH-WT-NA/PH-WT-NA-Y

[2. Ratings and applicable wires]

ITEM	STANDARD
Rated Voltage	100V DC/AC (rms)
Rated Current	2A (AWG.#24)
Applicable wires	AWG.#30~#24
Insulation O.D	Ø0.9~1.4mm
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. #24) (Based upon JIS C5402 5.4)	10mΩ(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 Cond.B)	1000MΩ(min.)
3-1-3	Dielectric strength	Mate connectors, apply 500V AC for 1 minute between adjacent terminal or ground. (Based upon JIS C5402 5.1/MIL-STD-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.#24)	10mΩ(max.)

3-2. Mechanical Performance

ITEM		Test condition	Requirement
3-2-1	Insertion force and withdrawal force	Insert and extract connectors at a speed of 25±3mm/minute	Refer to paragraph 4~5

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		#24	#26	#28	#30
			1	width	1.3±0.1			
				height	0.68 ~0.77	0.61 ~0.70	0.52 ~0.61	0.47 ~0.56
			2	width	1.50			
				height	1.56	1.50	1.45	1.40
			Crimp strength		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/min.	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.	1.5kgf (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	20mΩ (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 201A)	Appearance	No Damage
			Contact Resistance	20mΩ (max.)
			Discontinui-ty	1μ sec (max.)
3-3-4	Shock	50G, 3 strokes in each X、Y、Z. axlals. (Based upon JIS C0041/MIL-STD-202 method 213B Cond.A)	Appearance	No Damage
			Contact Resistance	20mΩ (max.)
			Discontinuity	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	20mΩ (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	20mΩ (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 cond.A)	Appearance	No Damage
			Contact Resistance	20mΩ (max.)
			Dielectric strength	Must meet 3-1-3
			Insulation resistance	500MΩ (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	20mΩ (max.)
			Dielectric strength	Must meet 3-1-3
			Insulation resistance	500MΩ (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±2Hours Remarks : we make sure the important area	Appearance	No Damage
			Contact Resistance	20mΩ (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±0.5sec temperature: 260±5°C	No Damage in appearance	

[4. Insertion force and withdrawal force]

[UNIT:Kgf]

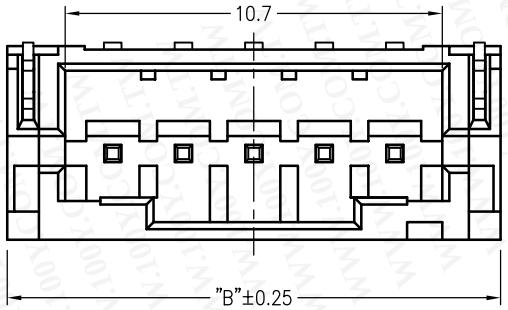
Circuits	Insertion (MAX.)	Withdrawal (MIN.)		
	Initial	Initial	10th	30th
2	2.4	0.60	0.50	0.50
3	2.8	0.75	0.60	0.60
4	3.2	0.90	0.70	0.70
5	3.6	1.05	0.80	0.80
6	4.0	1.20	0.90	0.90
7	4.4	1.35	1.00	1.00
8	4.8	1.50	1.10	1.10

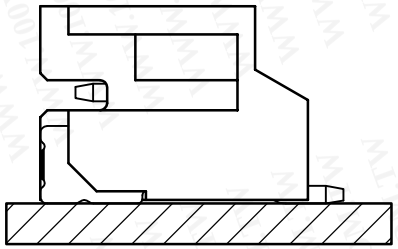
9	5.2	1.65	1.20	1.20
10	5.6	1.80	1.30	1.30
11	6.0	1.95	1.40	1.40
12	6.4	2.10	1.50	1.50
13	6.8	2.25	1.60	1.60
14	7.2	2.40	1.70	1.70
15	7.6	2.55	1.80	1.80
16	8.0	2.70	1.90	1.90

[5. Product shape, Dimensions and materials]

<REFER TO THE DRAWING>

Poles	DIM.A	DIM.B
2P	2.0	8.0
3P	4.0	10.0
4P	6.0	12.0
5P	8.0	14.0
6P	10.0	16.0
7P	12.0	18.0
8P	14.0	20.0
9P	16.0	22.0
10P	18.0	24.0
11P	20.0	26.0
12P	22.0	28.0
13P	24.0	30.0
14P	26.0	32.0
15P	28.0	34.0
16P	30.0	36.0





Assembly layout

■ 技术参数 SPECIFICATIONS

适用线规: AWG#24~#30

◆ Applicable Wire: AWG#24~#30

◆ 额定电压: 100V DC/AC(rms)
Rated voltage: 100V DC/AC(rms)

◆ 额定电流: 2A (AWG #24)
Rated Current: 2A (AWG #24)

◆ 耐压值: 800V AC/minute
Withstand voltage: 800V AC/min.

◆ 工作温度: −25℃ ~ +85℃
Working Temp : −25℃ ~ +85℃

◆ 绝缘电阻: ≥1000 MΩ
Insulation resistance: ≥1000 MΩ

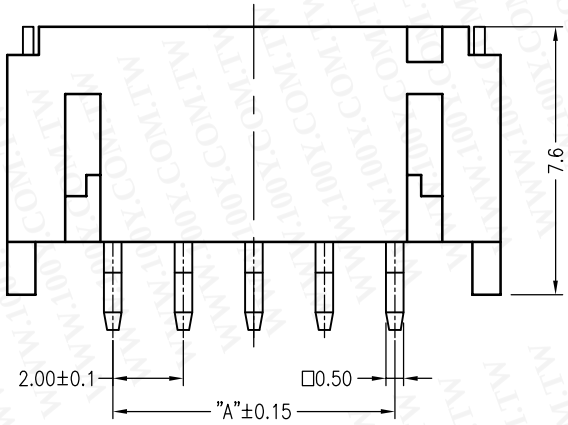
◆ 接触电阻: ≤10 mΩ
Contact resistance: ≤10 mΩ

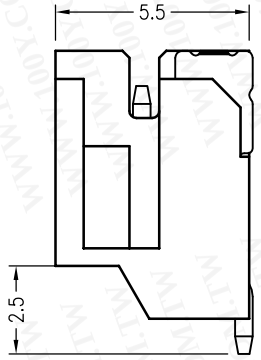
■ 材料 MATERIAL

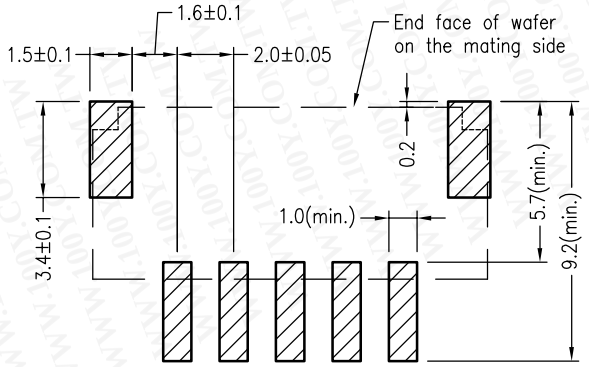
◆ 绝缘体: 尼龙9T, UL94−V0
Insulator: Nylon9T, UL94−V0

◆ 接触针: 黄铜
Contact PIN: Brass

◆ 焊片: 磷铜
Solder tab: Phosphor bronze







P.C.B LAYOUT

GENERAL TOLERANCE		SCALE: 5:1	DRAWN:	DATE: 2014.11.12	DOC. NO: JD-Y-E125	TITLE: 工程图	REV. A
XX. ±0.40		UNIT: mm	CHECK:	DATE: 2014.11.12	PARTS NO: PH-WT-NA		SHEET: 1/1
X. ±0.30		SIZE: A4	APPROVE:	DATE: 2014.11.12			
.X ±0.25	X.° ± 2°						
.XX ±0.15	.X° ± 1°						

DWG NO: E:\DWG\Production\PH

The following sample(s) was/were submitted and identified on behalf of the clients as : PA9T Beige-yellow(in Chinese as PA9T米黄色)

SGS Job No. :	CP14-048231 - SZ
Date of Sample Received :	05 Sep 2014
Testing Period :	05 Sep 2014 - 12 Sep 2014
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) comply with the limits as set by RoHS Directive 2011/65/EU Annex II; recasting 2002/95/EC.

Signed for and on behalf of
SGS-CSTC Ltd.

Echo

Echo Yeung
Approved Signatory

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Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
SN1	CAN14-147933.005	Beige plastic 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 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 62321:2008, determination of PBBs and PBDEs by GC-MS.

Test Item(s)	Limit	Unit	MDL	*005*
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1,000	mg/kg	2	6
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
Monobromodiphenyl ether	-	mg/kg	5	ND

Test Item(s)	Limit	Unit	MDL	005
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

Notes :

(1) The maximum permissible limit is quoted from the directive 2011/65/EU, Annex II

Polynuclear Aromatic Hydrocarbons (PAHs)

Test Method : With reference to ZEK 01.4-08 of German ZLS and its amendments, analysis was performed by GC-MS.

Test Item(s)	Unit	MDL	005
Naphthalene(NAP)	mg/kg	0.1	ND
Acenaphthylene(ANY)	mg/kg	0.1	ND
Acenaphthene(ANA)	mg/kg	0.1	ND
Fluorene(FLU)	mg/kg	0.1	ND
Phenanthrene(PHE)	mg/kg	0.1	ND
Anthracene(ANT)	mg/kg	0.1	ND
Fluoranthene(FLT)	mg/kg	0.1	ND
Pyrene(PYR)	mg/kg	0.1	ND
Benzo(a)anthracene(BaA)	mg/kg	0.1	ND
Chrysene(CHR)	mg/kg	0.1	ND
Benzo(b)fluoranthene(BbF) + Benzo(j)fluoranthene(BjF)	mg/kg	0.1	ND

Test Item(s)	Unit	MDL	*005*
Benzo(k)fluoranthene(BkF)	mg/kg	0.1	ND
Benzo(e)pyrene(BeP)	mg/kg	0.1	ND
Benzo(a)pyrene(BaP)	mg/kg	0.1	ND
Indeno(1,2,3-c,d)pyrene(IPY)	mg/kg	0.1	ND
Dibenzo(a,h)anthracene(DBA)	mg/kg	0.1	ND
Benzo(g,h,i)perylene(BPE)	mg/kg	0.1	ND
Sum of 18 PAHs	mg/kg	-	ND

ZEK 01.4-08: Restraining maximum values for products

Parameter	Category 1	Category 2	Category 3
	Material indented to be put in the mouth or material for toys with normal skin contact for children aged < 36 months	Materials those are not included in Category 1, with predictable contact with the skin longer than 30 s. (long-term skin contact).	Materials those are not included in Category 1 or 2, with predictable skin contact up to 30 s (short-term skin contact).
Benzo(a)pyrene (mg/kg)	<0.2**	1	20
Sum of 18 PAH (mg/kg)*	<0.2**	10	200

Notes:

* = 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 which is indented to be put in the mouth 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.

Tetrabromobisphenol A (TBBP-A)

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

Test Item(s)	Unit	MDL	*005*
Tetrabromobisphenol A (TBBP-A)	mg/kg	10	ND

Dimethyl Fumarate (DMF)

SGS-CSTC Standards Technical Services Co., Ltd. Guangzhou Branch Testing Chemical Laboratory
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Test Method : SGS In house method(GZTC CHEM-TOP-095), alalysis was performed by GC-MS

Test Item(s)	Limit	Unit	MDL	*005*
Dimethyl fumarate(DMF)	0.1	mg/kg	0.1	ND
Conclusion				**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.

Test Item(s)	Unit	MDL	*005*
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.

Test Item(s)	Unit	MDL	005
Perfluorooctane Sulfonates (PFOS) and related Acid,Metal Salt and Amide	mg/kg	10	ND
Perfluorooctanoic Acid (PFOA)	mg/kg	10	ND

Notes :

For reference: commission regulation (EU) No 757/2010 amending regulation (EC) No 850/2004:
(1) For the purposes of this entry, Article 4(1) (b) shall apply to concentrations of PFOS equal to or below 10 mg/kg (0,001 % by weight) when it occurs in substances or in preparations.
(2) For the purposes of this entry, Article 4(1) (b) shall apply to concentrations of PFOS in semi-finished products or articles, or parts thereof, if the concentration of PFOS is lower than 0,1 % by weight calculated with reference to the mass of structurally or micro-structurally distinct parts that contain PFOS or, for textiles or other coated materials, if the amount of PFOS is lower than 1µg /m2 of the coated material.

Phthalate

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

Test Item(s)	CAS NO.	Unit	MDL	*005*
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
Diisobutyl Phthalate (DIBP)	84-69-5	%(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
Dipropyl Phthalate (DPrP)	131-16-8	%(w/w)	0.003	ND
Dicyclohexyl Phthalate (DCHP)	84-61-7	%(w/w)	0.003	ND

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Test Item(s)	CAS NO.	Unit	MDL	*005*
Dipentyl Phthalate (DPP)	131-18-0	%(w/w)	0.003	ND
Dibenzyl Phthalate (DBzP)	523-31-9	%(w/w)	0.003	ND
Diphenyl Phthalate (DPhP)	84-62-8	%(w/w)	0.003	ND
Di-n-hexyl Phthalate (DnHP)	84-75-3	%(w/w)	0.003	ND

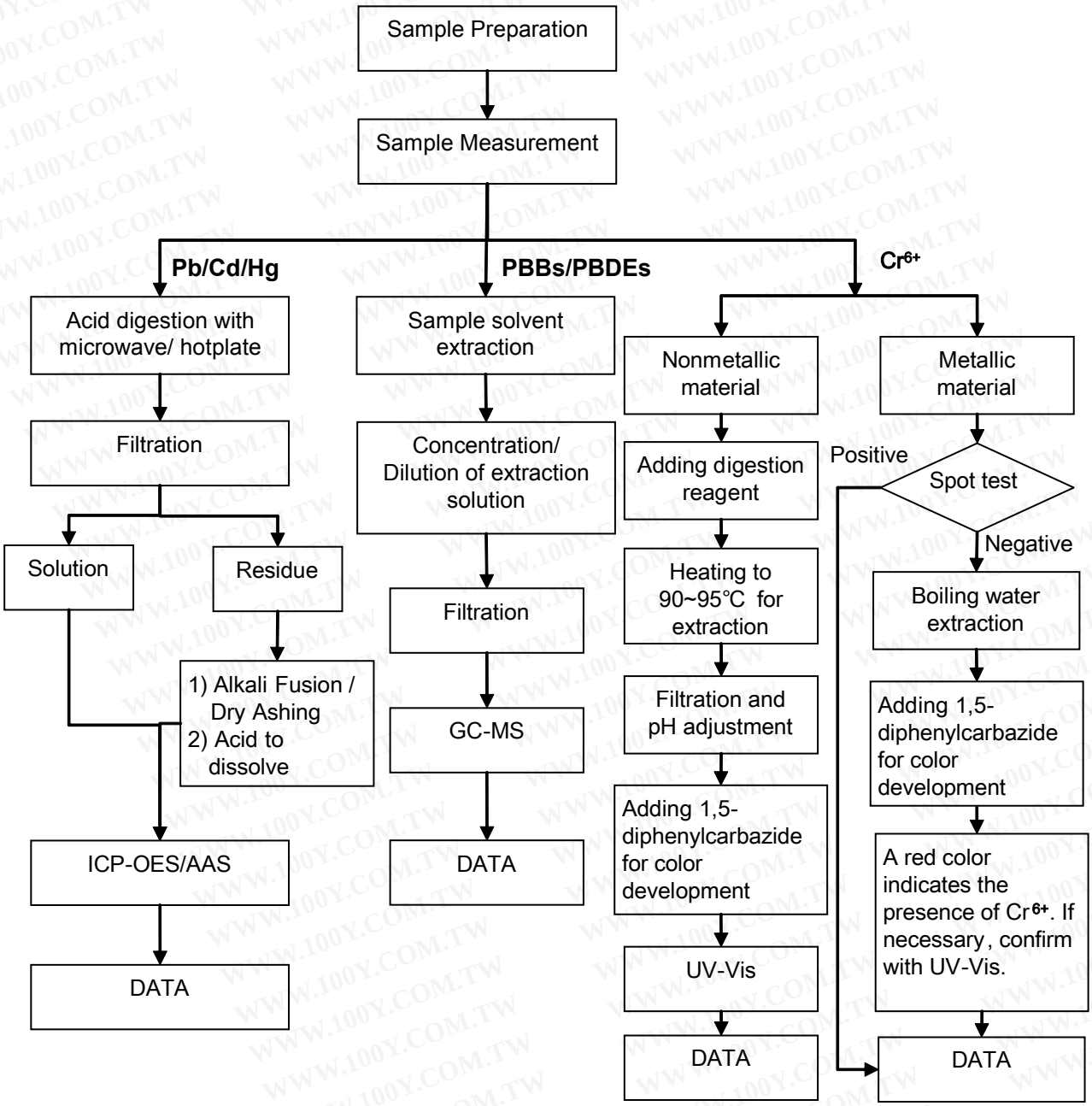
Notes :

(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

ATTACHMENTS

RoHS 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^{6+} and PBBs/PBDEs test method excluded).



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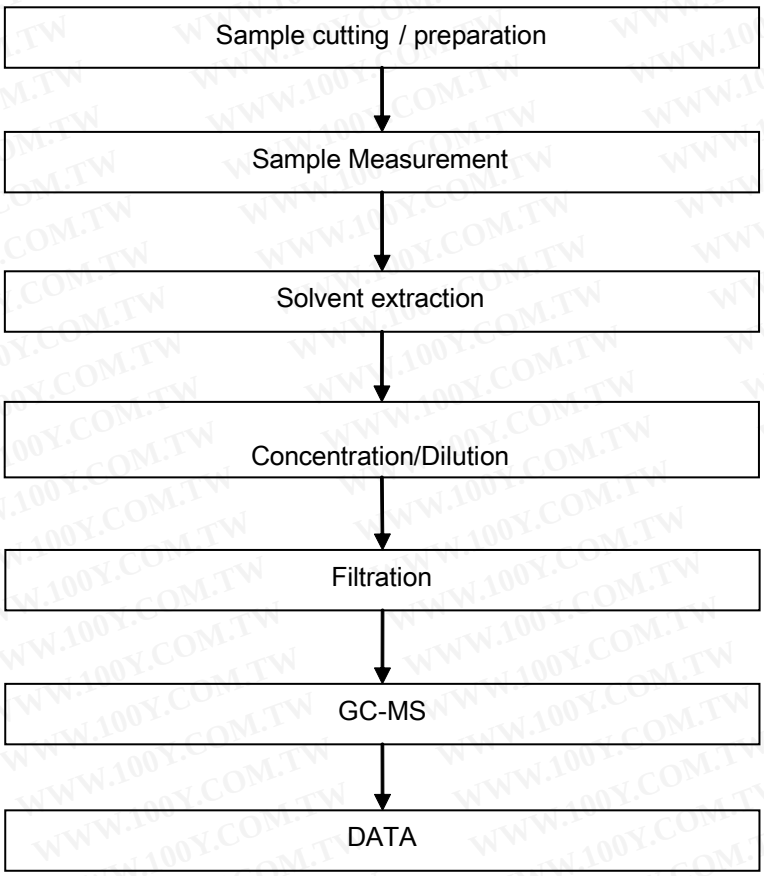
ATTACHMENTS

HBCDD Testing Flow Chart

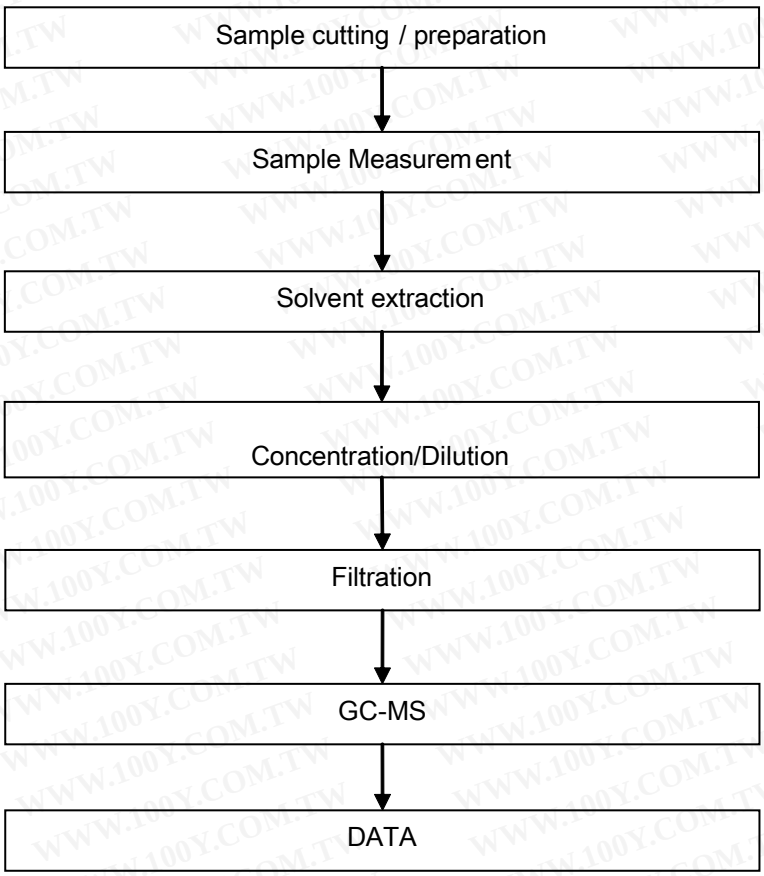
1) Name of the person who made testing: Sunny Hu
2) Name of the person in charge of testing: Cutey Yu



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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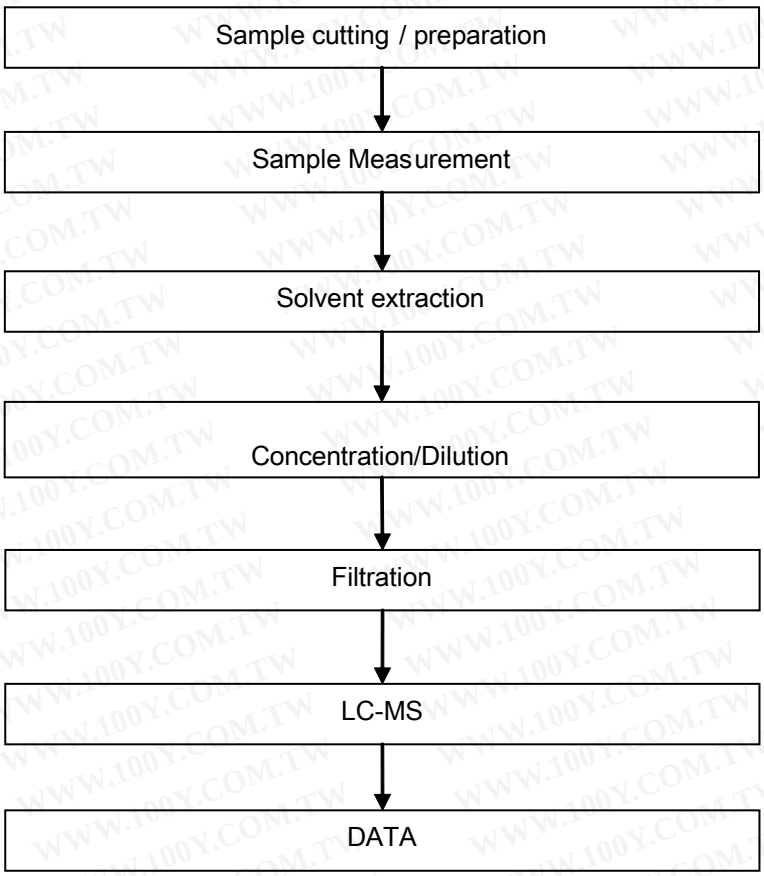
ATTACHMENTS

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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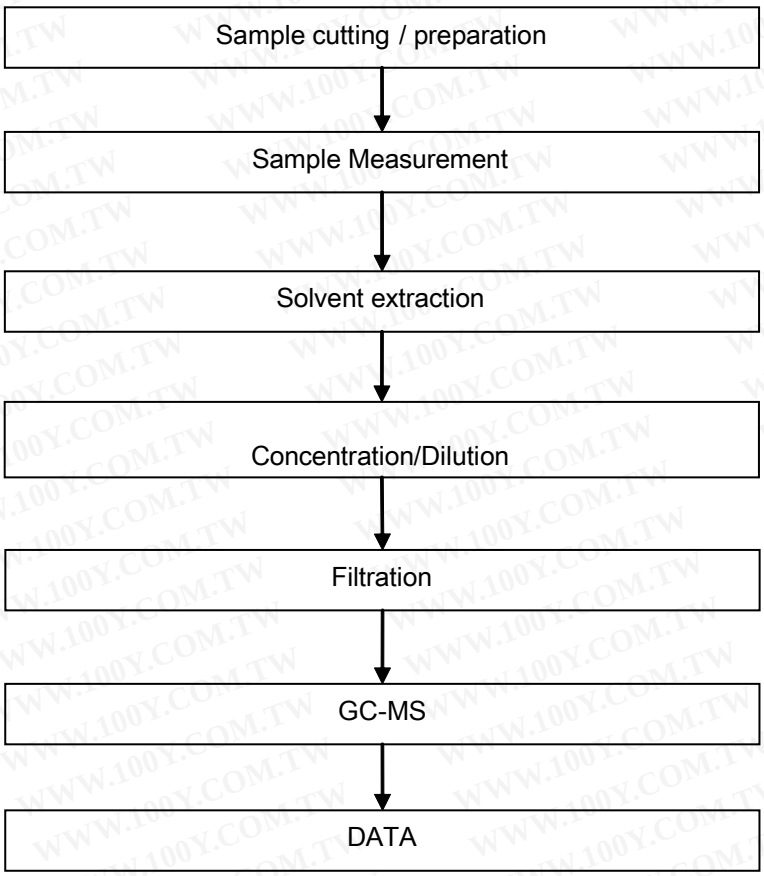
ATTACHMENTS

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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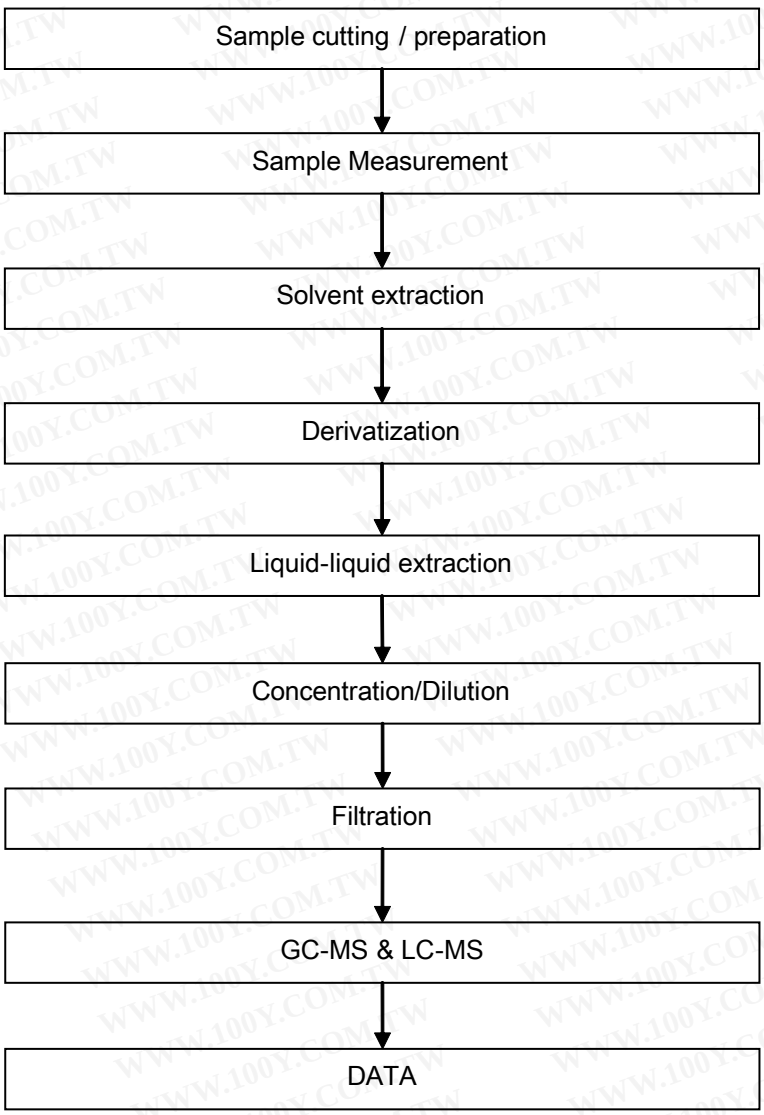
ATTACHMENTS

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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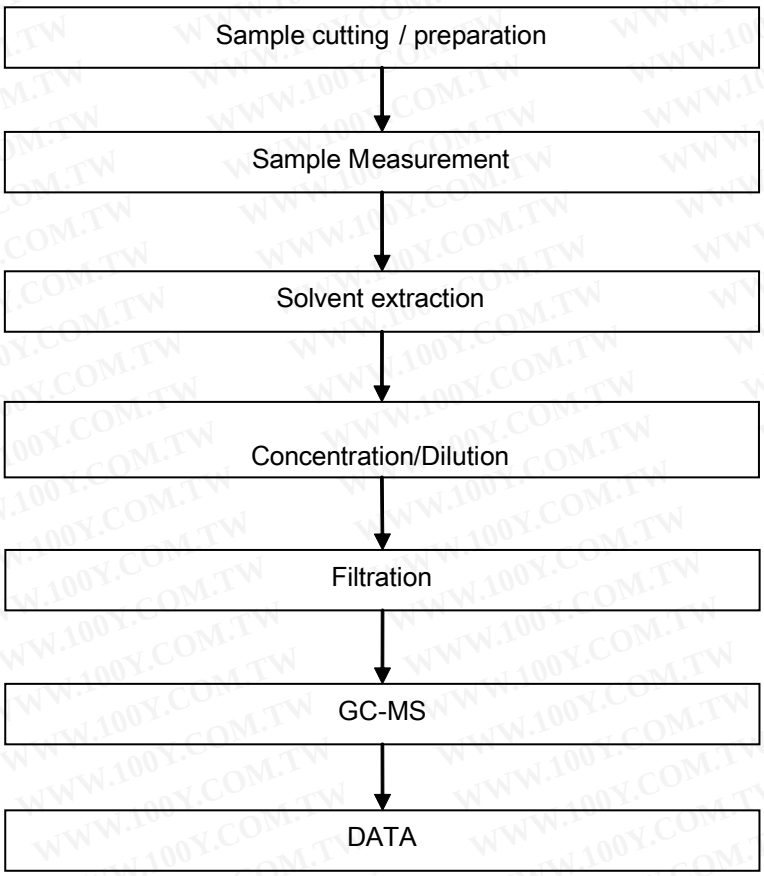
ATTACHMENTS

Dimethyl Fumarate Testing Flow Chart

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



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Sample photo:

CAN14-147933.005

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The following sample(s) was/were submitted and identified on behalf of the clients as : Brass electroplate bright tin PIN (in Chinese as黄铜镀亮锡铜针)

SGS Job No. :	CP14-048231 - SZ
Date of Sample Received :	05 Sep 2014
Testing Period :	05 Sep 2014 - 12 Sep 2014
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 2011/65/EU Annex II; recasting 2002/95/EC.

Signed for and on behalf of
SGS-CSTC Ltd.

Echo

Echo Yeung
Approved Signatory

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Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
SN1	CAN14-147933.017	Silvery plated metal pin

Remarks :

(1) 1 mg/kg = 1 ppm = 0.0001%
(2) MDL = Method Detection Limit
(3) ND = Not Detected (< MDL)
(4) "-" = Not Regulated

RoHS 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 spot test / Colorimetric Method using UV-Vis.

Test Item(s)	Limit	Unit	MDL	*017*
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1,000	mg/kg	2	23
Mercury (Hg)	1,000	mg/kg	2	ND
Hexavalent Chromium (CrVI)	-	-	◇	Negative

Notes :

(1) The maximum permissible limit is quoted from the directive 2011/65/EU, Annex II
(2)◇Spot-test:
Negative = Absence of CrVI coating, Positive = Presence of CrVI coating;
(The tested sample should be further verified by boiling-water-extraction method if the spot test result is Negative or cannot be confirmed.)
◇Boiling-water-extraction:
Negative = Absence of CrVI coating
Positive = Presence of CrVI coating; the detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg with 50 cm2 sample surface area.
Information on storage conditions and production date of the tested sample is unavailable and thus results of Cr(VI) represent status of the sample at the time of testing.

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Perfluorooctane Sulfonates (PFOS) and Perfluorooctanoic Acid (PFOA)

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

Test Item(s)	Unit	MDL	*017*
Perfluorooctane Sulfonates (PFOS) and related Acid,Metal Salt and Amide	µg/m²	1.0	ND
Perfluorooctanoic Acid (PFOA)	µg/m²	1.0	ND

Notes :

For reference: commission regulation (EU) No 757/2010 amending regulation (EC) No 850/2004:
(1) For the purposes of this entry, Article 4(1) (b) shall apply to concentrations of PFOS equal to or below 10 mg/kg (0,001 % by weight) when it occurs in substances or in preparations.
(2) For the purposes of this entry, Article 4(1) (b) shall apply to concentrations of PFOS in semi-finished products or articles, or parts thereof, if the concentration of PFOS is lower than 0,1 % by weight calculated with reference to the mass of structurally or micro-structurally distinct parts that contain PFOS or, for textiles or other coated materials, if the amount of PFOS is lower than 1µg /m2 of the coated material.

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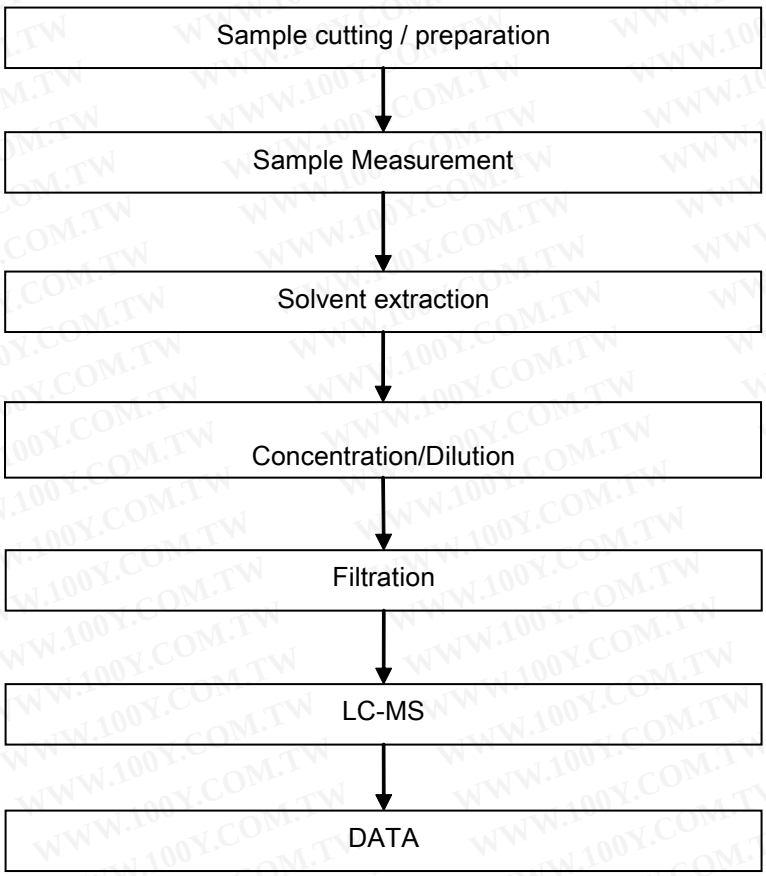
ATTACHMENTS

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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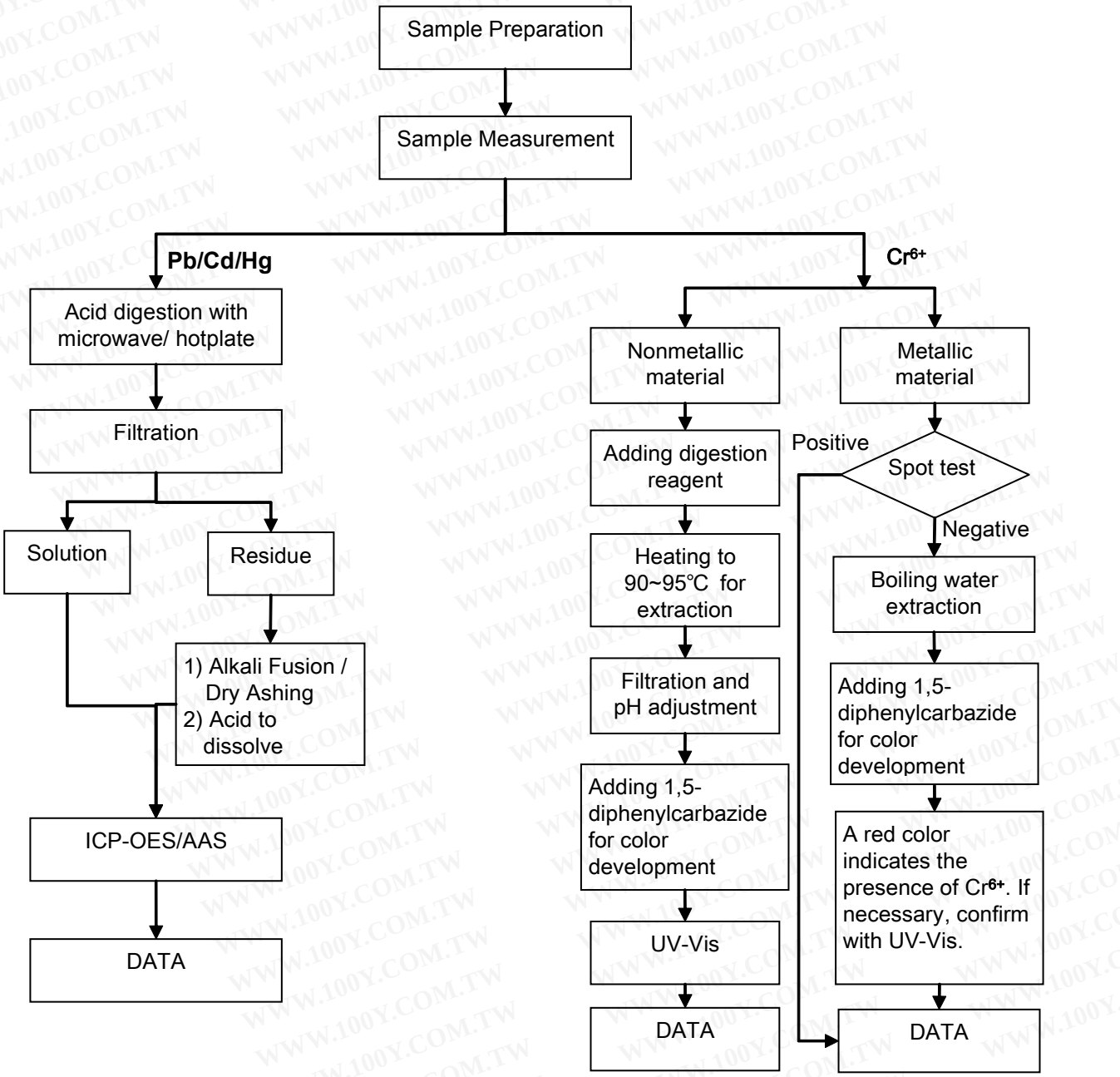
ATTACHMENTS

RoHS 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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Sample photo:

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

SGS Job No. :	CP14-048231 - SZ
Date of Sample Received :	05 Sep 2014
Testing Period :	05 Sep 2014 - 12 Sep 2014
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 2011/65/EU Annex II; recasting 2002/95/EC.

Signed for and on behalf of
SGS-CSTC Ltd.

Echo

Echo Yeung
Approved Signatory

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Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
SN1	CAN14-147933.012	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 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 spot test / Colorimetric Method using UV-Vis.

Test Item(s)	Limit	Unit	MDL	*012*
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1,000	mg/kg	2	45
Mercury (Hg)	1,000	mg/kg	2	ND
Hexavalent Chromium (CrVI)	-	-	◇	Negative

Notes :

(1) The maximum permissible limit is quoted from the directive 2011/65/EU, Annex II
(2)◇Spot-test:
Negative = Absence of CrVI coating, Positive = Presence of CrVI coating;
(The tested sample should be further verified by boiling-water-extraction method if the spot test result is Negative or cannot be confirmed.)
◇Boiling-water-extraction:
Negative = Absence of CrVI coating
Positive = Presence of CrVI coating; the detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg with 50 cm2 sample surface area.
Information on storage conditions and production date of the tested sample is unavailable and thus results of Cr(VI) represent status of the sample at the time of testing.

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Perfluorooctane Sulfonates (PFOS) and Perfluorooctanoic Acid (PFOA)

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

Test Item(s)	Unit	MDL	*012*
Perfluorooctane Sulfonates (PFOS) and related Acid,Metal Salt and Amide	µg/m²	1.0	ND
Perfluorooctanoic Acid (PFOA)	µg/m²	1.0	ND

Notes :

For reference: commission regulation (EU) No 757/2010 amending regulation (EC) No 850/2004:
(1) For the purposes of this entry, Article 4(1) (b) shall apply to concentrations of PFOS equal to or below 10 mg/kg (0,001 % by weight) when it occurs in substances or in preparations.
(2) For the purposes of this entry, Article 4(1) (b) shall apply to concentrations of PFOS in semi-finished products or articles, or parts thereof, if the concentration of PFOS is lower than 0,1 % by weight calculated with reference to the mass of structurally or micro-structurally distinct parts that contain PFOS or, for textiles or other coated materials, if the amount of PFOS is lower than 1µg /m2 of the coated material.

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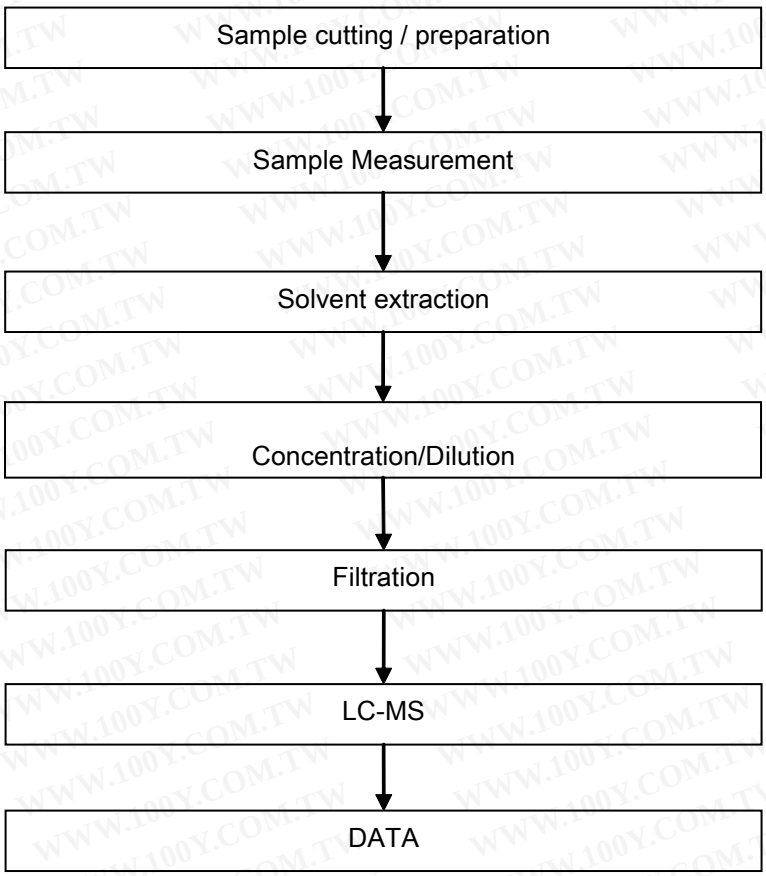
ATTACHMENTS

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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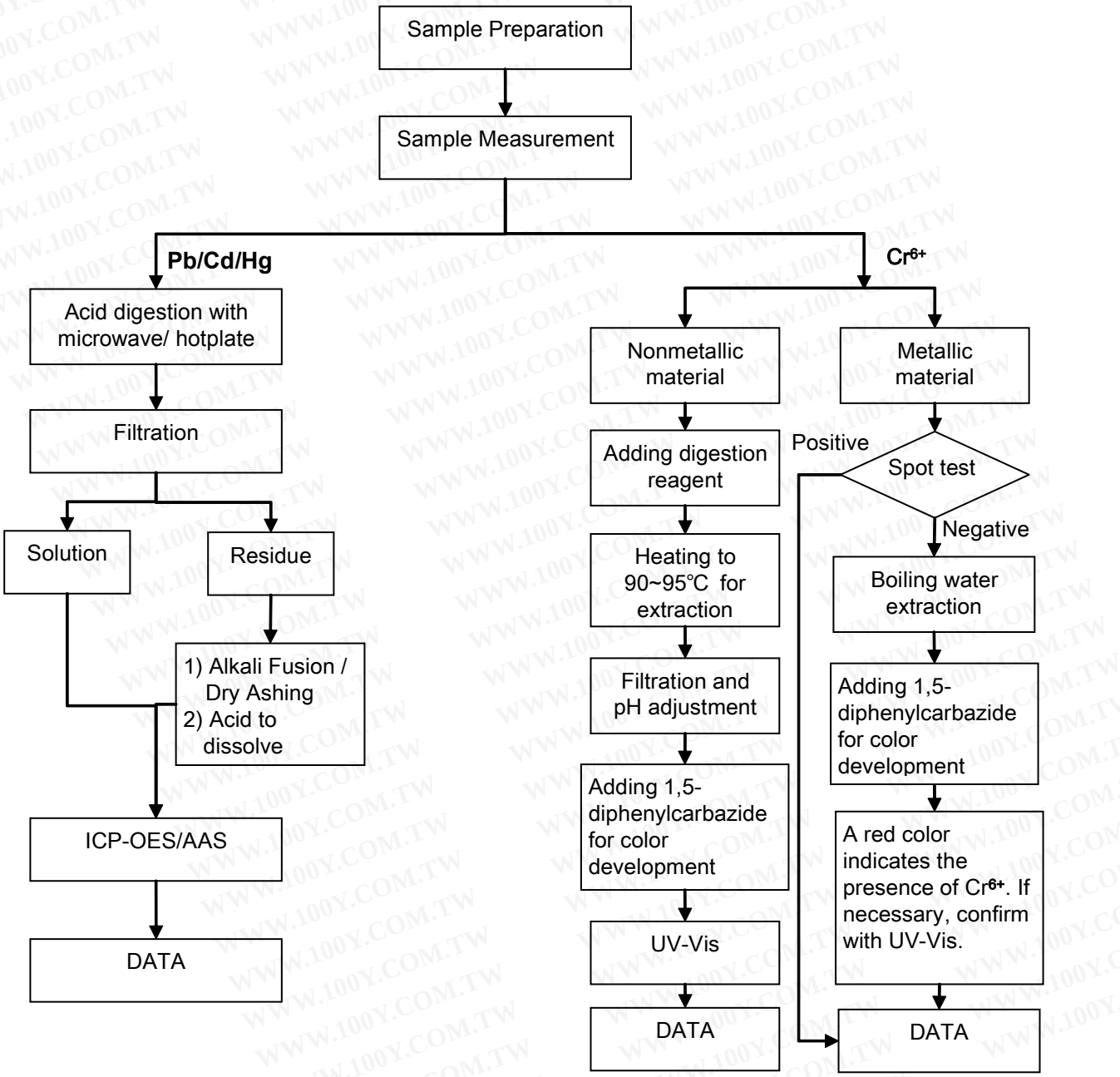
ATTACHMENTS

RoHS 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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Sample photo:

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