承 认 书

Approval Sheet

客户(Customer): /

客户料号 (Cus .P/N): /

华联威料号 (HLW P/N):U573-521B-G61018

品名规格 (PronameSpec):TYPE C 6P 四脚沉板防水母座

送样日期 (Delivery Date):2021/12/25

承认日期 (Acknowledge Date):2021/12/25

Approved No: 客 户 Customer			
采 购 部 Purchasing Dept	品 质 部 QC Dept	工 程 部 Engineering Dept	确 认 Approved By
深 圳 市 华 联 威 电 子 科 技 有 限 公 司 SHEN ZHEN SHI HUA LIAN WEI ELECTRONICS TECHNOLOGY CO; LTD.			
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REV.	ECN.NO.	APPD.
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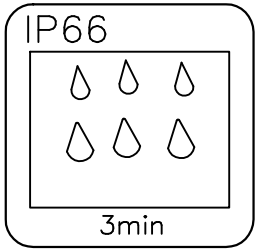
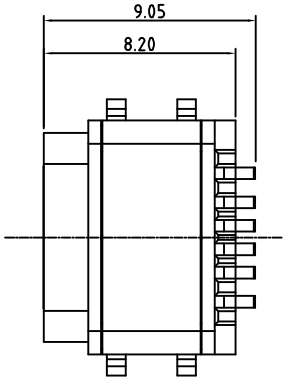
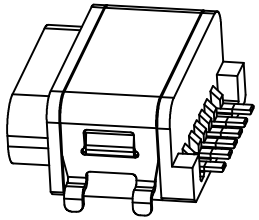
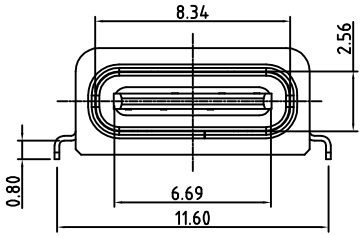
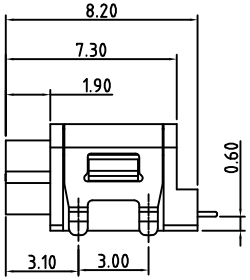


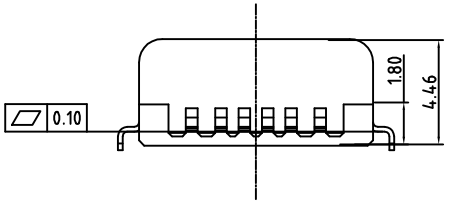


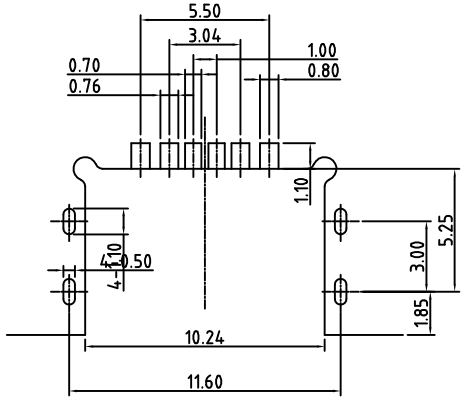


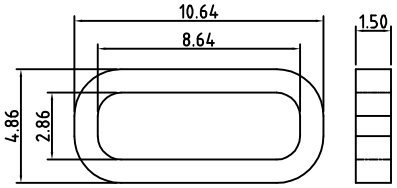
SPECIFICATIONS:
1. ELECTRICAL CHARACTERISTICS:
   1.1. RATING: 3A;
   1.2. CONTACT RESISTANCE: 30 mΩ MAX.(INITIAL);
   1.3. DIELECTRIC WITHSTANDING: 100V AC MIN.;
   1.4. INSULATION RESISTANCE: 100MΩ MIN.;
2. DURABILITY: 10,000 CYCLES MIN.;
3. INSERTION FORCE: 5-20N;
4. EXTRACTION FORCE: 6-20N;
5. WATER PROOFNESS:THIS PRODUCT IS BASED ON IPX6.
6. PLUG INTERFACE DIMENSIONS COMFORM TO USB2.0 SPEC.
7. PACKAGING: TAPE & REEL.



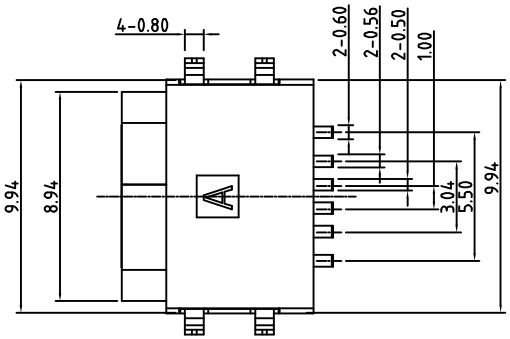








建议胶圈尺寸



U573-521X-XXX0X8

- 1.铁壳镀镍
- 5.铜壳镀镍
- B:不锈钢镀镍
- 1:半金1u″
- 3:半金3u″
- G:镀半金G/Fu″
- 1:黑色
- 2:白色
- G:绿色
- 1:PA46
- 2:PBT
- 6:LCP
- 1:盘装
- 3:载带

ITEM	PART NAME	Q'TY	FINISH	NOTE
3	Shell	1	SUS304R-1/2H Ni PlatingT=0.25mm	
2	Contact	6	Phosphor bronze C5191R-EH Au/Ni Plating T=0.20mm	
1	Housing	1	PA10T (G.F30%)	

PIN	SIGNAL NAME	PIN	SIGNAL NAME
A5	CC1	B12	GND
A9	VBUS	B9	VBUS
A12	GND	B5	CC2

TOLERANCE UNLESS OTHERWISE SPECIFIED
.XXX ±0.15
.XX ±0.20
.X ±0.30
.X° ±5°
.XX° ±2°

HLW 深圳市华联威电子科技有限公司
HUA LIAN WEI TECHNOLOGY ELECTRONICS CO;LTD.

APPROVED		PART NAME:	USB TYPE C 6P四脚沉板防水母座			
CHECKED		PART No:	U573-521X-XXX0X8			C
DRAWED	ZhangFenYan	PROJECTION:	UNIT:	SCALE	SHEET	REV.
DATE	2018.10.10		mm	1:1	1OF1	A

HLWconn® 深圳市华联威电子科技有限公司

HUA LIAN WEI TECHNOLOGY ELECTRONICS CO.,LTD

USB 3.1 TYPE-C系列产品SPEC

版本版次： C　　制定日期 20200707　　适用范围 通用

1. Scope（范围）

1.1 Contents(内容)

This specification covers the performance, tests and quality requirements for the Electronics USB 3.1 TYPE-C Connector.(此份产品规格适用于USB 3.1 TYPE-C连接器的产品功能，测试方法及质量要求)

2. Requirements (要求):

2.1 Rating(额定条件)

A. Voltage rating(额定电压):30V AC

B. Current rating(额定电流):1.5A

C. Operation Temperature Range(工作温度范围):-30℃ to +80℃

3. Test Condition(测试条件):

3.1 Temperature range(温度范围):-15℃ to +35℃

3.2 Humidity range (湿度范围):25% to 85%

4. Test Methods and Requirements:(测试方法及要求)

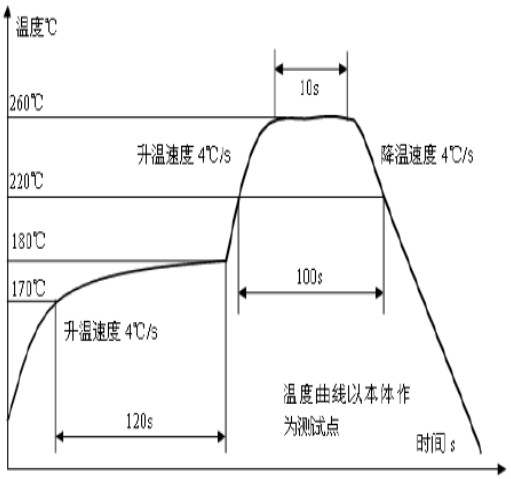
4.1 Examination of product (产品外观)			
4.1.1	Examination of Product 产品外观	Visual 目视	No peeling off the plating deformation of the base or damage. 不得有电镀层剥落，塑料变形或破损
4.2. Electrical Performance(电气性能)			
4.2.1	Contact Resistance 接触阻抗	（EIA-364-06B） 适合USB 3.1 TYPE-C嵌合；开放电压20mv以下；短路电流100ma的状态下测定。 Mate applicable USB 3.1 TYPE-C and measure by dry circuit, 20mv MAX, 100mA. 40mΩMAX	40mΩ MAX
4.2.2	Dielectric Withstanding Voltage (耐电压)	（EIA-364-20C） Unmated connectors, apply 100V AC (RMS.) for 1 minute between adjacent terminals of ground. 没有配对的连接器在相邻的端子或接地之间通上100V的交流电压1分钟	1. No Breakdown or flashover 2. Leakage current:0.5mA Max 1. 不能有损坏或跳火花 2. 漏电流<0.5mA
4.2.3	nsulation Resistance 绝缘阻抗	（EIA-364-21C） Unmated connectors, apply 500V DC for 1 minute between adjacent terminals of ground. 没有配对的连接器在相邻的端子或接地之间通上500V的直流电压1分钟	100MΩ min（unmated） 没有配对需大于100 MΩ
4.3Mechanical Performance(机械性能)			

4.3.1	Insertion/Withdrawal Force 插入力/拔出力	（EIA-364-13） Insertion and withdrawal speed: 25mm/minute. 插入和拔出的速度为25mm/分	插入力 Insertion 0.50kgf/MIN，2.0kgf/MAX 拔出力 Withdrawal 0.80kgf/MIN，2.0kgf/MAX After 10000 cycles 0.6kgf/MIN，2.0kgf/MAX
4.3.2	Durability 寿命测试	（EIA-364-09） 适合USB 3.1 TYPE-C；用每分钟12.5mm的速度，平行的插入，拔出。 Insert and extract applicable USB 3.1 TYPE-C at the speed rate of 12.5 mm/minute.	10000 cycles
4.3.3	Humidity-Temperature cycle 温湿度循环		
4.3.4	Vibration 振动	（EIA-364-28条件3） Amplitude:1.52mm P-P or 147m/s^2 {15G} Sweep time: 50-2000-50Hz in 20 minutes. Duration: 12 times in each (total of 36 times) X, Y, Z, axes. Electrical load DC 100mA current shall be flowed during the test.(ANSI/EIA-364-28 Condition Ⅲ) 在直流100毫安通电状态下测试，在X,Y,Z垂直3方向上，频率50-2000-50赫兹（加速度往复20分钟），全振幅1.52mm P-P或147 m/s^2 {15G}，每轴12回计36回	Appearance: No damage 外观：无损坏 Contact Resistance 接触阻抗 Contact: Change from initial Value:30mΩ Max. 端子：从初始值开始变化量小于30mΩ 间断性：不超过1微秒
4.3.4	Physical shock 冲击性	（EIA-364-27条件A） Pulse width: 11msec Waveform: Half-sine 490m/s²（50G）3 strokes in each X, Y, Z axes. (ANSI/EIA-364-27 condition A) 周期：11msec 冲击波形：正弦半波490m/s²（50G）3 循环在X, Y, Z轴	Appearance：No damage 外观：无损坏 Contact Resistance 接触阻抗 Contact: Change from initial Value 40mΩ Max 端子：从初始值开始变化量小于40mΩ Discontinuity: 1μ sec Max. 间断性：不超过1微秒
4.4 Environmental Performance			

4.4.1	Thermal shock test 冷热冲击	EIA-364-32C条件1） 10 cycles of: a)-55±3℃ for 30 minutes b) +85±3℃ for 30 minutes 10个循环， a)-55±3℃ 30 分钟 b) +85±3℃ 30 分钟	Appearance: No Damage. 外观：没有损坏 Contact Resistance 接触阻抗 Contact: Change from initial Value 40mΩ Max 端子：从初始值开始变化量小于40mΩ
4.4.2	Solder ability 焊锡性	（EIA-364-52） To be sipped in the solder bath 245±5℃ Coverage for 3 seconds. 将焊锡脚浸在245±5℃的锡炉中<3秒	The inspected area of each lead must have 90% solder coverage minimum
4.4.3	Humidity 恒温恒湿	（EIA-364-31B） (A) Mate connectors together and perform the test as follows 配对的连接器测试条件 Temperature: +25℃ to +85℃(温度：+25℃到+85℃) Relative Humidity: 90% to 95%(相对湿度：90%到95%) Duration:4 cycles(96 hours) (持续时间：4个循环共96小时) Upon completion of the test, specimens shall be conditioned ambient room conditions for 24 hours, after which the specified measurements shall be performed. 试验完成后，样品放置于室温条件中24小时后再进行测试	Appearance：No Damage 外观，没有损坏 Contact Resistance 接触阻抗 Contact: Change from initial Value 30mΩ Max 端子：从初始值开始变化量小于30mΩ
4.4.4	Salt Spray 盐水喷雾	EIA-364-26B） Temperature: 35±2℃ 温度：35±2℃ Concentration for salt: 5% 盐水浓度：5% (1)Duration: 24H 持续时间：24小时 Condition(条件)： Contact plated gold more than 15u″(include 15 u″),and the material of shell for copper alloy, or stainless. 端子镀金厚度大于等于15 u″且壳体材质是铜合金或是不锈钢 (2) Duration: 12H 持续时间：12小时 Condition(条件)： Contact plated gold less than 15 u″,and/or the material of shell for steel 端子镀金厚度小于15u″且/或壳体材质是铁材	No detrimental corrosion(Terminal solder tail unrequested) 产品无氧化，锈蚀（端子焊脚镀锡处不作要求）

4.4.5	Cold resistance (Unmated) 冷阻抗	（EIA-364-17B） Unmated connectors and expose to -25±3℃ for168 hours. Upon completion of the exposure period, the test specimens shall be conditioned at ambient room conditions for 1 to 2 hours, after which the specified measurements shall be performed. 没配对的连接器放置于-25±3℃温度中168小时，当完成实验后，样品放置一般环境中1到2小时后，在进行测试	Appearance: No Damage. 外观：没有损坏 Contact Resistance 接触阻抗 Contact: Change from initial Value 30mΩ Max Shell Part: Change from initial Value 50mΩ Max 端子：从初始值开始变化量小于30mΩ 外壳：从初始值开始变化量小于50mΩ
4.4.6	Heat resistance (Unmated) 热阻抗	（EIA-364-17B） Mated connectors and expose to 85±2℃ for168 hours. Upon completion of the exposure period, the test specimens shall be conditioned at ambient room conditions for 1 to 2 hours, after which the specified measurements shall be performed. 配对的连接器放置于85±2℃温度中168小时，当完成实验后，样品放置一般环境中1到2小时后，在进行测试	Appearance: No Damage. 外观：没有损坏 Contact Resistance 接触阻抗 Contact: Change from initial Value 30mΩ Max Shell Part: Change from initial Value 50mΩ Max 端子：从初始值开始变化量小于30mΩ 外壳：从初始值开始变化量小于50mΩ
4.4.7	Thermal Aging 高温老化	（EIA-364-31B，Condition 4， Method A） Unmated connectors and expose to +85±2℃ for 250 hours. Upon completion of the exposure period, the test specimens shall be conditioned at ambient room conditions for 1 to 2 hours, after which the specified measurements shall be performed. 没配对的连接器放置于+85±2℃温度中250小时，当完成实验后，样品放置一般环境中1到2小时后，在进行测试	Appearance: No Damage. 外观：没有损坏 Contact Resistance 接触阻抗 Contact: Change from initial Value 40mΩ Max 端子：从初始值开始变化量小于40m
4.4.8	Resistance to Soldering Heat	for wave soldering ： mil-std-202f,method 210 A,test condition B 波峰焊：mil-std-202f，method 210 A，试验条件B Pre-heat : 80℃, 60 Seconds 预热:80℃，60秒 Temperature : 260 ± 5 ℃ 温度:260±5℃ Immersion duration : 10 ± 1 sec. 浸泡时间:10±1秒。 for manual soldering :手动焊接: mil-std-202f,method 210 A,test condition A Pre-heat : No预热:没有 Temperature : 350 ± 10 ℃温度:350±10℃ Immersion duration :3.5±0.5 sec.浸泡时间:3.5±0.5秒	No physical damage shall occur. 不可有损坏 Reflow welding is not applicable to PBT 回流焊不适用于PBT

Solder Temp：260±5℃,10±0.5sec
焊锡温度：260±5℃,10±0.5sec



Note 1：Shall meet visual requirements, show no physical damage, and meet requirement of additional tests as specified in the test sequence in Figures 2

说明1：测试要求不能有物理损坏，测试依据表格二的顺序进行

3.Product Qualification And Requalification Test:产品测试顺序表 Figure 2

Test or Examination	Test Group													
	A	B	C	D	E	F	G	H	I	J	K	L	M	N
Test Sequence														
4.1.1.Examination of Product 产	1,9	1,3	1,5	1	1,5	1,5	1,5	1,3	1,5	1,5	1,5	1,5	1,5	1
4.2.1.Contact Resistance 接触	2,8		2,4		2,4	2,4	2,4		2,4	2,4	2,4	2,4	2,4	
4.2.2.Dielectric Withstanding	3,7													
4.2.3.Insulation Resistance 绝缘	4,6													
4.3.1.Insertion/ Withdrawal force		2												
4.3.2.Durability 寿命测试			3											
4.3.3.Vibration 振动性					3									
4.3.4.Physical shock 冲击性						3								
4.4.1.Thermal shock test 冷热							3							
4.4.2.Solderability 焊锡性								2						
4.4.3.Humidity 恒温恒湿	5								3					
4.4.4.Salt Spray 盐水喷雾										3				
4.4.5.Cold resistance 冷阻											3			

4.4.6.Heat resistance 热阻												3		
4.4.7.Thermal Aging 高温老化													3	
4.4.8.IR-reflow 回流焊测试														2
NO. of Test samples(Min.) 测	5	5	5	5	5	5	5	5	5	5	5	5	5	5

NOTE 2：(a) Numbers indicate sequence in which tests are performed.
(b) Discontinuities shall not take place in this test group, during tests.
说明 2： (a)测试依照矩阵要求数量进行。
(b)在测试中，群组测试不能间断

核准：唐竹君　　制作人：魏红

HLWconn®

深圳市华联威电子科技有限公司

SHENZHENHUALIANWEIELECTRONICS CO., LTD.

測試報告

TEST REPORT

產品名稱 Part Name	TYPE C 6P 四脚沉板防水母座	測試日期 Date of Testing	2021.12.24 2021.12.25	報告編號 Repor t NO.	MD20211225-01
產品型號 Part Name	U573-521B-G61018	樣品數量 Quantity	5PCS	測試環境 Measuring Environment	濕 度 Temp:18 fl1C 相對濕度 R.H.:49% f57%

一•電性測試 ELECTRICAL TEST

序 號 NO.	測試項目 Testing Item	測試條件 Tes ting Con di tions	測試設備 Testing Equipment	規格 SPEC	測試記錄 Testing Result					判定 Judge	
					1	2	3	4	5	Pass	Fail
1	Contact resis tance	Test current:100mA max	DIGITAL MICRO—**OHMMETER**	40 mΩ Max	14.77 mΩ	15.42 mΩ	15.86 mΩ	16.37 mΩ	17.53 mΩ	P	
2	In sula tion resis tance	Test voltage:500VDC Operation stated:1min	ULTRA HIGH RESISTANCE METER	100 mΩ Min	Pass	Pass	Pass	Pass	Pass	P	
3	Dielec tric withstand voltage	Test voltage:100VAC Cut—off current:0.5mA **Operation stated:1 min**	BREAKDOWN TESTER	No discharge or flashover occur	Pass	Pass	Pass	Pass	Pass	P	

二. 機械特性測試 MECHANICAL TEST

序 號 NO.	測試項目 Testing Item	測試條件 Tes ting Con di tions	測試設備 Testing Equipment	規格 SPEC	測試記錄 Testing Result					判定 Judge	
					1	2	3	4	5	Pass	Fail
1	Durability test	Ra te:200cycles/hour Total: 10000 cycles	LIFE TESTER FOR CONNECTOR	No physical damage	Pass	Pass	Pass	Pass	Pass	P	
2	Mating Force	5N-20Newtons maximun at a maximum rare of 12.5mm per minute	[1] Insertion force testing machine	No physical damage	Pass	Pass	Pass	Pass	Pass	P	
3	Un—Mating Force	8N-20N NewtNewtonso ns m minimuminimum at a maximum rare of 12.5mm per minute	Insertion force testing machine	No physical damage	Pass	Pass	Pass	Pass	Pass	P	

三.環境特性測試 ENVIRONMENTAL TEST

序 號 NO.	測試項目 Testing Item	測試條件 Tes ting Con di tions	測試設備 Testing Equipment	規格 SPEC	測試記錄 Testing Result					判定 Judge	
					1	2	3	4	5	Pass	Fail
1	Humidi ty—Tempera ture cycle	Temperature: 40±2°C Dura tion :168H	PROGRAM CONTROLLED TEMP. & HUMIDTY CHAMBER	No physical damage	Pass	Pass	Pass	Pass	Pass	P	
2	Heat test	Temperature: 70±2°C Dura tion :168H	OVEN	No physical damage	Pass	Pass	Pass	Pass	Pass	P	

3	Cold test	Temperature: -25 ±3°C Dura tion :168H	PROGRAM CONTROLLED TEMP. & HUMIDTY CHAMBER	No physical damage	Pass	Pass	Pass	Pass	Pass	P	
4	**Tempera ture** cycling test	Temperature: 70—25 C Duration:5 cycle	PROGRAM **CONTROLLED** TEMP. & HUMIDTY CHAMBER	**No physical** damage	Pass	Pass	Pass	Pass	Pass	P	

四.物理測試 **PHYSICAL TEST**

序 NO.	測試項目 Testing Item	測試條件 Testing Con di tions	測試設備 Testing Equipment	規格 SPEC	測試記錄 Testing Result					判定 Judge	
					1	2	3	4	5	Pass	Fail
1	Salt spray test	Temperature: 35±2°C Concentration:5±1 % Duration:12H	SALT SPRAY TESTER	No Oxidation	Pass	Pass	Pass	Pass	Pass	P	
2	Solder ability test	Temperature: 260 ± 5°CDura tio n:10 ±1 sec	OVEN	NO physical **damage**	Pass	Pass	Pass	Pass	Pass	P	
3	Solder ability test	Temperature: 260 ±10 C Dura tion :10 ±1 sec	CONTROLLED CONSTANT-TEMP SOLDER POT	Soldering area 三 95%	Pass	Pass	Pass	Pass	Pass	P	
判定 Result		■合格(ACCEPT)					□ 不合格(REJECT)				

核准(Approver)：欠必锋　　測試(Tester)：但芬

深圳市华联威电子科技有限公司

檢驗報告

■首件檢驗 □入庫檢驗 □出貨檢驗 □客退檢驗 □退料檢驗 □其他 2021年12月25日 版次:A1

料號	U573-521B-G61018	制令單號	/	送檢單位	工程部	首件製作者	裝配
品名	TYPE C 6P四脚沉板防水母座	客戶代號	/	批 量	/	送檢時間	/
				數 量	5PCS	確認時間	/

抽 樣 標 準	■單次 □雙次	抽样数	AQL	CRI:0	MAJ:0.40	MIN:0.65
MIL-STD-105E(II)	■正常 □加嚴 □減量	(5PCS)	ACC/REJ	0	/	/

不 良 数: CRI (/) MAJ (/) MIN (/) 不良率(%) /

NO.	檢驗項目 單位:MM/G	檢測儀器	檢 驗 記 錄 1	2	3	4	5	品管判定 AC	RE	CRI	MAJ	MIN	備注
尺寸測量	8.34±0.20	D	8.36	8.38	8.35	8.36	8.34	√					
	6.69±0.20	D	6.72	6.68	6.70	6.73	6.70	√					
	11.60±0.20	D	11.65	11.67	11.63	11.67	11.65	√					
	2.56±0.20	D	2.59	2.56	2.57	2.56	2.57	√					
	9.05±0.20	D	9.10	9.07	9.06	9.05	9.06	√					
	8.20±0.20	D	8.23	8.25	8.26	8.27	8.26	√					
	0.60±0.20	D	0.63	0.65	0.67	0.64	0.65	√					
	3.10±0.20	D	3.12	3.10	3.09	3.12	3.08	√					
	9.94±0.20	D	9.96	10.02	9.95	10.06	10.04	√					

檢驗依據: ■<<工程圖紙>> □<<檢驗規範>> □<<承認書>> □樣品 □其它

檢測儀器:A游標卡尺 B千分尺 C厚薄儀 D投影鏡 E放大鏡 F顯微鏡 G錫爐 H插拔力器 I間位尺 J其它

品保判定: ■合格Accept □退貨Reject □特采Waive □挑選Sort

核准：欠必锋 审核：刘联英 检验员：但芬

深圳市华联威电子科技有限公司

电镀报告表

品名:TYPE C 6P 四脚沉板防水母座（端子）		版次:A.0
电镀规格:Ni40u″,Sn40u″,Au G/Fu″	日期:2021-08-25	页次:1/1

厂商:同华

测试设备:CMI X-射线膜厚测试仪

1、底层电镀测试（Ni）

数据	测试标准	实测值	判定	测试日期	测试时间
1	40u″MIN	60.5u″	OK	2021/8/25	10:20:15
2	40u″MIN	58.3u″	OK	2021/8/25	10:20:17
3	40u″MIN	67.5u″	OK	2021/8/25	10:20:19
4	40u″MIN	62.4u″	OK	2021/8/25	10:20:21

2、表层电镀测试（Sn）

数据	测试标准	实测值	判定	测试日期	测试时间
1	40u″MIN	75.3u″	OK	2021/8/25	10:25:10
2	40u″MIN	74.7u″	OK	2021/8/25	10:25:12
3	40u″MIN	85.9u″	OK	2021/8/25	10:25:14
4	40u″MIN	72.4u″	OK	2021/8/25	10:25:16

3、表层电镀测试（Au）

数据	测试标准	实测值	判定	测试日期	测试时间
1	0.5u″MIN	0.55u″	OK	2021/8/25	10:30:32
2	0.5u″MIN	0.53u″	OK	2021/8/25	10:30:34
3	0.5u″MIN	0.58u″	OK	2021/8/25	10:30:36
4	0.5u″MIN	0.59u″	OK	2021/8/25	10:30:38

核准：欠必锋　　审核：刘联英　　检验员：但芬

深圳市华联威电子科技有限公司

电镀报告表

品名:TYPE C 6P 四脚沉板防水母座外壳		版次:A.0
电镀规格:Cu:40u″Ni50u″MIN	日期:2021/9/12	页次:1/1

厂商:金和源

测试设备:CMI X-射线膜厚测试仪

1、底层电镀测试(Cu)

数据	测试标准	实测值	判定	测试日期	测试时间
1	40u″min	45.3u″	OK	2021/9/12	19:55:05
2	40u″min	48.5u″	OK	2021/9/12	19:55:57
3	40u″min	44.2u″	OK	2021/9/12	19:56:48
4	40u″min	45.6u″	OK	2021/9/12	19:57:31

2、表层电镀测试（Ni）

数据	测试标准	实测值	判定	测试日期	测试时间
1	50u″min	50.26u″	OK	2021/9/12	19:58:12
2	50u″min	50.28u″	OK	2021/9/12	19:59:04
3	50u″min	50.18u″	OK	2021/9/12	20:01:44
4	50u″min	50.13u″	OK	2021/9/12	20:02:36

核准：欠必锋　　审核：刘联英　　检验员：但芬

深圳市华联威电子科技有限公司

盐水喷雾实验报告

试验方法	盐水喷雾腐蚀试验法	参考资料	MIL-STD-1216
METHOD	NEUTRL SALT SPRAY CORROSION TEST	REF	
客户	/	试验起始日期	2021年12月24日　20:00 时起
		DATE	2021年12月25日　08:00 时止
样品名称	TYPE C 6P 四脚沉板防水母座	试验数量	5PCS
P/N	U573-521B-G61018		

试验条件　　（TEST CONDDITION）

1、盐水溶解（SALT SOLUTION：浓度50±10g/L，PH值6.5-7.2.

2、试验室温度（TEMP.IT THE SPRAY DHAMBR):35±1℃.

3、盐水桶温度（TEMP.OF SALE SOL′N TANK): 35±1℃.

4、 压力桶温度 （TEMP.OF SAR SUPPLIERY）：47±1℃.

5、 试验室相对湿度（R.H IN THE CHAMBER ） 85%.

6、 压缩空气压力（COMPRESSED AIR PRESSURE）：1.00±0.01Kg/cm^2.

7、 样品放置位置（SPECIMEN SUPPORTED ANGLE ）：尼龙绳吊挂70°-90°.

8、 喷雾收集量（COLLECT RATE OF SALT SOL′N）1-2mL/(8 cm^2hr).

9、盐雾测试时间： 12小时 （H）

判定方法（ADFUSGD METHOD ）

试验后以20倍放大镜观察、无蓝、绿色腐蚀物之现象（不包含折弯处），即判定合格.(Inspext the ecimen at 20 xmagnification no blue or green corrosion products are acceptable)

样品序号	试验后现象 PHENOMENON AFTER TEST	判定 COMMENT
1	无蓝、绿色腐蚀物之现象	OK
2	无蓝、绿色腐蚀物之现象	OK
3	无蓝、绿色腐蚀物之现象	OK
4	无蓝、绿色腐蚀物之现象	OK
5	无蓝、绿色腐蚀物之现象	OK

核准:欠必锋　　审核：刘联英　　试验员:但芬

钜鼎銅材廠檢驗報告單

公司名稱 Customer	钜鼎銅材廠檢驗報告單				重量 Weight(kg)	1078	出貨日期 Date		2021/11/23	
品名 Article	標准 Standard No				尺寸 Dimension		狀態 Tenper		銅卷編號 Coil No	
C2680	JISH3100:2017				0.18*400		EH		1021-C-08	
化學成分Chemical Compositions(%)										
元素 Element	Cu %	Zn%	Pb%	Fe%	\	\	\	\	化學成分	雜質
規範 Spec	64.0-68.0	餘量	<0.05	<0.05	\	\	\	\	合格	合格
實測 Actual	64.32	餘量	0.0036	0.0136	\	\	\	\	合格	合格
機械性質子Mechanical Properties										
項目 Item	結晶粒度 Grain Size Mm	硬度 Hardness Hv	抗拉強度 TensionStrength Mpa	伸長度 Elongation %	導電率 Electrical Conduc %IACS	彎曲試驗 Bending Test 180	表面粗度 Surface Roughness Ra(u m)		彎曲度 Camber mm\n	
規範MAX Spec	\	170-190	490-610	\	\	\	\		\	
實測 Actual	\	178	574	5	\	\	\		\	

品質部

聯系電話:0755-28111847
傳真: 0755-28110077

送货专用章

Materials Information

PRODUCT NAME: LCP M-401 BK

COMPOSITION/INFORMATION OF LCP M-401 BK

SUBSTANCE/MIXTURE: Mixture
SYNONYM(S): Aromatic Liquid Crystal Polymer(LCP)

品名	比例	用途
德众泰 LCP 树脂	0.565	构成材料主要成分
抗氧剂	0.002	抗氧化
科莱恩热稳定剂	0.003	增加高温稳定性
黑色母	0.01	着色
滑石粉	0.2	增强剂，增加流动性
玻纤	0.22	增强

NAME OF COMPANY: DZT Engineering Plastics Tech. Co.,Ltd
ADDRESS: Building 2 Zhichong Industrial Park, Hi-Tech Zone, Jiangmen City, Guangdong Province, China
SECTION IN CHARGE: Quality Assurance Department
TEL/FAX: +86-750-3689920/+86-750-3689921
EMERGENCY TEL: +86-750-3689708

深圳市桐晟鼎泰工程塑胶有限公司
业务章

DZT Engineering Plastics Tech. Co., Ltd Original Files

材 质 证 明 书（2020/A）
MATERIAL CERTIFICATE

生产厂家	SHNZHEN CITY XINQIA METAL PRODUCTS CO.LTD	生产编号	B20191101	开立日期 Issue Date	2019.11、5	证明书编号 Certificate No	20191105-01
钢种名称	SUS 304 1\2H	订单编号 Order No	JIS	依据规范 By Standard			

项目 Item	钢卷编号 Coil No	厚度(mm) Thickness	宽度(mm) Width	长度 Length	数量(卷) Quantity©	重量(Kg) Weight(Kg)	成品表面加工			
1		0.3	296	COIL	1	1400				
2										
3										
4										
5										
6										

	化学成份Chemical Composition（%）										标准 Spec	硬度 Hardness	降伏强度 (N/mm^2) Yield stress	引张强度 (N/mm^2) Tensile Stress	伸长率(%) Elongation	弯曲试验 Bend Test	
	C	Si	Mn	P	S	Cr	Ni	Mo	N								
标准 Spec	0.080 max	0.750 max	2.000 max	0.045 max	0.030 max	18.00 20.00	8.00 10.50				试片编号 Specimen	270-290HV	865 min	1059 min	- -		
1	0.042	0.320	1.180	0.031	0.006	18.03	8.01				20140328-01	270	497	870	-	OK	
2																	
3																	
4																	
5																	
6																	

以上列出的典型数据,仅供参考,并不代表技术数据的最大值或最小值,也不用于最终设计.任一具体材料的数据可能与此表中所列出的数据有所不同.

Data shown are typical,For reference only,and should not be construed as maximum or minimum values for specification or for final design data. On any particular piece of material may vary from those shown herein.

如有异常，请于三天内回复

Only discrepancy pls contact us within 3 days

技术部经理 Manager

东莞市嘉茂金属材料有限公司

Test Report

No. CANEC2119174205 Date: 22 Oct 2021

SHENZHEN HUALIANWEI ELECTRONICS TECHNOLOGY CO.,LTD

101, 201, PLANT 1, NO.307, GUANLAN GUIHUA ROAD, GUIXIANG COMMUNITY, GUANLAN SUB-DISTRICT, LONGHUA DISTRICT, SHENZHEN CITY, GUANGDONG PROVINCE, CHINA

The following sample(s) was/were submitted and identified on behalf of the clients as : SUS304 hardware

SGS Job No. :	CP21-055214 - GZ
Model No. :	SUS304
Client Ref. Info. :	Used for USB series, HDMI series, RJ series, 1394 series, MICRO series, MINI series, DISPLAYPORT series, VGA series, DVI series, TYPE-C series, JACK series
Date of Sample Received :	18 Oct 2021
Testing Period :	18 Oct 2021 - 22 Oct 2021
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

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B1027EEF

Allie Chen

Allie Chen
Approved Signatory

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中国·广州·经济技术开发区科学城科珠路198号 邮编: 510663 t (86-20) 82155555 sgs.china@sgs.com

Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
SN1	CAN21-191742.005	Silver-grey metal

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 : With reference to IEC 62321-4:2013+A1:2017, IEC 62321-5:2013, IEC 62321-7-1:2015, analyzed by ICP-OES and UV-Vis .

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 (Cr(VI))▾	-	μg/cm²	0.10	ND

Notes :

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

(2) IEC 62321 series is equivalent to EN 62321 series
https://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101::::FSP_ORG_ID,FSP_LANG_ID:1258637,25

(3) ▾= 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.

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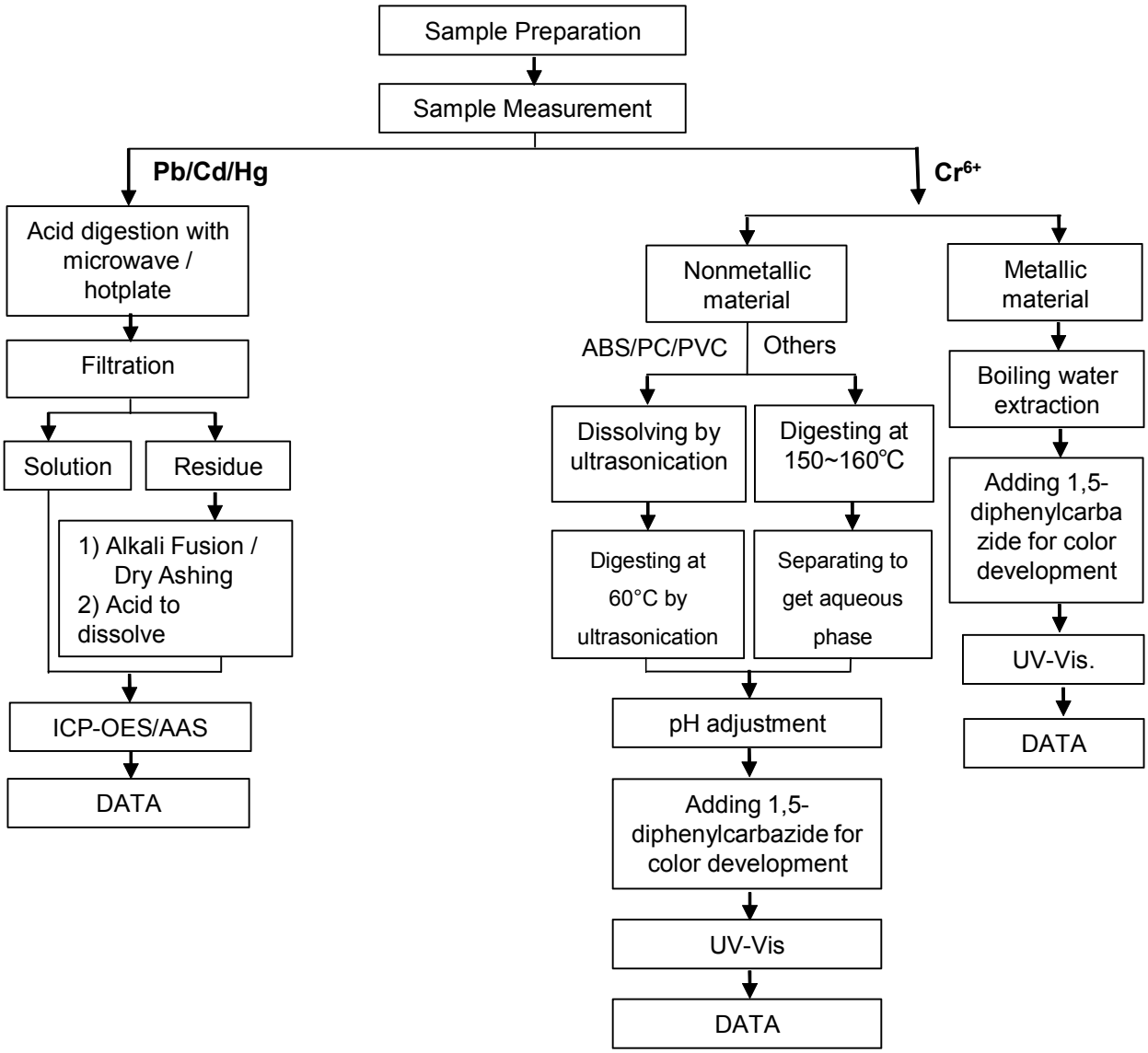
ATTACHMENTS

Pb/Cd/Hg/Cr^{6+} Testing Flow Chart

1) These samples were dissolved totally by pre -conditioning method according to below flow chart. (Cr^{6+} test method excluded).



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Sample photo:

CAN21-191742.005

SGS authenticate the photo on original report only

*** End of Report ***

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Test Report

SHENZHEN HUALIANWEI ELECTRONICS TECHNOLOGY CO.,LTD

101, 201, PLANT 1, NO.307, GUANLAN GUIHUA ROAD, GUIXIANG COMMUNITY, GUANLAN SUB-DISTRICT, LONGHUA DISTRICT, SHENZHEN CITY, GUANGDONG PROVINCE, CHINA

The following sample(s) was/were submitted and identified on behalf of the clients as : C2680 Terminal

SGS Job No. :	CP21-055214 - GZ
Model No. :	C2680 terminal after plating
Client Ref. Info. :	Used for USB series, HDMI series, RJ series, 1394 series, MICRO series, MINI series, DISPLAYPORT series, VGA series, DVI series, TYPE-C series, JACK series
Date of Sample Received :	18 Oct 2021
Testing Period :	18 Oct 2021 - 22 Oct 2021
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

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Allie Chen

Allie Chen
Approved Signatory

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Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
SN1	CAN21-191742.001	Silver-grey/brassy metal

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 : With reference to IEC 62321-4:2013+A1:2017, IEC 62321-5:2013, IEC 62321-7-1:2015, analyzed by ICP-OES and UV-Vis .

Test Item(s)	Limit	Unit	MDL	*001*
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1,000	mg/kg	2	44
Mercury (Hg)	1,000	mg/kg	2	ND
Hexavalent Chromium (Cr(VI))▾	-	μg/cm²	0.10	ND

Notes :

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

(2) IEC 62321 series is equivalent to EN 62321 series https://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101::::FSP_ORG_ID,FSP_LANG_ID:1258637,25

(3) ▾= 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.

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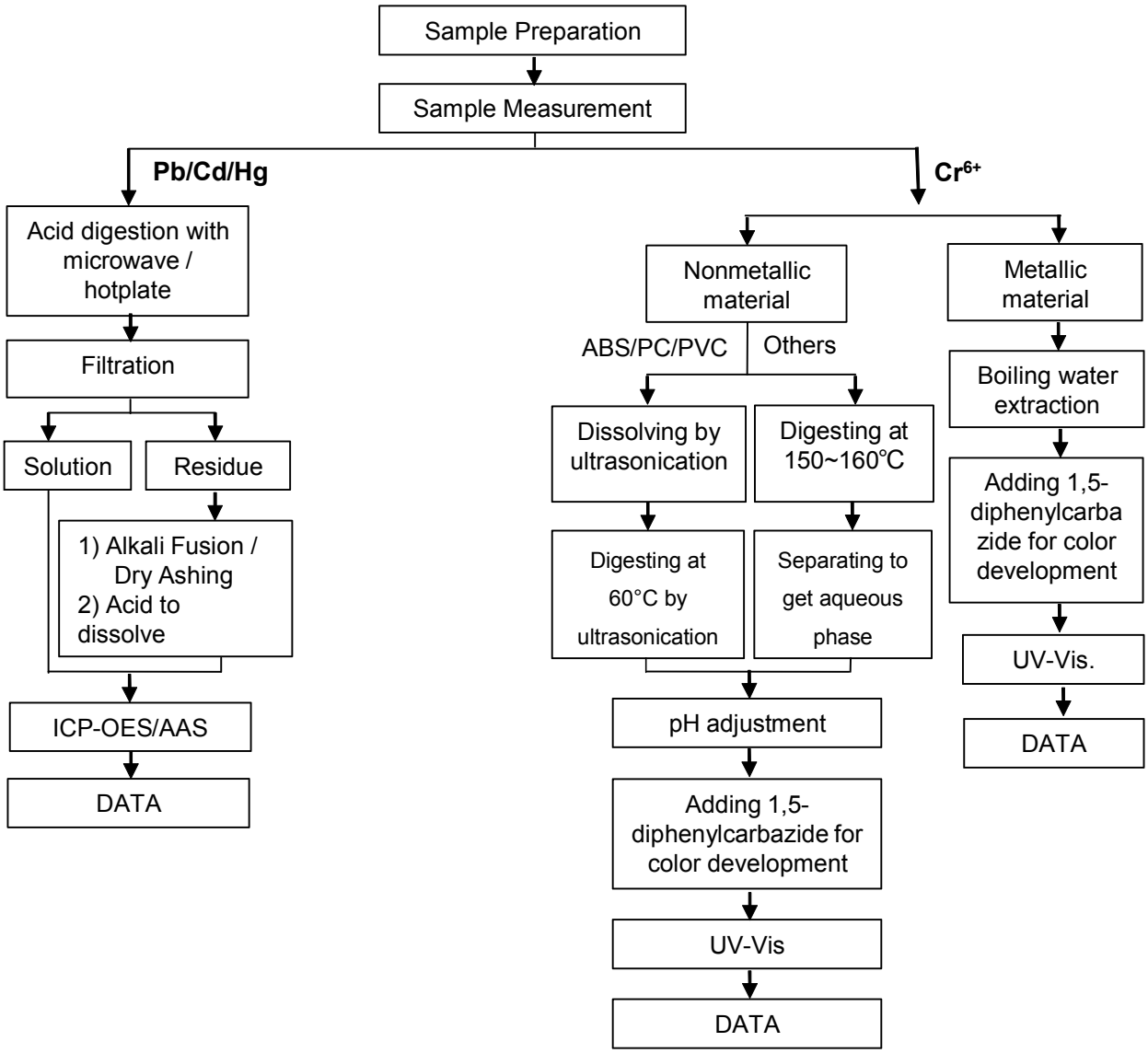
Pb/Cd/Hg/Cr^{6+} Testing Flow Chart

1) These samples were dissolved totally by pre -conditioning method according to below flow chart. (Cr^{6+} test method excluded).



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Sample photo:

CAN21-191742.001

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Test Report

SHENZHEN HUALIANWEI ELECTRONICS TECHNOLOGY CO.,LTD

101, 201, PLANT 1, NO.307, GUANLAN GUIHUA ROAD, GUIXIANG COMMUNITY, GUANLAN SUB-DISTRICT, LONGHUA DISTRICT, SHENZHEN CITY, GUANGDONG PROVINCE, CHINA

The following sample(s) was/were submitted and identified on behalf of the clients as : LCP plastic black color

SGS Job No. :	CP21-055214 - GZ
Model No. :	LCP Plastic
Client Ref. Info. :	Used for USB series, HDMI series, RJ series, 1394 series, MICRO series, MINI series, DISPLAYPORT series, VGA series, DVI series, TYPE-C series, JACK series
Date of Sample Received :	18 Oct 2021
Testing Period :	18 Oct 2021 - 22 Oct 2021
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

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BA24A4B1

Allie Chen

Allie Chen
Approved Signatory

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Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
SN1	CAN21-191742.008	Black plastic

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 : With reference to IEC 62321-4:2013+A1:2017, IEC 62321-5:2013, IEC 62321-7-2:2017 , IEC 62321-6:2015 and IEC 62321-8:2017, analyzed by ICP-OES , UV-Vis and GC-MS .

Test Item(s)	Limit	Unit	MDL	*008*
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	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	008
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)	1,000	mg/kg	50	ND
Butyl benzyl phthalate (BBP)	1,000	mg/kg	50	ND
Bis (2-ethylhexyl) phthalate (DEHP)	1,000	mg/kg	50	ND
Diisobutyl Phthalates (DIBP)	1,000	mg/kg	50	ND

Notes :

(1) The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863.
(2) IEC 62321 series is equivalent to EN 62321 series
https://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101::::FSP_ORG_ID,FSP_LANG_ID:1258637,25
(3) The restriction of DEHP, BBP, DBP and DIBP shall apply to medical devices, including in vitro medical devices, and monitoring and control instruments, including industrial monitoring and control instruments, from 22 July 2021.

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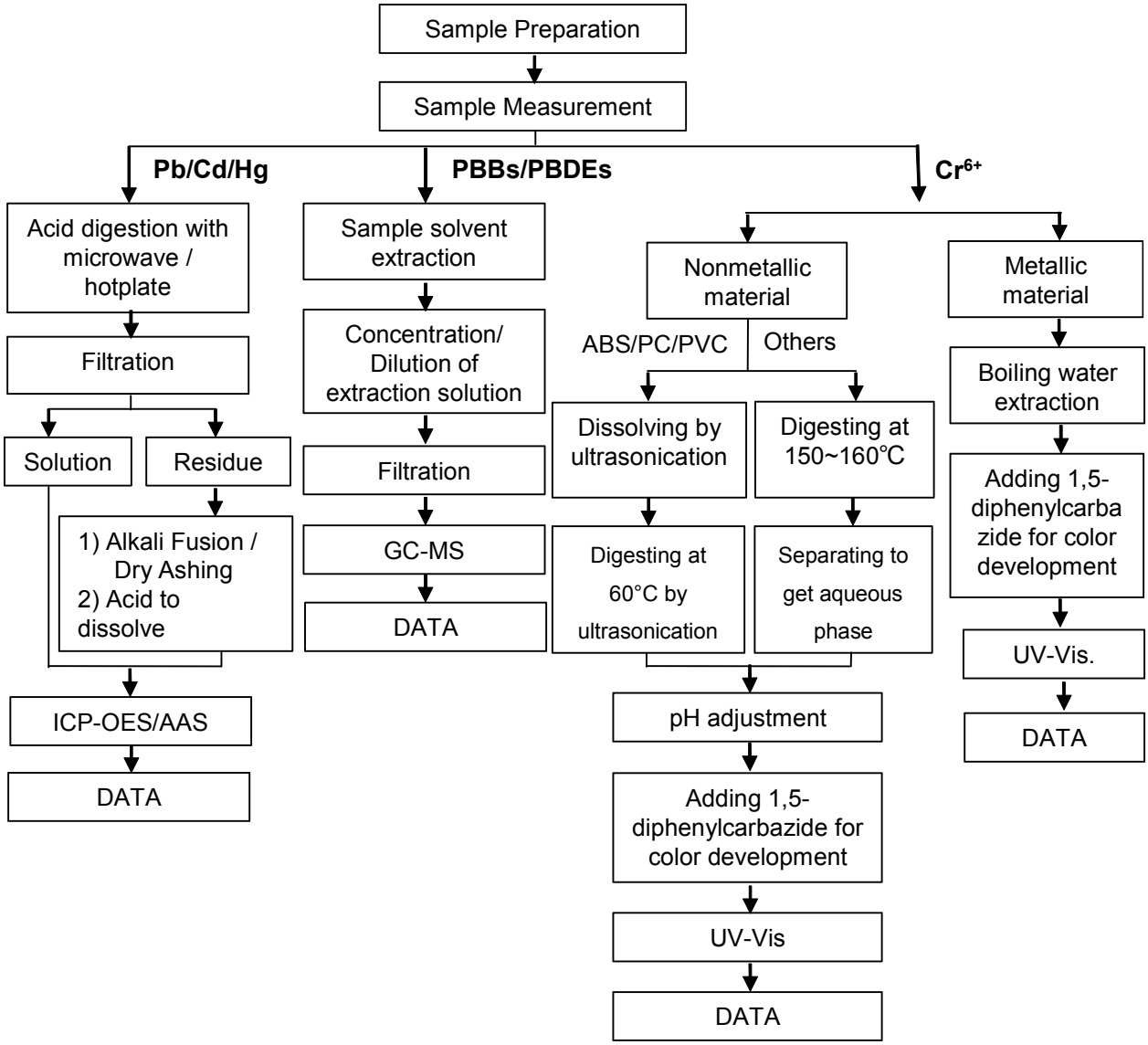
Pb/Cd/Hg/Cr^{6+}/PBBs/PBDEs Testing Flow Chart

1) 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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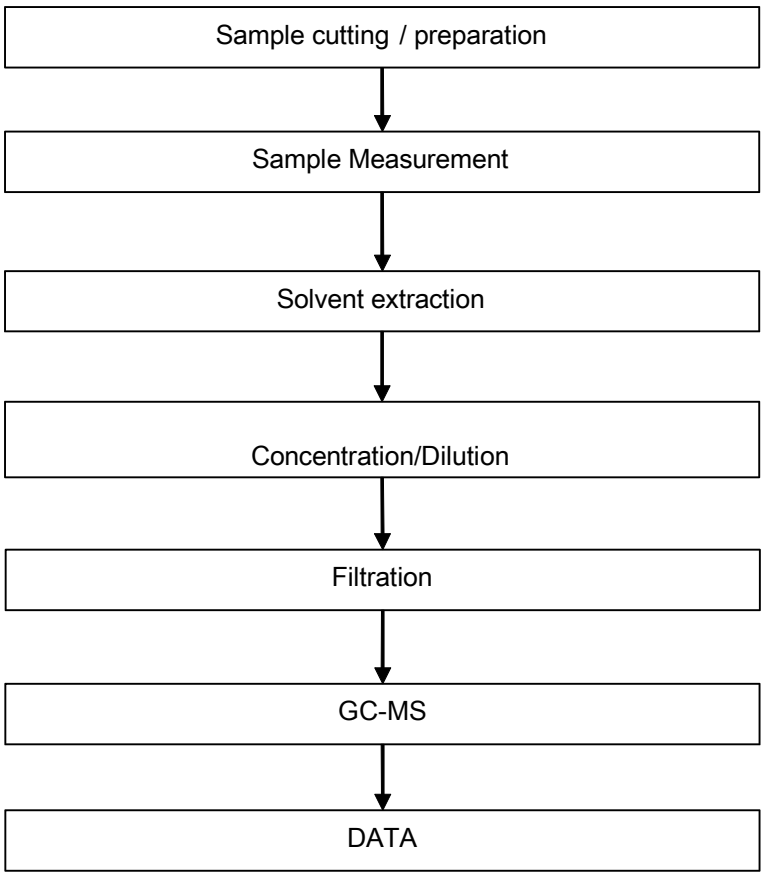
Phthalates Testing Flow Chart



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Sample photo:

CAN21-191742.008

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Test Report

SHENZHEN CITY TONGHUA INDUSTRY CO.,LTD

TONGHUA MANSIN TONGLE XINBU VILLANG TOWN SHENZHEN CITY CHINA

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

SGS Job No. :	CP21-051017 - SZ
Date of Sample Received :	18 Sep 2021
Testing Period :	18 Sep 2021 - 27 Sep 2021
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

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CANEC2117633801

Allie Chen

Allie Chen
Approved Signatory

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Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
SN1	CAN21-176338.001	Gold 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 : With reference to IEC 62321-4:2013+A1:2017, IEC 62321-5:2013, IEC 62321-7-1:2015 , IEC 62321-6:2015 and IEC 62321-8:2017, analyzed by ICP-OES , UV-Vis and GC-MS .

Test Item(s)	Limit	Unit	MDL	*001*
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1,000	mg/kg	2	73
Mercury (Hg)	1,000	mg/kg	2	ND
Hexavalent Chromium (Cr(VI))▾	-	μg/cm²	0.10	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	001
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.

(2) IEC 62321 series is equivalent to EN 62321 series
https://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101::::FSP_ORG_ID,FSP_LANG_ID:1258637,25

(3) ▾= 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.

Perfluorooctanoic acid (PFOA) and its salts & Perfluorooctane sulfonates (PFOS) and its derivatives

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

Test Item(s)	CAS NO.	Unit	MDL	001
Perfluorooctanoic acid (PFOA) and its salts+	335-67-1	mg/kg	0.010	ND
Perfluorooctane sulfonates (PFOS) ^	1763-23-1	mg/kg	0.010	ND
Perfluorooctane Sulfonamide (PFOSA)	754-91-6	mg/kg	0.010	ND
N-methylperfluoro-1-octanesulfonamide(MeFOSA)	31506-32-8	mg/kg	0.010	ND
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	mg/kg	0.010	ND
2-(N-methylperfluoro-1-octanesulfonamido) -ethanol(MeFOSE)	24448-09-7	mg/kg	0.010	ND
2-(N-ethylperfluoro-1-octanesulfonamido) -ethanol(EtFOSE)	1691-99-2	mg/kg	0.010	ND
Perfluorooctane sulfonates (PFOS) and its derivatives	-	mg/kg	-	ND

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Notes :

(1) + PFOA and its salts including PFOA-Na (CAS No.: 335-95-5), PFOA-K (CAS No.: 2395-00-8), PFOA-Ag (CAS No.: 335-93-3), PFOA-F (CAS No.: 335-66-0) and APFO (CAS No.: 3825-26-1);
(2) ^ PFOS including PFOS-K (CAS No.: 2795-39-3), PFOS-Li (CAS No.: 29457-72-5), PFOS-NH_4 (CAS No.: 29081-56-9), PFOS-$NH(OH)_2$ (CAS No.: 70225-14-8), PFOS-$N(C_2H_5)_4$ (CAS No.: 56773-42-3), PFOS-DDA(CAS No.:251099-16-8) and POSF (CAS No.: 307-35-7)

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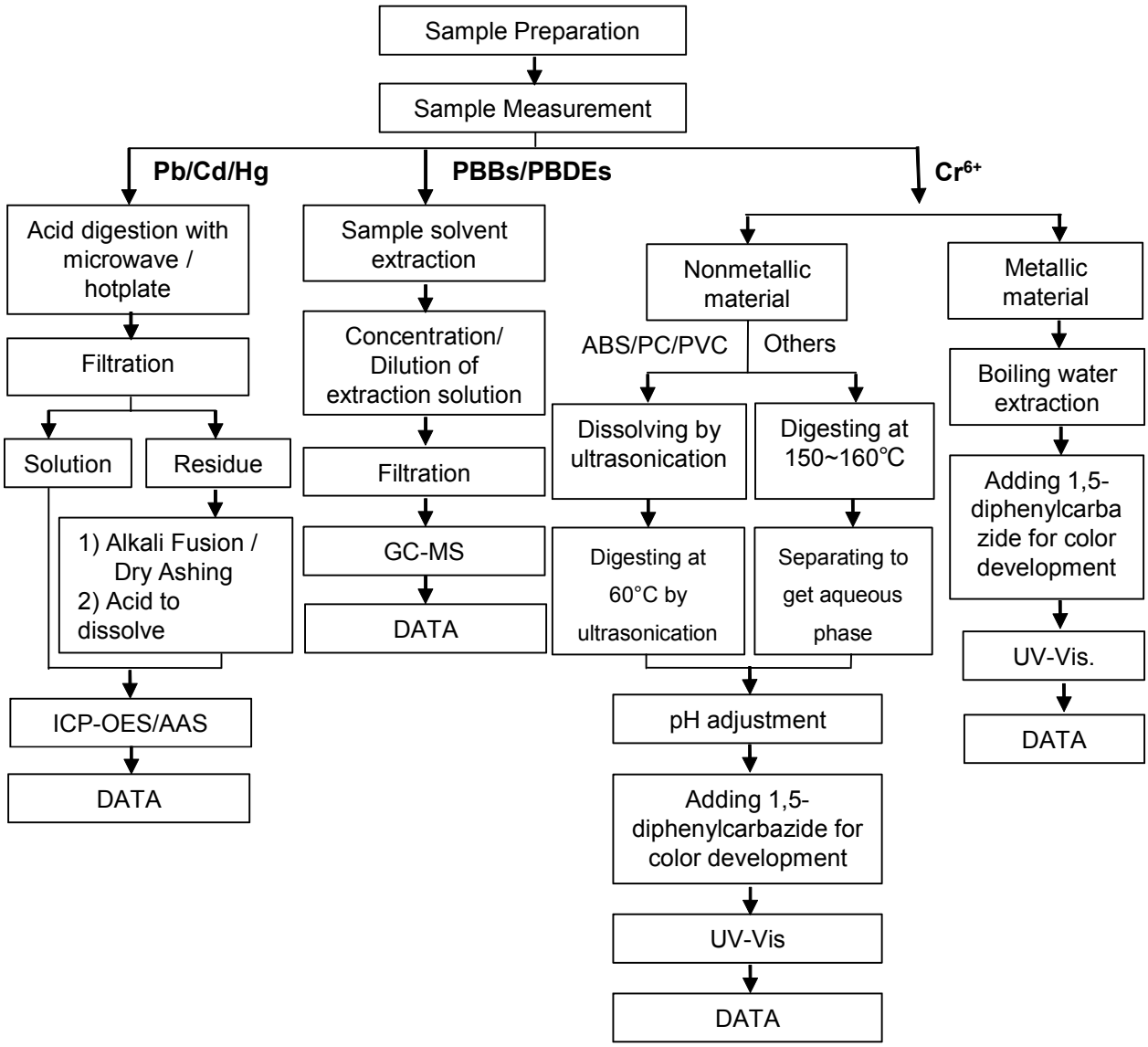
Pb/Cd/Hg/Cr^{6+}/PBBs/PBDEs Testing Flow Chart

1) 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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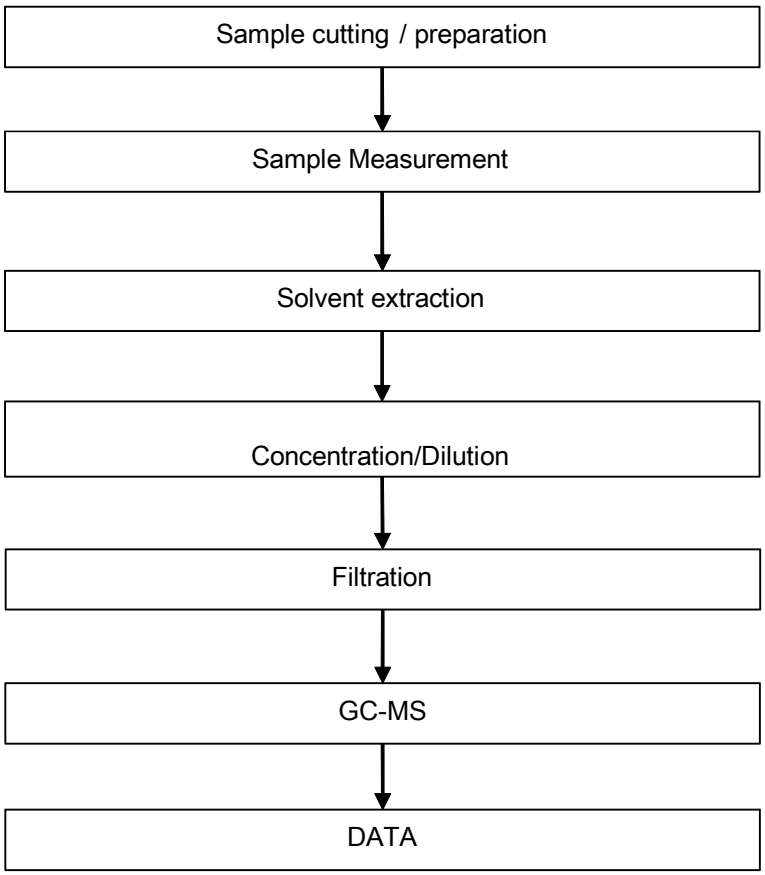
Phthalates Testing Flow Chart



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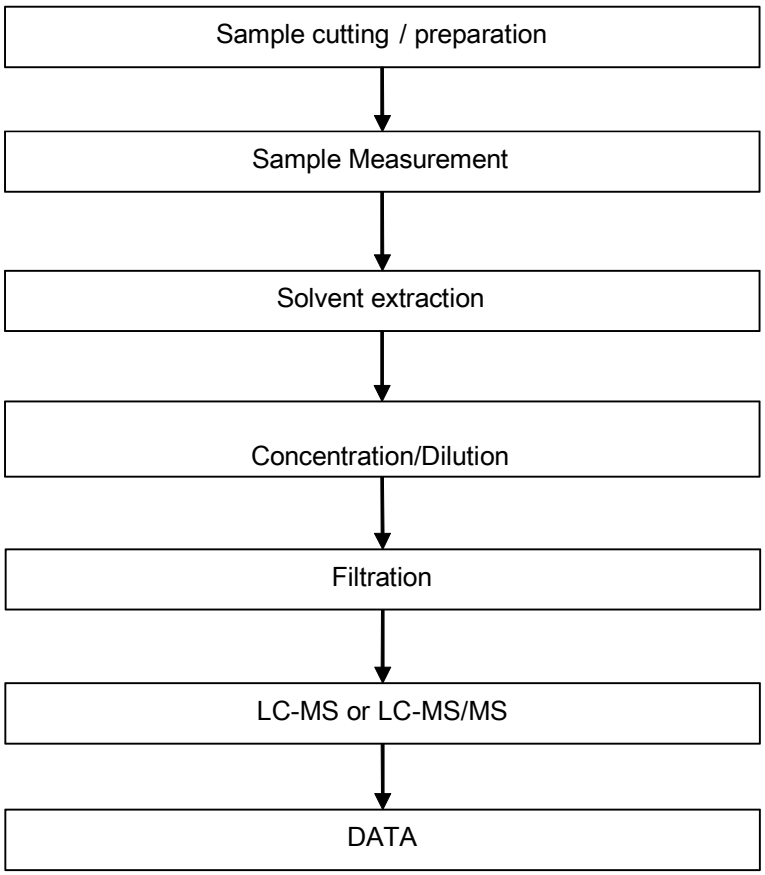
PFOA / PFOS Testing Flow Chart



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Sample photo:

CAN21-176338.001

SGS authenticate the photo on original report only

*** End of Report ***

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Test Report

SHENZHEN CITY TONGHUA INDUSTRY CO.,LTD

TONGHUA MANSIN TONGLE XINBU VILLANG TOWN SHENZHEN CITY CHINA

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

SGS Job No. :	CP21-051017 - SZ
Date of Sample Received :	18 Sep 2021
Testing Period :	18 Sep 2021 - 27 Sep 2021
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

scan to see the report

CANEC2117633803

Allie Chen

Allie Chen
Approved Signatory

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Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
SN1	CAN21-176338.003	Silver-gray 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 : With reference to IEC 62321-4:2013+A1:2017, IEC 62321-5:2013, IEC 62321-7-1:2015 , IEC 62321-6:2015 and IEC 62321-8:2017, 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	37
Mercury (Hg)	1,000	mg/kg	2	ND
Hexavalent Chromium (Cr(VI))▾	-	μg/cm²	0.10	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.

(2) IEC 62321 series is equivalent to EN 62321 series
https://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101::::FSP_ORG_ID,FSP_LANG_ID:1258637,25

(3) ▾= 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.

Perfluorooctanoic acid (PFOA) and its salts & Perfluorooctane sulfonates (PFOS) and its derivatives

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

Test Item(s)	CAS NO.	Unit	MDL	003
Perfluorooctanoic acid (PFOA) and its salts+	335-67-1	mg/kg	0.010	ND
Perfluorooctane sulfonates (PFOS) ^	1763-23-1	mg/kg	0.010	ND
Perfluorooctane Sulfonamide (PFOSA)	754-91-6	mg/kg	0.010	ND
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N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	mg/kg	0.010	ND
2-(N-methylperfluoro-1-octanesulfonamido) -ethanol(MeFOSE)	24448-09-7	mg/kg	0.010	ND
2-(N-ethylperfluoro-1-octanesulfonamido) -ethanol(EtFOSE)	1691-99-2	mg/kg	0.010	ND
Perfluorooctane sulfonates (PFOS) and its derivatives	-	mg/kg	-	ND

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(1) + PFOA and its salts including PFOA-Na (CAS No.: 335-95-5), PFOA-K (CAS No.: 2395-00-8), PFOA-Ag (CAS No.: 335-93-3), PFOA-F (CAS No.: 335-66-0) and APFO (CAS No.: 3825-26-1);
(2) ^ PFOS including PFOS-K (CAS No.: 2795-39-3), PFOS-Li (CAS No.: 29457-72-5), PFOS-NH_4 (CAS No.: 29081-56-9), PFOS-$NH(OH)_2$ (CAS No.: 70225-14-8), PFOS-$N(C_2H_5)_4$ (CAS No.: 56773-42-3), PFOS-DDA(CAS No.:251099-16-8) and POSF (CAS No.: 307-35-7)

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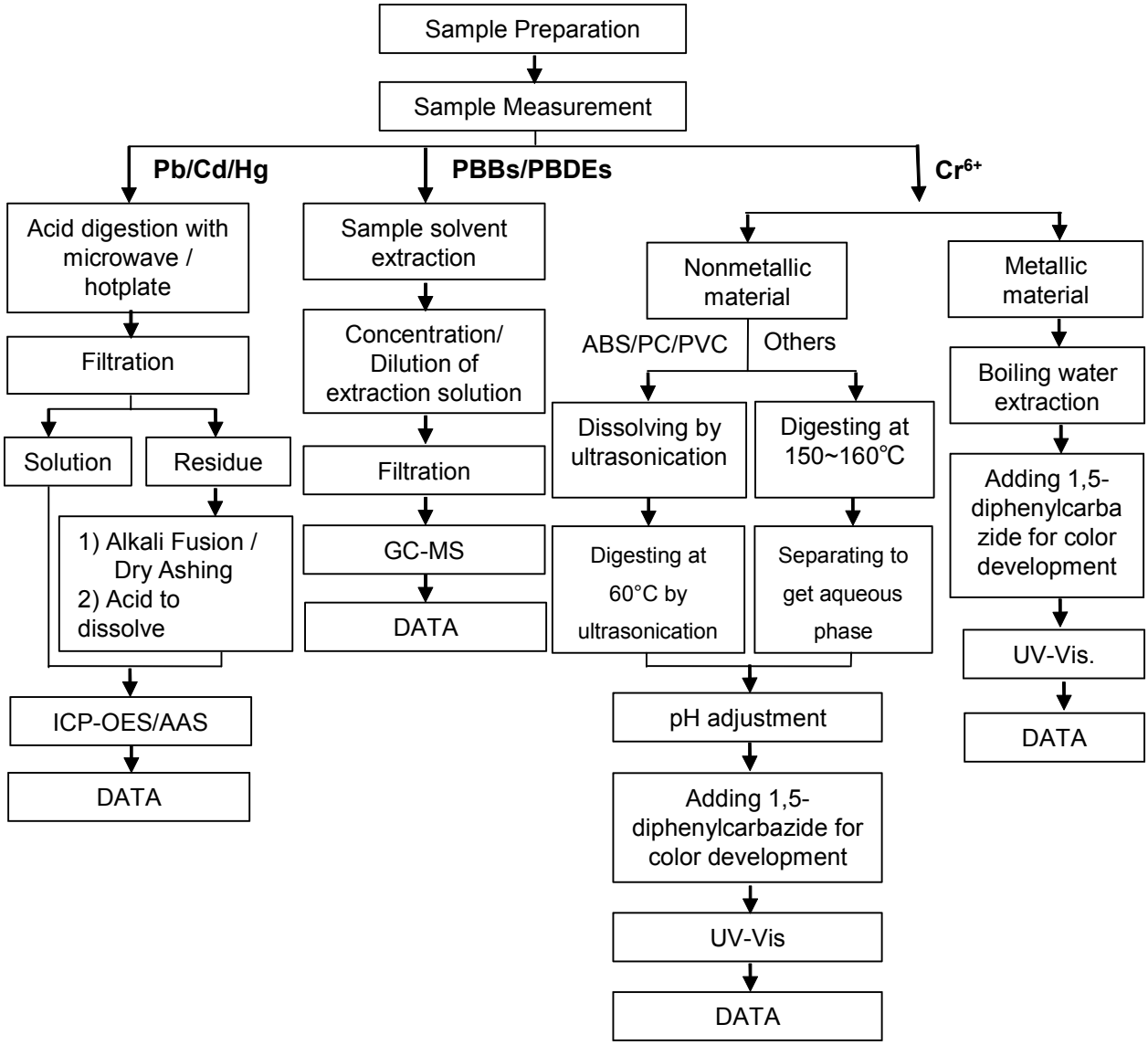
Pb/Cd/Hg/Cr^{6+}/PBBs/PBDEs Testing Flow Chart

1) 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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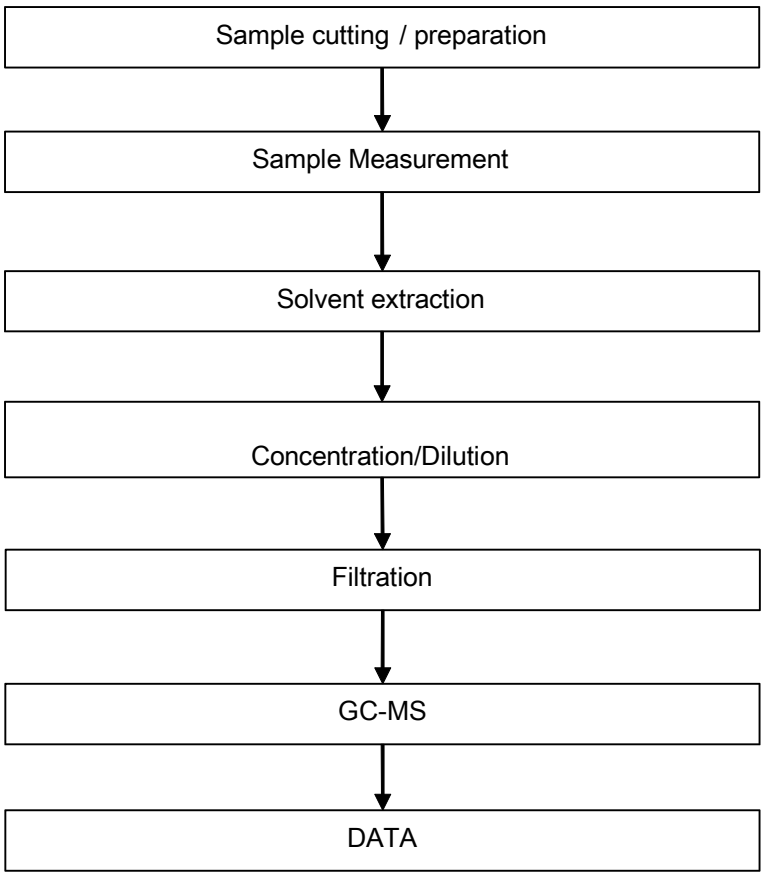
Phthalates Testing Flow Chart



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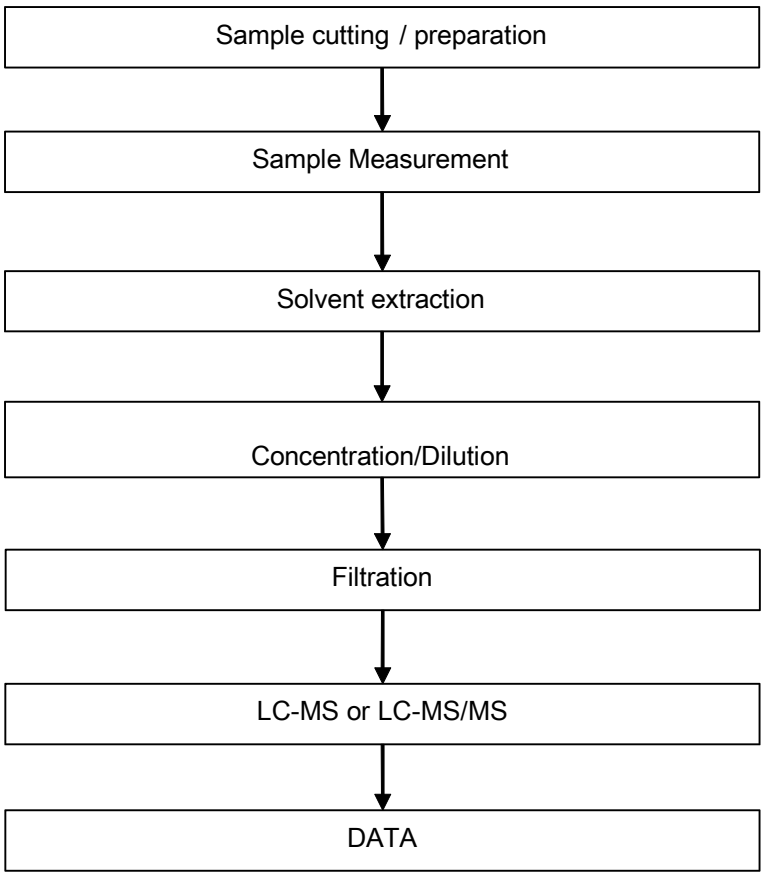
PFOA / PFOS Testing Flow Chart



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Sample photo:

CAN21-176338.003

SGS authenticate the photo on original report only

*** End of Report ***

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Test Report

SHENZHEN CITY TONGHUA INDUSTRY CO.,LTD

TONGHUA MANSIN TONGLE XINBU VILLANG TOWN SHENZHEN CITY CHINA

The following sample(s) was/were submitted and identified on behalf of the clients as : Bright Tin(SN)

SGS Job No. :	CP21-051017 - SZ
Date of Sample Received :	18 Sep 2021
Testing Period :	18 Sep 2021 - 27 Sep 2021
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

scan to see the report

CANEC2117633802

Allie Chen

Allie Chen
Approved Signatory

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Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
SN1	CAN21-176338.002	Silver-gray 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 : With reference to IEC 62321-4:2013+A1:2017, IEC 62321-5:2013, IEC 62321-7-1:2015 , IEC 62321-6:2015 and IEC 62321-8:2017, analyzed by ICP-OES , UV-Vis and GC-MS .

Test Item(s)	Limit	Unit	MDL	*002*
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1,000	mg/kg	2	29
Mercury (Hg)	1,000	mg/kg	2	ND
Hexavalent Chromium (Cr(VI))▾	-	μg/cm²	0.10	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	002
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.

(2) IEC 62321 series is equivalent to EN 62321 series
https://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101::::FSP_ORG_ID,FSP_LANG_ID:1258637,25

(3) ▾= 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.

Perfluorooctanoic acid (PFOA) and its salts & Perfluorooctane sulfonates (PFOS) and its derivatives

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

Test Item(s)	CAS NO.	Unit	MDL	002
Perfluorooctanoic acid (PFOA) and its salts+	335-67-1	mg/kg	0.010	ND
Perfluorooctane sulfonates (PFOS) ^	1763-23-1	mg/kg	0.010	ND
Perfluorooctane Sulfonamide (PFOSA)	754-91-6	mg/kg	0.010	ND
N-methylperfluoro-1-octanesulfonamide(MeFOSA)	31506-32-8	mg/kg	0.010	ND
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	mg/kg	0.010	ND
2-(N-methylperfluoro-1-octanesulfonamido) -ethanol(MeFOSE)	24448-09-7	mg/kg	0.010	ND
2-(N-ethylperfluoro-1-octanesulfonamido) -ethanol(EtFOSE)	1691-99-2	mg/kg	0.010	ND
Perfluorooctane sulfonates (PFOS) and its derivatives	-	mg/kg	-	ND

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Notes :

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Pb/Cd/Hg/Cr^{6+}/PBBs/PBDEs Testing Flow Chart

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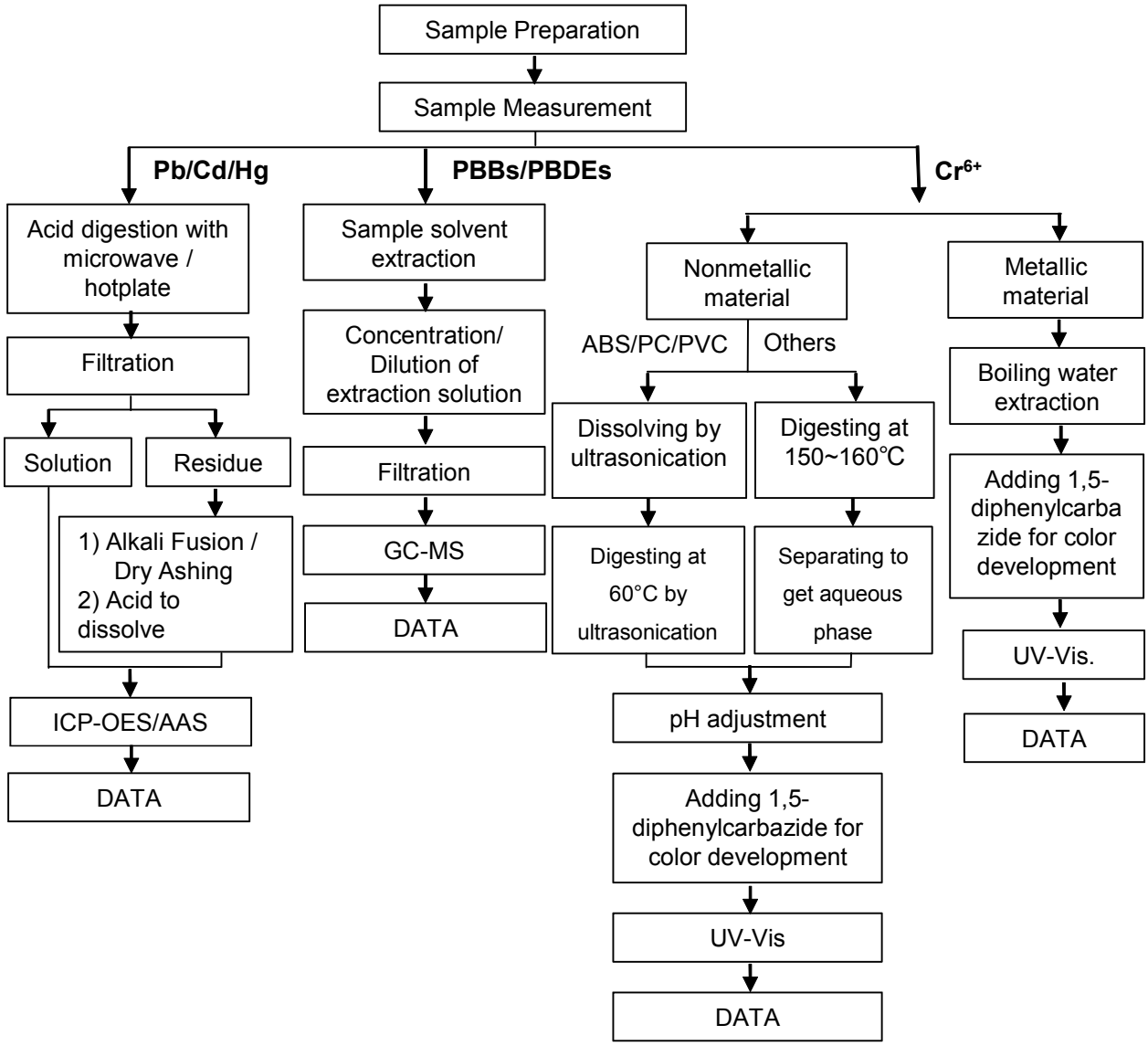

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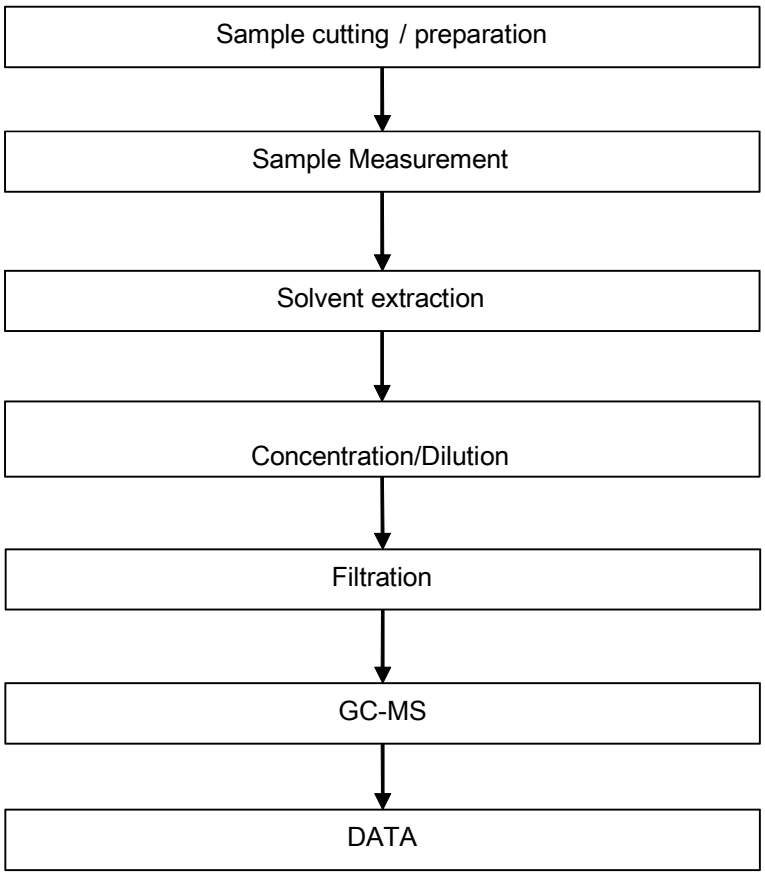

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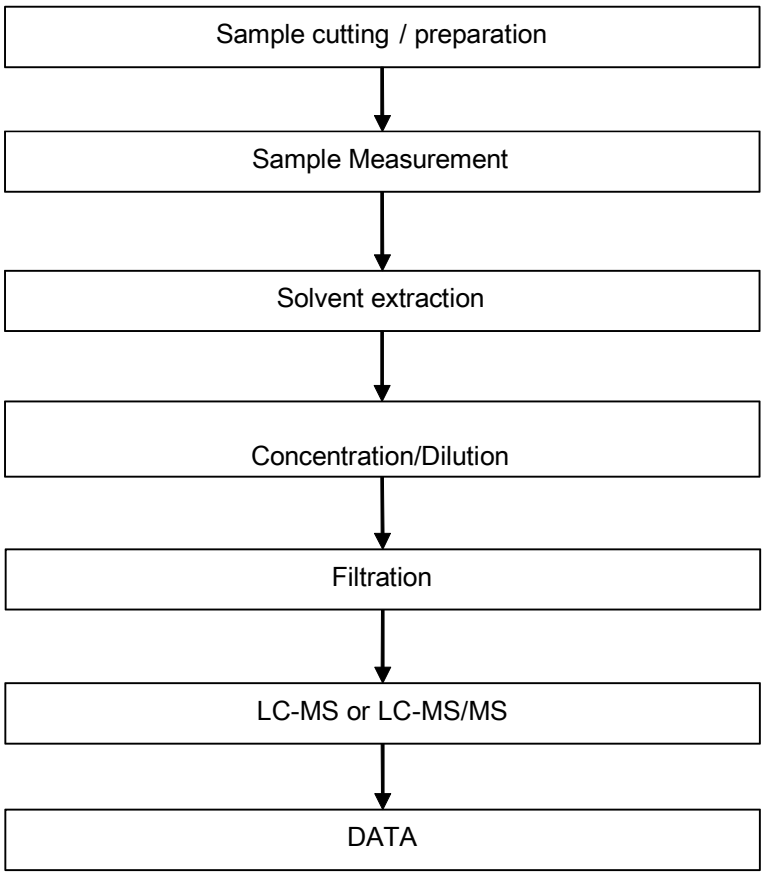
PFOA / PFOS Testing Flow Chart



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