承　认　书

Approval　Sheet

客户(Customer)：　/

客户料号 (Cus .P/N)：/

华联威料号 (HLW P/N)：U442-9065-G61038

品名规格 (PronameSpec)：MICRO USB 5P/F 防水母座

送样日期 (Delivery Date):2021/12/06

承认日期 (Acknowledge Date):2021/12/06

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.			
业 务 部 Sales Dept	品　管　部 QC Dept	工　程　部 Engineering Dept	核　准 Checked By
陈少萍	欠必锋	魏红	唐竹君

地址:深圳市龙华区观澜街道桂香社区观澜桂花路 307 号

TEL：0755-28888886 28888866

hua@hlwconn.com

Http://www.hlwconn.com

目　录

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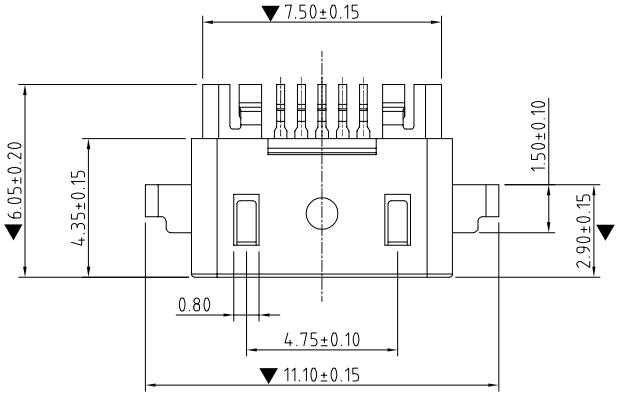
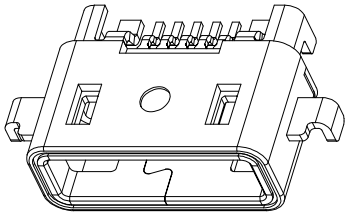
REV.	ECN.NO.	APPD.
A	/	LXQ



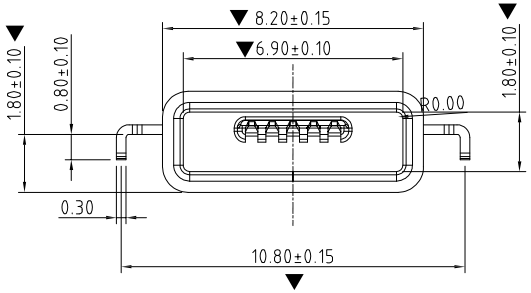


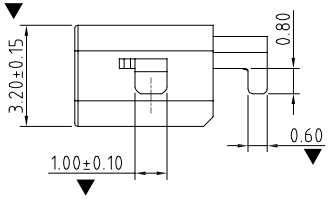
Notes:

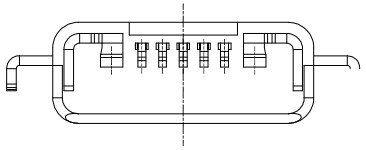
1. Dimension shall be interpreted per ASME Y14.5M1994.
2. Dimension marked ▽ & ▼ should be checked by Q.C. and process, engineers and ▽ should also check the CPK data.

Specification:

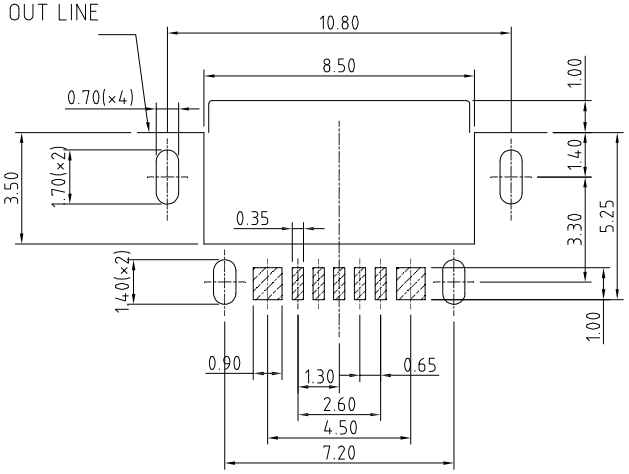
1. Current Rating: 1.0 AMP
2. Voltage Rating: 30V AC,DC
3. Dielectric Strength: 500V AC RMS for 1 minute.
4. Contact Resistance: 30 mΩ Max.
5. Insulator Resistance: 500MΩ Min. AT 250V DC.
6. Mating/Unmating cycles: 2000cycles
7. Temperature: -20°C to +60°C

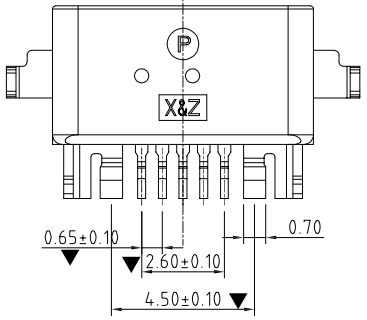






PCB OUT LINE





U442-906X-XXX038

- 1:铁壳镀镍
- 5:铜壳镀镍
- 6:铜壳镀雾锡

1:半金1u″
3:半金3u″
5:半金5u″
8:半金15u″
9:镀全金1u″
G:半金G/Fu″

2:吸塑管
3:冷封载带
6:载带+贴麦拉
8:热封载带

6:LCP

1:黑色
2:白色
3:米黄色

TOLERANCE UNLESS OTHERWISE SPECIFIED		深圳市华联威电子科技有限公司 HUA LIAN WEI TECHNOLOGY ELECTRONICS CO;LTD.				
.XXX ±0.10 .XX ±0.20 .X ±0.30	.X° ±3° .XX° ±2°					
APPROVED		PART NAME:	MICRO USB 5P/F 防水母座			
CHECKED		PART No:	U442-9065-X61038			C
DRAWED	Shen	PROJECTION:	UNIT:	SCALE	SHEET	REV.
DATE	2021.09.01		mm	1:1	1 OF 1	A

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

MICRO USB系列产品SPEC

1. Scope（范围）

1.1 Contents(内容)

This specification covers the performance, tests and quality requirements for the Electronics MICRO USB Connector.
(此份产品规格适用于MICRO USB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(操作温度范围):0℃ to +50℃

3. Test Condition(测试条件):

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

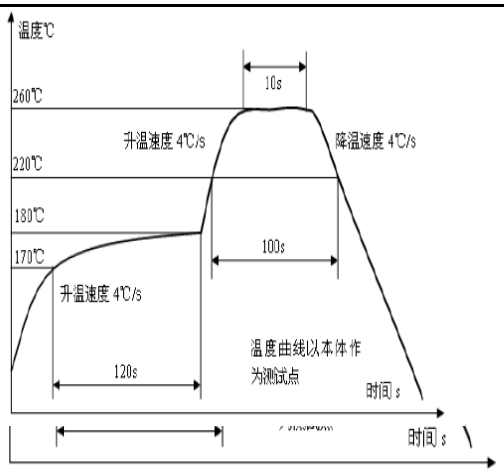
3.2 Humidity range (湿度范围):25% to 85%

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） Mated connectors, Contact: measure by dry circuit, 30 m Volts maximum,20 mA 配对的连接器， 端子：测试端子在回路中施加直流最大30mV 20mA的电流再测端子的电阻值	Initial Contact resistance Excluding conductor Resistance:50 mΩ max (Target design value) 接触电阻初始值最大不能超过30 mΩ （目标设计值)
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	Insulation 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	1000MΩ min（unmated） 没有配对需大于1000 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	Maximum insertion force 35N 插入力不超过35N(3.57kg) Withdrawal force 7N min 拔出力最小7N (0.70kg) EXTRACTION FORCE(AFTER TEST):5N MIN 拔出力(耐久测试后):5N最小

4.3.2	Durability 寿命测试	（EIA-364-09） Measure contact and shell resistance after the Following. Automatic cycling:10000 cycles at 100±5 Cycles per hour. 以每小时100±5插拔次数测试10000循环后测量端子和外壳的接触阻抗	Contact Resistance 接触阻抗 Contact: Change from initial Value: 50 milliohms maximum. 端子：从初始值开始变化量小于50 mΩ
4.3.3	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:50mΩ Max. 端子：从初始值开始变化量小于50mΩ 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 50mΩ Max 端子：从初始值开始变化量小于50mΩ 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 50mΩ Max 端子：从初始值开始变化量小于50mΩ
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 表面粘锡面积不少于90%
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 50mΩ Max 端子：从初始值开始变化量小于50mΩ

		（EIA-364-31B） (B) Unmated each connector and perform the test as follows. 没有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 Conform to item of dielectric withstanding Voltage and Insulation Resistance. 符合耐电压及绝缘阻抗要求
4.4..4	Salt Spray 盐水喷雾	EIA-364-26B） Temperature: 35±2℃ 温度：35±2℃ Concentration for salt: 50% 盐水浓度：50% (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） Contact Resistance 接触阻抗 Contact: Change from initial Value 50mΩ Max 端子：从初始值开始变化量小于50mΩ
4.4..5	Cold resistance (Unmated) 冷阻抗	（EIA-364-17B） Unmated connectors and expose to -25±3℃ 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-25±3℃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 30mΩ Max 端子：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℃ 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. 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 50mΩ Max 端子：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 50mΩ Max 端子：从初始值开始变化量小于50mΩ
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。	No physical damage shall occur. 不可有损坏
		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	
			

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 产品外观	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 接触阻抗	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 Voltage	3,7													
4.2.3.Insulation Resistance 绝缘阻抗	4,6													
4.3.1.Insertion/Withdrawal force 插拔力		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 冷热冲击							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 冷阻抗											3			
4.4.6.Heat resistance 热阻抗												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.) 测试样	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：覃裕华

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	MICRO USB 5P/防水母座	測試日期 Date of Testing	2021.12.03.-2021.12.04	報告編號 Report NO.	MD20211204-01
產品型號 Part Name	U442-9065-G61038	樣品數量 Quantity	5PCS	測試環境 Date of Testing	濕度 Temp:18~21C 相對濕度

一.電性測試 ELECTRICAL TEST

序號 NO.	測試項目 Testing Item	測試條件 Testing Conditions	測試設備 Testing Equipments	規格 SPEC	測試記錄 Testing Result					判定 Judge	
					1	2	3	4	5	OK	NG
1	接觸阻抗	2 mA	直流低電阻 測試儀	50 mΩ Max	19.36 mΩ	18.05 mΩ	18.62 mΩ	19.55 mΩ	18.53 mΩ	V	
2	絕緣阻抗	500 VDC	絕緣電阻測 試儀	100 mΩ Min.	Pass	Pass	Pass	Pass	Pass	V	
3	耐壓測試	100V AC / 0.5 mA 1 分钟	耐壓測試儀	No damaged	OK	OK	OK	OK	OK	V	

二.机械特性測試 MECHANICAL TEST

序號 NO	測試項目 Testing Item	測試條件 Testing Conditions	測試設備 Testing Equipments	規格 SPEC	測試記錄 Testing Result					判定 Judge	
					1	2	3	4	5	OK	NG
4	插入力	每分钟 25±3mm 的速度	插拔力計	35N Max.	16N	13N	15N	15N	16N	V	
5	拔出力	每分钟 25±3mm 的速度	插拔力計	7N Max	OK	OK	OK	OK	OK	V	
6	锁口保持力	60N Min	吊重测试机	不得发生 物理损坏	OK	OK	OK	OK	OK	V	
7	耐久性	测试速度:每 分钟 10 到 20 个 循环，测试次	插拔力計	不得发生 物理损坏	OK	OK	OK	OK	OK	V	

三.环境特性测试 ENVIRONMENTAL TEST

序號 NO	測試項目 Testing Item	測試條件 Testing Conditions	測試設備 Testing Equipments	規格 SPEC	測試記錄 Testing Result					判定 Judge	
					1	2	3	4	5	OK	NG
9	冷热冲击	温度-55±3° C 温度 85±3C 持续时间 10H	高低温试验 箱	不得发生 物理损坏	OK	OK	OK	OK	OK	V	
10	湿温循环	温度-25±85C, 持续时间：4aw	湿温循环机	最大接触 阻抗 30mΩ	OK	OK	OK	OK	OK	V	
11	盐雾试验	温度:35±2C 12 小时	盐雾试验箱	最大接触 阻抗 50mΩ	OK	OK	OK	OK	OK	V	
12	可焊性	焊锡温度：245±5C	熔锡炉	沾锡面积 达 95%以 上	OK	OK	OK	OK	OK	V	
13	焊接耐热试验	260±5C 10 秒	工业烘烤箱	不得发生 物理损坏	OK	OK	OK	OK	OK	V	

綜合判定 TEST JUDGMENT	■合格(Acceptable)	□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6日 版次:A1

料號	U442-9065-G61038	制令單號	/	送檢單位	工程部	首件製作者	裝配
品名	MICRO USB 5P/F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	7.50±0.15	D	7.56	7.58	7.60	7.59	7.60	√					
	6.05±0.20	D	6.08	6.10	6.09	6.11	6.10	√					
	4.35±0.15	D	4.39	4.37	4.36	4.38	4.36	√					
	4.75±0.10	D	4.76	4.78	4.79	4.78	4.76	√					
	11.10±0.15	D	11.15	11.16	11.14	11.15	11.14	√					
	1.50±0.10	D	1.56	1.53	1.55	1.54	1.56	√					
	2.90±0.15	D	2.96	2.93	2.95	2.94	2.96	√					
	8.20±0.15	D	8.26	8.25	8.24	8.26	8.24	√					
	6.90±0.10	D	6.93	6.95	6.96	6.94	6.97	√					
	1.80±0.10	D	1.83	1.85	1.84	1.86	1.84	√					
	10.80±0.15	D	10.83	10.85	10.84	10.83	10.85	√					
	3.20±0.15	D	3.25	3.24	3.21	3.22	3.23	√					
	1.00±0.10	D	1.06	1.05	1.04	1.06	1.04	√					

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:MICRO 5P/F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	115.3u″	OK	2021/8/25	10:25:10
2	40u″MIN	124.7u″	OK	2021/8/25	10:25:12
3	40u″MIN	118.9u″	OK	2021/8/25	10:25:14
4	40u″MIN	112.4u″	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:MICRO 5P/F 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03日 20:00 时起
		DATE	2021年12月04日 08:00 时止
样品名称	MICRO USB 5P/F防水母座	试验数量	5PCS
P/N	U442-9065-G61038		

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

东莞市强能金属有限公司

产品质量证明书

牌号	状态	规格	公差(mm)		重量（kg）	日期
			厚度	宽度		
C2680（H65）	EH	0.25*305	±0.01	+0/-0.1	kg	2011-7-16
化学成份	元素	CU%	P%	Pb%	Fe%	Zn%
	标准	63.5-68	0.01	0.03		余量
	实际值	64.4	0.0024	0.0096	0.013	余量
成品性能	项目	抗拉强度 Mpa	延伸率 %	硬度值 HV	冲击值 mm	晶粒度 mm
	实际值	560		175		
执行标注：	GB/T2059-2000		检验员：	欧明端	质管部经理	覃中文

备注：货到用户：请顾客在七天内提出供货质量异议我厂负责产品质量三包，超出七天后顾客反映供货质量异议，我厂概不负责.

东莞市煜春塑料科技有限公司

材质证明

主成份	含　量 LCP E130i 黑色	备　注
LCP 树脂	68%±5%	
玻纤	30%±5%	
抗氧剂	0.3%	
润滑剂	0.3%	
黑色粉	1.4%	

Test Report

No. CANEC2119174202 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 : C2680 Copper shell

SGS Job No. :	CP21-055214 - GZ
Model No. :	C2680 shell 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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338F9A18

Allie Chen

Allie Chen
Approved Signatory

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

198 Kezhu Road,Scientech Park Guangzhou Economic & Technology Development District,Guangzhou,China 510663 t (86-20) 82155555 www.sgsgroup.com.cn
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	CAN21-191742.002	Silver-grey plated 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	*002*
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1,000	mg/kg	2	50
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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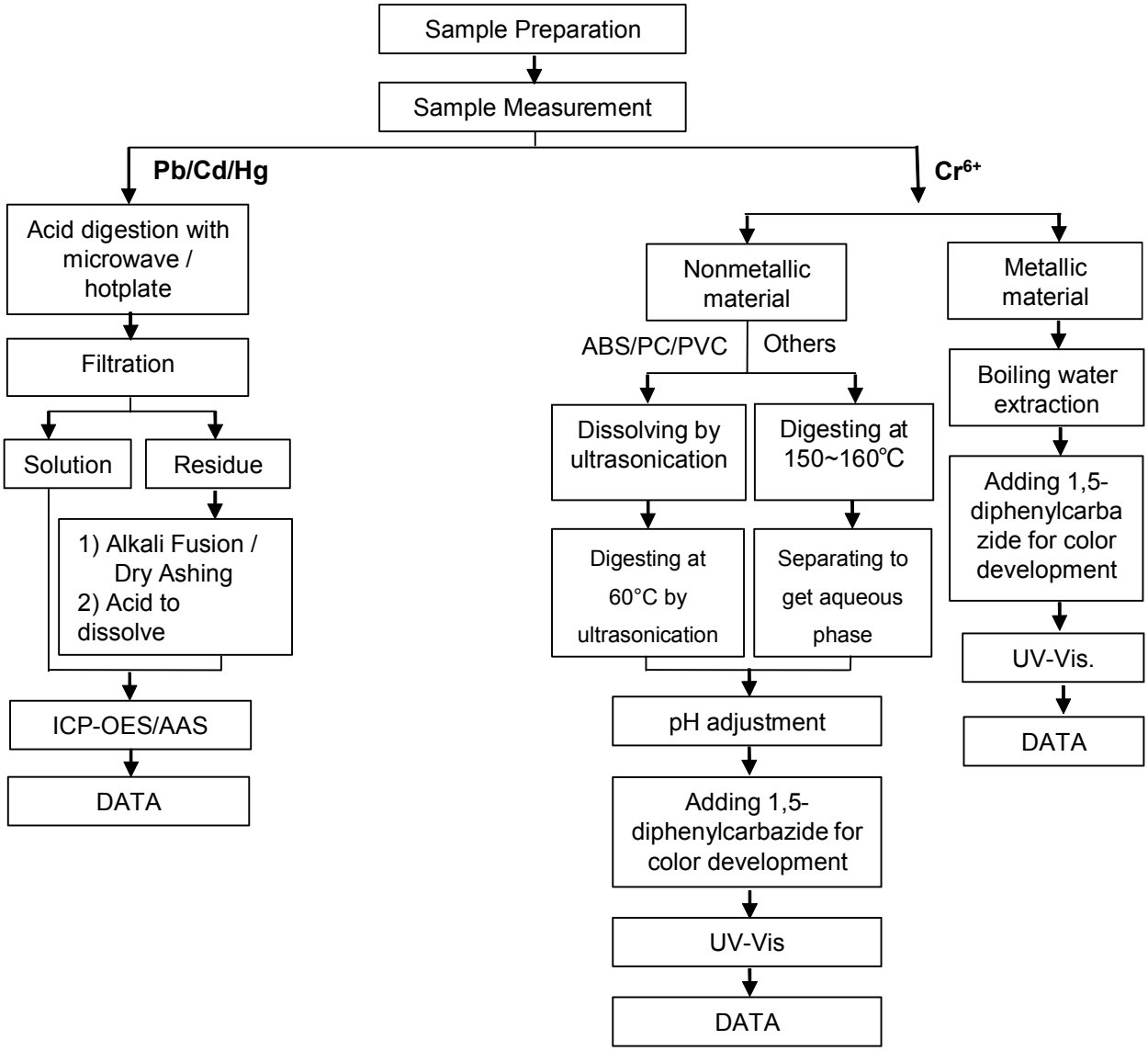
ATTACHMENTS

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:

CAN21-191742.002

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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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Allie Chen

Allie Chen
Approved Signatory

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

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Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
SN1	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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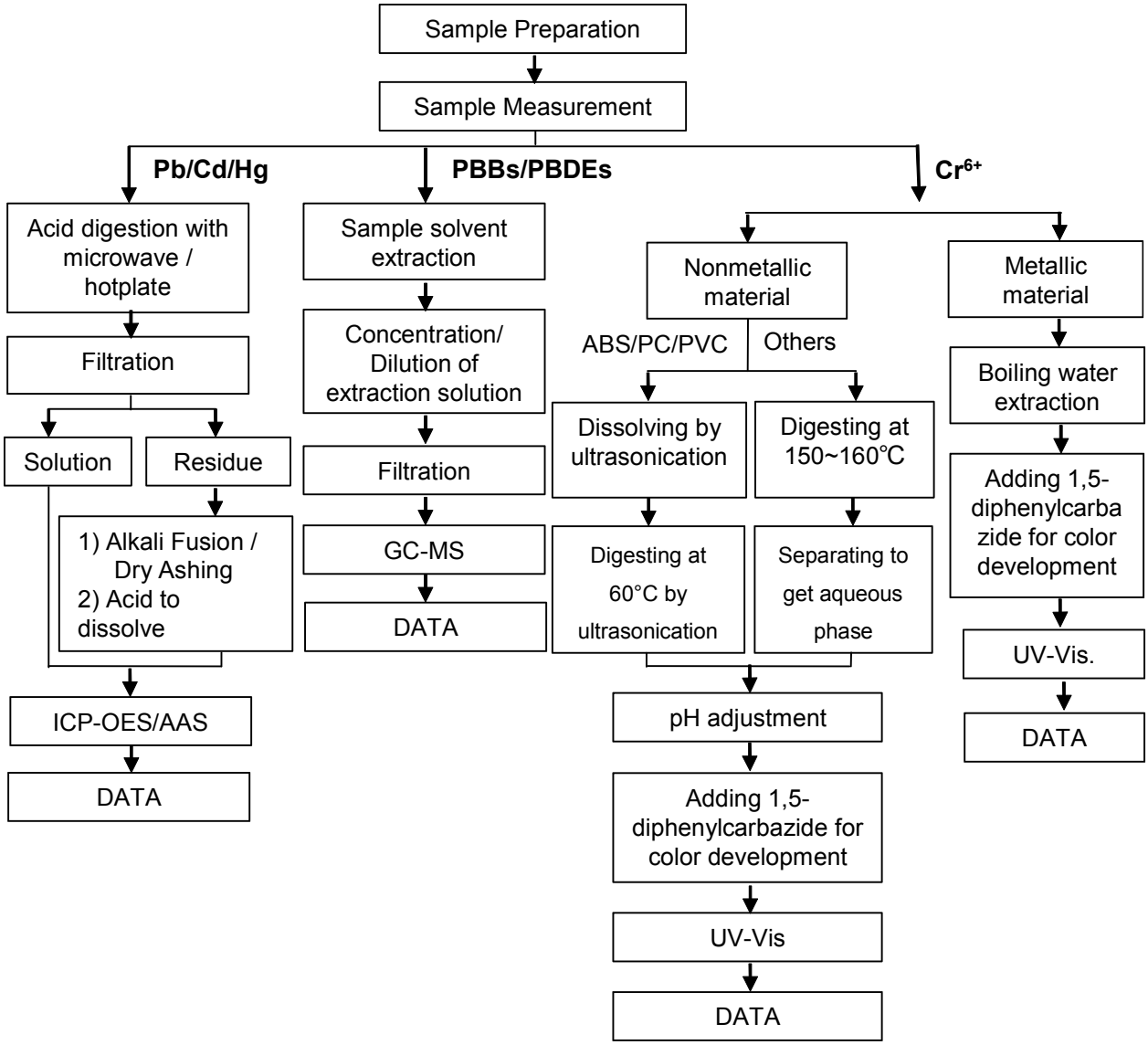
ATTACHMENTS

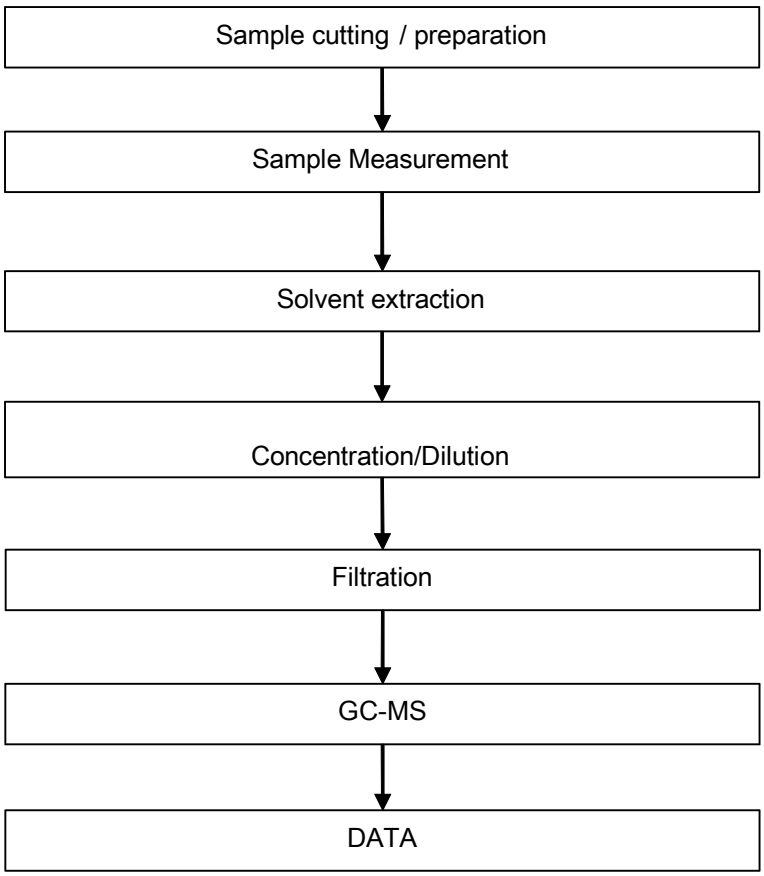
Pb/Cd/Hg/Cr^{6+}/PBBs/PBDEs Testing Flow Chart

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



ATTACHMENTS

Phthalates Testing Flow Chart



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Sample photo:

CAN21-191742.008

SGS authenticate the photo on original report only

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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

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

Test Part Description :

Specimen No.	SGS Sample ID	Description
SN1	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), $PFOS\text{-}NH_4$ (CAS No.: 29081-56-9), $PFOS\text{-}NH(OH)_2$ (CAS No.: 70225-14-8), $PFOS\text{-}N(C_2H_5)_4$ (CAS No.: 56773-42-3), PFOS-DDA(CAS No.:251099-16-8) and POSF (CAS No.: 307-35-7)

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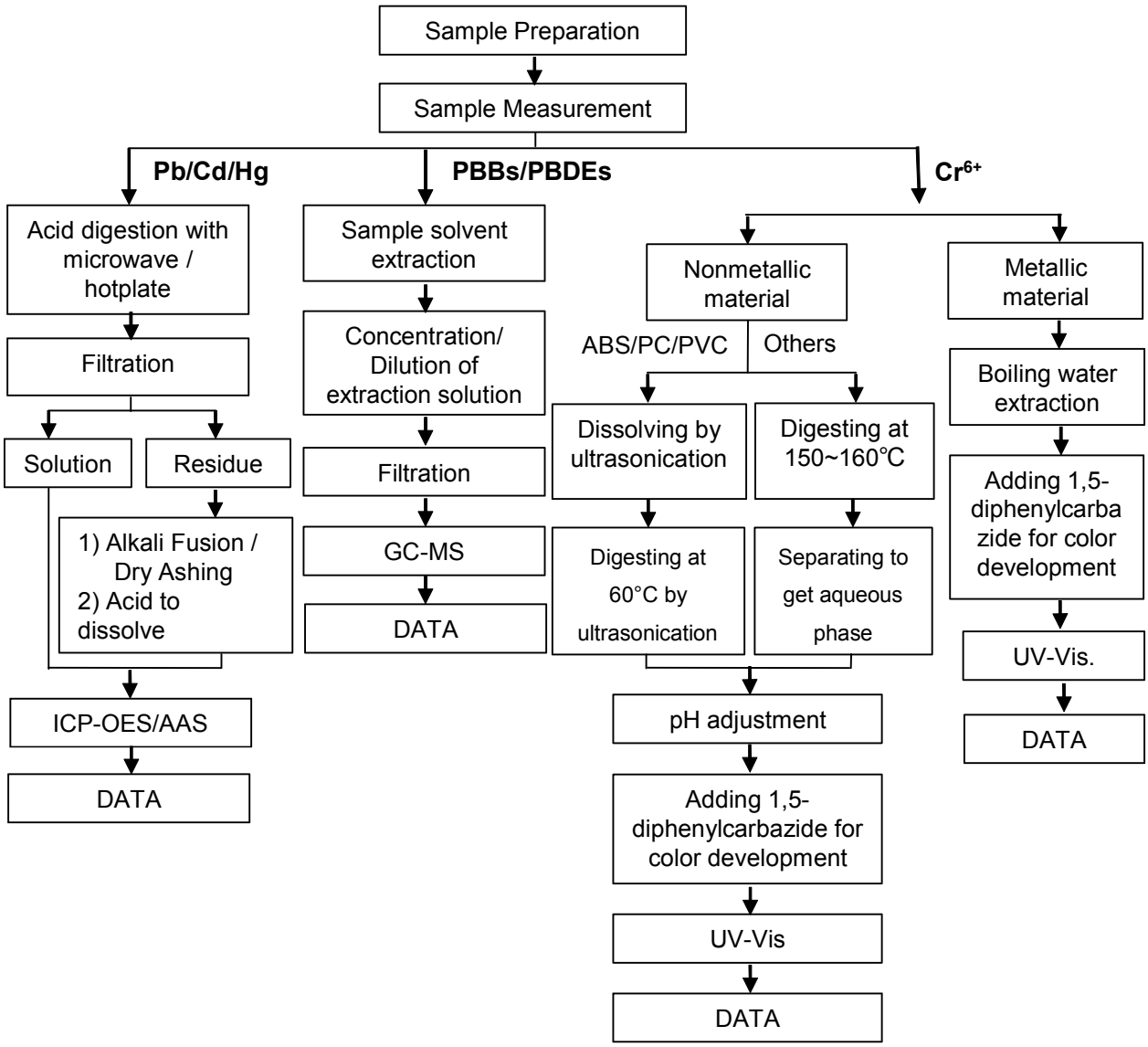
Pb/Cd/Hg/Cr^{6+}/PBBs/PBDEs Testing Flow Chart

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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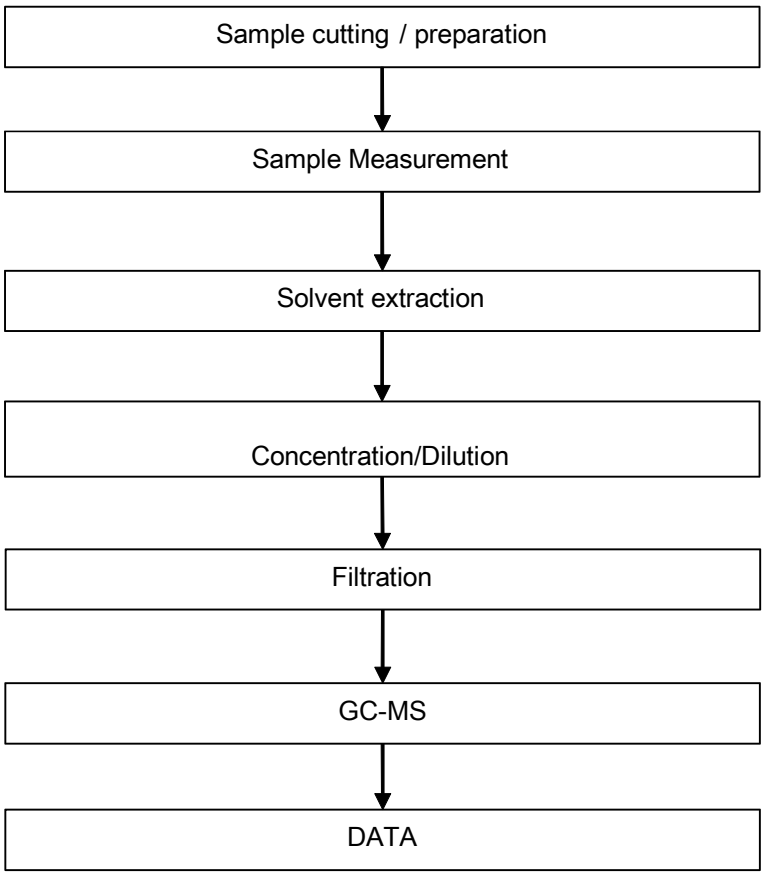
ATTACHMENTS

Phthalates Testing Flow Chart



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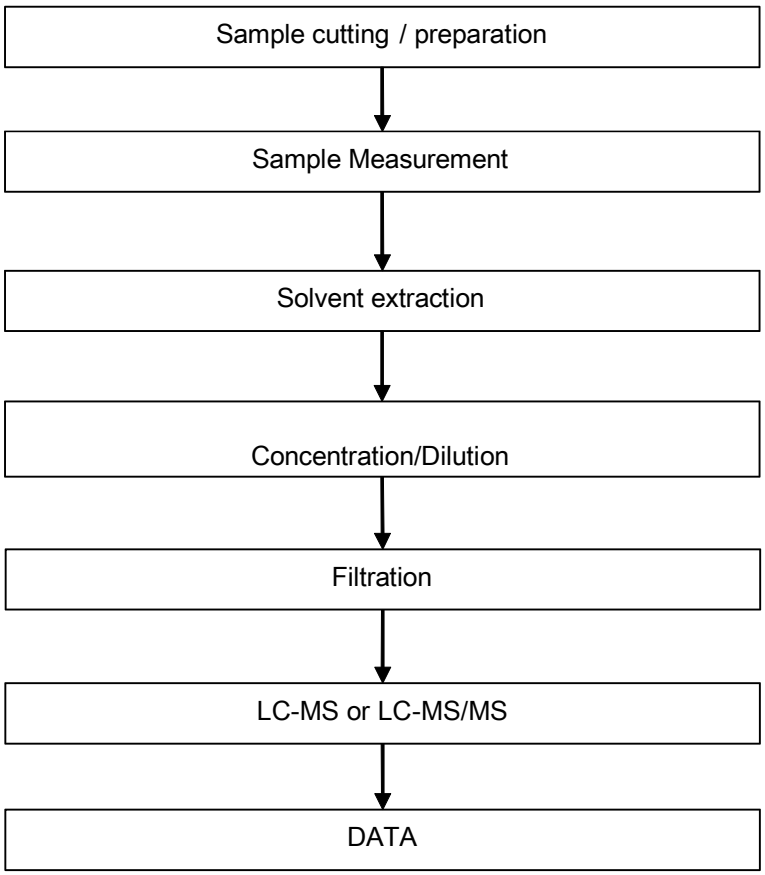
ATTACHMENTS

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

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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
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), $PFOS\text{-}NH_4$ (CAS No.: 29081-56-9), $PFOS\text{-}NH(OH)_2$ (CAS No.: 70225-14-8), $PFOS\text{-}N(C_2H_5)_4$ (CAS No.: 56773-42-3), PFOS-DDA(CAS No.:251099-16-8) and POSF (CAS No.: 307-35-7)

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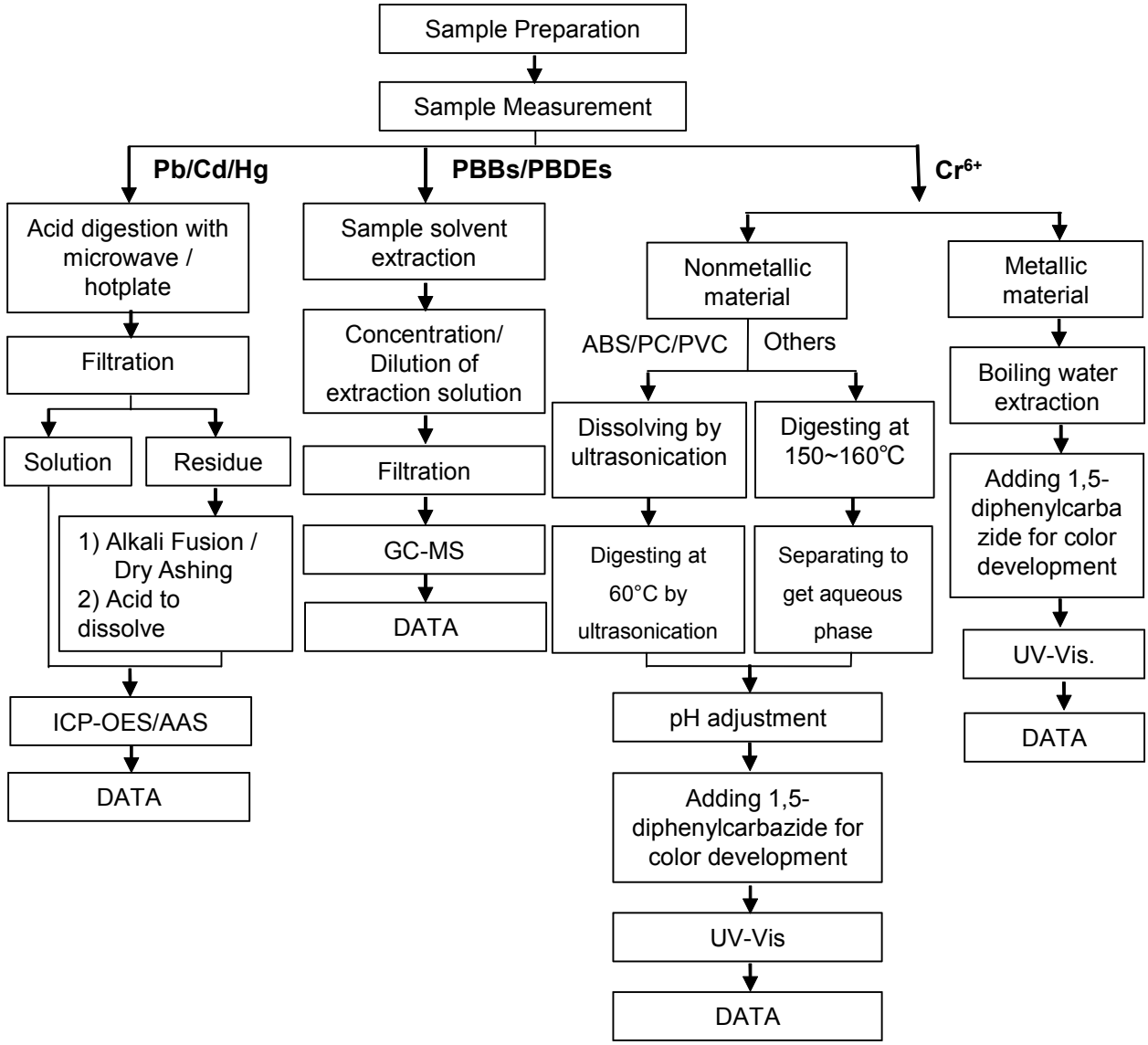
ATTACHMENTS

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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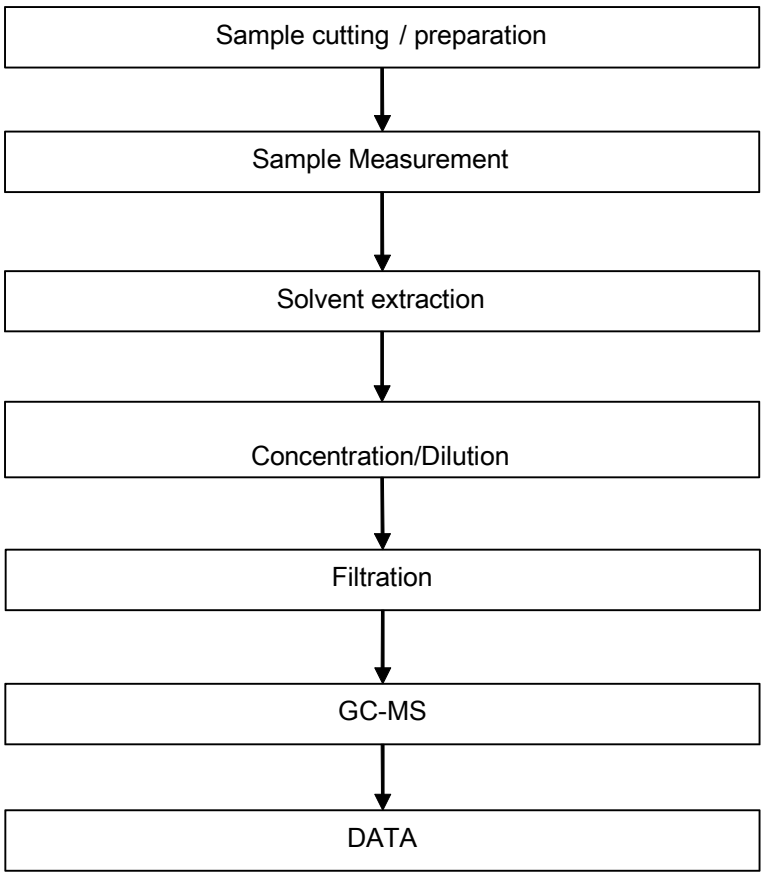
ATTACHMENTS

Phthalates Testing Flow Chart



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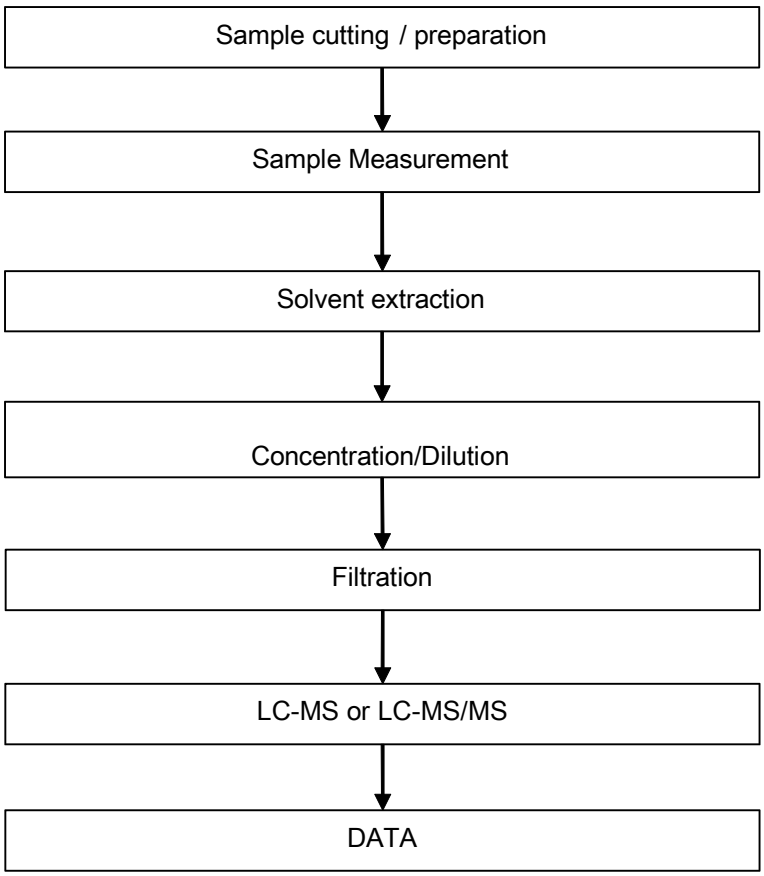
ATTACHMENTS

PFOA / PFOS Testing Flow Chart



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Sample photo:

CAN21-176338.003

SGS authenticate the photo on original report only

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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

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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

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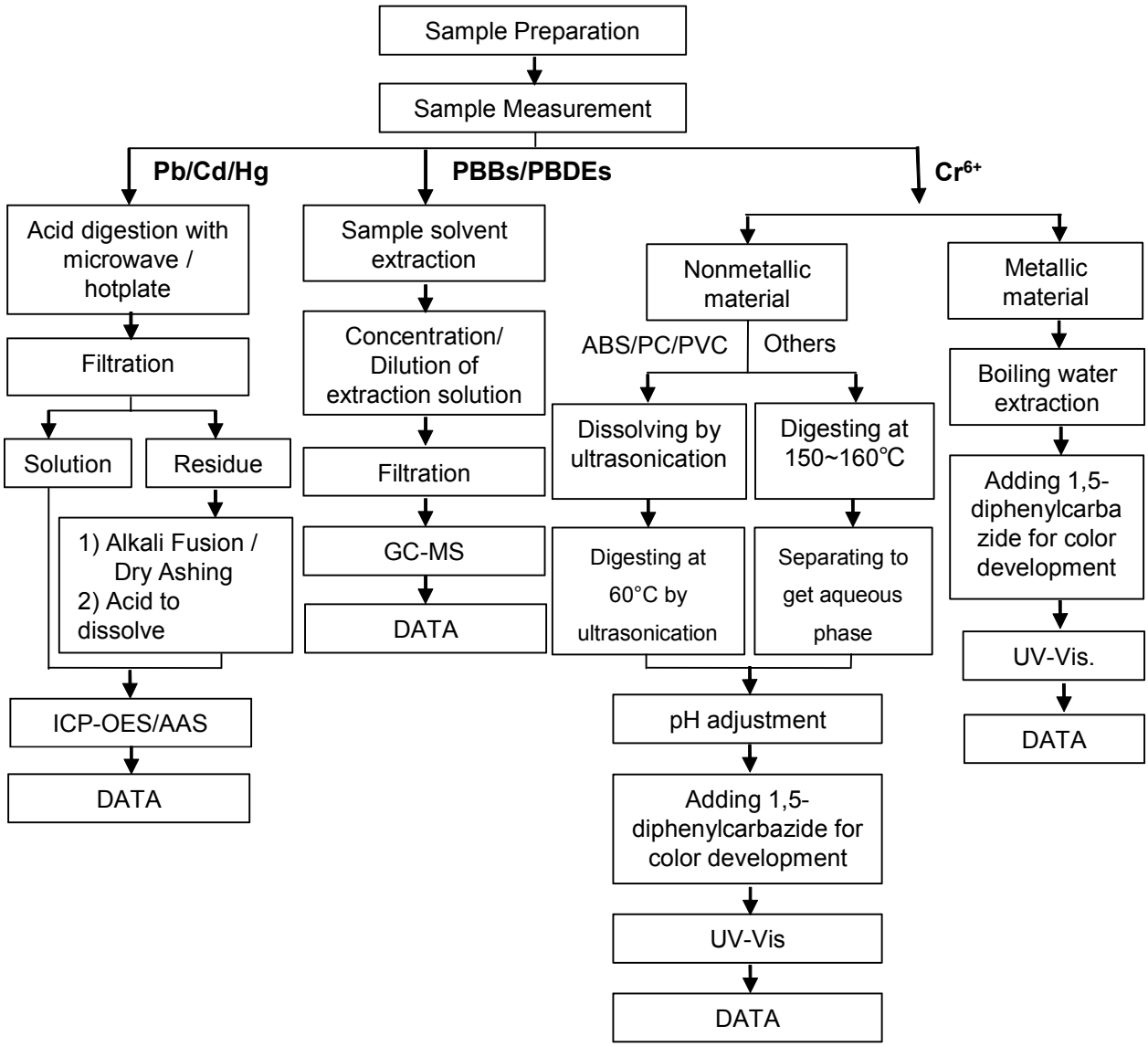
Pb/Cd/Hg/Cr^{6+}/PBBs/PBDEs Testing Flow Chart

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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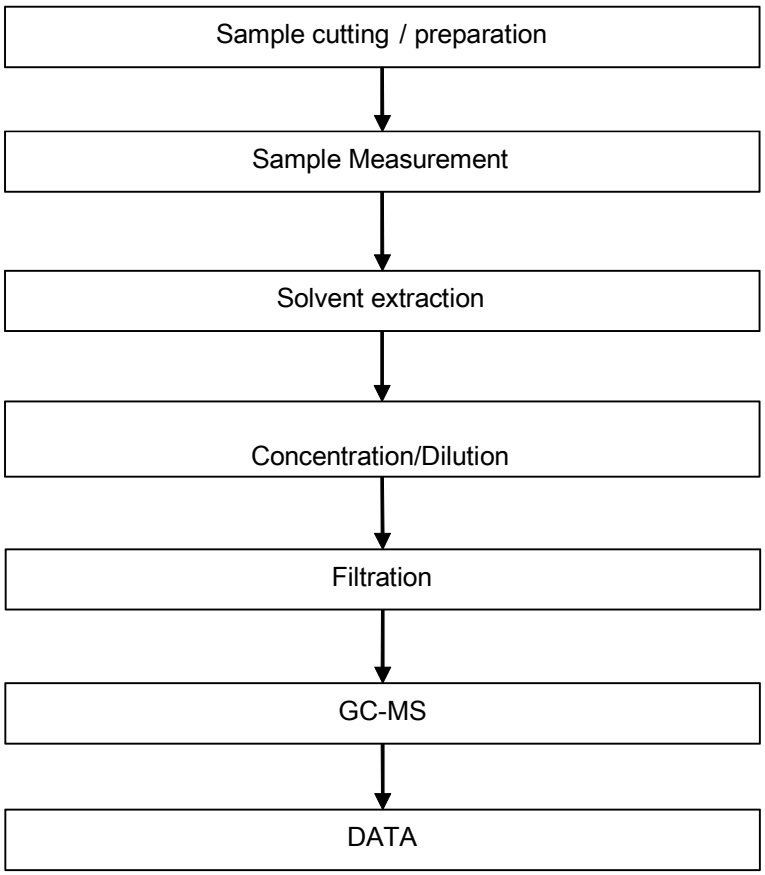
Phthalates Testing Flow Chart



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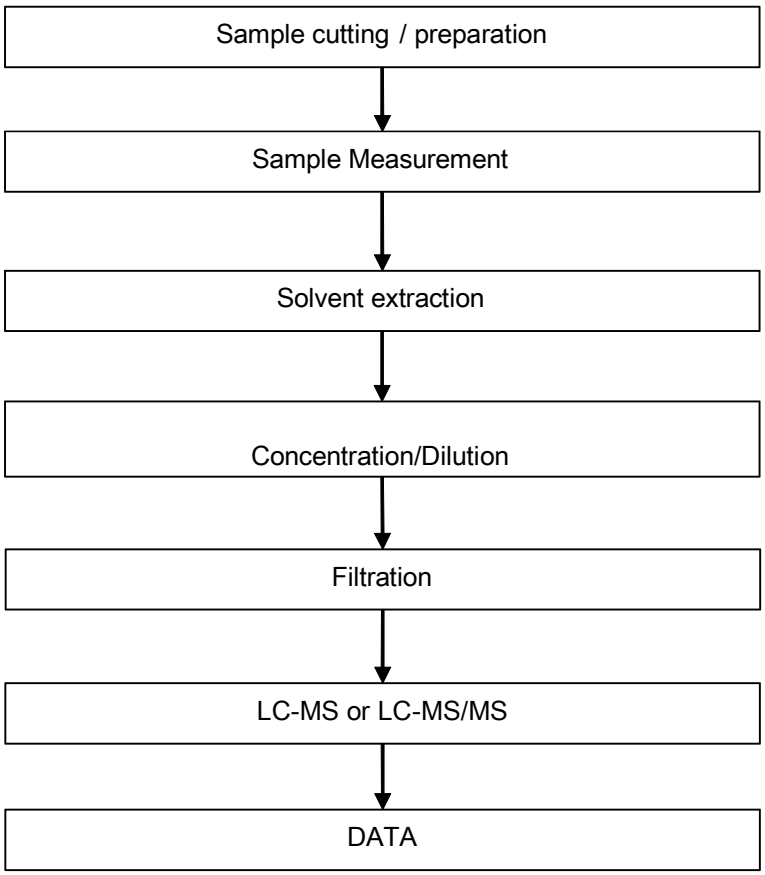
ATTACHMENTS

PFOA / PFOS Testing Flow Chart



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Sample photo:

CAN21-176338.002

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*** End of Report ***

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