连兴旺电子(深圳)有限公司

规 格 书

SPECIFICATIONS FOR APPROVAL

客户：
Customer：

客户料号：
Customer Part No:

公司料号：
Part No：LB3133-SxxP-WOR 公座
LB3133-SxxS-WOR 母座

产品名称：
Description：1.0mm 单槽BTB公母座

发行日期：
Issue Date：2018.04.23

客户签核 （Customer Approval）：

采购	品保	工程

内部签核 （Signature）：

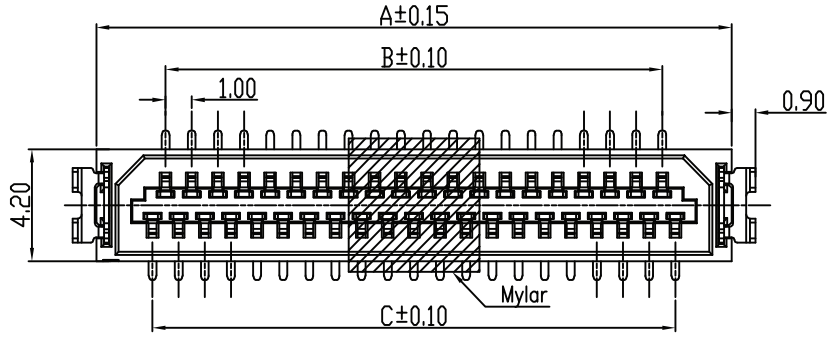
核准	审核	制作
	Hu.bill	Kavin

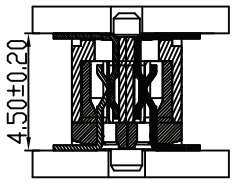
连兴旺电子(深圳)有限公司

LXWCONN ELECTRONICS (SHENZHEN) CO.,LTD

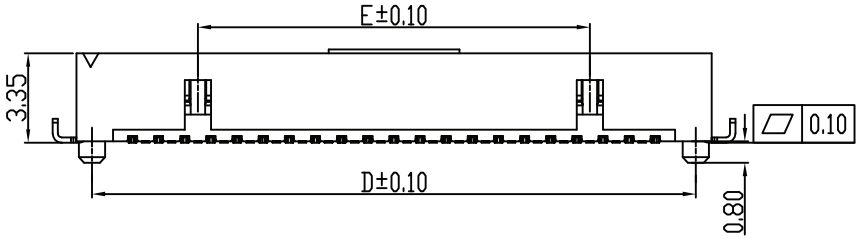
TEL：+80-0755 2959 1214 FAX：+80-0755 2795 1049

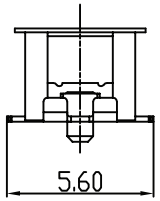
ADD：东莞市虎门镇新联社区高科一路1号钧益工业园F栋

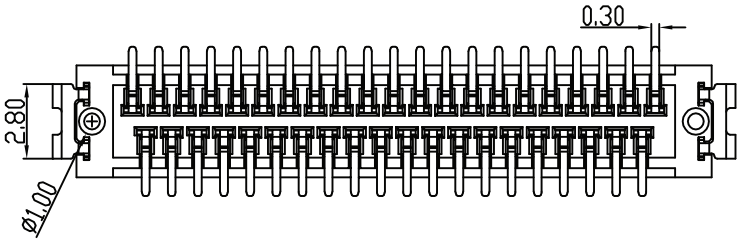


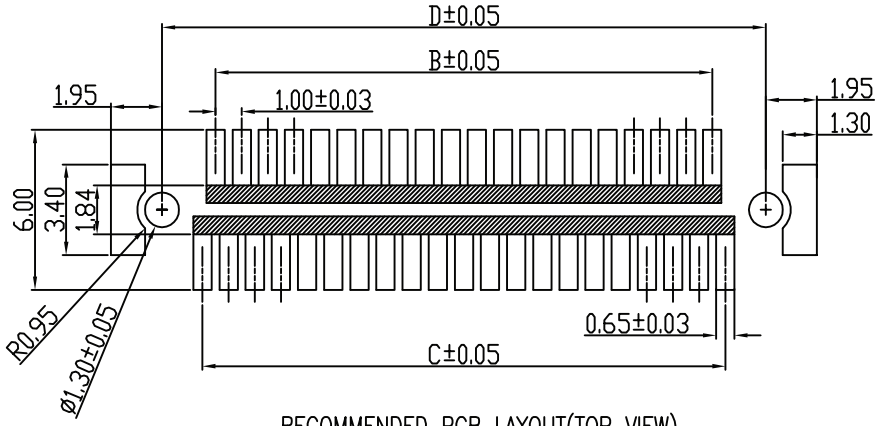


MATING HEIGHT









RECOMMENDED PCB LAYOUT(TOP VIEW)

Note:

Electrical

Current Rating:0.5A

Voltage Rating:150V AC

Contact Resistance:50mΩ max(Initial),75mΩ max(After)

Dieletric Withstanding Voltage:250VAC

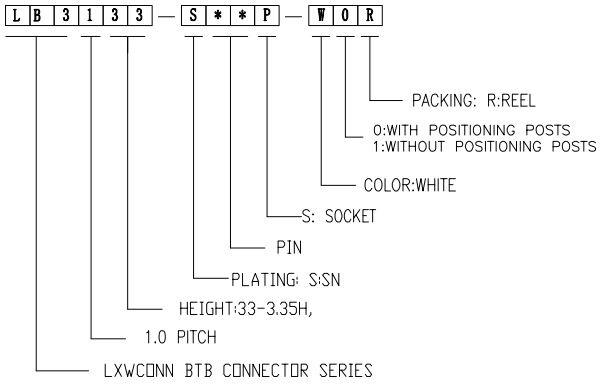
Insulation Resistance 500mega ohms min. at 100 VDC

Physical

Housing:thermoplastic, UL 94V-0 rated,inWhite Color

Contact: Copper alloy

Operating Temperature:-45°C to +125°C



PIN	A	B	C	D	E
9 PIN	8.3	3	4	7.1	0
11 PIN	9.3	4	5	8.1	0
13 PIN	10.3	5	6	9.1	0
15 PIN	11.3	6	7	10.1	0
17 PIN	12.3	7	8	11.1	0
19 PIN	13.3	8	9	12.1	4
21 PIN	14.3	9	10	13.1	5
23 PIN	15.3	10	11	14.1	6
25 PIN	16.3	11	12	15.1	7
31 PIN	19.3	14	15	18.1	10
41 PIN	24.3	19	20	23.1	15
51 PIN	29.3	24	25	28.1	20

RoHS Compliant 2013/95/EC

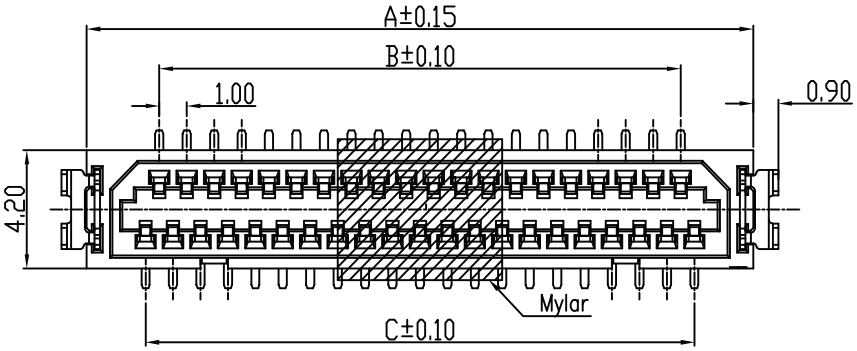
修订 SER	修改摘要 REVISION DESCRIPTION	签名 SIGNATURE	日期 DATE

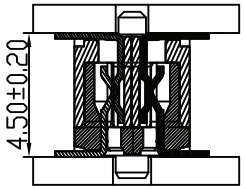
一般公差 GENERAL TOLERANCE
.X ±0.35
.XX ±0.25
.XXX ±0.15
ANGLES ±0° 30'

版本 (REV) D

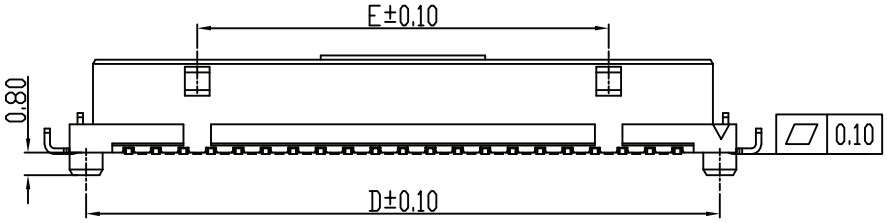
制图 (DR): JERRY 2024.02.22	品名(TITLE): DF9 1.0 BTB PLUG			
审核 (CHKD):	料号 (PART NO): LB3133-S**P-WOR			
核准 (APPD): TONG 2024.02.22	比例(SCALE) 1:1	单位(UNITS) mm	张数(SHEET) 1 OF 1	图幅(SIZE) A4

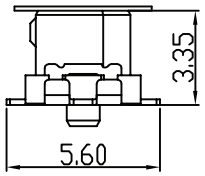
LXW connectivity 连兴旺电子(深圳)有限公司
LXWCONN ELECTRONICS(SHENZHEN)CO.,LTD

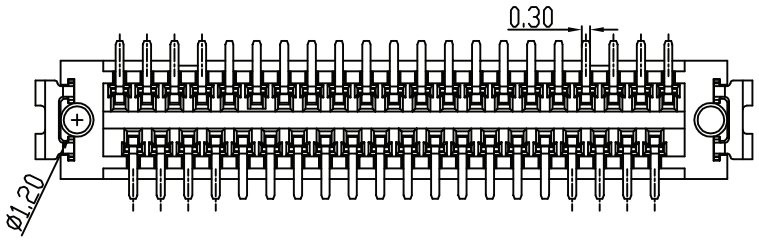


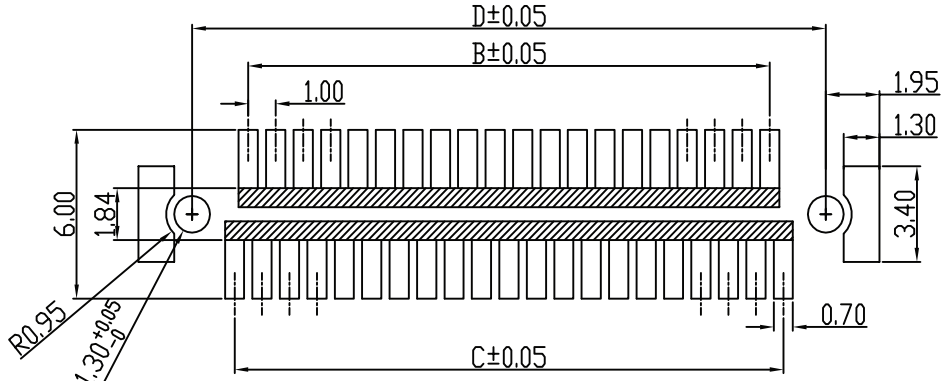


MATING HEIGHT



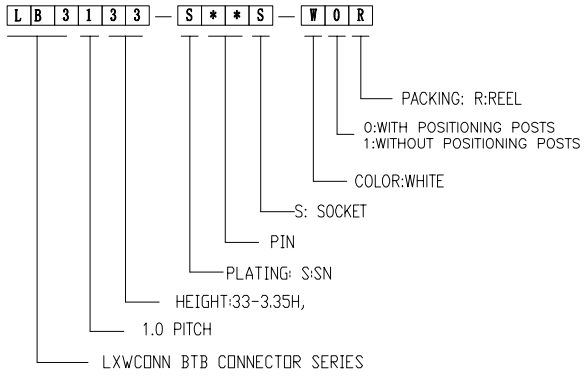






RECOMMENDED PCB LAYOUT(TOP VIEW)

Note:
Electrical
Current Rating:0.5A
Voltage Rating:150V AC
Contact Resistance:50mΩ max(Initial),75mΩ max(After)
Dieletric Withstanding Voltage:250VAC
Insulation Resistance 500mega ohms min. at 100 VDC
Physical
Housing:thermoplastic, UL 94V-0 rated,inWhite Color
Contact: Copper alloy
Operating Temperature:-45°C to +125°C



	A	B	C	D	E
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19 PIN	13.3	8	9	12.1	4
21 PIN	14.3	9	10	13.1	5
23 PIN	15.3	10	11	14.1	6
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31 PIN	19.3	14	15	18.1	10
41 PIN	24.3	19	20	23.1	15
51 PIN	29.3	24	25	28.1	20

RoHS Compliant 2013/95/EC

修订 SER	修改摘要 REVISION DESCRIPTION	签名 SIGNATURE	日期 DATE
⚠	新版发行	JERRY	12/05/19'

一般公差 GENERAL TOLERANCE
.X ±0.35
.XX ±0.25
.XXX ±0.15
ANGLES ±0° 30'

版本 (REV) A

LXW connectivity 连兴旺电子(深圳)有限公司
LXWCONN ELECTRONICS(SHENZHEN)CO.,LTD

制图 (DR): JERRY 2024.01.03	品名(TITLE): DF9 1.0 BTB SOCKET		
审核 (CHKD):	料号(PART NO): LB3133-S**S-WOR		
核准 (APPD): TONG 2024.01.03	比例(SCALE) 1:1	单位(UNITS) mm	张数(SHEET) 1 OF 1	图幅(SIZE) A4

1. SCOPE

1.1. CONTENTS

This specification covers the performance, tests and quality requirements for the 1.0mm Pitch BOARD to BOARD SMD V/T Type Connector .

1.2. QUALIFICATION

When tests are performed on the subject product line, the procedures specified in LB646-QxxP-C0R LB637-QxxS-C0R inspection plan and product drawings.

2. APPLICABLE DOCUMENT

The following LXWCONN documents form a part of this specification to the extent specified herein. Unless otherwise specified, the latest edition of the document applies. In the event of conflict between the requirements of this specification and the product drawings, the product drawing shall take precedence. In the event of conflict between the requirements of this specification and the referenced documents, this specification shall take precedence.

3. REQUIREMENTS

3.1. DESIGN AND CONSTRUCTION

Product shall be of the design, construction and physical dimensions specified on the applicable product drawings.

3.2. MATERIALS

A. Housing:LCP HIGH-TEMP THERMOPLASTIC, UL94V-0, BEIGE.
B. Terminal: Phosphor， 1μ " Gold-Flash on contact area and mater tin on pad area over all nickel under plated .

3.3. RATINGS

A. Voltage rating:100V DC
B. Current rating: 1.5A allowable current to be applied
C. Operating Temperature: - 40℃ to +105℃(Including terminal temperature rise)
D. Operating Humidity range: Relative humidity 93%Max
E. Storage temperature range:20±8℃
F. Storage Humidity range: Relative humidity 60%Max

3.4. PERFORMANCE REQUEIREMENT AND TEST DESCRIPTION

The product shall be designed to meet the electrical, mechanical and environmental performance Requirements specified in Figure 1. All tests shall be performed at ambient environmental conditions.

测试项目 TEST ITEM		规格 REQUIREMENT	测试方式/条件 PROCEDURE
1	外观检查 Examination of Product	符合图面外观，无任何形状损坏 Meets requirements of product Drawing. No physical damage.	目视检查 Visual inspection.
电气特性 ELECTRICAL REQUIREMENT			
2	接触电阻 Contact Resistance	30mΩ 以下。 30mΩ Max.	将样品成对连接，开放电压 20mV 以下；限电流 10mA 的状态下进行测试。 Subject mated contacts assembled in housing to closed circuit of 10mA max. at open circuit voltage of 20mV max. (EIA-364-23)
3	绝缘阻抗 Insulation Resistance	500MΩ 以上。 500MΩ Min.	未连接的样品，提供相邻端子间或端子与地面间加 DC 500V 进行绝缘阻抗测试。 Impressed Voltage 500V DC Test between adjacent circuits of unmated connectors. (EIA-364-21)
4	耐电压 Dielectric withstanding Voltage	目视外观无任何击穿损坏 No Breakdown 电流泄漏： 1 mA max. Current leakage: 1 mA max.	未连接的样品，提供相邻端子间或端子与地面间加 AC 500V（有效值）历时 1 分钟下测定耐电压。 500 V AC for 1minute Test between adjacent circuit of unmated connectors. (EIA-364-20)
机械特性 MECHANICAL REQUIREMENT			
5	接触保持力 Contact Retention Force	0.01Kgf/Pin 以上 0.01Kgf/Pin Min.	将样品成对连接，以操作速度每分钟位移 25±3mm 进行接触保持力测试。 Load shall be applied on each at a speed of 25±3mm/minute as shown below then pin retention force shall be measured.
6	插入力 Insertion Force	0.125KgfxN Max. (N=Pins) 0.125KgfxN Max. (N=Pins)	将成对连接器焊板连接，以操作速度每分钟位移 25±3mm 进行插入力测试。 Mate The sample connectors shall be soldered on a board and inserted and separated at speed of 25±3mm/min. (EIA-364-13)

测试项目 TEST ITEM		规格 REQUIREMENT		测试方式/条件 PROCEDURE
机械特性 MECHANICAL REQUIREMENT				
7	耐插拔 Durability	外观 Appearance	目视外观无任何损坏异状 No Damage	将样品成对连接，以操作速度每分钟位移 25±3mm 进行 50 次插拔测试。 Mate The sample connectors should be mounted in the tester and fully mated and unmated the number of 50cycles specified at the rate of 25±3 mm/min. (EIA-364-09)
		接触阻抗 Contact Resistance	90mΩ 以下. 90mΩ Max.	
8	耐振动 Vibration	接触阻抗 Contact Resistance	90mΩ 以下. 90mΩ Max.	通过 DC 电流 1mA,位移相对距离 1.5mm，振动周期 10~55~10Hz 在 1 分钟内，持续 2 小时，方向在 X，Y，Z 轴做测试 Mate connectors and subject to the following vibration conditions for period of 2 hours in each of 3 mutually perpendicular axes passing DC 1mA during the test.Amplitude:1.5mm P-P frequency:10~55~10 Hz in 1 minute (EIA-364-28 Condition I)
		外观 Appearance	目视外观无任何损坏异状 No Damage	
		瞬间断电 Discontinuity	1 μ sec 以下. 1 μ sec Max.	
9	耐冲击性 Shock (Mechanical)	外观 Appearance	目视外观无任何损坏异状 No Damage	将样品成对连接，通过 DC1mA 测试条件，连续测试 3 次。在 X、Y、Z 3 轴 6 个垂直方向施予重力加速度 490m/s^2{50G}冲击。 Mate The sample connectors shall and subject to the following shock condition.3 times of shocks shall be applied for each 6 directions along 3 mutually perpendicular axes, passing DC 1mA current during the test.(Total of 18 shocks) Peak value490m/s^2{50G} (EIA-364-27, test condition A)
		接触阻抗 Contact Resistance	90mΩ 以下. 90mΩ Max.	
		瞬间断电 Discontinuity	1 μ sec 以下. 1 μ sec Max..	
环境特性及其它性能（ENVIRONMENT PERFORMANCE AND OTHERS）				
10	温升 Temperature Rising	负载额定电流下温度 30℃ 30℃ Max. Under loaded rating current		量测通过成对连样品接最大容许电流时，样品接触点这温升。 Mate The sample connectors and measure the temperature rise of contact when the maximum AC rated current is passed. (EIA-364-70 METHOD 2)

测试项目 TEST ITEM		规格 REQUIREMENT		测试方式/条件 PROCEDURE
环境特性及其它性能（ENVIRONMENT PERFORMANCE AND OTHERS）				
11	耐热性 Heat Resistance	外观 Appearance	目视外观无任何损坏异状 No Damage	将样品成对连接置于环境温度 85±2℃测试时间 96 小时。再置放于室温下 1~2 小时。 Mate The sample connectors shall expose to 85±2℃ for 96 hours. Upon completion of the exposure period, the test specimens shall be conditioned at ambient room condition for 1to2 hours, after which the specified measurements shall be performed.
		接触阻抗 Contact Resistance	90mΩ 以下. 90mΩ Max.	
12	耐寒性 Cold Resistance	外观 Appearance	目视外观无任何损坏异状 No Damage	将样品成对连接置于环境温度-40±2℃测试时间 96 小时。再置放于室温下 1~2 小时。 Mate The sample connectors shall expose to -25±2℃ for 96 hours. Upon completion of the exposure period, the test specimens shall be conditioned at ambient room condition for 1to2 hours, after which the specified measurements shall be performed.
		接触阻抗 Contact Resistance	90mΩ 以下. 90mΩ Max.	
11	耐湿性 Humidity	接触阻抗 Contact Resistance	90mΩ 以下. 90mΩ Max.	将样品成对连接置于环境温度 40±2℃，相对湿度 90~95%，测试时间 96 小时。再置放于室温下 1~2 小时。 Mate The sample connectors shall expose to 40±2℃ relative humidity 90~95% for 96 hours. Upon completion of the exposure period, the test specimens shall be conditioned at ambient room condition for 1to2 hours, after which the specified measurements shall be performed.
		耐电压 Dielectric Strength	需能符合电压试 No Breakdown	
		外观 Appearance	目视外观无任何损坏异状 No Damage	
		绝缘阻抗 Insulation Resistance	500MΩ 以上。 500MΩ Min.	

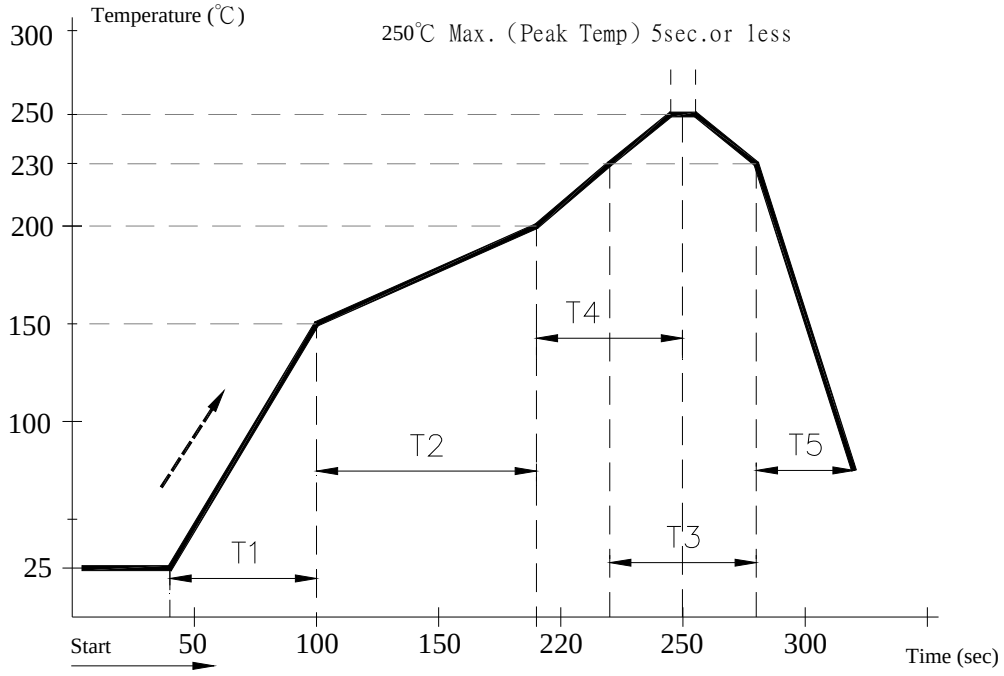
测试项目 TEST ITEM		规格 REQUIREMENT		测试方式/条件 PROCEDURE
环境特性及其它性能（ENVIRONMENT PERFORMANCE AND OTHERS）				
12	温度循环 Temperature Cycling	接触阻抗 Contact Resistance	90mΩ 以下. 90mΩ Max.	将样品成对连接，承受 5 cycles 冷热冲击后，置放于室温下 1~2 小时。1cycle time 如下 a)-40±3℃,30 分钟 b) +85±3℃,30 分钟 A connector shall and subject to the following condition for 5 cycles .Upon completion of the exposure period, the test specimens shall be conditioned at ambient room condition for 1to2 hours, after which the specified measurements shall be performed. 1cycle a)-25±3℃,30 minutes b) +85±3℃,30 minutes (Transit time shall be with in 3 minutes) (EIA-364-31, Test condition A)
		外观 Appearance	目视外观无任何损坏异状 No Damage	
13	盐水喷雾 Salt Spray	外观 Appearance	目视外观无任何损坏异状 No Damage	将样品成对连接，使用 5±1%浓度盐水，测试温度 35±2℃，测试时间 24 小时后，于室温下使用清水冲洗后再干燥。 Mate The sample connectors shall expose to the following salt mist conditions. Upon completion of the exposure period, salt deposits shall be removed by a gentle wash or dip in running water, after which the specified NaCl solution Concentration:5±1% Spray time:24hours Ambient temperature:35±2℃ (EIA-364-26,Test condition B)
14	焊锡性 Solder ability	润湿性 Solder Wetting	润湿面积 95%以上,并不得有漏焊针孔现象。 95% of immersed area must show no voids, pin holes.	锡温 250±5℃，将导电端子浸入锡炉液面至 Housing 距离锡面 0.1mm 位置，焊锡时间 3±0.5 秒。 Tip of solder tails and fitting mails into the molten solder (held at 250±5℃) up to 0.1mm from the Housing for 3±0.5sec onds. (EIA-364-52)

测试项目 TEST ITEM		规格 REQUIREMENT		测试方式/条件 PROCEDURE
环境特性及其它性能（ENVIRONMENT PERFORMANCE AND OTHERS）				
15	焊锡耐热性 Resistance to Reflow Soldering Heat	外观 Appearance	目视外观无任何损坏异状 No Damage	使用红外线回流焊时请参考第 4 点 When reflowing….Refer to paragraph 4. 使用烙铁手焊时须符合下述焊锡条件 Soldering iron method 0.2 mm from terminal tip and fitting nail tip. Soldering time:5 seconds Max. Soldering temperature:370~400℃

Figure 1

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

4. INFRARED REFLOW CONDITION (Lead Free)



T1	Temperature Ramp Up Rate	2℃~5℃/Sec
T2	Preheat:150℃~200℃	60~90Sec
T3	Time Over 230℃	30~50Sec
T4	Preheat:200℃~250℃	30Sec
T5	Ramp Down Rate During Cooling	4℃~7℃/Sec
	Peak Temperature	250℃Max

NOTE:

Please check the reflow soldering condition by your own devices beforehand. Because the condition changes by the soldering devices, P.C.Boarde and so on.

5.0. PRODUCT QUALIFICATION AND RELIABILITY TEST SEQUENCE

Test or Examination	Test Group											
	A	B	C	D	E	F	G	H	I	J	K	L
Appearance (外观)	1;7	1;3	1;6	1;6	1;6	1;3	1;6	1;6	1;5	1;5	1;3	1;3
Contact Resistance (接触电阻)			2;5	2;5	2;5		2;5	2;5	2;4	2;4		
Dielectric Withstanding Voltage (耐电压)	3;6											
Insulation Resistance (绝缘阻抗)	2;5											
Insertion Force (插入力)		2										
Contact Retention Force（接触保持力）			3,4									
Vibration(耐振动)				3,4								
Shock Mechanical (耐冲击性)					3,4							
Temperature Rising (温升)						2						
Heat Resistance(抗热性)							3,4					
Cold Resistance(耐寒性)								3,4				
Humidity(耐湿性)	4											
Temperature Cycling (温度循环)									3			
Salt Spray(盐水喷雾)										3		
Solder ability (可焊性)											2	
Resistance to Soldering Heat (焊锡耐热性)												2

Figure 2

NOTE: (a) Numbers indicate sequence in which tests are performed.
(b) Discontinuities shall not take place in this test group, during test

QMFZ2 Component - Plastics | Friday, August 10, 2001 | E106764

POLYPLASTICS CO LTD
VECTRA DIV, KASUMIGASEKI BLDG, 6TH FL 2-5 KASUMIGASEKI 3-CHOME CHIYODA-KU TOKYO 100-6006 JAPAN

Material Designation: **E130i(d)(e)**

Product Description: Liquid Crystal Polymer (LCP), thermotropic aromatic polyester, designated "Vectra" furnished as pellets.

Color	Min. Thick. (mm)	Flame Class	HWI	HAI	RTI Elec	RTI Imp	RTI Str	IEC GWIT	IEC GWFI
ALL	0.75	V-0	2	4	240	220	240	-	-
	1.5	V-0	1	4	240	220	240	-	-
	3.0	V-0	0	4	240	220	240	-	-

CTI: 4 **HVTR:** 0 **D495:** 5 **IEC BP:** -

(d) Virgin and regrind up to 50% by weight incl. have the same basic material characteristics for colors NC and BK.

(e) In addition, regrind at 26 to 50% have the same basic characteristics at a minimum of 1.5mm except RTI's for the Mechanical w/Impact property is 180C.

Report Date: 08/19/1992 | Underwriters Laboratories Inc® | 593273003

1. E130i的一般物性

表 1-1 一般物性(ISO)

项　目	单位	试验方法	高耐热, 高流动
			E130i
			玻璃纤维, 标准
密度	g/cm^3	ISO 1183	1.61
拉伸强度*	MPa	ASTM D638	175
拉伸率*	%	ASTM D638	2
弯曲强度	MPa	ISO 178	220
弯曲模量	MPa	ISO 178	15000
弯曲应变	%	ISO 178	2.3
简支梁冲击强度(有缺口)	kJ/m^2	ISO 179/1eA	35
负荷变形温度(1.8MPa)	℃	ISO 75-1,2	280
成型收缩率(80□×1mmt、流动方向、注射压力60MPa)	%		0.02
成型收缩率(80□×1mmt、垂直方向、注射压力60MPa)	%		0.54
成型收缩率(80□×1mmt、流动方向、注射压力79MPa)	%		-
成型收缩率(80□×1mmt、垂直方向、注射压力79MPa)	%		-
体积电阻率	Ω・cm	IEC 60093	1.0×10^{16}
表面电阻率	Ω	IEC 60093	1.0×10^{16}
介电常数(1kHz)		IEC 60250	4.3
介电常数(1MHz)		IEC 60250	3.8
介电常数(10GHz)			3.6
介电损耗角正切(1kHz)		IEC 60250	0.017
介电损耗角正切(1MHz)		IEC 60250	0.032
介电损耗角正切(10GHz)			0.007
绝缘破坏强度(1mmt)	kV/mm	IEC 60243-1	44
绝缘破坏强度(3mmt)	kV/mm	IEC 60243-1	24
耐导电径迹	CTI	IEC 60112	125
耐电弧性	s		130
阻燃性		UL94	V-0

以上数值为材料的代表性测试值、并非该规格材料的最低值。

*1)有关ＵＬ（Underwriters Laboratories Inc.）的认定值、请参照ＵＬ发行的黄卡 （File No.E106764 ）。

*2)本品级受以日本国外汇管理及外国贸易法为依据的出口贸易管理条例表中的第1条第16项的制约。

測試報告
Test Report

號碼(No.) : CE/2018/15729　　日期(Date) : 2018/01/31　　頁數(Page): 1 of 20

福興實業股份有限公司
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台北市延平南路74號
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以下測試樣品係由申請廠商所提供及確認 (The following sample(s) was/were submitted and identified by/on behalf of the applicant as):

送樣廠商(Sample Submitted By)	:	福興實業股份有限公司 (FU HSING INDUSTRIAL CO., LTD.)
樣品名稱(Sample Description)	:	LAPEROS LCP (VECTRA LCP)
樣品型號(Style/Item No.)	:	A130 VF2201、A150B VF2201、A430 VF2201、C130 VF2201、E130G VF2201、E130i VF2201、E463i VF2201、E471i VF2201、E473i VF2201、E480i VF2201、E481i VF2201、GA130 VF2201、GA473 VF2201、GA481 VF2201、GA140M VF2201、GA463 VF2201、HA475 VF2201、T130 VF2201、S135 VF2201、S471 VF2201、S475 VF2201、S476 VF2201
收件日期(Sample Receiving Date)	:	2018/01/24
測試期間(Testing Period)	:	2018/01/24 TO 2018/01/31

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測試需求(Test Requested):

(1) 依據客戶指定，參考RoHS 2011/65/EU Annex II及其修訂指令(EU) 2015/863測試鎘、鉛、汞、六價鉻、多溴聯苯、多溴聯苯醚, DBP, BBP, DEHP, DIBP. (As specified by client, with reference to RoHS 2011/65/EU Annex II and amending Directive (EU) 2015/863 to determine Cadmium, Lead, Mercury, Cr(VI), PBBs, PBDEs, DBP, BBP, DEHP, DIBP contents in the submitted sample(s).)

(2) 依據客戶指定，檢測 PAHs 及其他測項. (As specified by client, to test PAHs and other item(s).)

測試結果(Test Results) : 請參閱下一頁 (Please refer to following pages).

結論(Conclusion) : (2) 根據客戶所提供的樣品，18項多環芳香烴測試結果符合德國產品安全委員會(AfPS) GS PAHs第 1 類之限值要求. (Based upon the performed tests on the submitted sample(s), the test results of PAHs (18 items) comply with the limits of PAHs requirement (Category 1) as set by German Committee on Product Safety (AfPS) GS PAHs.)

Troy Chang / Manager - Tech
Signed for and on behalf of
SGS TAIWAN LTD.
Chemical Laboratory - Taipei

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測試結果(Test Results)

測試部位(PART NAME)No.1　　:　米色塑膠粒 (BEIGE PLASTIC PELLETS)

測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測極限值 (MDL)	結果 (Result) No.1
鎘 / Cadmium (Cd)	mg/kg	參考IEC 62321-5 (2013)，以感應耦合電漿原子發射光譜儀檢測. / With reference to IEC 62321-5 (2013) and performed by ICP-AES.	2	n.d.
鉛 / Lead (Pb)	mg/kg	參考IEC 62321-5 (2013)，以感應耦合電漿原子發射光譜儀檢測. / With reference to IEC 62321-5 (2013) and performed by ICP-AES.	2	2.61
汞 / Mercury (Hg)	mg/kg	參考IEC 62321-4 (2013)，以感應耦合電漿原子發射光譜儀檢測. / With reference to IEC 62321-4 (2013) and performed by ICP-AES.	2	n.d.
六價鉻 / Hexavalent Chromium Cr(VI)	mg/kg	參考IEC 62321-7-2 (2017)，以UV-VIS檢測. / With reference to IEC 62321-7-2 (2017) and performed by UV-VIS.	8	n.d.
全氟辛烷磺酸 / Perfluorooctane sulfonates (PFOS-Acid, Metal Salt, Amide)	mg/kg	參考US EPA 3550C (2007)，以液相層析/質譜儀檢測. / With reference to US EPA 3550C (2007). Analysis was performed by LC/MS.	10	n.d.
全氟辛酸 / PFOA (CAS No.: 335-67-1)	mg/kg		10	n.d.
鹵素 (氯) / Halogen-Chlorine (Cl) (CAS No.: 22537-15-1)	mg/kg	參考BS EN 14582 (2016)，以離子層析儀分析. / With reference to BS EN 14582 (2016). Analysis was performed by IC.	50	n.d.
鹵素 (溴) / Halogen-Bromine (Br) (CAS No.: 10097-32-2)	mg/kg	參考BS EN 14582 (2016)，以離子層析儀分析. / With reference to BS EN 14582 (2016). Analysis was performed by IC.	50	n.d.

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測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測極限值 (MDL)	結果 (Result) No. 1
多溴聯苯總和 / Sum of PBBs	mg/kg	參考IEC 62321-6 (2015)，以氣相層析/質譜儀檢測. / With reference to IEC 62321-6 (2015) and performed by GC/MS.	-	n.d.
一溴聯苯 / Monobromobiphenyl	mg/kg		5	n.d.
二溴聯苯 / Dibromobiphenyl	mg/kg		5	n.d.
三溴聯苯 / Tribromobiphenyl	mg/kg		5	n.d.
四溴聯苯 / Tetrabromobiphenyl	mg/kg		5	n.d.
五溴聯苯 / Pentabromobiphenyl	mg/kg		5	n.d.
六溴聯苯 / Hexabromobiphenyl	mg/kg		5	n.d.
七溴聯苯 / Heptabromobiphenyl	mg/kg		5	n.d.
八溴聯苯 / Octabromobiphenyl	mg/kg		5	n.d.
九溴聯苯 / Nonabromobiphenyl	mg/kg		5	n.d.
十溴聯苯 / Decabromobiphenyl	mg/kg		5	n.d.
多溴聯苯醚總和 / Sum of PBDEs	mg/kg		-	n.d.
一溴聯苯醚 / Monobromodiphenyl ether	mg/kg		5	n.d.
二溴聯苯醚 / Dibromodiphenyl ether	mg/kg		5	n.d.
三溴聯苯醚 / Tribromodiphenyl ether	mg/kg		5	n.d.
四溴聯苯醚 / Tetrabromodiphenyl ether	mg/kg		5	n.d.
五溴聯苯醚 / Pentabromodiphenyl ether	mg/kg		5	n.d.
六溴聯苯醚 / Hexabromodiphenyl ether	mg/kg		5	n.d.
七溴聯苯醚 / Heptabromodiphenyl ether	mg/kg		5	n.d.
八溴聯苯醚 / Octabromodiphenyl ether	mg/kg		5	n.d.
九溴聯苯醚 / Nonabromodiphenyl ether	mg/kg		5	n.d.
十溴聯苯醚 / Decabromodiphenyl ether	mg/kg		5	n.d.
紅磷 / Red phosphorus	**	以熱裂解-氣相層析/質譜儀分析. / Analysis was performed by Pyrolyzer-GC/MS.	-	Negative
聚氯乙烯 / PVC	**	以紅外光譜分析及焰色法檢測. / Analysis was performed by FTIR and FLAME Test.	-	Negative

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測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測極限值 (MDL)	結果 (Result) No. 1
鄰苯二甲酸二丁酯 / DBP (Dibutyl phthalate) (CAS No.: 84-74-2)	mg/kg	參考IEC 62321-8 (2017)，以氣相層析儀/質譜儀檢測. / With reference to IEC 62321-8 (2017). Analysis was performed by GC/MS.	50	n.d.
鄰苯二甲酸丁苯甲酯 / BBP (Butyl Benzyl phthalate) (CAS No.: 85-68-7)	mg/kg		50	n.d.
鄰苯二甲酸二 (2-乙基己基)酯 / DEHP (Di- (2-ethylhexyl) phthalate) (CAS No.: 117-81-7)	mg/kg		50	n.d.
鄰苯二甲酸二異癸酯 / DIDP (Di-isodecyl phthalate) (CAS No.: 26761-40-0; 68515-49-1)	mg/kg		50	n.d.
鄰苯二甲酸二異壬酯 / DINP (Di-isononyl phthalate) (CAS No.: 28553-12-0; 68515-48-0)	mg/kg		50	n.d.
鄰苯二甲酸二正辛酯 / DNOP (Di-n-octyl phthalate) (CAS No.: 117-84-0)	mg/kg		50	n.d.
鄰苯二甲酸二異丁酯 / DIBP (Di-isobutyl phthalate) (CAS No.: 84-69-5)	mg/kg		50	n.d.
鄰苯二甲酸二乙酯 / DEP (Di-ethyl phthalate) (CAS No.: 84-66-2)	mg/kg		50	n.d.
鄰苯二甲酸二甲酯 / DMP (Di-methyl phathalate) (CAS No.: 131-11-3)	mg/kg		50	n.d.
鄰苯二甲酸二正己酯 / DNHP (Di-n-hexyl phthalate) (CAS No.: 84-75-3)	mg/kg		50	n.d.
鄰苯二甲酸二異戊酯 / DIPP (Di-iso-pentyl phthalate) (CAS No.: 605-50-5)	mg/kg		50	n.d.

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測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測極限值 (MDL)	結果 (Result) No. 1
鄰苯二甲酸二 (C7-11支鏈與直鏈)烷基酯 / DHNUP (1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters) (CAS No.: 68515-42-4)	mg/kg	參考IEC 62321-8 (2017)，以氣相層析儀/質譜儀檢測. / With reference to IEC 62321-8 (2017). Analysis was performed by GC/MS.	50	n.d.
鄰苯二甲酸二戊酯 / Di-n-pentyl phthalate (CAS No.: 131-18-0)	mg/kg		50	n.d.
鄰苯二甲酸二 (2-甲氧基乙基)酯 / DMEP (Bis (2-methoxyethyl) phthalate) (CAS No.: 117-82-8)	mg/kg		50	n.d.
鄰苯二甲酸二 (C6-8支鏈與直鏈)烷基酯，富C7 / DIHP (1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich) (CAS No.: 71888-89-6)	mg/kg		50	n.d.
雙酚 A / Bisphenol A (CAS No.: 80-05-7)	mg/kg	參考RSTS-CHEM-239-1 (2016)，以超高效能液相層析串聯質譜儀檢測. / With reference to RSTS-CHEM-239-1 (2016). Analysis was performed by UPLC-MSMS.	1	n.d.
銻 / Antimony (Sb)	mg/kg	參考US EPA 3052 (1996)，以感應耦合電漿原子發射光譜儀檢測. / With reference to US EPA 3052 (1996). Analysis was performed by ICP-AES.	2	n.d.
三氧化二銻 / Antimony trioxide (Sb_2O_3)*** (CAS No.: 1309-64-4)	mg/kg	參考US EPA 3052 (1996)，以感應耦合電漿原子發射光譜儀檢測. / With reference to US EPA 3052 (1996). Analysis was performed by ICP-AES.***	-	n.d.
砷 / Arsenic (As)	mg/kg	參考US EPA 3052 (1996)，以感應耦合電漿原子發射光譜儀檢測. / With reference to US EPA 3052 (1996). Analysis was performed by ICP-AES.	2	n.d.

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測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測極限值 (MDL)	結果 (Result) No. 1
多環芳香烴 / Polycyclic Aromatic Hydrocarbons (PAHs)				
苊 / Acenaphthene (CAS No.: 83-32-9)	mg/kg	參考AfPS GS 2014:01 PAK，以氣相層析/質譜儀檢測. / With reference to AfPS GS 2014:01 PAK. Analysis was performed by GC/MS.	0.2	n.d.
苊烯 / Acenaphthylene (CAS No.: 208-96-8)	mg/kg		0.2	n.d.
蒽 / Anthracene (CAS No.: 120-12-7)	mg/kg		0.2	n.d.
苯駢蒽 / Benzo[a]anthracene (CAS No.: 56-55-3)	mg/kg		0.2	n.d.
苯駢(a)芘 / Benzo[a]pyrene (CAS No.: 50-32-8)	mg/kg		0.2	n.d.
苯(b)苯駢芴 / Benzo[b]fluoranthene (CAS No.: 205-99-2)	mg/kg		0.2	n.d.
苯駢苝 / Benzo[g,h,i]perylene (CAS No.: 191-24-2)	mg/kg		0.2	n.d.
苯(k)苯駢芴 / Benzo[k]fluoranthene (CAS No.: 207-08-9)	mg/kg		0.2	n.d.
Chrysene (CAS No.: 218-01-9)	mg/kg		0.2	n.d.
二苯駢蒽 / Dibenzo[a,h]anthracene (CAS No.: 53-70-3)	mg/kg		0.2	n.d.
苯駢芴 / Fluoranthene (CAS No.: 206-44-0)	mg/kg		0.2	n.d.
芴 / Fluorene (CAS No.: 86-73-7)	mg/kg		0.2	n.d.
茚酮芘 / Indeno[1,2,3-c,d] pyrene (CAS No.: 193-39-5)	mg/kg		0.2	n.d.
萘 / Naphthalene (CAS No.: 91-20-3)	mg/kg		0.2	n.d.
菲 / Phenanthrene (CAS No.: 85-01-8)	mg/kg		0.2	n.d.
芘 / Pyrene (CAS No.: 129-00-0)	mg/kg		0.2	n.d.
苯(j)苯駢芴 / Benzo[j]fluoranthene (CAS No.: 205-82-3)	mg/kg		0.2	n.d.
苯駢(e)芘 / Benzo[e]pyrene (CAS No.: 192-97-2)	mg/kg		0.2	n.d.
多環芳香烴18項總和 / Sum of 18 PAHs	mg/kg		-	n.d.

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測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測極限值 (MDL)	結果 (Result) No.1
六溴環十二烷及所有主要被辨別出的異構物 / Hexabromocyclododecane (HBCDD) and all major diastereoisomers identified (α- HBCDD, β- HBCDD, γ- HBCDD) (CAS No.: 25637-99-4 and 3194-55-6 (134237-51-7, 134237-50-6, 134237-52-8))	mg/kg	參考IEC 62321 (2008)，以氣相層析/質譜儀檢測. / With reference to IEC 62321 (2008). Analysis was performed by GC/MS.	5	n.d.

備註(Note)：

1. mg/kg = ppm；0.1wt% = 1000ppm
2. n.d. = Not Detected (未檢出)
3. MDL = Method Detection Limit (方法偵測極限值)
4. "-" = Not Regulated (無規格值)
5. **= Qualitative analysis (No Unit) 定性分析(無單位)
6. Negative = Undetectable 陰性(未偵測到); Positive = Detectable 陽性(已偵測到)
7. ***: 該物質是由銻之測試結果計算得知. 其MDL是針對銻之評估. (The substance was calculated by the test result of Antimony. The MDL was evaluated for Antimony.)
8. 參數換算表 / Parameter Conversion Table：http://twap.sgs.com/sgsrsts/chn/download-REACH_tw.asp

PFOS參考資訊(Reference Information) : 持久性有機污染物 POPs - (EU) 757/2010

PFOS濃度在物質或製備中不得超過0.001%(10ppm)，在半成品、成品或零部件中不得超過0.1%(1000ppm)，在紡織品或塗層材料中不得超過1μg/m²。

(Outlawing PFOS as substances or preparations in concentrations above 0.001% (10ppm), in semi-finished products or articles or parts at a level above 0.1%(1000ppm), in textiles or other coated materials above 1μg/m².)

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△ 德國產品安全委員會(AfPS) GS PAHs 要求 / AfPS (German commission for Product Safety): GS PAHs requirements

項目 (Parameter)	第1類(Category 1)	第2類(Category 2)		第3類(Category 3)	
	意圖放入嘴內的材料或玩具會與皮膚有所接觸(超過30秒). (Material indented to be put in the mouth or toys with intended skin contact (longer than 30 s).)	不屬於第1類的材料並可預見與皮膚接觸逾30秒(長期或經常與皮膚接觸). (Materials not falling under category 1 with foreseeable contact to skin for longer than 30 seconds (long-term skin or frequent contact).)		可預見與皮膚接觸短於30秒(短期與皮膚接觸), 以及不屬於第1類或第2類的材料. (Materials not falling under category 1 or 2 with foreseeable contact to skin for less than 30 seconds (short-term skin contact).)	
		列於2009/48/EC之玩具 (Toy under 2009/48/EC)	列於德國產品安全法之其他產品 (Other products under ProdSG)	列於2009/48/EC之玩具 (Toy under 2009/48/EC)	列於德國產品安全法之其他產品 (Other products under ProdSG)
Naphthalene	< 1	< 2		< 10	
Acenaphthylene Acenaphthene Fluorene Phenanthrene Anthracene Fluoranthene Pyrene	< 1 Sum	< 5 Sum	< 10 Sum	< 20 Sum	< 50 Sum
Benzo[a]anthracene	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Chrysene	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo[b]fluoranthene	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo[j]fluoranthene	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo[k]fluoranthene	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo[a]pyrene	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo[e]pyrene	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Indeno[1,2,3-c,d] pyrene	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Dibenzo[a,h]anthracene	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo[g,h,i]perylene	< 0.2	< 0.2	< 0.5	< 0.5	< 1
18項PAH總濃度 (Sum of 18 PAH)	< 1	< 5	< 10	< 20	< 50

單位(Unit)：mg/kg

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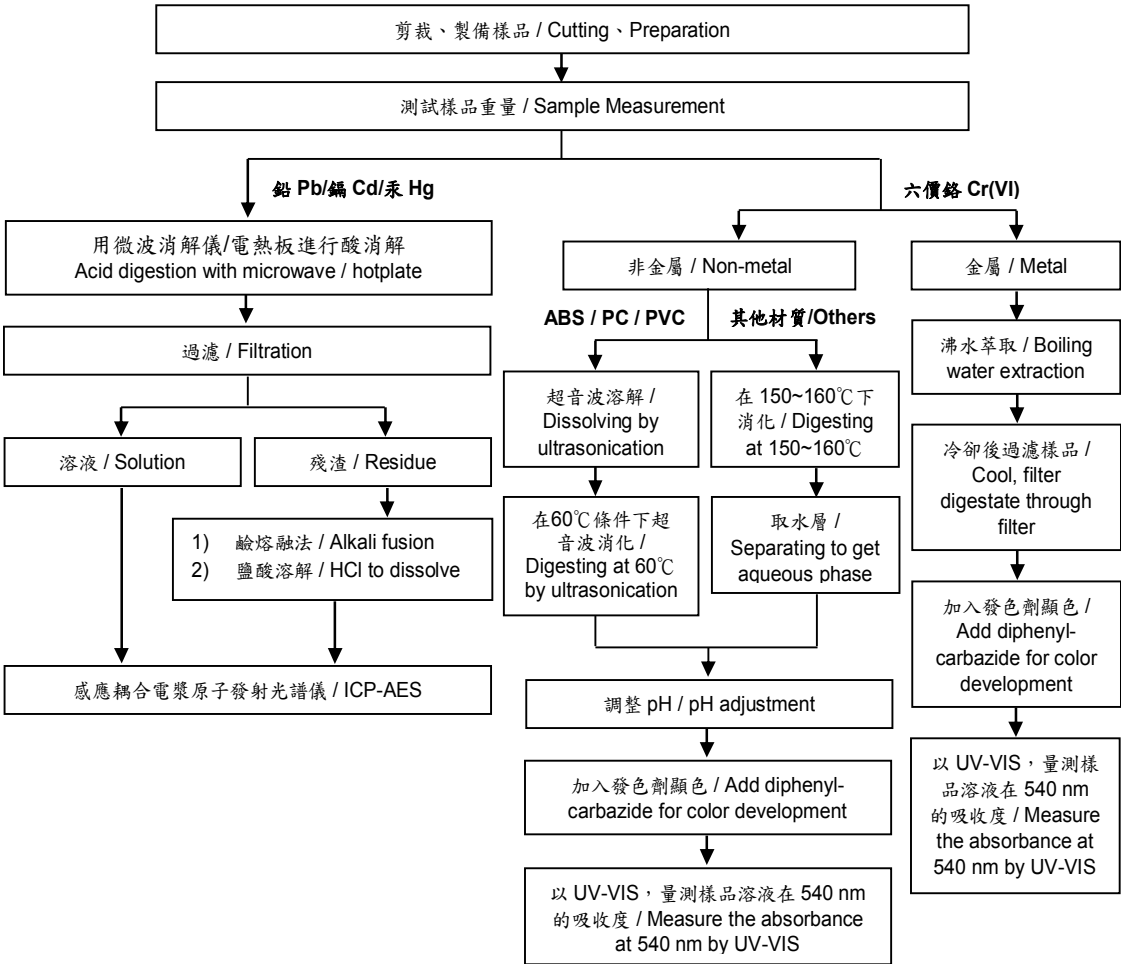
重金屬流程圖 / Analytical flow chart of Heavy Metal

根據以下的流程圖之條件，樣品已完全溶解。（六價鉻測試方法除外）
These samples were dissolved totally by pre-conditioning method according to below flow chart.（Cr^{6+} test method excluded）

- 測試人員：王志瑋 / Technician : JR Wang
- 測試負責人：張啟興 / Supervisor: Troy Chang



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FU HSING INDUSTRIAL CO., LTD.
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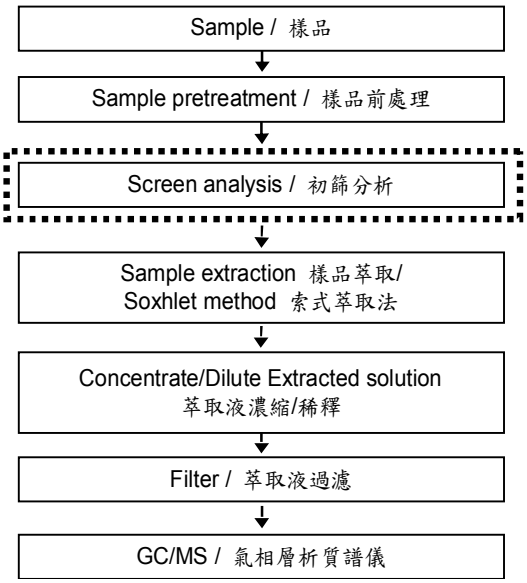
多溴聯苯/多溴聯苯醚分析流程圖 / Analytical flow chart - PBB/PBDE

- 測試人員：涂雅苓 / Technician: Yaling Tu
- 測試負責人：張啟興 / Supervisor: Troy Chang

初次測試程序 / First testing process
選擇性篩檢程序 / Optional screen process
確認程序 / Confirmation process



測試報告
Test Report

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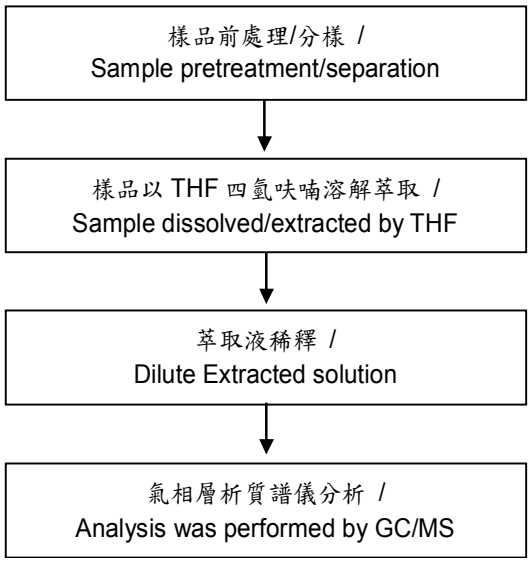
可塑劑分析流程圖 / Analytical flow chart - Phthalate

- 測試人員：徐毓明 / Technician: Andy Hsu
- 測試負責人：張啟興 / Supervisor : Troy Chang

【測試方法/Test method: IEC 62321-8】



測試報告
Test Report

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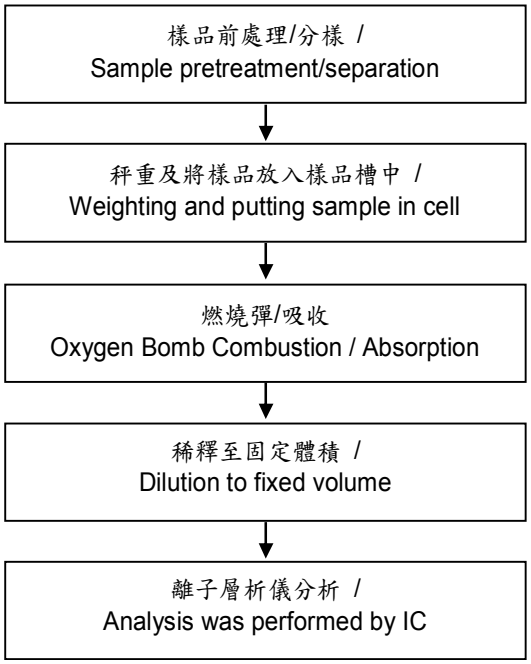
鹵素分析流程圖 / Analytical flow chart - Halogen

- 測試人員：陳恩臻 / Technician: Rita Chen
- 測試負責人：張啟興 / Supervisor: Troy Chang



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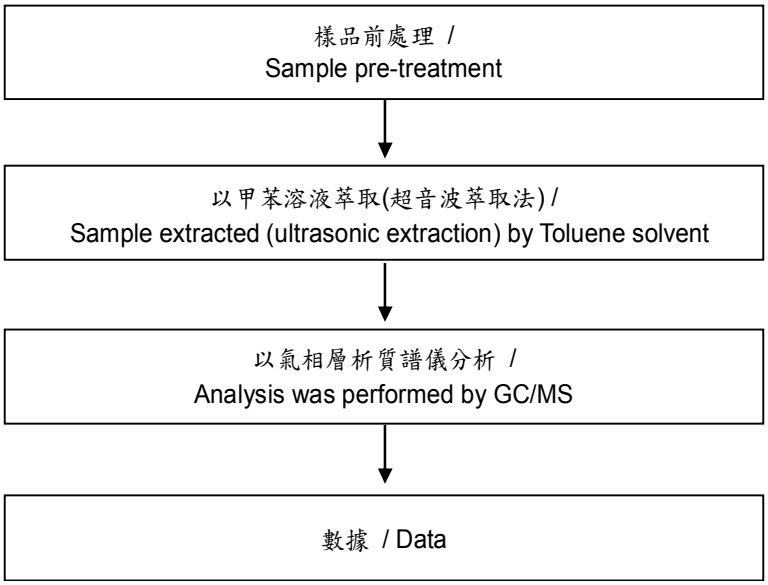
多環芳香烴分析流程圖 / Analytical flow chart - PAHs (Polycyclic Aromatic Hydrocarbons)

- 測試人員：涂雅苓 / Technician: Yaling Tu
- 測試負責人：張啟興 / Supervisor: Troy Chang



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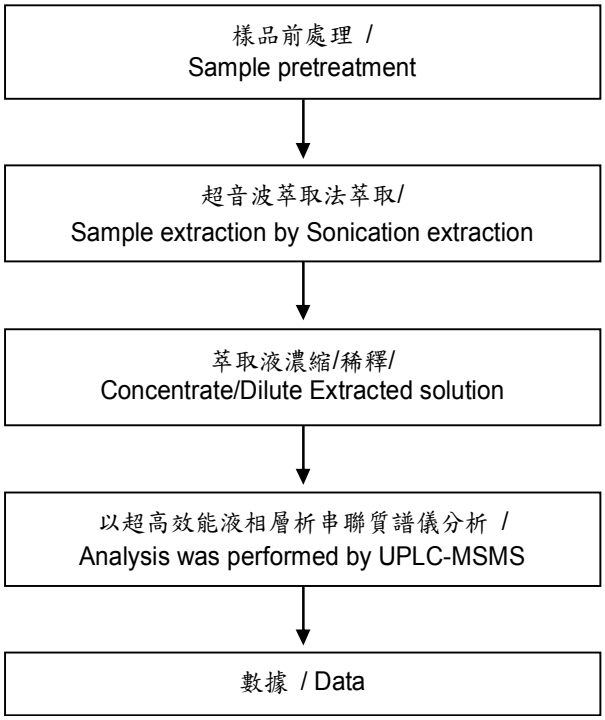
雙酚A分析流程圖 / Analytical flow chart - Bisphenol A

- 測試人員：涂雅苓 / Technician: Yaling Tu
- 測試負責人：張啟興 / Supervisor: Troy Chang



測試報告
Test Report

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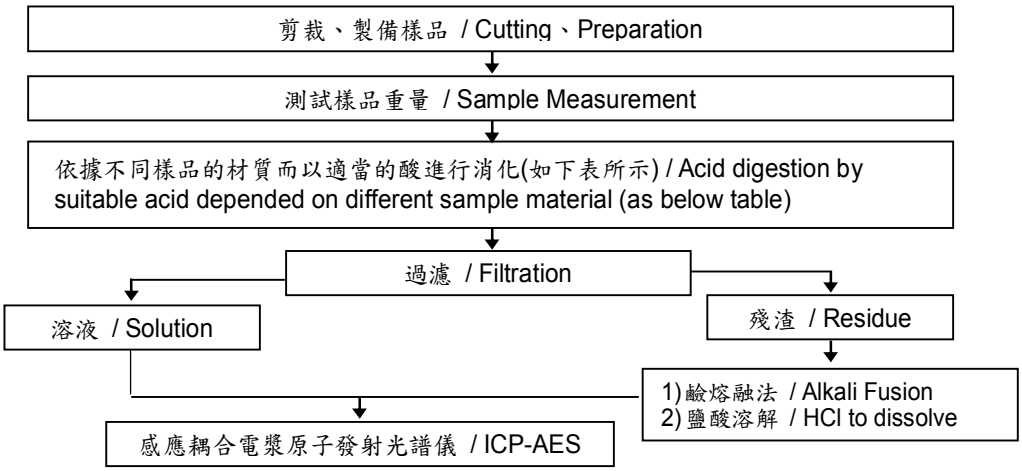
74, YEN PING SOUTH RD., TAIPEI, 100-42, TAIWAN

根據以下的流程圖之條件，樣品已完全溶解。 / These samples were dissolved totally by pre-conditioning method according to below flow chart.

- 測試人員：王志瑋 / Technician: JR Wang
- 測試負責人：張啟興 / Supervisor: Troy Chang

元素以 ICP-AES 分析的消化流程圖
(Flow Chart of digestion for the elements analysis performed by ICP-AES)



鋼,銅,鋁,焊錫 / Steel, copper, aluminum, solder	王水,硝酸,鹽酸,氫氟酸,雙氧水 / Aqua regia, HNO_3, HCl, HF, H_2O_2
玻璃 / Glass	硝酸,氫氟酸 / HNO_3/HF
金,鉑,鈀,陶瓷 / Gold, platinum, palladium, ceramic	王水 / Aqua regia
銀 / Silver	硝酸 / HNO_3
塑膠 / Plastic	硫酸,雙氧水,硝酸,鹽酸 / H_2SO_4, H_2O_2, HNO_3, HCl
其他 / Others	加入適當的試劑至完全溶解 / Added appropriate reagent to total digestion

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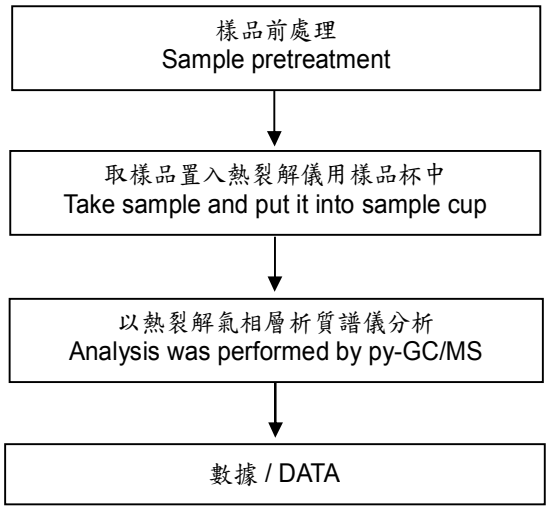
紅磷分析流程 / Analytical flow chart - Red phosphorus

- 測試人員：涂雅苓 / Technician: Yaling Tu
- 測試負責人：張啟興 / Supervisor: Troy Chang



測試報告
Test Report

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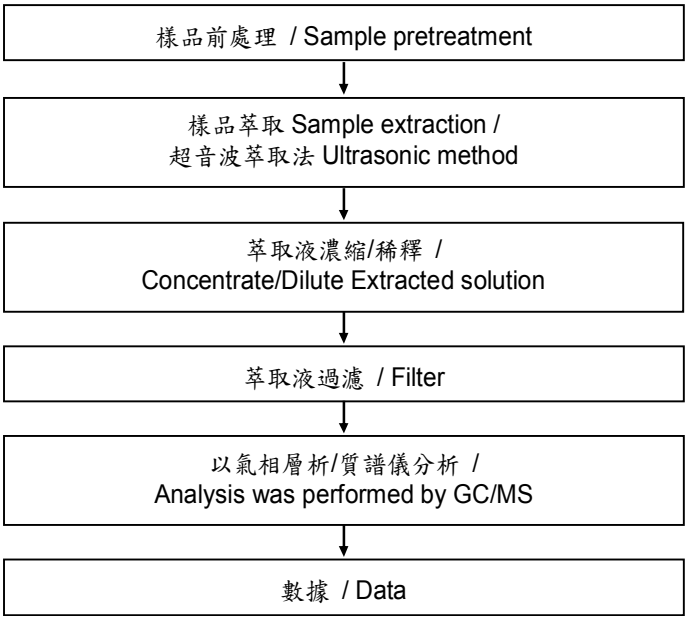
六溴環十二烷分析流程圖 / Analytical flow chart - HBCDD

- 測試人員：涂雅苓 / Technician: Yaling Tu
- 測試負責人：張啟興 / Supervisor: Troy Chang



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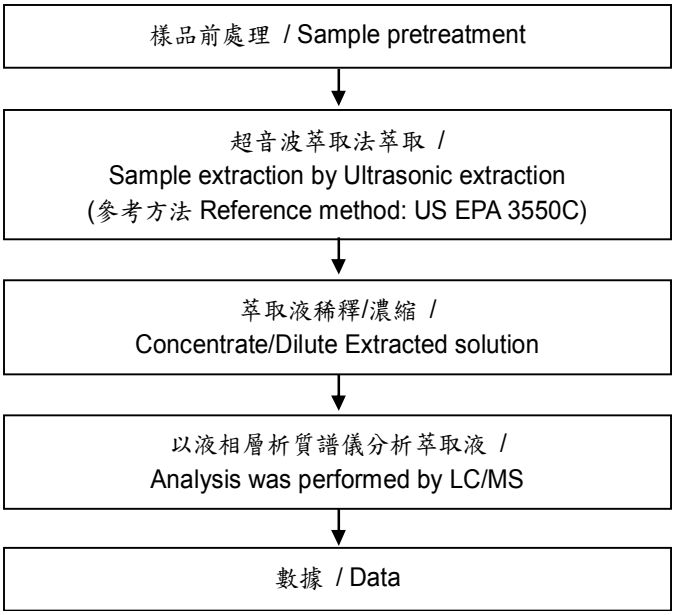
全氟辛酸/全氟辛烷磺酸分析流程圖 / Analytical flow chart - PFOA/PFOS

- 測試人員：涂雅苓 / Technician: Yaling Tu
- 測試負責人：張啟興 / Supervisor: Troy Chang



測試報告
Test Report

號碼(No.) : CE/2018/15729　　日期(Date) : 2018/01/31　　頁數(Page): 19 of 20

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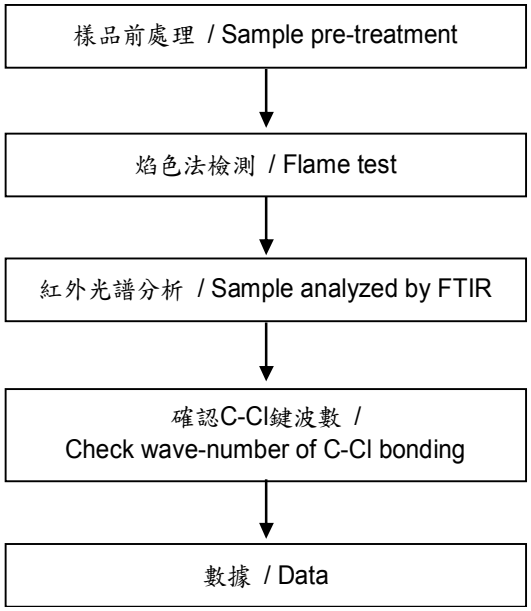
聚氯乙烯物質判定分析流程圖 / Analysis flow chart - PVC

- 測試人員：涂雅苓 / Technician: Yaling Tu
- 測試負責人：張啟興 / Supervisor: Troy Chang



測試報告
Test Report

號碼(No.) : CE/2018/15729　　日期(Date) : 2018/01/31　　

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＊ 照片中如有箭頭標示，則表示為實際檢測之樣品/部位. ＊
(The tested sample / part is marked by an arrow if it's shown on the photo.)

CE/2018/15729

** 報告結尾 (End of Report) **

产 品 质 量 证 明 书

CERTIFICATE OF QUALITY

东莞市德耀金属材料有限公司

No 6 ChuangSheng Rd,The second Shang Sha Industrial Estate
Chang an Town, Dongguan City , China
TEL:0769-81608900 FAX:0769-81608901

客户名称 Customer	合同号 Contract No.	重量(Kg) Weight(Kg)	签发日期 Date of Issue
	2014-11-13	2196	2014-11-26

牌号 Brand	标准 Standard No.	规格（mm） Dimension	状态 Temper	表面质量 Surface Quality
C5191	JIS H 3110：2000	0.20X305	H	OK

化 学 成 份 Chemical composition

		Cu	Pb	Fe	Bi	P	Sn
标准 Spec	Min		/	/	/	/	5.5
	Max		0.02	0.05	0.002	0.25	7
实测	Acteal	余量	0.005	0.005	/	0.05	5.81

尺寸公差(mm) Size Tolerance

	厚度Thickness	宽度 Width	长度Length
标准 Spec	0.25±0.01	305±0.5	/
Min	0.24	304.5	/
Max	0.26	305.5	/

机 械 性 能 Mechanical properties

项目 Item		抗拉强度(N/mm2) Tensile Strength	延伸率（%） Elongation	硬度（HV） Hardness		
标准 Spec	Min	560	11	190		
	Max	650	/	210		
实测	Actual	607	21	195		

注：本证明书请妥善保管，本产品经检验符合标准，所提供的数据均为测试值，如有质量异议，请于七天内提出，本公司将竭诚为您服务。
如经贵司冲压变形及电镀后我司不承担相关责任。

出证人 Issued By：

Test Report

No. CANEC1725962403 Date: 26 Dec 2017 Page 1 of 5

DONG GUAN DE YAO METAL MATERIALS CO.,LTD

NO.6 CHUANG SHENG ROAD,THE SECOND INDUSTRIAL SHANG SHA CHANG AN TOWN DONG GUAN CITY CHINA

The following sample(s) was/were submitted and identified on behalf of the clients as : C5191

SGS Job No. :	CP17-069239 - GZ
Date of Sample Received :	15 Dec 2017
Testing Period :	15 Dec 2017 - 21 Dec 2017
Test Requested :	Selected test(s) as requested by client.
Test Method :	Please refer to next page(s).
Test Results :	Please refer to next page(s).
Conclusion :	Based on the performed tests on submitted sample(s), the results of Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs) comply with the limits as set by RoHS Directive (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

Violet Shi

Violet,Shi
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 f (86-20) 82075113 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 f (86-20) 82075113 e sgs.china@sgs.com

Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
SN1	CAN17-259624.002	Copper-colored metal sheet

Remarks :

(1) 1 mg/kg = 1 ppm = 0.0001%

(2) MDL = Method Detection Limit

(3) ND = Not Detected (< MDL)

(4) "-" = Not Regulated

RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU

Test Method : With reference to IEC 62321-4:2013+A1:2017, IEC62321-5:2013, IEC 62321-7-1:2015 and IEC 62321-6:2015 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	21
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

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

Notes :

(1) The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863.
IEC 62321 series is equivalent to EN 62321 series
http://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101::::FSP_ORG_ID,FSP_LANG_ID:1258637,25

(2) ▼= a. The sample is positive for CrVI if the CrVI concentration is greater than 0.13 µg/cm2. The sample coating is considered to contain CrVI

b. The sample is negative for CrVI if CrVI is ND (concentration less than 0.10 µg/cm2). The coating is considered a non-CrVI based coating

c. The result between 0.10 µg/cm2 and 0.13 µg/cm2 is considered to be inconclusive - unavoidable coating variations may influence the determination

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

Remark: Results & photo(s) of this report refer to test report CANEC1725420203.

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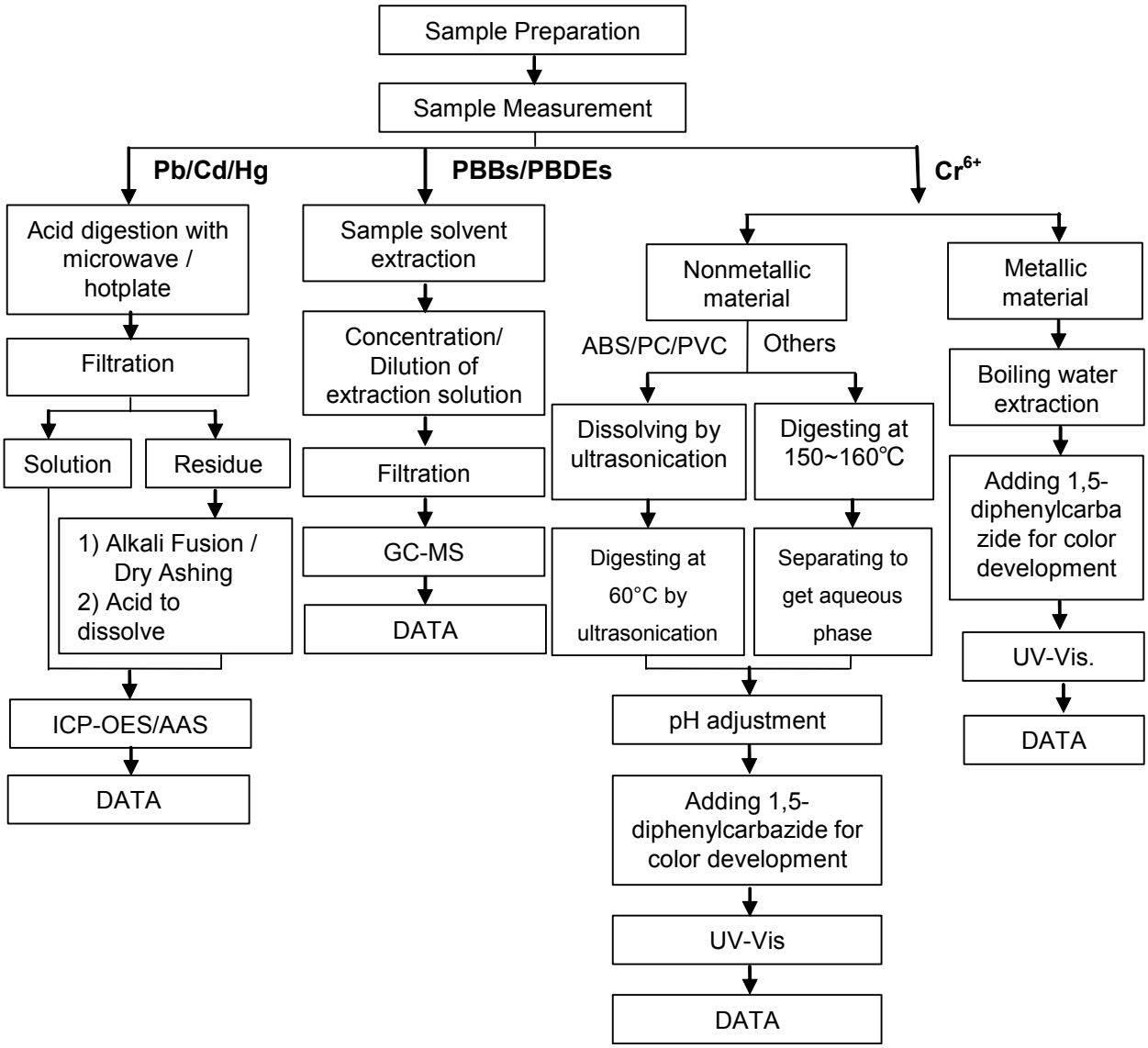
ATTACHMENTS

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

1) Name of the person who made testing: Edith Zhang / Sunny Hu
2) Name of the person in charge of testing: Bella Wang / Qiong Liu
3) These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr^{6+} and PBBs/PBDEs test method excluded).



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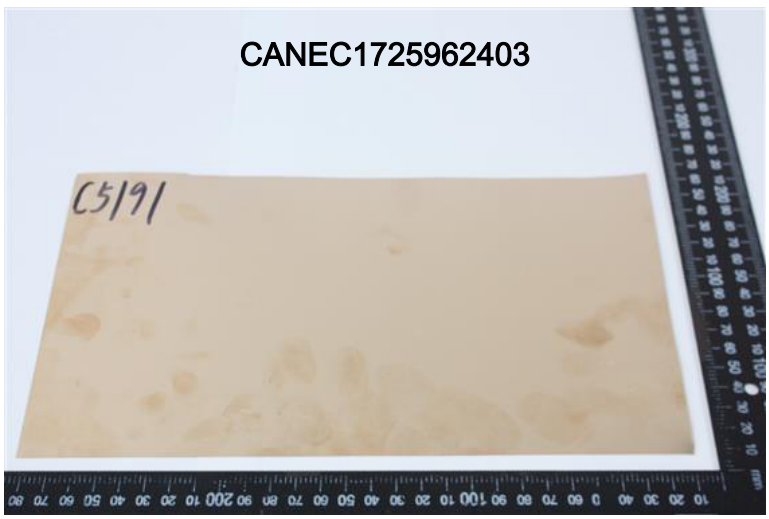
Sample photo:



CAN17-259624.002

SGS authenticate the photo on original report only

*** End of Report ***

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Test Report

DONGGUAN CITY YIHAI ELECTROPLATING CO.,LTD

SHAJIAO COMMUNITY LINHAI INDUSTRIAL ROAD HUMEN TOWN DONGGUAN CITY CHINA

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

SGS Job No. :	CP17-024342 - SZ
Date of Sample Received :	09 May 2017
Testing Period :	09 May 2017 - 15 May 2017
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

Almay Gao
Approved Signatory

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Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
SN1	CAN17-082112.001	Silvery plated metal

Remarks :

(1) 1 mg/kg = 1 ppm = 0.0001%

(2) MDL = Method Detection Limit

(3) ND = Not Detected (< MDL)

(4) "-" = Not Regulated

RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU

Test Method : (1)With reference to IEC 62321-5:2013, determination of Cadmium by ICP-OES.
(2)With reference to IEC 62321-5:2013, determination of Lead by ICP-OES.
(3)With reference to IEC 62321-4:2013, determination of Mercury by ICP-OES.
(4)With reference to IEC 62321-7-1:2015 , determination of Hexavalent Chromium by Colorimetric Method using UV-Vis.

Test Item(s)	Limit	Unit	MDL	*001*
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1,000	mg/kg	2	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.
IEC 62321 series is equivalent to EN 62321 series
http://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101::::FSP_ORG_ID,FSP_LANG_ID:1258637,25

(2) ▾= a. The sample is positive for CrVI if the CrVI concentration is greater than 0.13 µg/cm2. The sample coating is considered to contain CrVI
b. The sample is negative for CrVI if CrVI is ND (concentration less than 0.10 µg/cm2). The coating is considered a non-CrVI based coating
c. The result between 0.10 µg/cm2 and 0.13 µg/cm2 is considered to be inconclusive - unavoidable coating variations may influence the determination
Information on storage conditions and production date of the tested sample is unavailable and thus Cr(VI) results represent status of the sample at the time of testing.

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Elementary Analysis

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

Test Item(s)	Unit	MDL	*001*
Beryllium (Be)	mg/kg	5	ND

PFOA & PFOS (Perfluorooctanoic acid & Perfluorooctane sulfonates)

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

Test Item(s)	CAS NO.	Unit	MDL	001
Perfluorooctanoic acid (PFOA)	335-67-1	μg/m²	1.0	ND
Perfluorooctane Sulfonates (PFOS)^	-	μg/m²	1.0	ND

Notes :

(1) ^ PFOS refer to Perfluorooctanesulfonic acid and its derivatives including Perfluoroctanesulfonic acid, Perfluoroctane sulfonamide, N-Methylperfluoroctane sulfonamide, N-Ethylperfluoroctane sulfonamide, N-Methylperfluoroctane sulfonamidoethanol and N-Ethylperfluoroctane sulfonamidoethanol.

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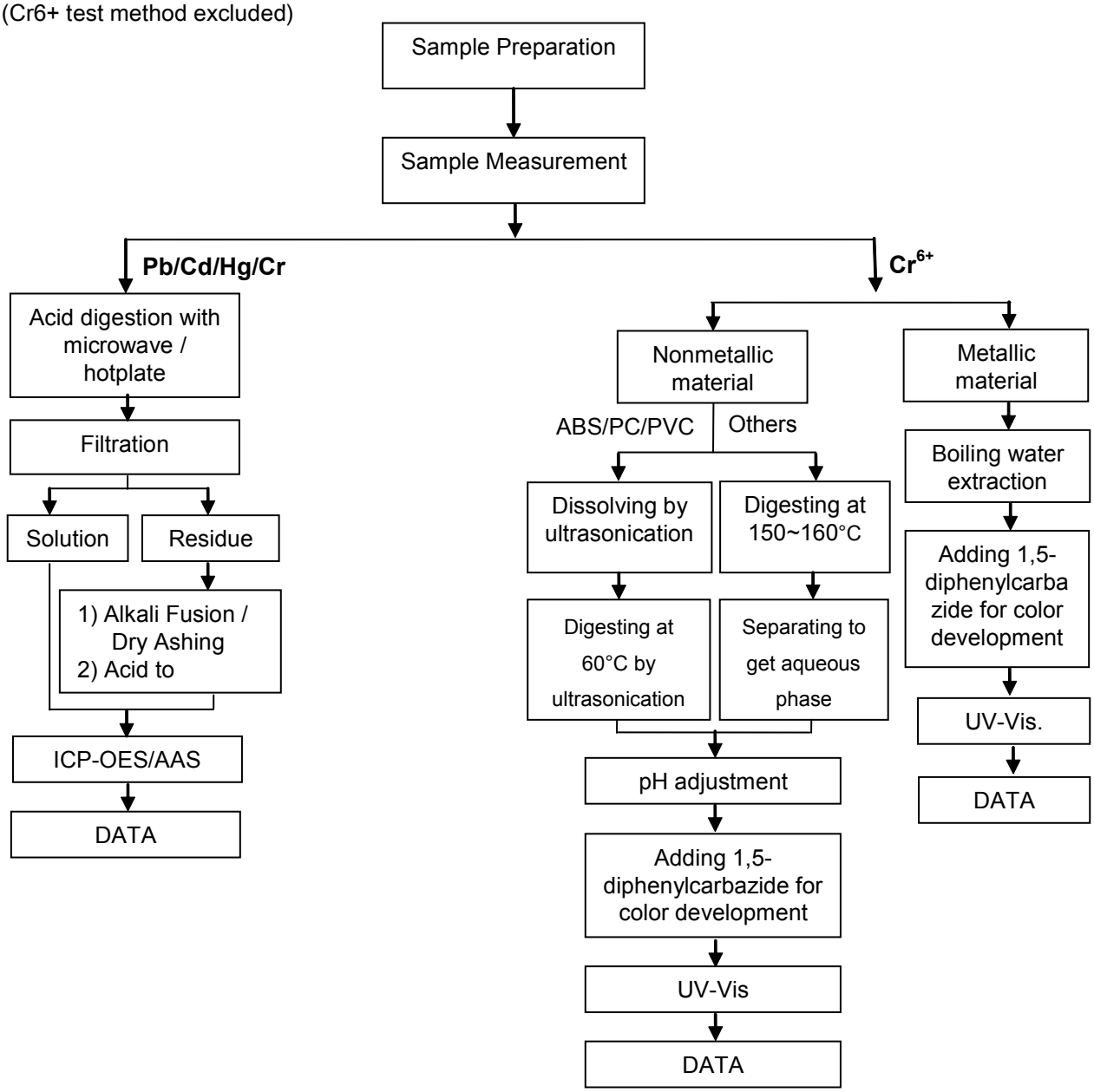
ATTACHMENTS

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

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



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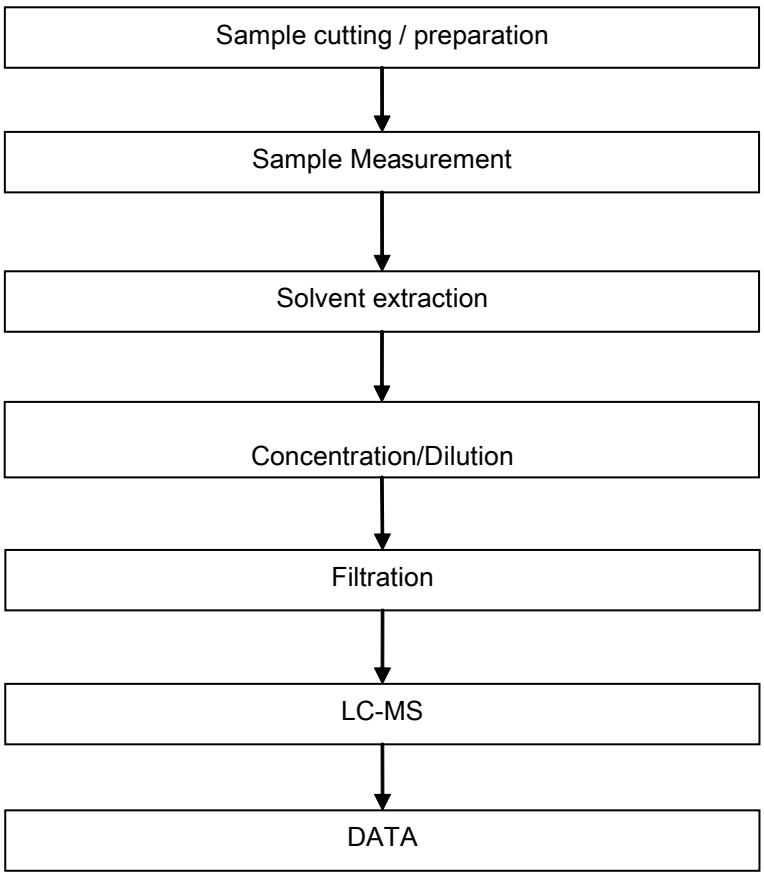
PFOA / PFOS Testing Flow Chart

1) Name of the person who made testing: Zhihong Wang
2) Name of the person in charge of testing: Qiong Liu



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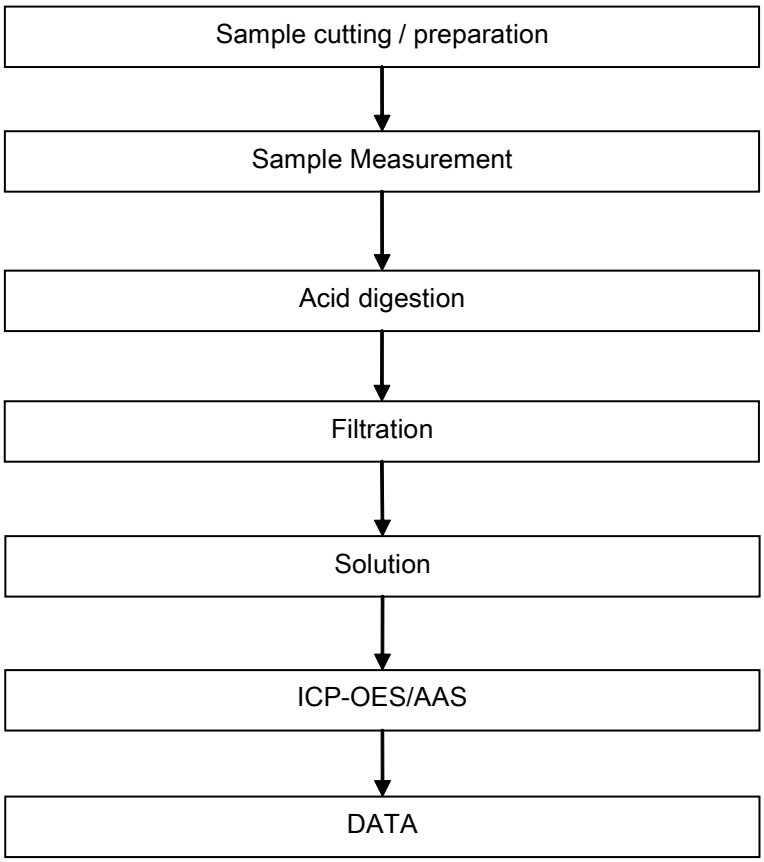
ATTACHMENTS

Elementary Testing Flow Chart

1) Name of the person who made testing: Edith Zhang
2) Name of the person in charge of testing: Bella Wang



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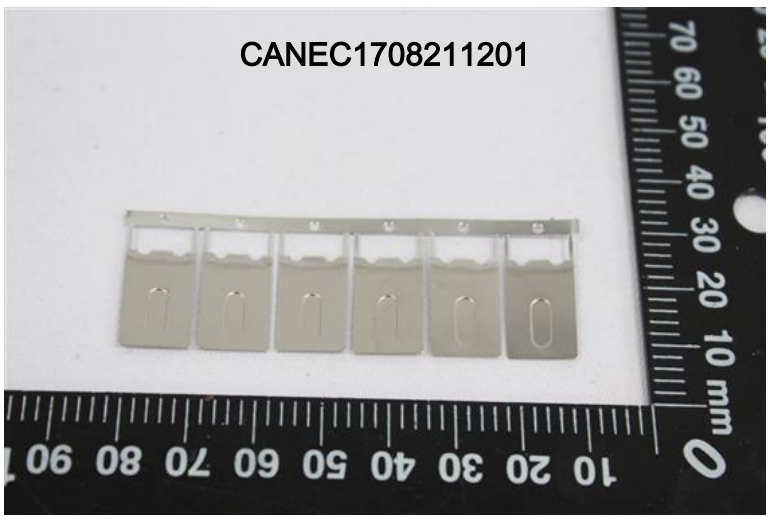
Sample photo:



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Test Report

DONGGUAN CITY YIHAI ELECTROPLATING CO.,LTD

SHAJIAO COMMUNITY LINHAI INDUSTRIAL ROAD HUMEN TOWN DONGGUAN CITY CHINA

The following sample(s) was/were submitted and identified on behalf of the clients as : MATTE TIN PLATING

SGS Job No. :	CP17-024342 - SZ
Date of Sample Received :	09 May 2017
Testing Period :	09 May 2017 - 15 May 2017
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

Almay Gao
Approved Signatory

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Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
SN1	CAN17-082112.004	Silvery plated metal

Remarks :

(1) 1 mg/kg = 1 ppm = 0.0001%

(2) MDL = Method Detection Limit

(3) ND = Not Detected (< MDL)

(4) "-" = Not Regulated

RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU

Test Method : (1)With reference to IEC 62321-5:2013, determination of Cadmium by ICP-OES.
(2)With reference to IEC 62321-5:2013, determination of Lead by ICP-OES.
(3)With reference to IEC 62321-4:2013, determination of Mercury by ICP-OES.
(4)With reference to IEC 62321-7-1:2015 , determination of Hexavalent Chromium by Colorimetric Method using UV-Vis.

Test Item(s)	Limit	Unit	MDL	*004*
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1,000	mg/kg	2	9
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.
IEC 62321 series is equivalent to EN 62321 series
http://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101::::FSP_ORG_ID,FSP_LANG_ID:1258637,25

(2) ▾= a. The sample is positive for CrVI if the CrVI concentration is greater than 0.13 µg/cm2. The sample coating is considered to contain CrVI
b. The sample is negative for CrVI if CrVI is ND (concentration less than 0.10 µg/cm2). The coating is considered a non-CrVI based coating
c. The result between 0.10 µg/cm2 and 0.13 µg/cm2 is considered to be inconclusive - unavoidable coating variations may influence the determination
Information on storage conditions and production date of the tested sample is unavailable and thus Cr(VI) results represent status of the sample at the time of testing.

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PFOA & PFOS (Perfluorooctanoic acid & Perfluorooctane sulfonates)

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

Test Item(s)	CAS NO.	Unit	MDL	004
Perfluorooctanoic acid (PFOA)	335-67-1	μg/m²	1.0	ND
Perfluorooctane Sulfonates (PFOS)^	-	μg/m²	1.0	ND

Notes :

(1) ^ PFOS refer to Perfluorooctanesulfonic acid and its derivatives including Perfluoroctanesulfonic acid, Perfluoroctane sulfonamide, N-Methylperfluoroctane sulfonamide, N-Ethylperfluoroctane sulfonamide, N-Methylperfluoroctane sulfonamidoethanol and N-Ethylperfluoroctane sulfonamidoethanol.

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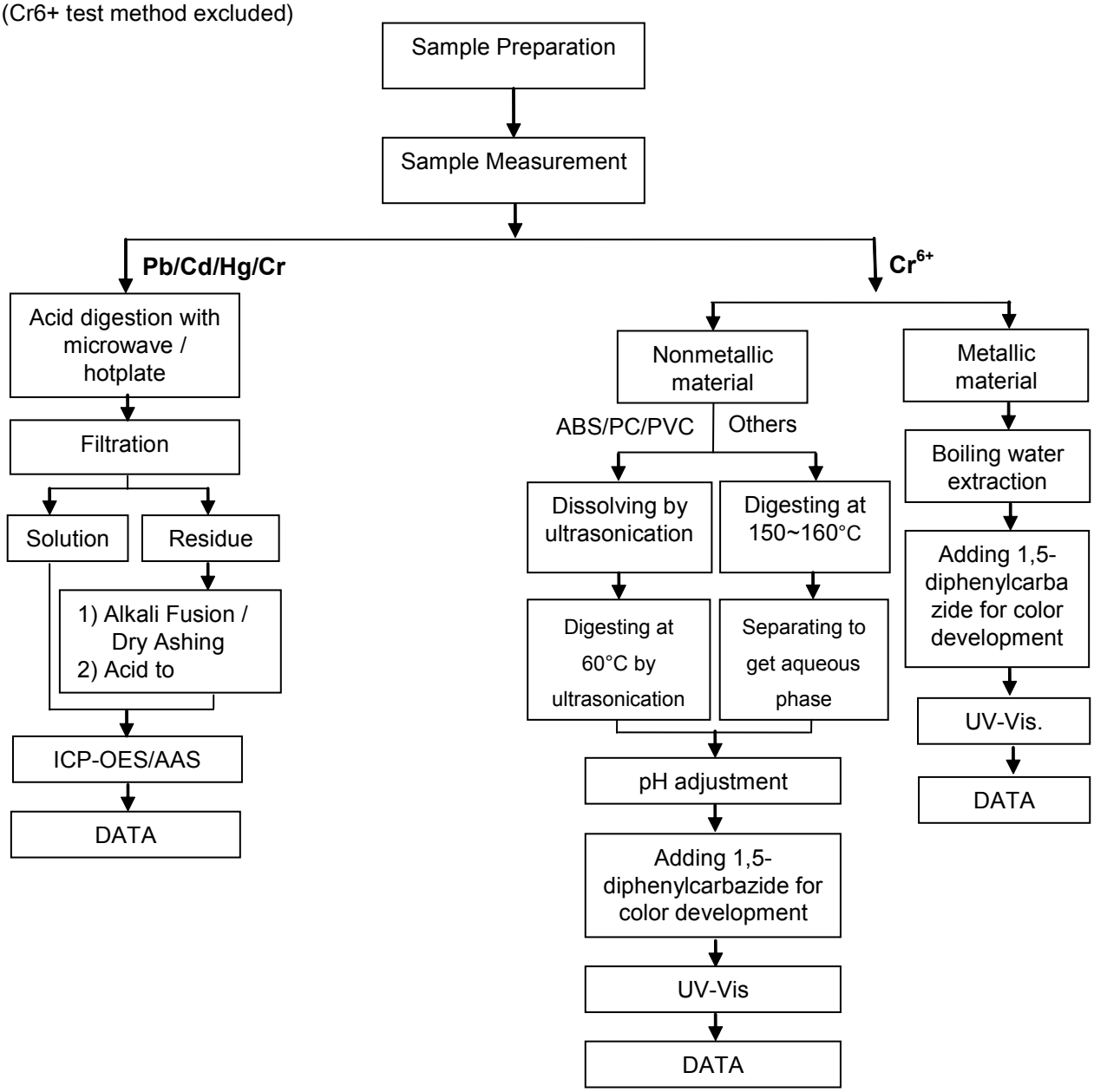
ATTACHMENTS

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

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



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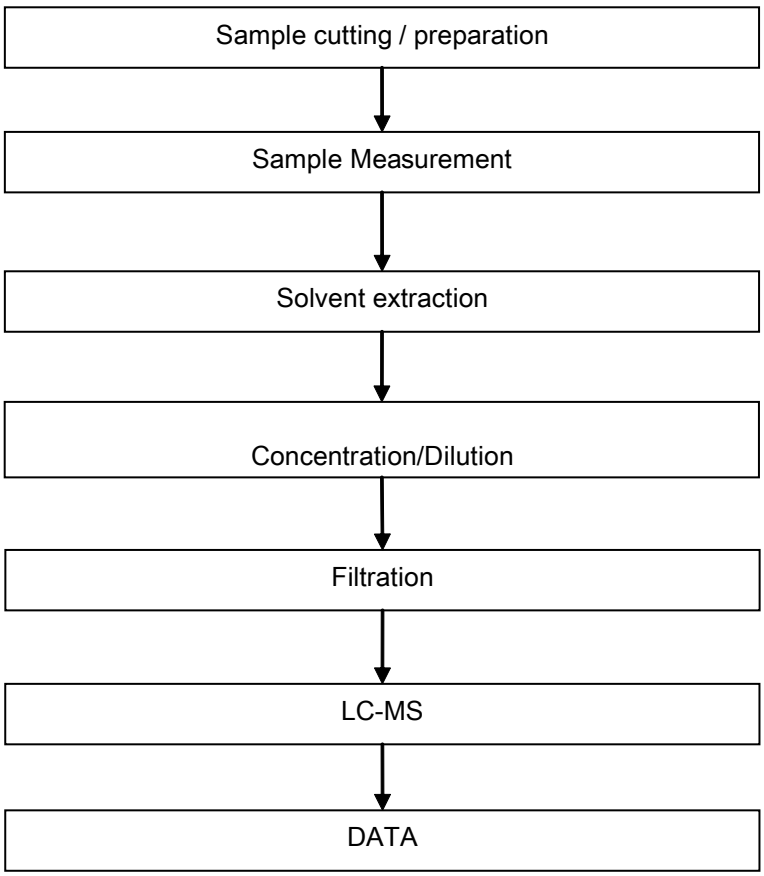
ATTACHMENTS

PFOA / PFOS Testing Flow Chart

1) Name of the person who made testing: Zhihong Wang
2) Name of the person in charge of testing: Qiong Liu



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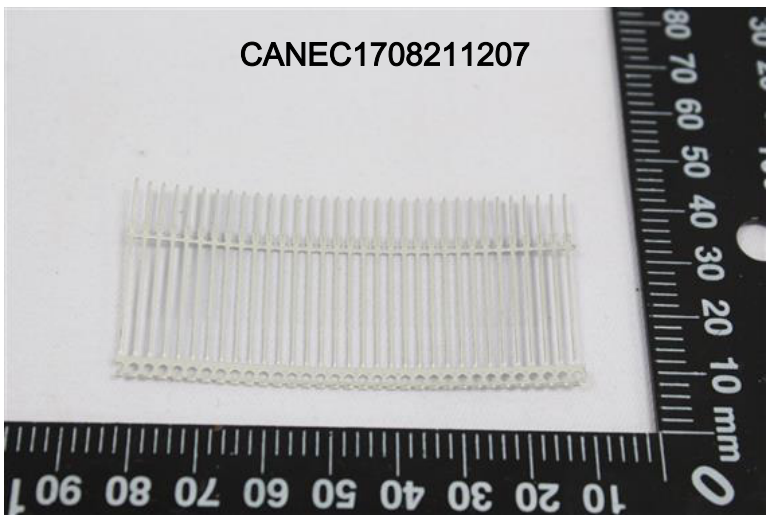
Sample photo:



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DONGGUAN CITY YIHAI ELECTROPLATING CO.,LTD

SHAJIAO COMMUNITY LINHAI INDUSTRIAL ROAD HUMEN TOWN DONGGUAN CITY CHINA

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

SGS Job No. :	CP17-024342 - SZ
Date of Sample Received :	09 May 2017
Testing Period :	09 May 2017 - 15 May 2017
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

Almay Gao
Approved Signatory

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Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
SN1	CAN17-082112.002	Golden platd metal

Remarks :

(1) 1 mg/kg = 1 ppm = 0.0001%

(2) MDL = Method Detection Limit

(3) ND = Not Detected (< MDL)

(4) "-" = Not Regulated

RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU

Test Method : (1)With reference to IEC 62321-5:2013, determination of Cadmium by ICP-OES.
(2)With reference to IEC 62321-5:2013, determination of Lead by ICP-OES.
(3)With reference to IEC 62321-4:2013, determination of Mercury by ICP-OES.
(4)With reference to IEC 62321-7-1:2015 , determination of Hexavalent Chromium by Colorimetric Method using UV-Vis.

Test Item(s)	Limit	Unit	MDL	*002*
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1,000	mg/kg	2	27
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.
IEC 62321 series is equivalent to EN 62321 series
http://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101::::FSP_ORG_ID,FSP_LANG_ID:1258637,25

(2) ▾= a. The sample is positive for CrVI if the CrVI concentration is greater than 0.13 µg/cm2. The sample coating is considered to contain CrVI

b. The sample is negative for CrVI if CrVI is ND (concentration less than 0.10 µg/cm2). The coating is considered a non-CrVI based coating

c. The result between 0.10 µg/cm2 and 0.13 µg/cm2 is considered to be inconclusive - unavoidable coating variations may influence the determination

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

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PFOA & PFOS (Perfluorooctanoic acid & Perfluorooctane sulfonates)

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

Test Item(s)	CAS NO.	Unit	MDL	002
Perfluorooctanoic acid (PFOA)	335-67-1	µg/m²	1.0	ND
Perfluorooctane Sulfonates (PFOS)^	-	µg/m²	1.0	ND

Notes :

(1) ^ PFOS refer to Perfluorooctanesulfonic acid and its derivatives including Perfluoroctanesulfonic acid, Perfluoroctane sulfonamide, N-Methylperfluoroctane sulfonamide, N-Ethylperfluoroctane sulfonamide, N-Methylperfluoroctane sulfonamidoethanol and N-Ethylperfluoroctane sulfonamidoethanol.

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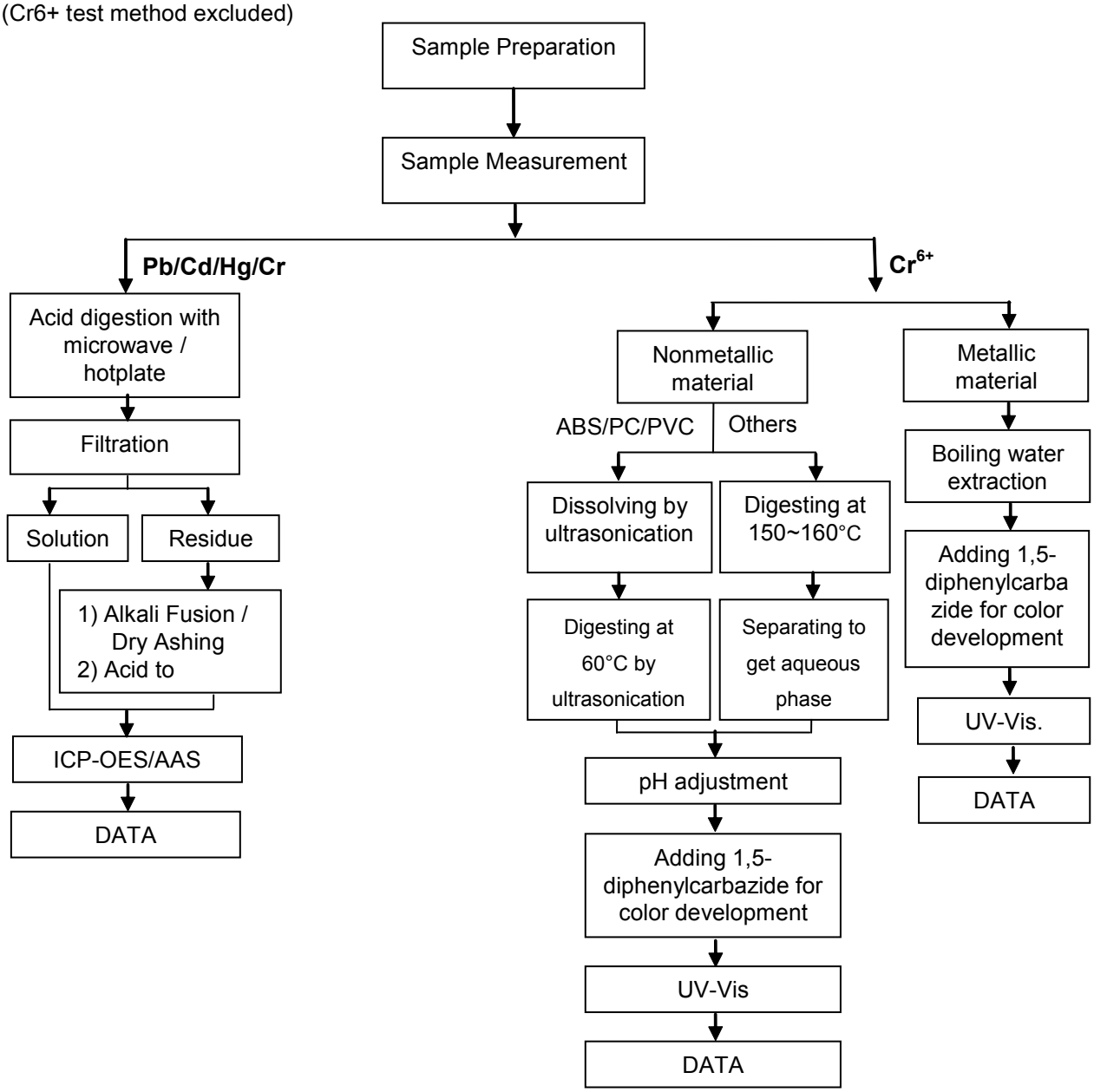
ATTACHMENTS

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

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



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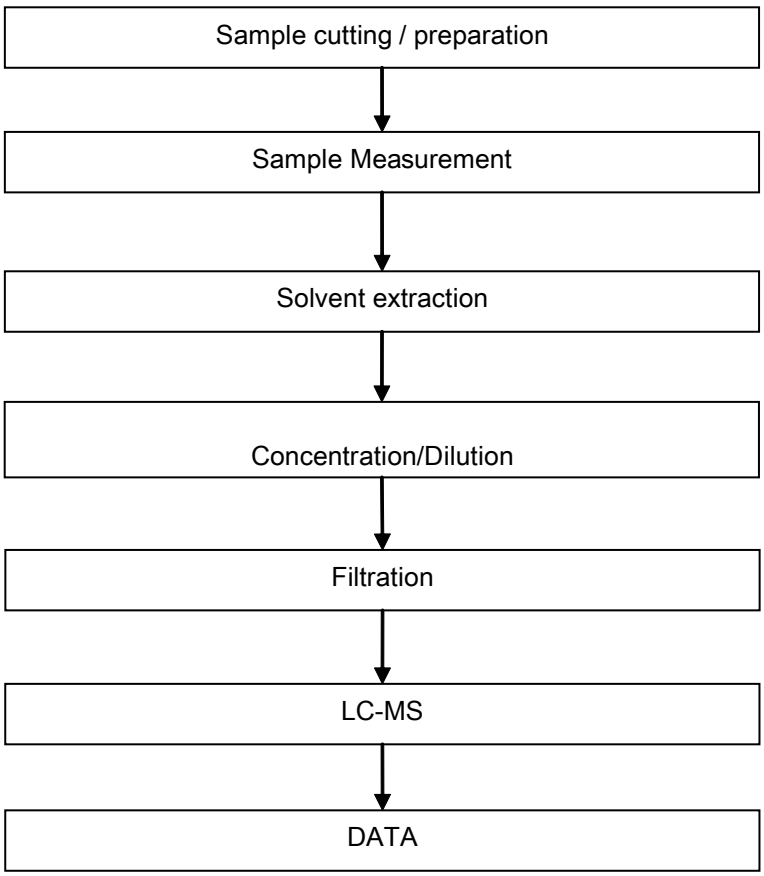
ATTACHMENTS

PFOA / PFOS Testing Flow Chart

1) Name of the person who made testing: Zhihong Wang
2) Name of the person in charge of testing: Qiong Liu



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Sample photo:

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