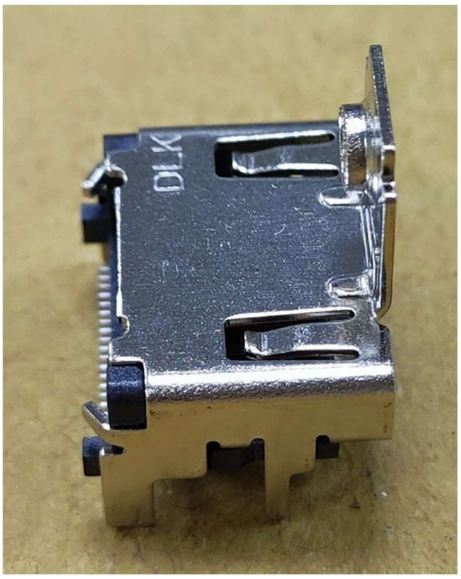

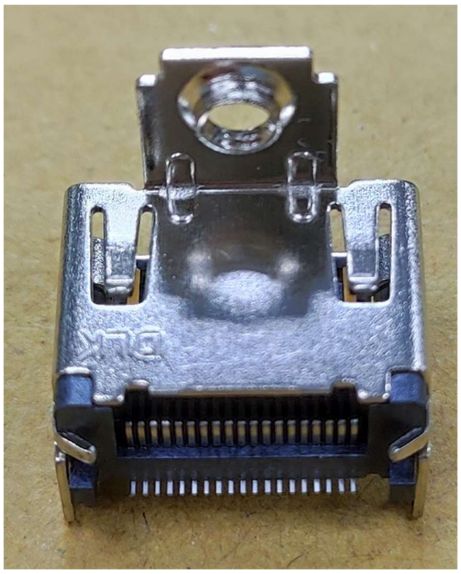

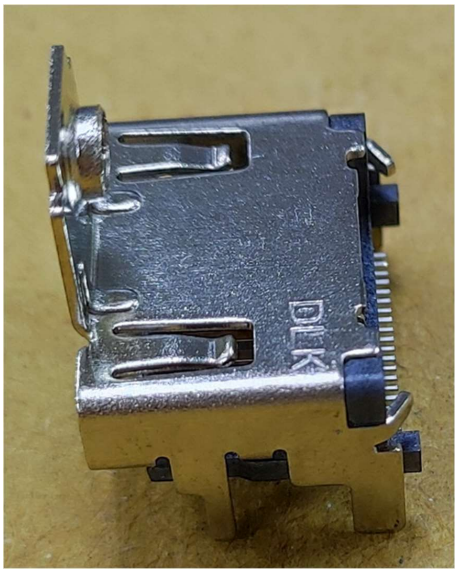

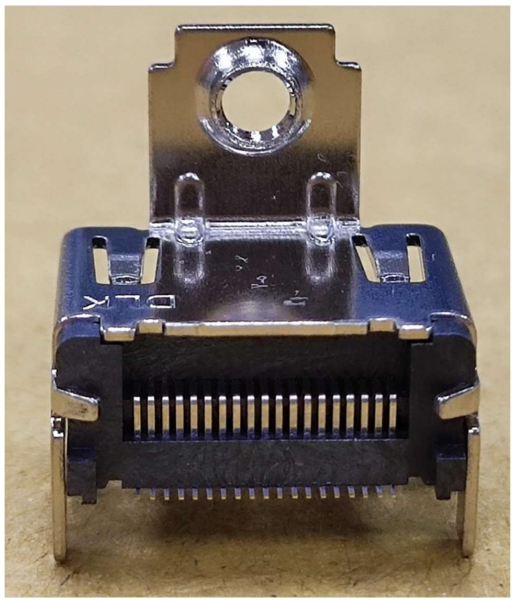

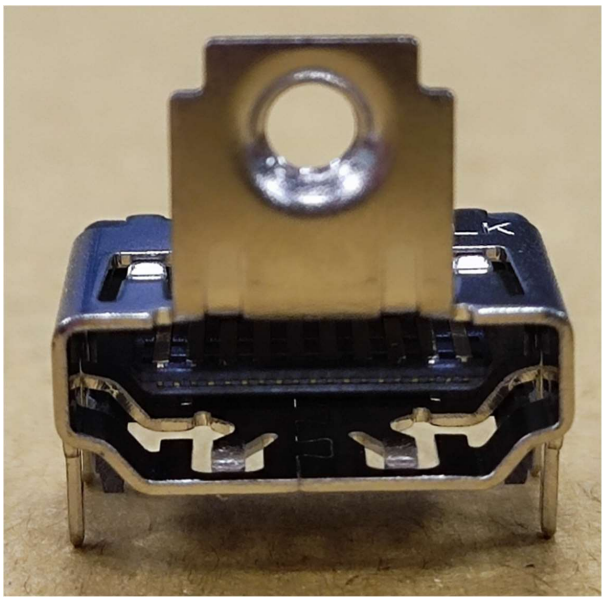

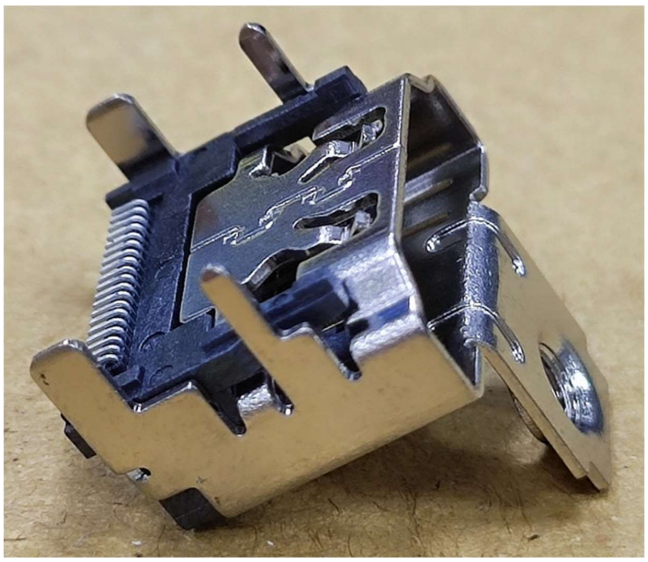

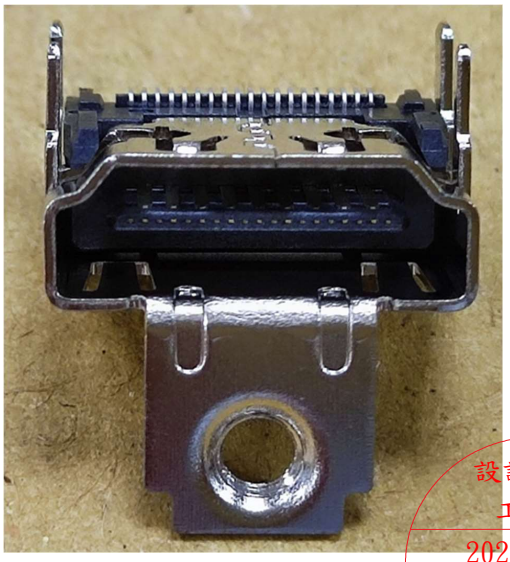

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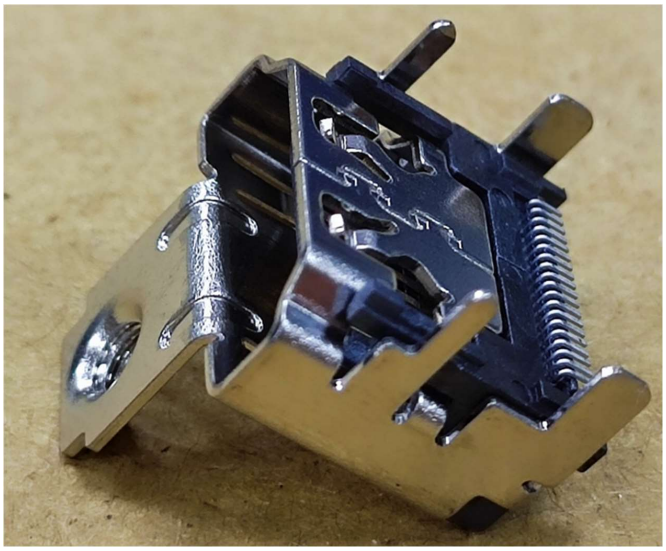
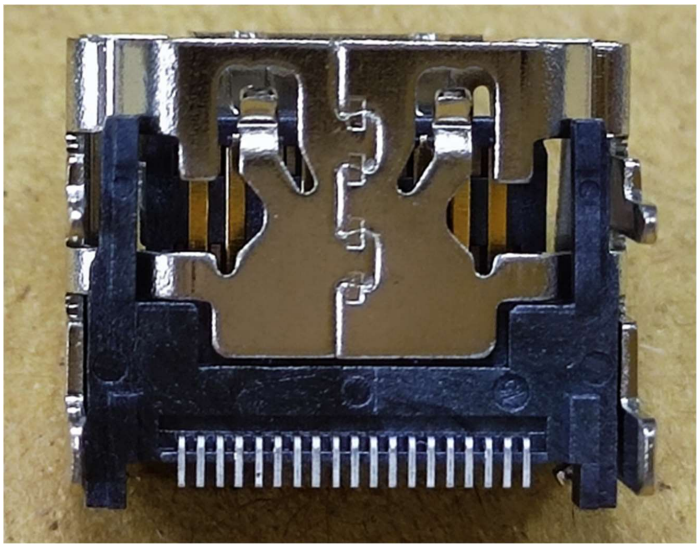
工程課
2023.11.20
發行
宜鍊科技開發股份有限公司





設計驗證
工程課
2023.11.20
發行
鈺啟科技開發股份有限公司

承　认　书

SPECIFICATION FOR APPROVAL

客　　户：钰纬科技开发股份有限公司
CUSTOMER

品　　名：HDMI A/F R/A 6.2H CONN
DESCRIPTION

客户料号：3FF01915810 (F0292)
BUYER P/N.

DLK 料号：HDM29A-19BM4RN10
DLK P/N

客户承认意见栏 CUSTOMER APPROVED BY

設計驗證
工程課
2023.11.20
發行
鈺緯科技開發股份有限公司

昆山德力康电子科技有限公司
KUNSHAN DLK ELECTRONICS TECHNOLOGY CO.,LTD
地址：昆山市淀山湖镇黄浦江南路 278 号
TEL：0512-57498666　　FAX：0512-57498555

核准		审核		制作	蒋 召	日期	2023 年 11 月 17 日

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6. 环保资料

Environmental protection information

7. 环境管理物质不使用证书

Environmental management material don't use certificate

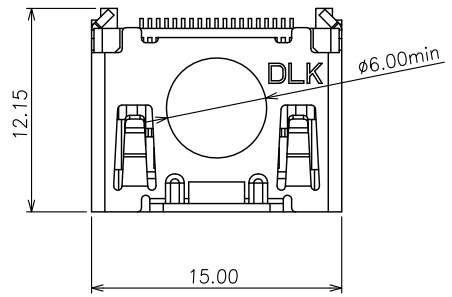
COMPONENT SPEC VERSION RECORD

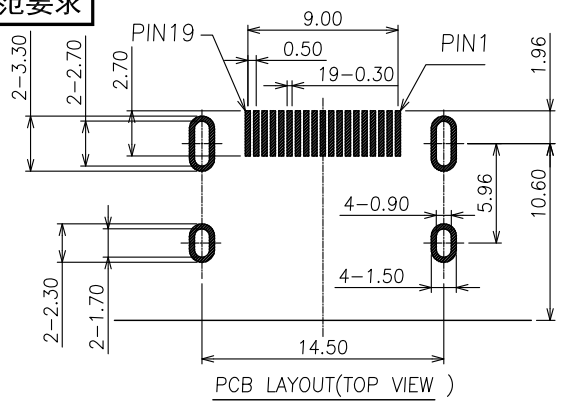
CUSTOMER PART NO.	3FF01915810	DLK PART NO.	HDM29A-19BM4RN10

VER	MINUTE OF CHANGES	DLK CHECK	RELEASE DATE
A	CHECKED AND RELEASED	邱宇	2023-11-17

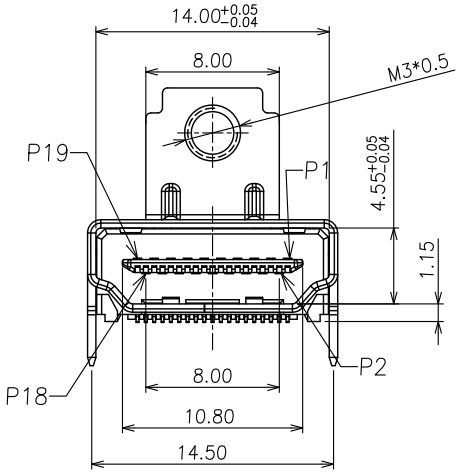
符合"DLK环境管理物质技术标准"，符合HDMI协会规范要求

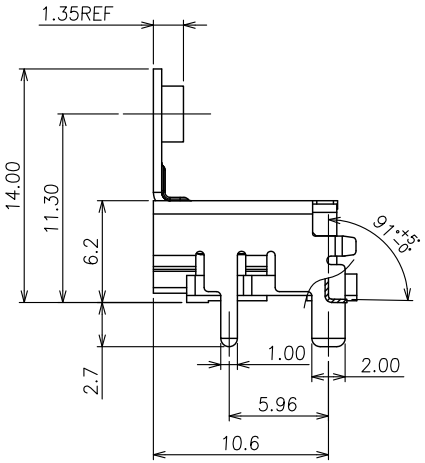
工程变更通知单 ECN(DCN) NO.	版本 REV	日期 DATE	说明 DESCRIPTION	改变 CHANGE	承认 APPRO.
———	X0	20230921	NEW	———	———
———	X1	20231027	按客户要求更新PCB LAYOUT	蒋 召	段国强

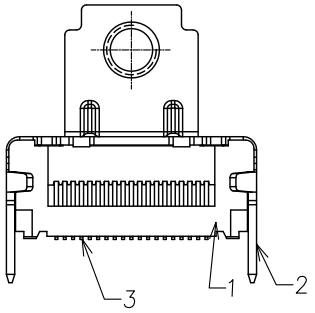


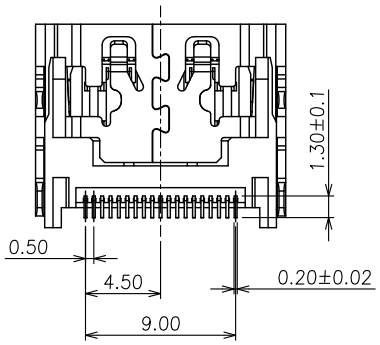


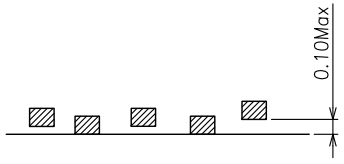
PCB LAYOUT(TOP VIEW)











COPLARNITY

HDM29 A-19 B ** R N1 0
① ② ③④ ⑤⑥⑦

① PRODUTION CODE（产品编码）：
HDM29: R/A 6.2H
② CHARACTER（特征）：
A: R/A SMT TYPE
③ POSITION （位数）：
19:19PIN
④ COLOR OF HOUSING(本体颜色）：
B:BLACK COLOR
⑤ PLATING OF CONTACT(端子电镀）：
M1:Au 1u"AND MATTE TIN PLATED
→ M4:Au 15u"AND MATTE TIN PLATED
⑥ PACKAGE(包装）：
R :TAPE&REEL PACKAGE
⑦ PLATING OF SHELL(外壳电镀）：
N1:NI PLATD

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紅緯科技開發股份有限公司

NOTE
1.CONTACT VOLTAGE RATING:40V
2.CONTACT CURRENT RATING:0.5A
3.CONTACT RESISTANCE:30mΩ Max
4.DIELECTRIC WITHSTANDING VOLTAGE:500 V R.M.S.
5.INSULATION RESISTANCE 100 MEGOHMS Min
6.TEMPEROTURE RANGE:-55°C ~+105°C

3FF01915810(F0292)

NO.	ITEM	Q'TY	DESCRIPTION	FINISH
3	CONTACT	19	COPPER ALLOY	PLATED Au
2	SHELL	1	COPPER ALLOY	PLATED NI
1	HOUSING	1	LCP	UL94V-0,Black

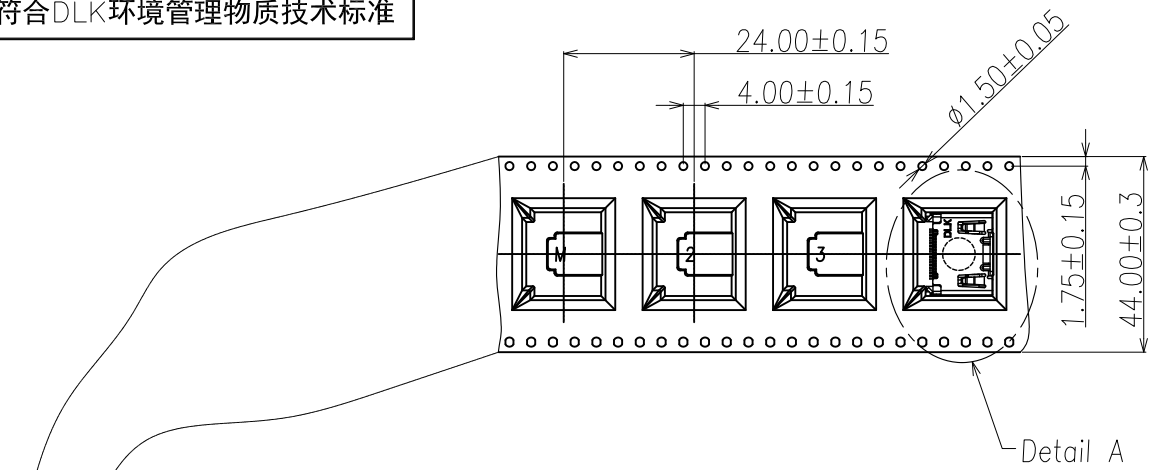
GENERAL TOLERANCE UNLESS OTHERWISE NOTED	
Angle	±1°
X.	±0.30
.X	±0.25
.XX	±0.15
.XXX	±0.10
A4	

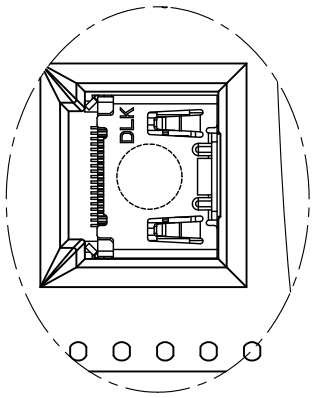
德力康电子科技有限公司
DLK DELIKANG ELECTRONICS TECHNOLOGY CO.,LTD

C	名称 TITLE:	HDMI A/F R/A 6.2H(11.30)19PIN CONN.			
档案名称 FILE NAME.	C-HDM29-00-00		料号 PART NO:	HDM29A-19BM4RN10	
DRAWING	蒋 召	CHECKED	覃智森	APPROVED	段国强
UNIT:	mm	SCALE	1:1	SHEET: 1 of 1	

符合DLK环境管理物质技术标准

工程变更通知单 ECN(DCN) NO.	版本 REV	日期 DATE	说明 DESCRIPTION	改变 CHANGE	承认 APPRO.
————	A	20100318	NEW	——	——
KSECN11135	B	20111014	修改包装方式及数量	郭孝振	严钊
KSECN16016	C	20160303	修改包装方式及数量 △C	陈浩泽	严成旺





Detail A(2:1)

包装说明：

1.数量：

△C 每盘=200Pcs(200Pcs/reel)

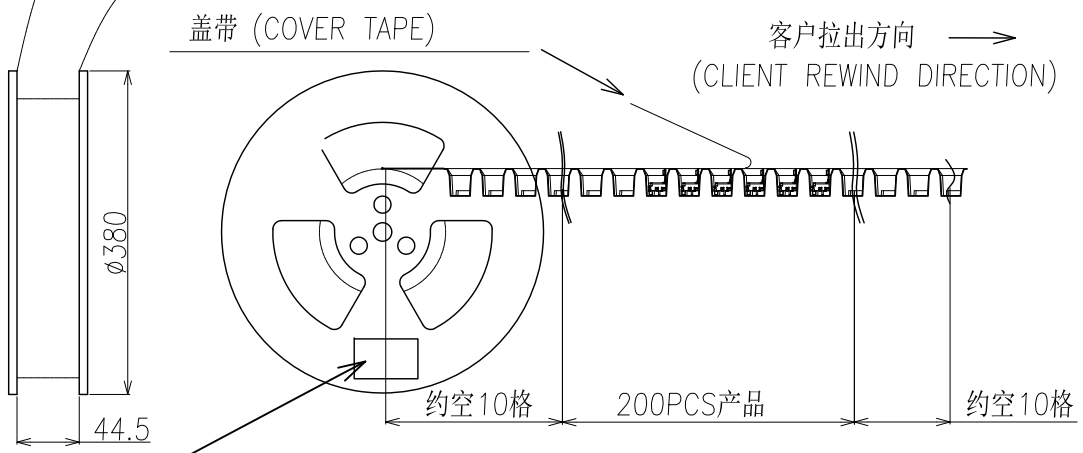
每箱=1200Pcs(1200Pcs/box)

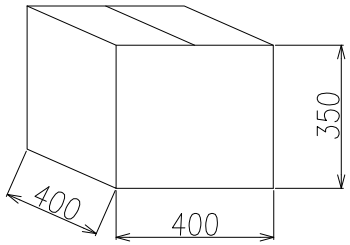
2.每盘包装前后各留约10格，每盘200Pcs，每6盘用PE袋包好(每盘与每盘之间加气泡垫隔开），加适量干燥剂，封口后再放入纸箱；

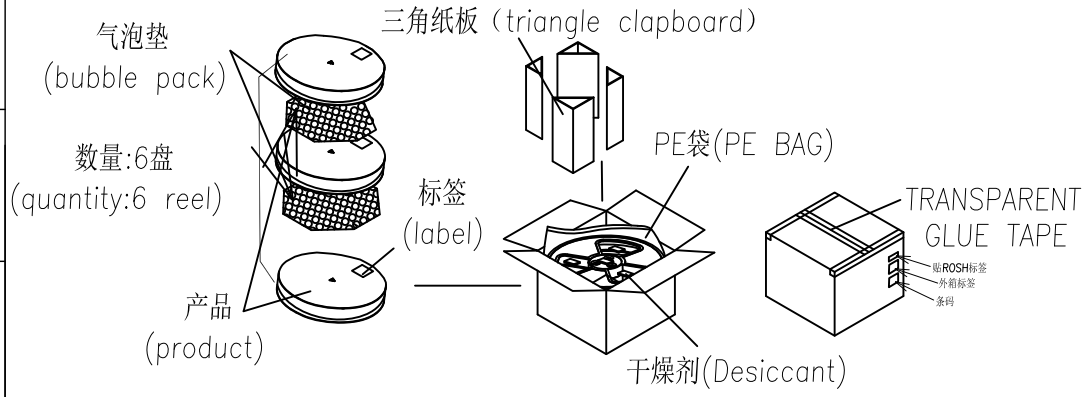
3.注意包材脏污破损不可使用，包装过程中注意不可碰伤刮伤产品；

4.外箱材质为K=K，破裂强度为6Kgf Min；

5.采用自粘盖带，拉力范围在30-120g/f







GENERAL TOLERANCE UNLESS OTHERWISE NOTED	
Angle	±1°
X.	±0.25
.X	±0.15
.XX	±0.10
.XXX	±0.05
A4	

德力康电子科技有限公司
DELIKANG ELECTRONICS TECHNOLOGY CO.,LTD

P	名称 TITLE:	HDMI A/F R/A 6.2H CONN.	料号 PART NO:	HDM29A-19BM4RN10	
档案名称 FILE NAME.		P-HDM29-00-00	PART NO: (OLD)	————	
DRAWING	陈浩泽	CHECKED	———	APPROVED	严成旺
UNIT:	mm	SCALE	1:1	SHEET: 1 of 1	

PRODUCT SPECIFICATION

1.0 Applicable Connector: Applicable to DLK HDMI Series connector.

（适用于德力康公司 HDMI 系列连接器.）

Scope: This specification covers the requirements for product performance and test methods of DLK's HDMI Series Connectors of the part numbers specified as bellow.

（覆盖范围：此规格书内容含盖德力康公司 HDMI 系列连接器产品性能及测试方法。）

2.0Rating（要求）：

2.1Contact Current Rating: 0.5Ampere Minimum.

（额定电流：0.5A）

2.2Contact Voltage Rating: 40Volt Maximum.

（额定电压：＜40V）

2.3Temperature Range: -55℃ to +105℃

（温度范围：-55℃ 至 +105℃）

3.0Test Condition（测试条件）：

All tests shall be performed as bellow conditions unless otherwise specified.

（所有的测试都在下列条件下完成，除非另有说明.）

3.1Temperature range : +25℃

（ 温度：+25℃）

3.2Humidity range: 40%

（湿度：40%）

3.3Atmospheric Pressure : 650 mm to 800 mm (866 to 1066mbar)

（大气压力：650 mm 至 800 mm (866 to 1066 兆帕)）

4.0Test Methods and Requirements（测试方法和要求）：

4.1Examination of product（检查尺寸）:

Item （条目）	Test Description （测试内容）	Test Methods （测试方法）	Requirement （要求）
4.1.1	Examination of product Outward Appearance Structure （检查尺寸）	Shall be confirm with eyes in accordance with each drawing. Shall be confirmed by using proper measuring instruments.（使用测量工具，按图面要求检查）	Outward appearance shall be good without such injurious problem structure shall be meet the design and dimensional requirements of drawing（没有任何一项在图面要求之外的）

4.2 Electrical performance（电气性能）：

Item	Test Description	Test Methods	Requirement
4.2.1	Contact Resistance （接触阻抗）	Mated connectors. Contact: measure by dry circuit, 20 mvolts maximum., 10mA Shell: measured by open circuit, 5 Volts maximum, 100mA. (ANSI/EIA-364-06A-83) （端子：将公母头对插后，在回路施加直流最大 20mV 10mA 的电流； 铁壳：将公母头对插后，在回路施加直流最大 5V 100mA 的电流； 再测量相对应端子或铁壳的电阻值）	Excluding conductor resistance : 30 milliohms maximum. （接触阻抗最大不能超过 30 毫欧）
4.2.2	Dielectric Strength （耐电压）	Unmated connectors, apply 500 Volts AC(RMS.) between adjacent terminal or ground. (ANSI/EIA 364-20,Method 301) Mated connector, apply 300 Volts AC(RMS.) between adjacent terminal and ground. （未对插的连接器，在相邻的端子间施加 AC 500V 1mA 的电流 1 分钟； 对插的连接器在相邻的端子间施加 AC 300V 1mA 的电流 1 分钟；）	No Breakdown （没有损坏）
4.2.3	Insulation Resistance （绝缘阻抗）	Unmated connectors, apply 500 Volts DC between adjacent terminal or ground. (ANSI/EIA 364-21, Method 302) （未对插的连接器，在相邻的端子间施加 DC 500V 1mA 的电流 1 分钟；）	100 megaohms minimum (unmated) （最小为 100 兆欧）
		Mated connectors, apply 150 Volts DC between adjacent terminal or ground. （对插的连接器在相邻的端子间施加 DC 150V 1mA 的电流 1 分钟；）	10 megaohms minimum (mated) （最小为 10 兆欧）
4.2.4	Contact Current Rating （额定电流）	55℃, maximum ambient 85℃, maximum temperature change (ANSI/EIA-364-70, TP-70) （给端子一个负载，当温度分别达到 55℃和 85℃稳定状态下，量测当时的电流）	0.5 A minimum （最小 0.5 A）
4.2.5	Applied Voltage Rating （额定电压）	40 Volts AC (RMS.) continuous maximum, on any signal pin with respect to the shield. （连续对所有端子施加最大 AC 40V 电压）	No Breakdown （没有如跳电或破裂之类的损坏）
4.2.6	TMDS Signals Time Domain Impedance	Rise time ≤ 200 psec (10%-90%). Signal to Ground pin ratio per HDMI designation. Differential Measurement Specimen Environment Impedance = 100 ohms differential Source-side receptacle connector mounted on a Controlled impedance PCB fixture. (ANSI/EIA-364-108 Draft Proposal)	Connector Area: 100 ohms ± 15%

4.2.7	TMDS Signals Time Domain Cross talk FEXT	Rise time ≤ 200 psec (10%-90%) Signal to Ground pin ration per HDMI designation. Differential Measurement Specimen Environment Impedance = 100 ohms differential. Source-side receptacle connector mounted on Controlled impedance PCB fixture. Driven pair and victim pair. (ANSI/EIA-364-90 Draft Proposal)	5 % maximum

4.3 Mechanical Performance:

Item	Test Description	Test Methods	Requirement	
4.3.1	Vibration （振动测试）	Amplitude:1.52 mm P-P or 147m/s^2 {15G}（振幅：1.52mm） Sweep time:50-2000-50Hz in 20 minutes.（频率：20 分钟内变换 50-2000-50Hz） Duration:12 times in each (total of 36 Times) X, Y, Z axes.（持续时间：每个方向 12 小时，共 36 小时） Electrical load: DC100mA current shall be Flowed during the test.（负载：施加 DC 100mA 电流测试） (ANSI/EIA-364-28 Condition Ⅲ Method 5A)	Appearance （外观）	No Damage （没有损坏）
			Contact Resistance （接触阻抗）	Contact: Change From initial value: 30 Milliohms maximum. （端子：测试后不得大于 30 毫欧） Shell Part: Change From initial value:50 Milliohms maximum. （外壳：测试后不得大于 50 毫欧）
			Discontinuity （断讯）	1 μsec maximum. （不能超过 1 微秒）
4.3.2	Shock （冲击测试）	Pulse width: 11 m sec., Waveform: half sine, 490m/s^2{50G}, 3 strokes in each （将对插后的连接器固定于冲击实验机上，并施加下列测试条件： 冲击时间：11 毫秒 波形：半正弦波 加速度最大 50G，沿 3 个互相垂直的方向）	Appearance （外观）	No Damage （没有损坏）
			Contact Resistance （接触阻抗）	Contact: Change From initial value: 30 Milliohms maximum. （端子：测试后不得大于 30 毫欧） Shell Part: Change From initial value:50 Milliohms maximum. （外壳：测试后不得大于 50 毫欧）

			Contact Resistance （接触阻抗）	Contact: Change From initial value: 30 Milliohms maximum. （端子：测试后不得大于 30 毫欧） Shell Part: Change From initial value:50 Milliohms maximum. （外壳：测试后不得大于 50 毫欧）
			Discontinuity （断讯）	1 μsec maximum. （不能超过 1 微秒）
4.3.3	Durability （寿命测试）	Measure contact and shell resistance after Following. Automatic cycling: 10,000 cycles at 100 ± 50 cycles per hour （将公座及母座焊接在 PCB 上，然后以每小时 100±50 次的速度沿轴向插拔 10000 次）	Contact Resistance （接触阻抗）	Contact: Change From initial value: 30 Milliohms maximum. （端子：测试后不得大于 30 毫欧） Shell Part: Change From initial value:50 Milliohms maximum. （外壳：测试后不得大于 50 毫欧）
4.3.4	Insertion/ Withdrawal Force （插入/拔出力）	Insertion and withdrawal speed: 25mm/mminute. (ANSI/EIA-364-13) （将公座或母座焊接在 PC 板上，然后以每分钟 25mm 的速度沿轴向插拔 3 次后再测量其插入和拔出力）	Withdrawal Force （拔出力）	Initial:9.8N {1.0kgf} minimum 39.2N{4.0kgf} maximum After 2000 cycles: 4.9N {0.5kgf} minimum 39.2N{4.0kgf} maximum 初始：最小 9.8N {1.0kgf} 最大 39.2N{4.0kgf} 插拔 2000 次后： 最小 4.9N {0.5kgf} 最大 39.2N{4.0kgf}
			Insertion force （插入力）	44.1N{4.5kgf} maximum （最大 44.1N{4.5kgf}）
4.3.5	Terminal retention (端子保持力)	Assembled in the housing at a rate of 25±3mm per minute. （沿胶芯组装面，用每分钟 25+3mm 的速度拔出端子）	pull-out force （拔出力）	2.94N Minute Min （0.3Kgf Min）

4.4 Environmental Performance:

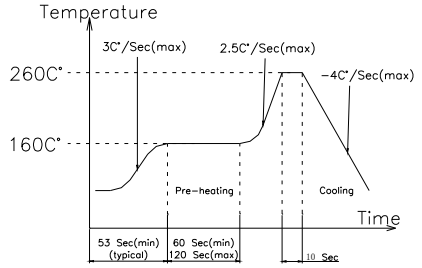
Item	Test Description	Test Methods	Requirement	
4.4.1	Thermal Shock （冷热冲击）	10 cycles of: –55℃ for 30 minutes +85℃ for 30 minutes (ANSI/EIA-364-32, Condition I) （将连接器焊在 PCB 上后将其暴露在下列环境条件中循环 10 次： 置于–55℃±3℃温度中 30 分钟，再转换标准温度条件 10-15 分钟，再转换至+85℃±2℃下 30 分钟，再换至标准温度条件 10-15 分钟；）	Appearance （外观）	No Damage （没有损坏）
			Contact Resistance （接触阻抗）	Contact: Change From initial value: 30 Milliohms maximum. （端子：测试后不得大于 30 毫欧） Shell Part: Change From initial value:50 Milliohms maximum. （外壳：测试后不得大于 50 毫欧）
4.4.2	Humidity （恒温恒湿）	A Mate connectors together and perform the test as Follows. Temperature: +25℃ to +85℃ Relative Humidity: 80 to 95% Duration: 4 cycles (96 hours) Upon completion of the test, specimens shall be conditioned at ambient room conditions for 24 hours, After which the specified measurements shall be performed. (ANSI/EIA-364-31) （将公母座配对后，放入下列环境中测试： 温度：+25℃-+85℃ 湿度：80-95% 时间：4 天（96 小时） 测试后产品应置于标准大气条件中 24 小时后再进行测量；）	Appearance （外观）	No Damage （没有损坏）
			Contact Resistance （接触阻抗）	Contact: Change From initial value: 30 Milliohms maximum. （端子：测试后不得大于 30 毫欧） Shell Part: Change From initial value:50 Milliohms maximum. （外壳：测试后不得大于 50 毫欧）

		B	Unmated each connectors and perform the test as follows. Temperature: +25℃ to +85℃ Relative Humidity: 80 to 95% Duration: 4 cycles (96 hours) Upon completion of the test, specimens shall be conditioned at ambient room conditions for 24 hours, After which the specified measurements shall be performed. (ANSI/EIA-364-31) （将单个连接器，放入下列环境中测试： 温度：+25℃-+85℃ 湿度：80-95% 时间：4 天（96 小时） 测试后产品应置于标准大气条件中 24 小时后再进行测量；）	Appearance （外观）	No Damage （没有损坏）
				Dielectric Withstanding Voltage and Insulation Resistance （耐电压和绝缘阻抗）	Conform to item of Dielectric Withstanding Voltage and Insulation Resistance （符合耐电压和绝缘阻抗测试要求）
4.4.3	Thermal Aging （热老化测试）	Mate connectors and expose to + 105℃ ± 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. (ANSI/EIA-364-17, Condition 4, Method A) （将连接器放在+ 105℃ ± 2℃的环境中 250 小时，然后再移至标准温度条件下 1-2 小时，再进行测量；）	Appearance （外观）	No Damage （没有损坏）
			Contact Resistance （接触阻抗）	Contact: Change From initial value: 30 Milliohms maximum. （端子：测试后不得大于 30 毫欧） Shell Part: Change From initial value:50 Milliohms maximum. （外壳：测试后不得大于 50 毫欧）
4.4.4	Solder ability （焊锡性）	Immerse the solder pin of the connector in the solder bath at 235℃±5℃ for 2.5±0.5seconds. After dipped the pin in the flux for 5 seconds. （将端子脚浸入助焊剂中 5 秒，然后将端子脚浸入 235℃±5℃的锡炉中 2.5±0.5 秒.）	Solder wetting （粘锡面积）	90% of immersed area must show no voids，Pin holes. (锡附着的面积应超过浸入表面积的 90%以上)
4.4.5	Resistance to soldering heat (耐焊性)	Place the connector on the PCB,then immerse the solder pin up to the surface of the board in the solder bath at 260℃+5℃ for 10 seconds. (将产品置于 PCB 上,然后将 Pin 脚部分浸入 260+5℃的锡炉中 10 秒)	1、 Without deformation of case or excessive lossen.(塑胶不得有明显变形或损坏) 2、 Electrical characteristics shall be satisfied.(电气特性必须符合规格)	
4.4.6	BPR Soldering Test	1. Solder pot temp.:190℃±5 2. Solder composition:Sn-(57.6)Bi-(0.4)Ag or Sn-(58)Bi 3. Test condition:Part 3 Seconds to lead the solder pot dipping	Decision Results:Dipping as more than 95% of lead soldering be.	

4.4.7	BPR Soldering Heat Test	Product 180 degree 10 minute leaving alone.	There will not be external variation to the product and will have to be satisfactory in the shovel and foot thing power SPEC
4.4.8	Salt Spray （盐水喷雾）	Salt density:5% Temperature: 35± 2℃ 盐水浓度：5% 温度：35± 2℃ After keeping in above surrounding for 48 hours EIA-364-26	

膜厚類型	測試時間	判定
USB / DVI&D-SUB / DP CONN / HDMI / AC SOCKET		
鍍錫部位	24H	無氧化,銹蝕
鍍錫之焊錫部位	24H	
金属件與非金屬/折彎處/切口	24H	
外部連接 port	48H	
接觸端鍍金(包含 15u"與 15u"以上)	48H	
接觸端鍍金(包含 15u"以下上)	48H	

4.5 Hot air reflow or IR reflow for SMD curing process：（回流焊参考温度）：



The recommended conditions
for the reflow temperature profile

5.0Test Sequence:

Test Group (a)		Sample Groups						
Test Item	Test Description	A	B	C	D	E	F	G
4.1.1	Examination of the connectors	1,4,7	1,5	1,7	1,7	1,4		
4.2.1	Contact Resistance	2,5,8,10	2,4	2,4,6				
4.2.2	Dielectric Strength				3,6			
4.2.3	Insulation Resistance				2,5			
4.2.4	Contact Current rating					2		
4.2.5	Applied Voltage Rating					3		
4.2.6	TMDS Signals Time Domain Impedance						1	
4.2.7	TMDS Signals Time Domain Cross talk FEXT						2	
4.3.1	Vibration	3						
4.3.2	Shock	6						
4.3.3	Durability	9						2
4.3.4	Insertion force							1,3
	Removal force							
4.4.1	Thermal Shock			3				
4.4.2	Humidity			5a	4b			
4.4.3	Thermal aging		3					
Number of Test Sample (Minimum)		5	5	5	5	5	5	5

Test Report

No.: SHAEC23008867601 **Date:** Jul 04, 2023

Client Name: KUNSHAN DELIKANG ELECTRONIC TECHNOLOGY CO., LTD

Client Address: NO. 278, HUANGPU JIANGNAN ROAD,DIANSHAN LAKE TOWN,KUNSHAN CITY,JIANGSU PROVINCE

Sample Name: Plastic

Model No.: LCP BK

Supplier: Modeng

The above sample(s) and information were provided by the client.

SGS Job No.: SHP23-005667

Sample Receiving Date: Jun 25, 2023

Testing Period: Jun 25, 2023 ~ Jul 04, 2023

Test Requested: Select test(s) as requested by the client.

Test Method(s): Please refer to next page(s).

Test Result(s): Please refer to next page(s).

Test Requirement	Conclusion
EU RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU- Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs), Bis(2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) and Diisobutyl phthalate (DIBP)	Pass
Halogen	See Results
Red Phosphorus	See Results

Signed for and on behalf of
SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.

Carol Luo
Approved Signatory

scan to see the report
4297B56D

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Test Result(s):

Test Part Description：

SN ID	Sample No.	SGS Sample ID	Description
SN1	A1	SHA23-0088676-0001.C001	Black pellet

Remarks:

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

EU RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU- Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs), Bis(2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) and Diisobutyl phthalate (DIBP)

Test Method: With reference to IEC 62321-4:2013+AMD1:2017, IEC 62321-5:2013, IEC 62321-7-2:2017, IEC 62321-6:2015 and IEC 62321-8:2017, analysis was performed by ICP-OES, UV-Vis and GC-MS.

Test Item(s)	Limit	Unit(s)	MDL	A1
Cadmium(Cd)	100	mg/kg	2	ND
Lead (Pb)	1000	mg/kg	2	3
Mercury (Hg)	1000	mg/kg	2	ND
Hexavalent Chromium (Cr(VI))	1000	mg/kg	8	ND
Polybromobiphenyl (PBBs)	1000	mg/kg	-	ND
Monobromobiphenyl (MonoBB)	-	mg/kg	5	ND
Dibromobiphenyl (DiBB)	-	mg/kg	5	ND
Tribromobiphenyl (TriBB)	-	mg/kg	5	ND
Tetrabromobiphenyl (TetraBB)	-	mg/kg	5	ND
Pentabromobiphenyl (PentaBB)	-	mg/kg	5	ND
Hexabromobiphenyl (HexaBB)	-	mg/kg	5	ND
Heptabromobiphenyl (HeptaBB)	-	mg/kg	5	ND
Octabromobiphenyl (OctaBB)	-	mg/kg	5	ND
Nonabromobiphenyl (NonaBB)	-	mg/kg	5	ND
Decabromobiphenyl (DecaBB)	-	mg/kg	5	ND
Polybromodiphenyl ether(PBDEs)	1000	mg/kg	-	ND
Monobromodiphenylether (MonoBDE)	-	mg/kg	5	ND
Dibromodiphenylether (DiBDE)	-	mg/kg	5	ND
Tribromodiphenylether (TriBDE)	-	mg/kg	5	ND
Tetrabromodiphenylether (TetraBDE)	-	mg/kg	5	ND
Pentabromodiphenylether (PentaBDE)	-	mg/kg	5	ND
Hexabromodiphenylether (HexaBDE)	-	mg/kg	5	ND
Heptabromodiphenylether (HeptaBDE)	-	mg/kg	5	ND
Octabromodiphenylether (OctaBDE)	-	mg/kg	5	ND
Nonabromodiphenylether (NonaBDE)	-	mg/kg	5	ND
Decabromodiphenylether (DecaBDE)	-	mg/kg	5	ND
Dibutyl Phthalate(DBP)	1000	mg/kg	50	ND
Benzyl Butyl Phthalate(BBP)	1000	mg/kg	50	ND

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Test Item(s)	Limit	Unit(s)	MDL	A1
Bis-(2-ethylhexyl) Phthalate(DEHP)	1000	mg/kg	50	ND
Diisobutyl Phthalate(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.
(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.

Halogen

Test Method: With reference to EN 14582:2016, analysis was performed by IC.

Test Item(s)	Unit(s)	MDL	A1
Fluorine(F)	mg/kg	20	326
Chlorine(Cl)	mg/kg	50	ND
Bromine(Br)	mg/kg	50	ND
Iodine(I)	mg/kg	50	ND

Red Phosphorus

Test Method: With reference to SGS In house method, analysis was performed by ICP-OES and Pyrolysis-GC-MS.

Test Item(s)	CAS No.	Unit(s)	MDL	A1
Red Phosphorus	7723-14-0	mg/kg	500	ND

Notes:
(1) The testing result is based on the worst-case scenario, and confirmed by Pyrolysis-GC-MS.
Unless otherwise stated, the decision rule for conformity reporting is based on Binary Statement for Simple Acceptance Rule (*w*=0) stated in ILAC-G8:09/2019.

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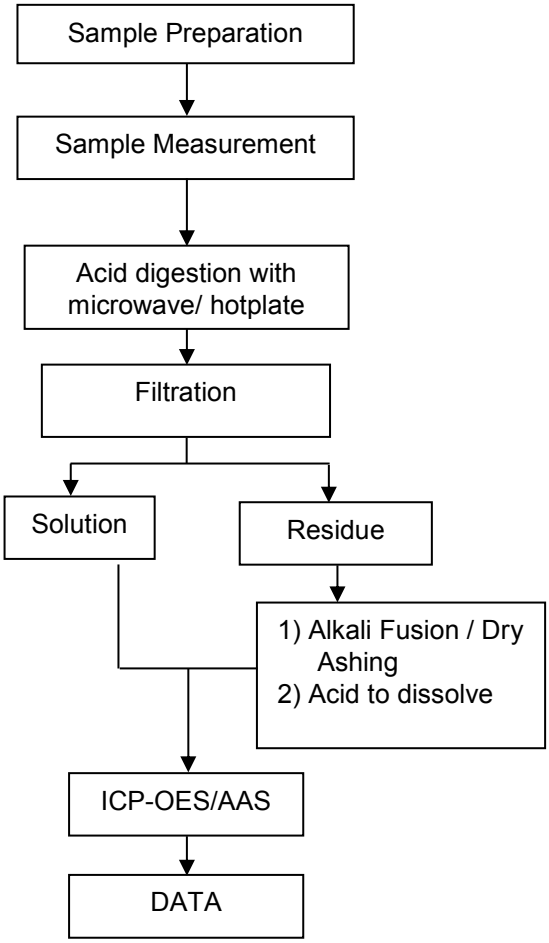
Elements Testing Flow Chart

These samples were dissolved totally by pre-conditioning method according to below flow chart.



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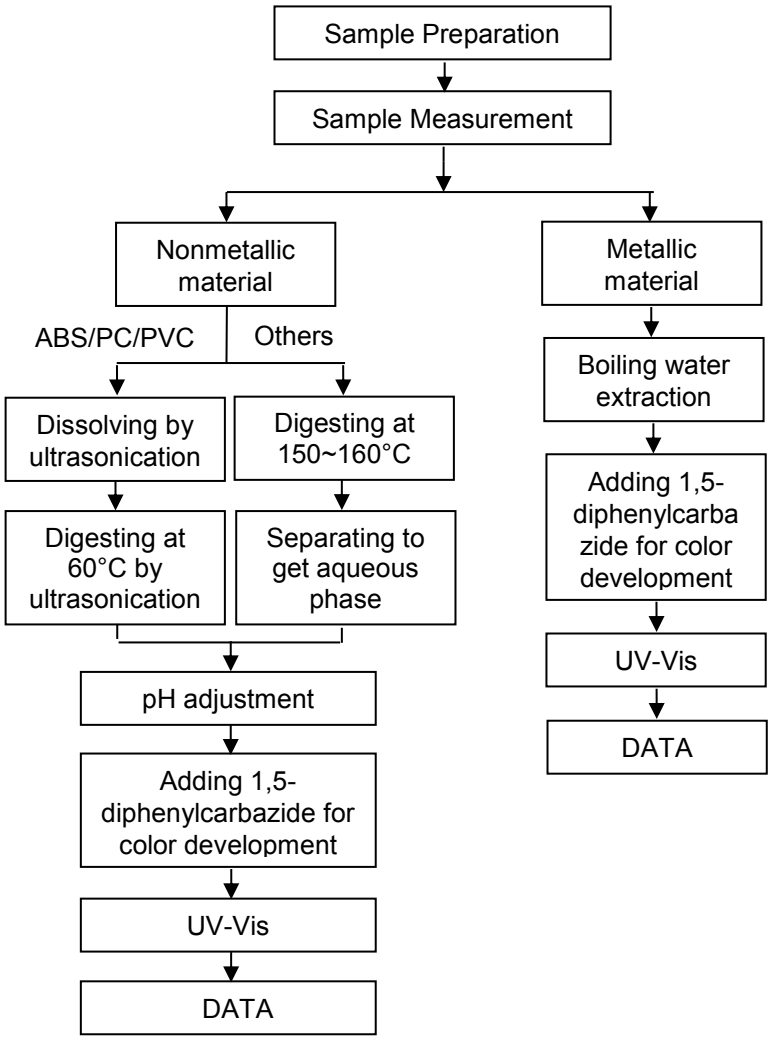
Hexavalent Chromium (Cr(VI)) Testing Flow Chart



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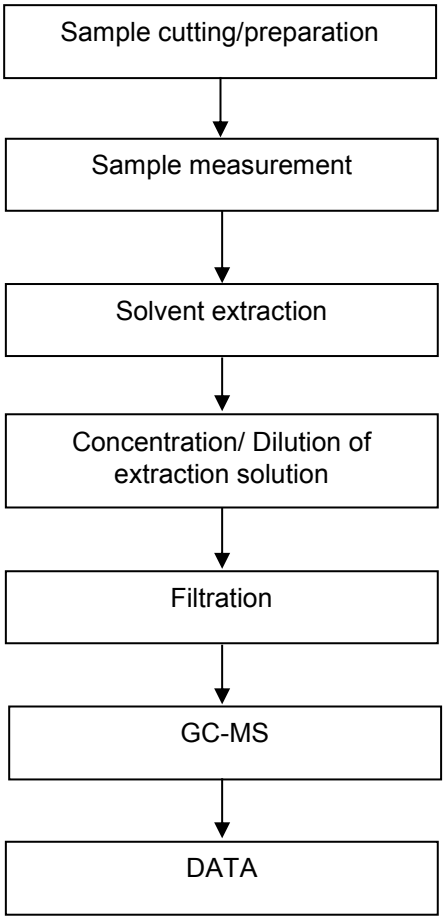
PBBs/PBDEs Testing Flow Chart



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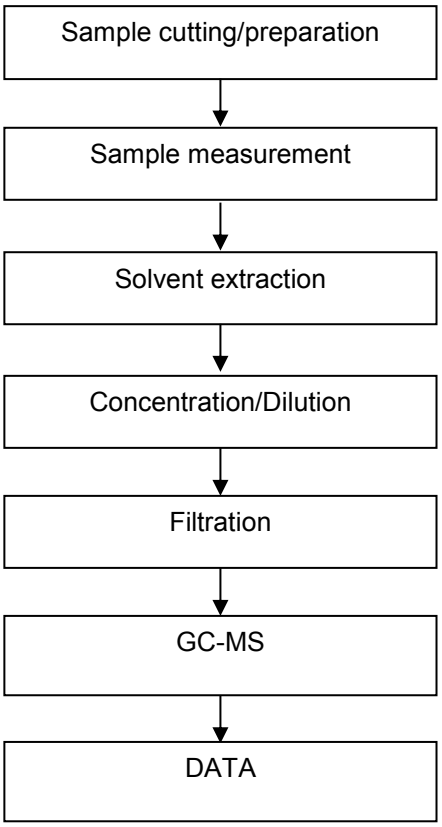
Phthalates Testing Flow Chart



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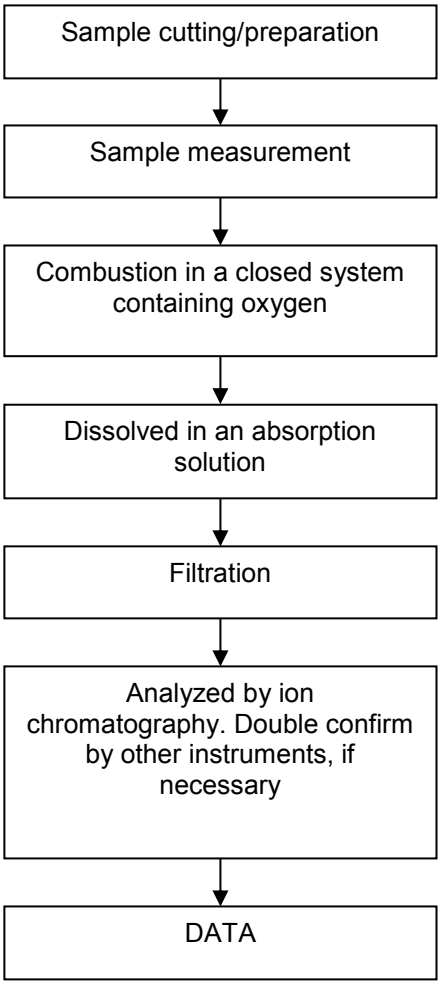
Halogen Testing Flow Chart



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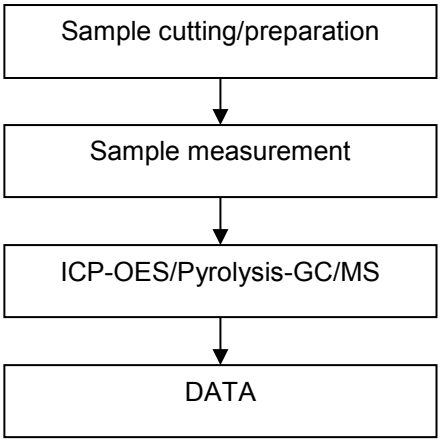
Red Phosphorus Testing Flow Chart



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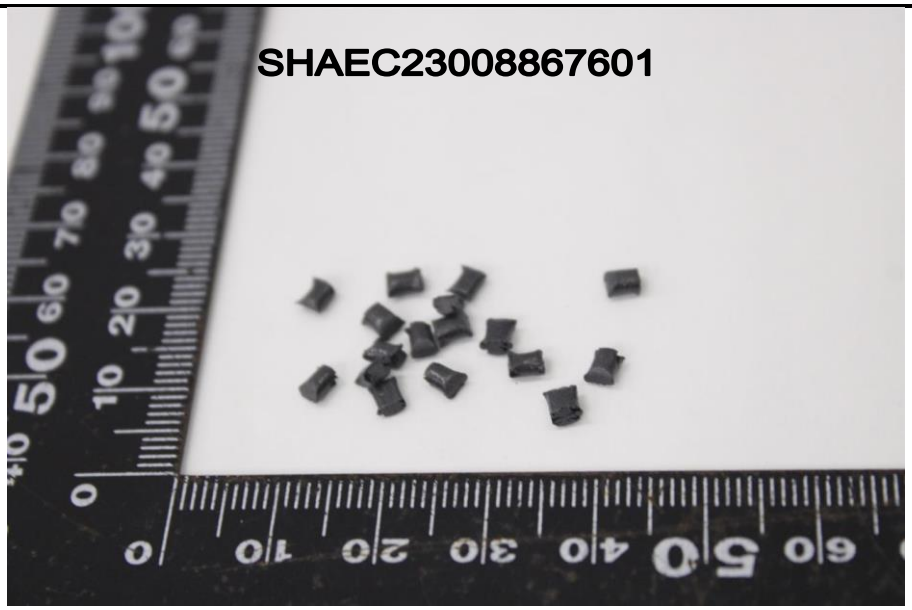
Sample Photo:



SHA23-0088676-0001.C001

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Test Report

No.: CANEC23000500013 **Date:** Mar 06, 2023

Client Name: GUANGZHOU COPPER MATERIALS CO,.LTD

Client Address: NO.5LONGDONGROAD,CHINA GUANGZHOU CITY CONGHUA ECONOMIC DEVELOPMENT ZONE OF HIGH-TECHINDUSTRIAL PARK

Sample Name: C2680

The above sample(s) and information were provided by the client.

SGS Job No.: CP23-007975

Sample Receiving Date: Feb 28, 2023

Testing Period: Feb 28, 2023 - Mar 06, 2023

Test Requested: Select test(s) as requested by the client.

Test Method(s): Please refer to next page(s).

Test Result(s): Please refer to next page(s).

Test Requirement	Conclusion
EU RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU- Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs), Bis(2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) and Diisobutyl phthalate (DIBP)	Pass

Signed for and on behalf of
SGS-CSTC Standards Technical Services Co., Ltd. Guangzhou Branch

Allie Chen

Allie Chen
Approved Signatory

scan to see the report
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Test Result(s):

Test Part Description：

SN ID	Sample No.	SGS Sample ID	Description
SN1	A7	CAN23-0005000-0001.C007	Brassy metal sheet

Remarks:

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

EU RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU- Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs), Bis(2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) and Diisobutyl phthalate (DIBP)

Test Method: With reference to IEC 62321-4:2013+AMD1:2017, IEC 62321-5:2013, IEC 62321-7-1:2015, IEC 62321-6:2015 and IEC62321-8:2017, analysis was performed by ICP-OES, UV-Vis and GC-MS.

Test Item(s)	Limit	Unit(s)	MDL	A7
Cadmium(Cd)	100	mg/kg	2	ND
Lead(Pb)	1000	mg/kg	2	33
Mercury(Hg)	1000	mg/kg	2	ND
Hexavalent Chromium (Cr(VI))▼	-	μg/cm²	0.10	ND
Polybromobiphenyl (PBBs)	1000	mg/kg	-	ND
Monobromobiphenyl (MonoBB)	-	mg/kg	5	ND
Dibromobiphenyl (DiBB)	-	mg/kg	5	ND
Tribromobiphenyl (TriBB)	-	mg/kg	5	ND
Tetrabromobiphenyl (TetraBB)	-	mg/kg	5	ND
Pentabromobiphenyl (PentaBB)	-	mg/kg	5	ND
Hexabromobiphenyl (HexaBB)	-	mg/kg	5	ND
Heptabromobiphenyl (HeptaBB)	-	mg/kg	5	ND
Octabromobiphenyl (OctaBB)	-	mg/kg	5	ND
Nonabromobiphenyl (NonaBB)	-	mg/kg	5	ND
Decabromobiphenyl (DecaBB)	-	mg/kg	5	ND
Polybromodiphenyl ether(PBDEs)	1000	mg/kg	-	ND
Monobromodiphenylether (MonoBDE)	-	mg/kg	5	ND
Dibromodiphenylether (DiBDE)	-	mg/kg	5	ND
Tribromodiphenylether (TriBDE)	-	mg/kg	5	ND
Tetrabromodiphenylether (TetraBDE)	-	mg/kg	5	ND
Pentabromodiphenylether (PentaBDE)	-	mg/kg	5	ND
Hexabromodiphenylether (HexaBDE)	-	mg/kg	5	ND
Heptabromodiphenylether (HeptaBDE)	-	mg/kg	5	ND
Octabromodiphenylether (OctaBDE)	-	mg/kg	5	ND
Nonabromodiphenylether (NonaBDE)	-	mg/kg	5	ND
Decabromodiphenylether (DecaBDE)	-	mg/kg	5	ND
Dibutyl Phthalate(DBP)	1000	mg/kg	50	ND
Benzyl Butyl Phthalate(BBP)	1000	mg/kg	50	ND

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Test Item(s)	Limit	Unit(s)	MDL	A7
Bis-(2-ethylhexyl) Phthalate(DEHP)	1000	mg/kg	50	ND
Diisobutyl Phthalate(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.

(3) ▼ = a. The sample is positive for Cr(VI) if the Cr(VI) concentration is greater than 0.13 μg/cm^2. The sample coating is considered to contain Cr(VI)
b. The sample is negative for Cr(VI) if Cr(VI) is ND (concentration less than 0.10 μg/cm^2). The coating is considered a non-Cr(VI) based coating
c. The result between 0.10 μg/cm^2 and 0.13 μg/cm^2 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.

Unless otherwise stated, the decision rule for conformity reporting is based on Binary Statement for Simple Acceptance Rule (*w*=0) stated in ILAC-G8:09/2019.

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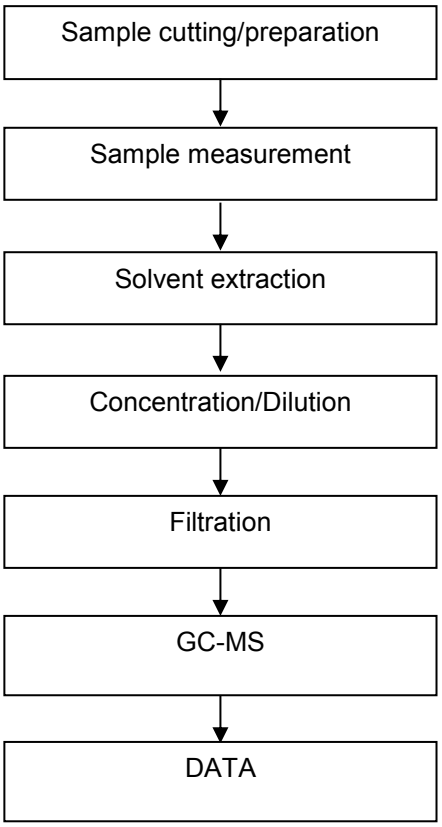
Phthalates Testing Flow Chart



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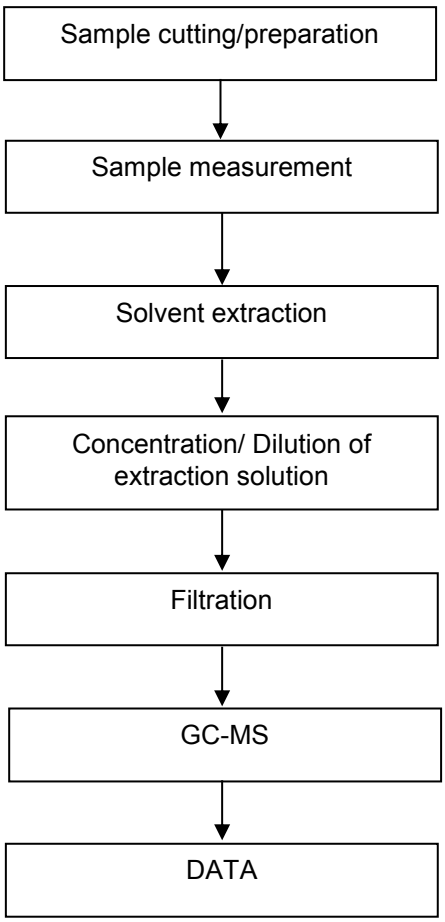
PBBs/PBDEs Testing Flow Chart



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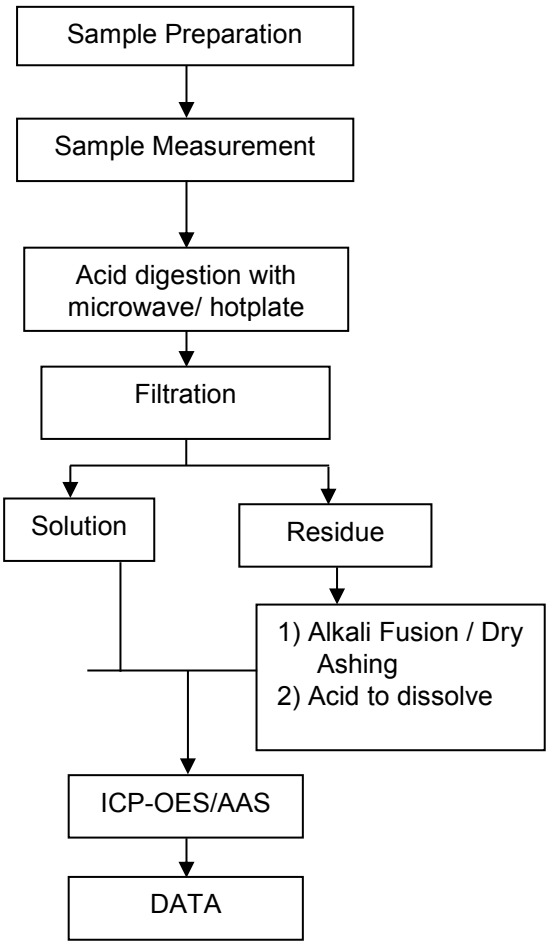
Elements (IEC62321) Testing Flow Chart

These samples were dissolved totally by pre-conditioning method according to below flow chart.



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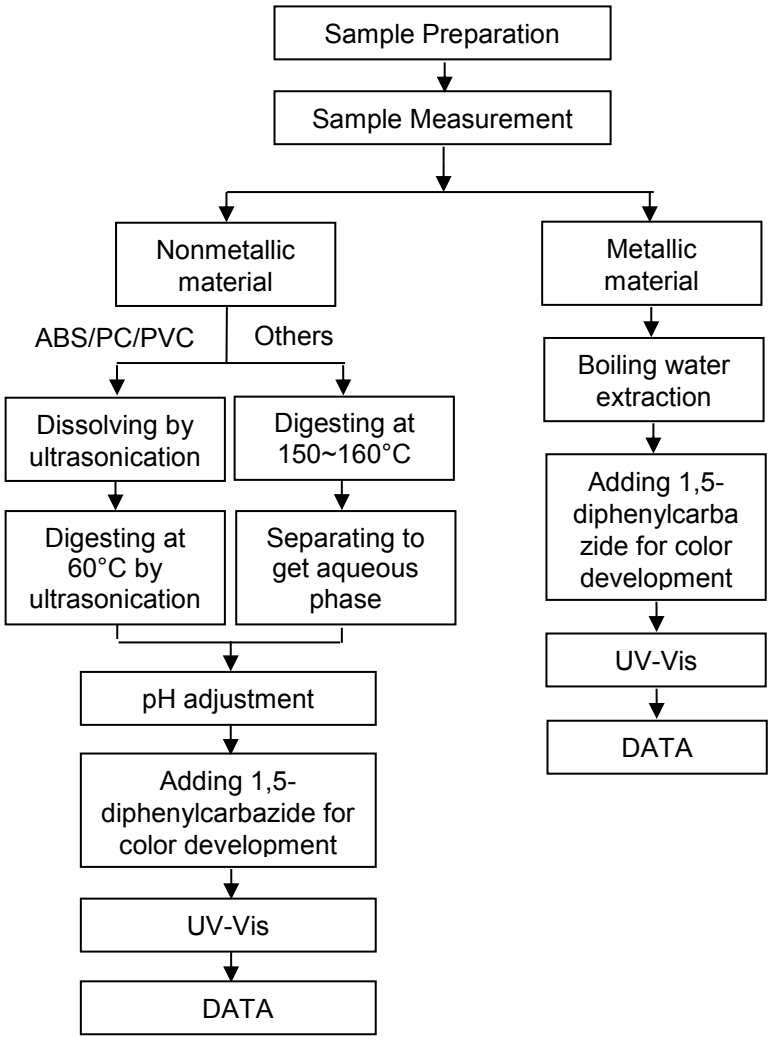
Hexavalent Chromium (Cr(VI)) Testing Flow Chart



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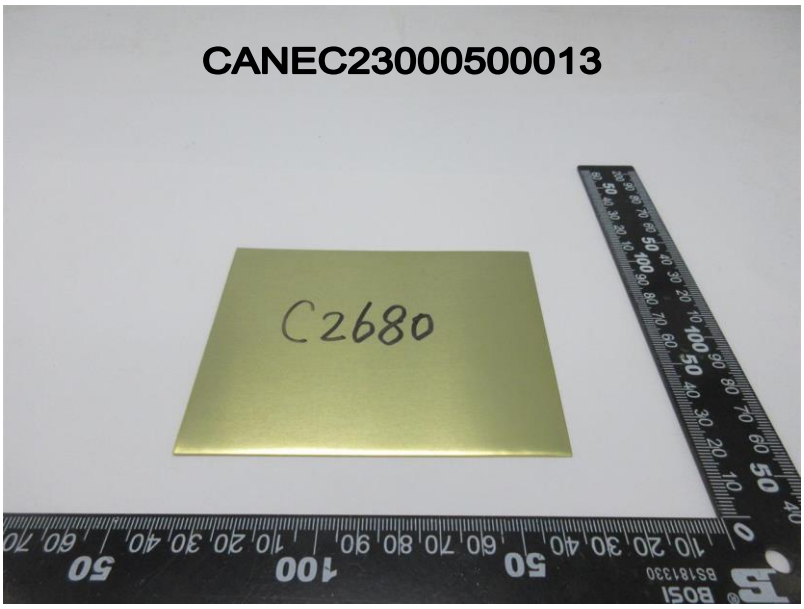

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Test Report

Client Name : Xuancheng Changfeng Electroplating Technology Co., Ltd.

Client Address : No. 16 Jinniu Xi Road, Langxi County Economic Development Zone, Xuancheng, Anhui

Sample Name : Gold plating

The above sample(s) and information were provided by the client.

SGS Job No. : SHP23-004570 - QD

Date of Sample Received : 12 Jun 2023

Testing Period : 12 Jun 2023 - 25 Jun 2023

Test Requested : Selected test(s) as requested by the client.

Test Method(s) : Please refer to next page(s).

Test Result(s) : Please refer to next page(s).

Result Summary :

Test Requested	Conclusion
EU RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU-Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs), Bis(2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) and Diisobutyl phthalate (DIBP)	PASS
Halogen	See Results
Element(s)	See Results
Perfluorooctanesulfonate (PFOS) and its derivatives and Perfluorooctanoic Acid (PFOA) and its salts	See Results

Signed for and on behalf of
SGS-CSTC Standards Technical Services (Qingdao) Co., Ltd.

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Wang Bo, Claire
Approved Signatory

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Test Result(s) :

Test Part Description :

Specimen No.	SGS Sample ID	Description
SN1	TAO23-041352.001	yellow plating
SN2	TAO23-041352.002	yellow metal

Remarks :

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

EU RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU- Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs), Bis(2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) and Diisobutyl phthalate (DIBP)

Test Method : With reference to IEC 62321-5:2013, IEC 62321-4:2013+AMD1:2017, IEC 62321-7-1:2015, IEC 62321-6:2015 and IEC62321-8:2017, analyzed by ICP-OES,AAS, UV-Vis and GC-MS.

Test Item(s)	Limit	Unit	MDL	*001*
Cadmium (Cd)	100	mg/kg	10	ND
Lead (Pb)	1000	mg/kg	10	ND
Mercury (Hg)	1000	mg/kg	10	ND
Hexavalent Chromium (Cr(VI))▾	-	μg/cm²	0.10	ND
Sum of PBBs	1000	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	1000	mg/kg	-	ND
Monobromodiphenyl ether	-	mg/kg	5	ND
Dibromodiphenyl ether	-	mg/kg	5	ND
Tribromodiphenyl ether	-	mg/kg	5	ND

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Test Item(s)	Limit	Unit	MDL	001
Tetrabromodiphenyl ether	-	mg/kg	5	ND
Pentabromodiphenyl ether	-	mg/kg	5	ND
Hexabromodiphenyl ether	-	mg/kg	5	ND
Heptabromodiphenyl ether	-	mg/kg	5	ND
Octabromodiphenyl ether	-	mg/kg	5	ND
Nonabromodiphenyl ether	-	mg/kg	5	ND
Decabromodiphenyl ether	-	mg/kg	5	ND
Dibutyl phthalate (DBP)	1000	mg/kg	50	ND
Butyl benzyl phthalate (BBP)	1000	mg/kg	50	ND
Bis (2-ethylhexyl) phthalate (DEHP)	1000	mg/kg	50	ND
Diisobutyl Phthalates (DIBP)	1000	mg/kg	50	ND

Notes :

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

(2) IEC 62321 series is equivalent to EN 62321 series.

(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.

(4) 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.

(5) The results of PBBs, PBDEs, DBP, BBP, DEHP & DIBP are based on the complete samples submitted by the client, including plating and substrate.

Halogen

Test Method : With reference to EN 14582: 2016, analysis was performed by Ion Chromatograph (IC).

Test Item(s)	Unit	MDL	002
Fluorine (F)	mg/kg	20	ND
Chlorine (Cl)	mg/kg	50	ND
Bromine (Br)	mg/kg	50	ND
Iodine (I)	mg/kg	50	ND

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Element(s)

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

Test Item(s)	Unit	MDL	*002*
Beryllium (Be)	mg/kg	5	ND
Antimony (Sb)	mg/kg	10	ND

Perfluorooctanesulfonate (PFOS) and its derivatives and Perfluorooctanoic Acid (PFOA) and its salts

Test Method : With reference to CEN/TS 15968:2010, analysis was performed by LC- MS-MS.

Test Item(s)	CAS NO.	Unit	MDL	002
Perfluorooctanesulfonate (PFOS) and its derivatives	-	mg/kg	-	ND
Perfluorooctane Sulfonates (PFOS)^	1763-23-1	mg/kg	0.01	ND
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	mg/kg	0.01	ND
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol (EtFOSE)	1691-99-2	mg/kg	0.01	ND
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	mg/kg	0.01	ND
2-(N-methylperfluoro- 1-octanesulfonamido) -ethanol (MeFOSE)	24448-09-7	mg/kg	0.01	ND
Perfluorooctane sulfonamide (PFOSA)	754-91-6	mg/kg	0.01	ND
Perfluorooctanoic Acid (PFOA) and its salts+		mg/kg	0.01	ND

Notes :

(1) ^ PFOS refer to its acid, salts/derivatives including PFOS (CAS No.: 1763-23-1) , PFOS-K (CAS No.: 2795-39-3) , PFOS-Li (CAS No.: 29457-72-5), PFOS-NH4 (CAS No.: 29081-56-9), PFOS-NH(OH)2 (CAS No.: 70225-14-8) and PFOS-N(C2H5)4 (CAS No.: 56773-42-3), PFOS-N(CH3)2(C10H21)2 (CAS No.:251099-16-8) and POSF (CAS No.: 307-35-7).

(2) PFOA and its salts+ refer to its acid / salts including PFOA (CAS No.: 335-67-1), 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)

Unless otherwise stated, the decision rule for conformity reporting is based on Binary Statement for Simple Acceptance Rule (w=0) stated in ILAC-G8:09/2019.

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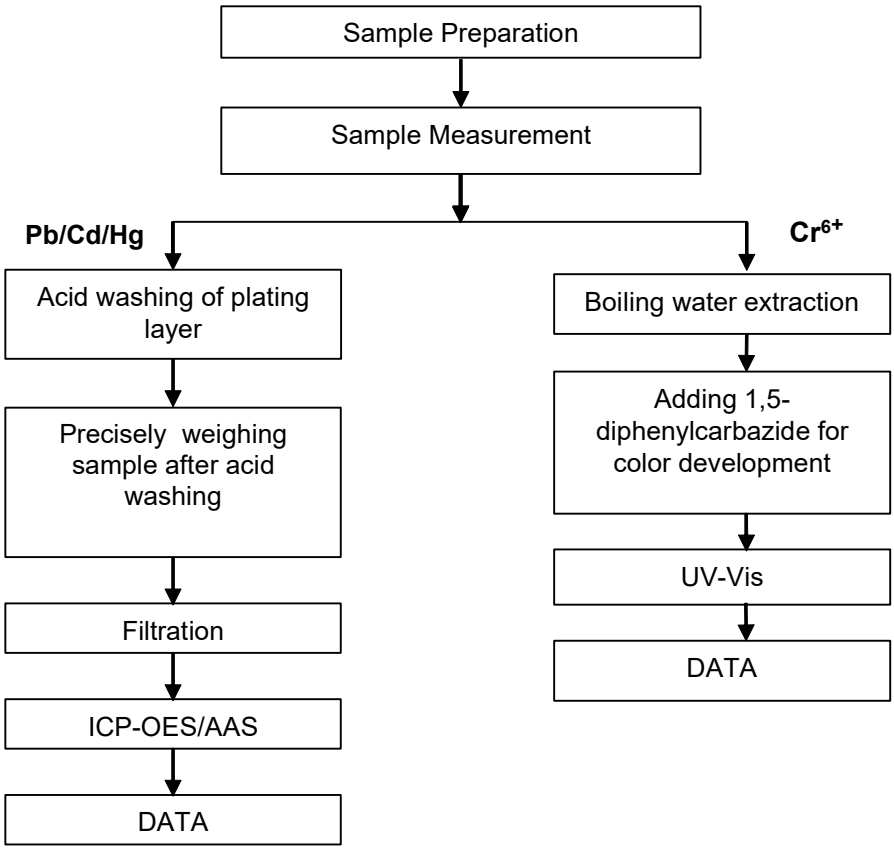
Plating Pb/Cd/Hg/Cr^{6+}Testing Flow Chart



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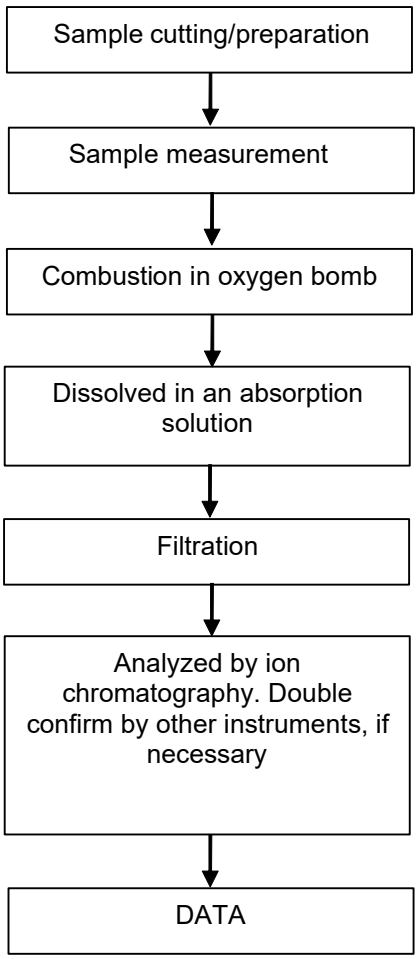
Halogen Testing Flow Chart



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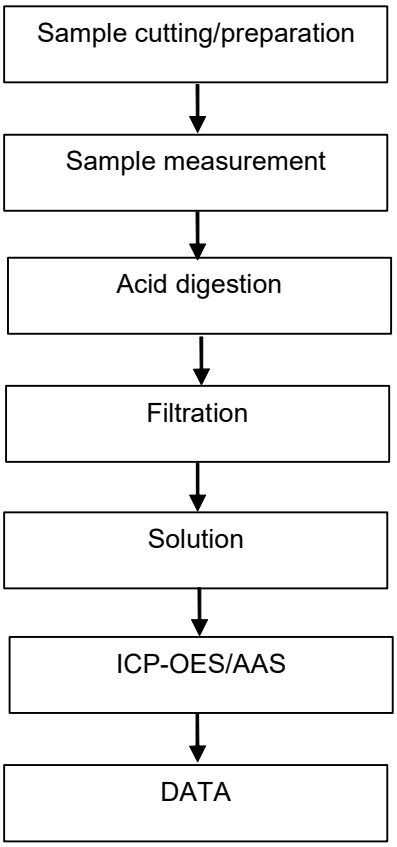
Elementary Testing Flow Chart



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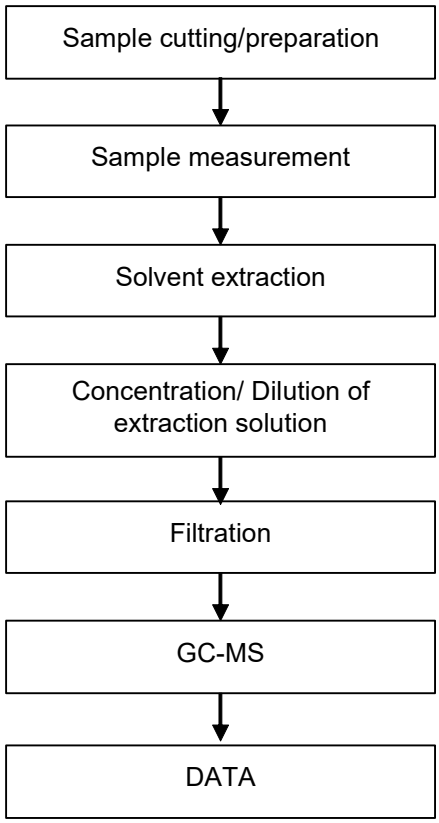
PBBs/PBDEs Testing Flow Chart



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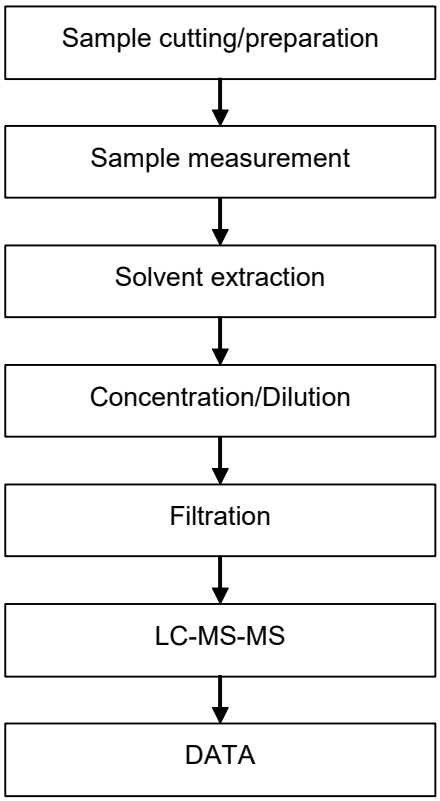
PFOS/PFOA Testing Flow Chart



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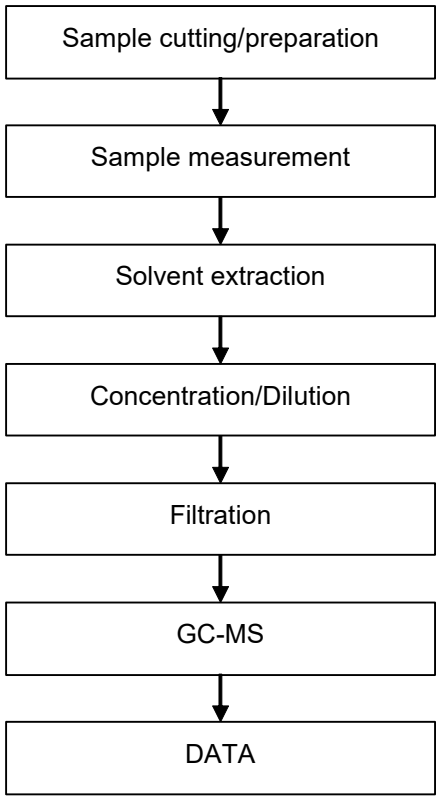
Phthalates Testing Flow Chart



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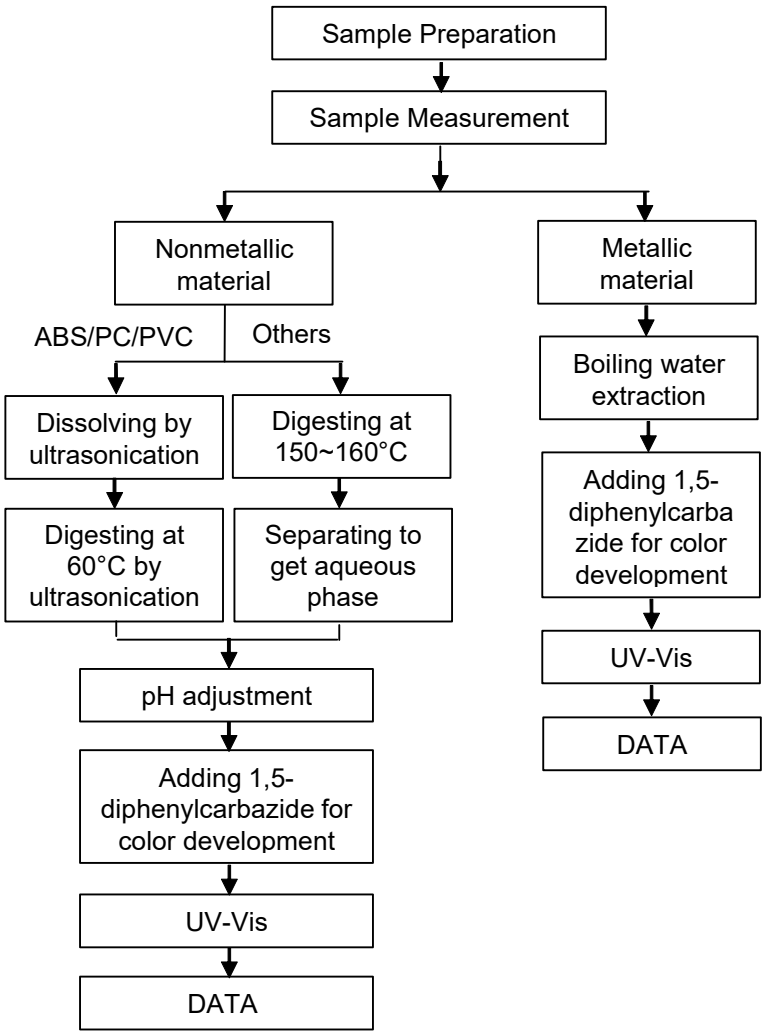
Hexavalent Chromium (Cr(VI)) Testing Flow Chart



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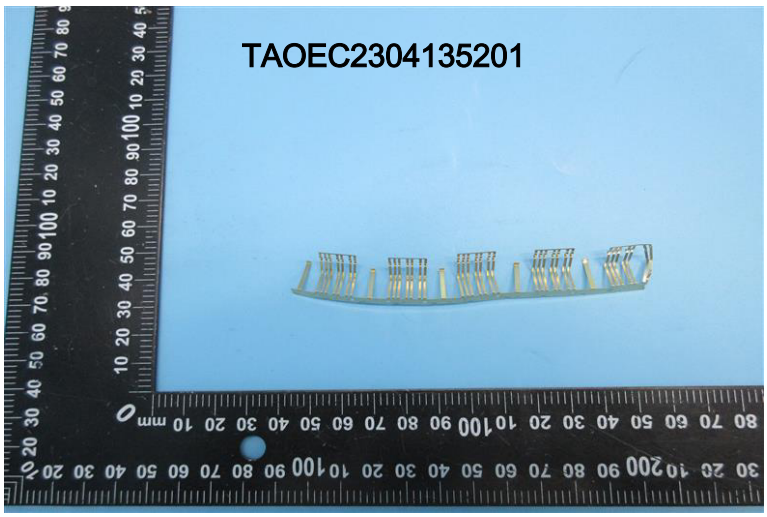
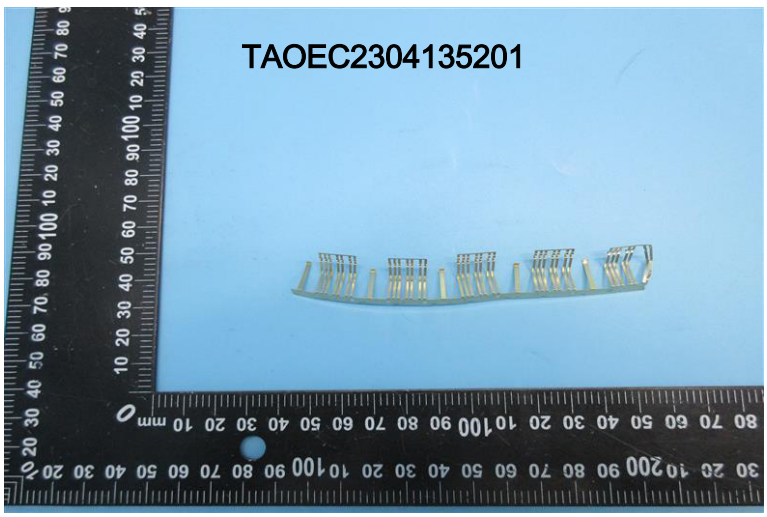
Sample photo:



TAO23-041352.001



TAO23-041352.002

SGS authenticate the photo on original report only

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Test Report

No. TAOEC2304135203 Date: 27 Jun 2023 Page 1 of 12

Client Name : Xuancheng Changfeng Electroplating Technology Co., Ltd.

Client Address : No. 16 Jinniu Xi Road, Langxi County Economic Development Zone, Xuancheng, Anhui

Sample Name : Nickel plating

The above sample(s) and information were provided by the client.

SGS Job No. : SHP23-004570 - QD

Date of Sample Received : 12 Jun 2023

Testing Period : 12 Jun 2023 - 25 Jun 2023

Test Requested : Selected test(s) as requested by the client.

Test Method(s) : Please refer to next page(s).

Test Result(s) : Please refer to next page(s).

Result Summary :

Test Requested	Conclusion
EU RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU-Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs), Bis(2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) and Diisobutyl phthalate (DIBP)	PASS
Halogen	See Results
Element(s)	See Results
Perfluorooctanesulfonate (PFOS) and its derivatives and Perfluorooctanoic Acid (PFOA) and its salts	See Results

Signed for and on behalf of
SGS-CSTC Standards Technical Services (Qingdao) Co., Ltd.

scan to see the report

FA6A73EB

Wang Bo, Claire
Approved Signatory

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Test Result(s) :

Test Part Description :

Specimen No.	SGS Sample ID	Description
SN1	TAO23-041352.003	gray plating
SN2	TAO23-041352.004	gray metal

Remarks :

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

EU RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU- Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs), Bis(2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) and Diisobutyl phthalate (DIBP)

Test Method : With reference to IEC 62321-5:2013, IEC 62321-4:2013+AMD1:2017, IEC 62321-7-1:2015, IEC 62321-6:2015 and IEC62321-8:2017, analyzed by ICP-OES,AAS, UV-Vis and GC-MS.

Test Item(s)	Limit	Unit	MDL	*003*
Cadmium (Cd)	100	mg/kg	10	ND
Lead (Pb)	1000	mg/kg	10	ND
Mercury (Hg)	1000	mg/kg	10	ND
Hexavalent Chromium (Cr(VI))▾	-	μg/cm²	0.10	ND
Sum of PBBs	1000	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	1000	mg/kg	-	ND
Monobromodiphenyl ether	-	mg/kg	5	ND
Dibromodiphenyl ether	-	mg/kg	5	ND
Tribromodiphenyl ether	-	mg/kg	5	ND

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Test Item(s)	Limit	Unit	MDL	003
Tetrabromodiphenyl ether	-	mg/kg	5	ND
Pentabromodiphenyl ether	-	mg/kg	5	ND
Hexabromodiphenyl ether	-	mg/kg	5	ND
Heptabromodiphenyl ether	-	mg/kg	5	ND
Octabromodiphenyl ether	-	mg/kg	5	ND
Nonabromodiphenyl ether	-	mg/kg	5	ND
Decabromodiphenyl ether	-	mg/kg	5	ND
Dibutyl phthalate (DBP)	1000	mg/kg	50	ND
Butyl benzyl phthalate (BBP)	1000	mg/kg	50	ND
Bis (2-ethylhexyl) phthalate (DEHP)	1000	mg/kg	50	ND
Diisobutyl Phthalates (DIBP)	1000	mg/kg	50	ND

Notes :

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

(2) IEC 62321 series is equivalent to EN 62321 series.

(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.

(4) 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.

(5) The results of PBBs, PBDEs, DBP, BBP, DEHP & DIBP are based on the complete samples submitted by the client, including plating and substrate.

Halogen

Test Method : With reference to EN 14582: 2016, analysis was performed by Ion Chromatograph (IC).

Test Item(s)	Unit	MDL	004
Fluorine (F)	mg/kg	20	ND
Chlorine (Cl)	mg/kg	50	ND
Bromine (Br)	mg/kg	50	ND
Iodine (I)	mg/kg	50	ND

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Element(s)

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

Test Item(s)	Unit	MDL	*004*
Beryllium (Be)	mg/kg	5	ND
Antimony (Sb)	mg/kg	10	ND

Perfluorooctanesulfonate (PFOS) and its derivatives and Perfluorooctanoic Acid (PFOA) and its salts

Test Method : With reference to CEN/TS 15968:2010, analysis was performed by LC- MS-MS.

Test Item(s)	CAS NO.	Unit	MDL	004
Perfluorooctanesulfonate (PFOS) and its derivatives	-	mg/kg	-	ND
Perfluorooctane Sulfonates (PFOS)^	1763-23-1	mg/kg	0.01	ND
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	mg/kg	0.01	ND
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol (EtFOSE)	1691-99-2	mg/kg	0.01	ND
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	mg/kg	0.01	ND
2-(N-methylperfluoro- 1-octanesulfonamido) -ethanol (MeFOSE)	24448-09-7	mg/kg	0.01	ND
Perfluorooctane sulfonamide (PFOSA)	754-91-6	mg/kg	0.01	ND
Perfluorooctanoic Acid (PFOA) and its salts+		mg/kg	0.01	ND

Notes :

(1) ^ PFOS refer to its acid, salts/derivatives including PFOS (CAS No.: 1763-23-1) , PFOS-K (CAS No.: 2795-39-3) , PFOS-Li (CAS No.: 29457-72-5), PFOS-NH4 (CAS No.: 29081-56-9), PFOS-NH(OH)2 (CAS No.: 70225-14-8) and PFOS-N(C2H5)4 (CAS No.: 56773-42-3), PFOS-N(CH3)2(C10H21)2 (CAS No.:251099-16-8) and POSF (CAS No.: 307-35-7).

(2) PFOA and its salts+ refer to its acid / salts including PFOA (CAS No.: 335-67-1), 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)

Unless otherwise stated, the decision rule for conformity reporting is based on Binary Statement for Simple Acceptance Rule (w =0) stated in ILAC-G8:09/2019.

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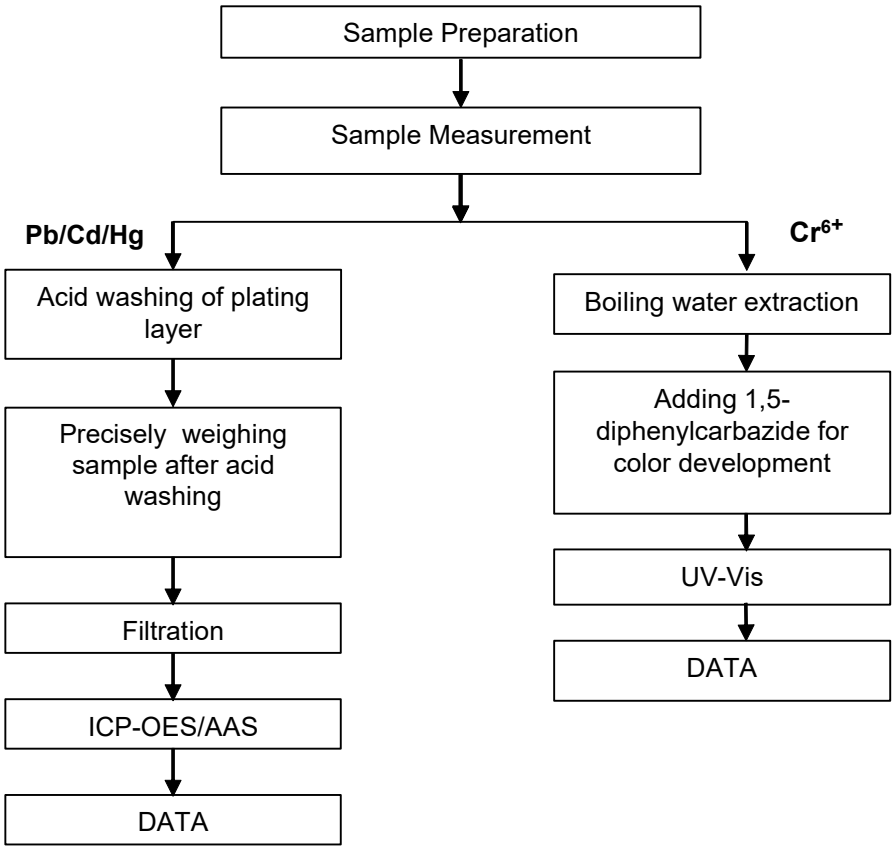
Plating Pb/Cd/Hg/Cr^{6+}Testing Flow Chart



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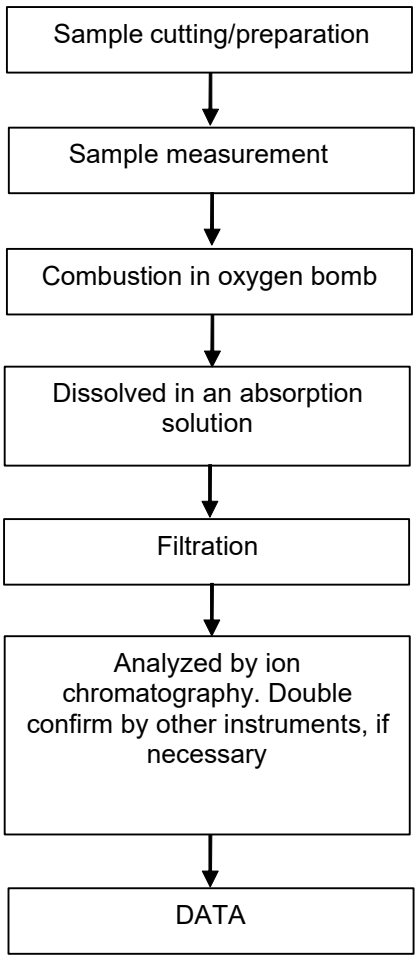
Halogen Testing Flow Chart



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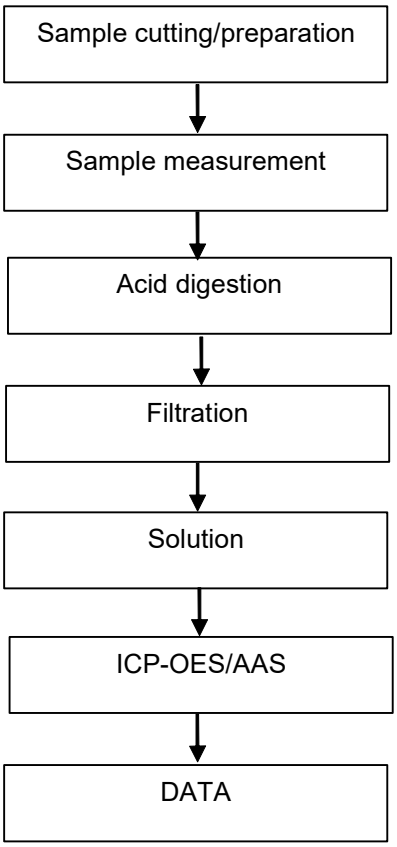
Elementary Testing Flow Chart



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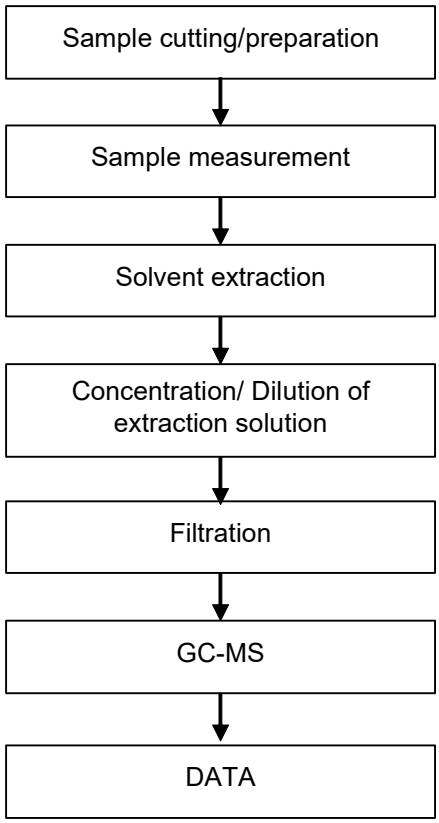
PBBs/PBDEs Testing Flow Chart



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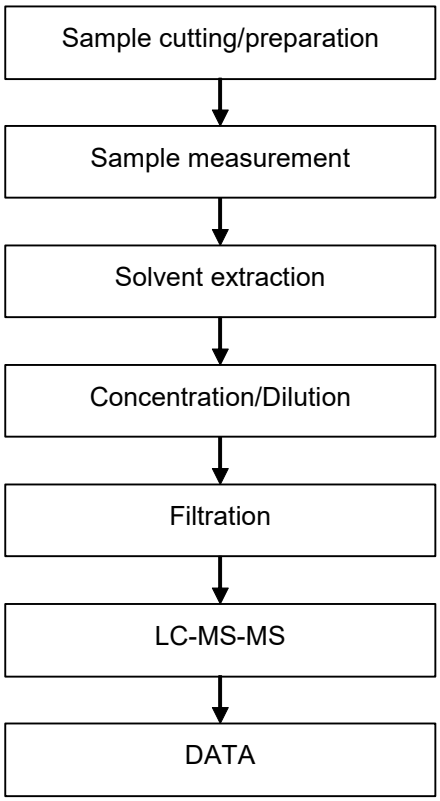
PFOS/PFOA Testing Flow Chart



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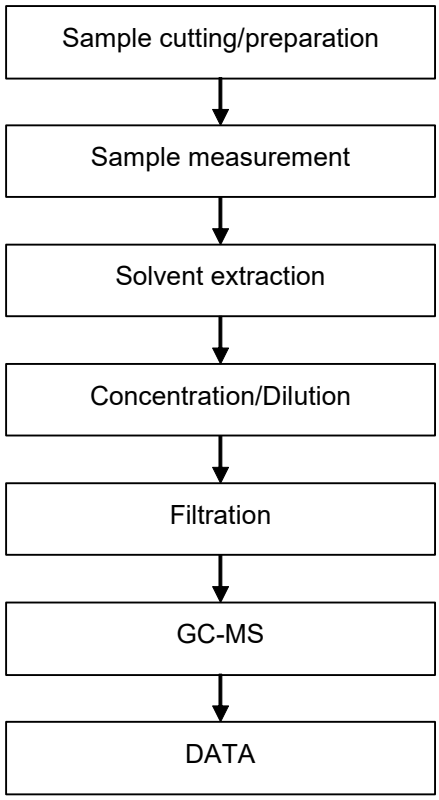
Phthalates Testing Flow Chart



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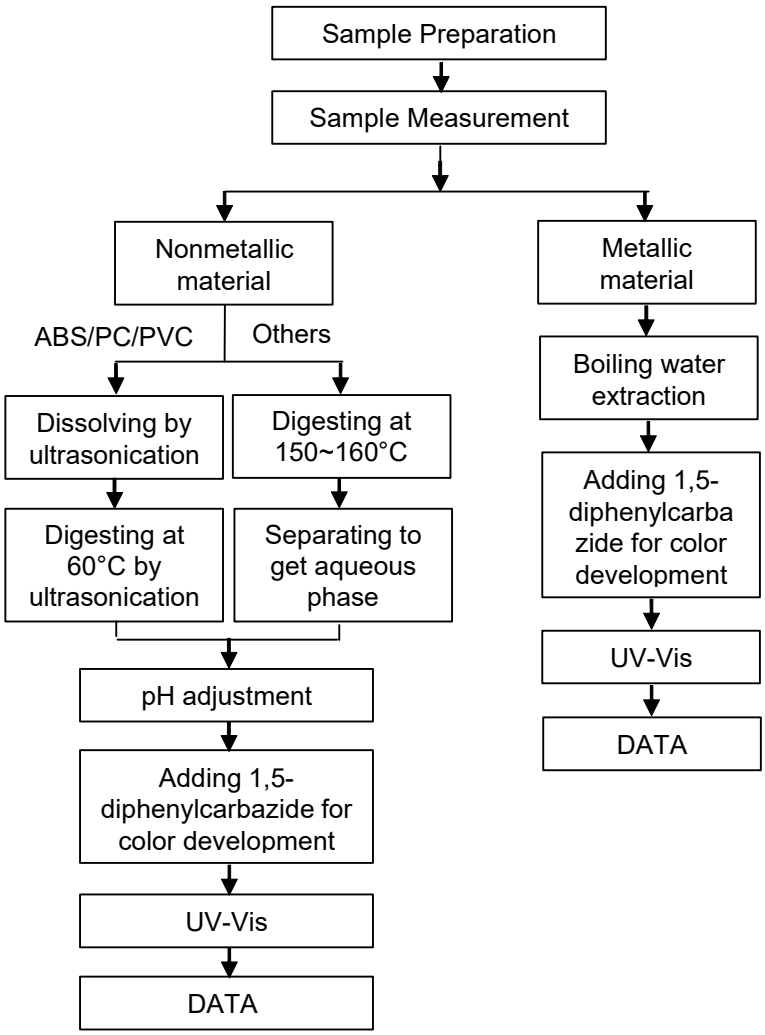
Hexavalent Chromium (Cr(VI)) Testing Flow Chart



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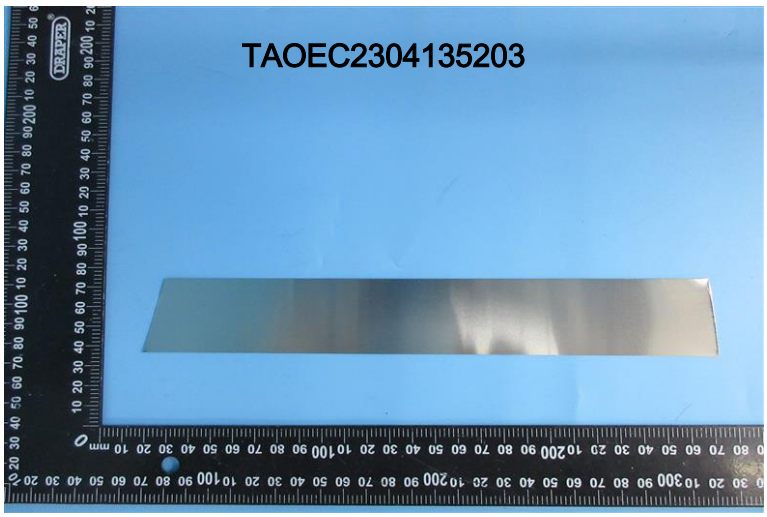

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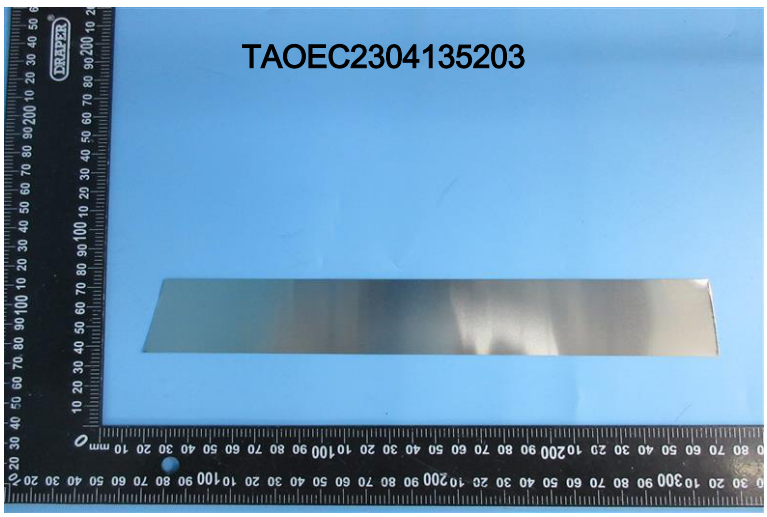

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Test Report

No. TAOEC2304135209 Date: 27 Jun 2023 Page 1 of 12

Client Name : Xuancheng Changfeng Electroplating Technology Co., Ltd.

Client Address : No. 16 Jinniu Xi Road, Langxi County Economic Development Zone, Xuancheng, Anhui

Sample Name : Fog tin plating

The above sample(s) and information were provided by the client.

SGS Job No. : SHP23-004570 - QD

Date of Sample Received : 12 Jun 2023

Testing Period : 12 Jun 2023 - 25 Jun 2023

Test Requested : Selected test(s) as requested by the client.

Test Method(s) : Please refer to next page(s).

Test Result(s) : Please refer to next page(s).

Result Summary :

Test Requested	Conclusion
EU RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU-Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs), Bis(2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) and Diisobutyl phthalate (DIBP)	PASS
Halogen	See Results
Element(s)	See Results
Perfluorooctanesulfonate (PFOS) and its derivatives and Perfluorooctanoic Acid (PFOA) and its salts	See Results

Signed for and on behalf of
SGS-CSTC Standards Technical Services (Qingdao) Co., Ltd.

scan to see the report

F7CA5CAB

Wang Bo, Claire
Approved Signatory

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Test Result(s) :

Test Part Description :

Specimen No.	SGS Sample ID	Description
SN1	TAO23-041352.009	Fog White plating
SN2	TAO23-041352.010	Fog White metal

Remarks :

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

EU RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU- Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs), Bis(2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) and Diisobutyl phthalate (DIBP)

Test Method : With reference to IEC 62321-5:2013, IEC 62321-4:2013+AMD1:2017, IEC 62321-7-1:2015, IEC 62321-6:2015 and IEC62321-8:2017, analyzed by ICP-OES,AAS, UV-Vis and GC-MS.

Test Item(s)	Limit	Unit	MDL	*009*
Cadmium (Cd)	100	mg/kg	10	ND
Lead (Pb)	1000	mg/kg	10	ND
Mercury (Hg)	1000	mg/kg	10	ND
Hexavalent Chromium (Cr(VI))▾	-	μg/cm²	0.10	ND
Sum of PBBs	1000	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	1000	mg/kg	-	ND
Monobromodiphenyl ether	-	mg/kg	5	ND
Dibromodiphenyl ether	-	mg/kg	5	ND
Tribromodiphenyl ether	-	mg/kg	5	ND

检验检测专用章 Inspection & Testing Services

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Test Item(s)	Limit	Unit	MDL	009
Tetrabromodiphenyl ether	-	mg/kg	5	ND
Pentabromodiphenyl ether	-	mg/kg	5	ND
Hexabromodiphenyl ether	-	mg/kg	5	ND
Heptabromodiphenyl ether	-	mg/kg	5	ND
Octabromodiphenyl ether	-	mg/kg	5	ND
Nonabromodiphenyl ether	-	mg/kg	5	ND
Decabromodiphenyl ether	-	mg/kg	5	ND
Dibutyl phthalate (DBP)	1000	mg/kg	50	ND
Butyl benzyl phthalate (BBP)	1000	mg/kg	50	ND
Bis (2-ethylhexyl) phthalate (DEHP)	1000	mg/kg	50	ND
Diisobutyl Phthalates (DIBP)	1000	mg/kg	50	ND

Notes :

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

(2) IEC 62321 series is equivalent to EN 62321 series.

(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.

(4) 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.

(5) The results of PBBs, PBDEs, DBP, BBP, DEHP & DIBP are based on the complete samples submitted by the client, including plating and substrate.

Halogen

Test Method : With reference to EN 14582: 2016, analysis was performed by Ion Chromatograph (IC).

Test Item(s)	Unit	MDL	010
Fluorine (F)	mg/kg	20	ND
Chlorine (Cl)	mg/kg	50	ND
Bromine (Br)	mg/kg	50	ND
Iodine (I)	mg/kg	50	ND

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Element(s)

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

Test Item(s)	Unit	MDL	010
Beryllium (Be)	mg/kg	5	ND
Antimony (Sb)	mg/kg	10	ND

Perfluorooctanesulfonate (PFOS) and its derivatives and Perfluorooctanoic Acid (PFOA) and its salts

Test Method : With reference to CEN/TS 15968:2010, analysis was performed by LC- MS-MS.

Test Item(s)	CAS NO.	Unit	MDL	010
Perfluorooctanesulfonate (PFOS) and its derivatives	-	mg/kg	-	ND
Perfluorooctane Sulfonates (PFOS)^	1763-23-1	mg/kg	0.01	ND
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	4151-50-2	mg/kg	0.01	ND
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol (EtFOSE)	1691-99-2	mg/kg	0.01	ND
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	31506-32-8	mg/kg	0.01	ND
2-(N-methylperfluoro- 1-octanesulfonamido) -ethanol (MeFOSE)	24448-09-7	mg/kg	0.01	ND
Perfluorooctane sulfonamide (PFOSA)	754-91-6	mg/kg	0.01	ND
Perfluorooctanoic Acid (PFOA) and its salts+		mg/kg	0.01	ND

Notes :

(1) ^ PFOS refer to its acid, salts/derivatives including PFOS (CAS No.: 1763-23-1) , PFOS-K (CAS No.: 2795-39-3) , PFOS-Li (CAS No.: 29457-72-5), PFOS-NH4 (CAS No.: 29081-56-9), PFOS-NH(OH)2 (CAS No.: 70225-14-8) and PFOS-N(C2H5)4 (CAS No.: 56773-42-3), PFOS-N(CH3)2(C10H21)2 (CAS No.:251099-16-8) and POSF (CAS No.: 307-35-7).

(2) PFOA and its salts+ refer to its acid / salts including PFOA (CAS No.: 335-67-1), 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)

Unless otherwise stated, the decision rule for conformity reporting is based on Binary Statement for Simple Acceptance Rule (w=0) stated in ILAC-G8:09/2019.

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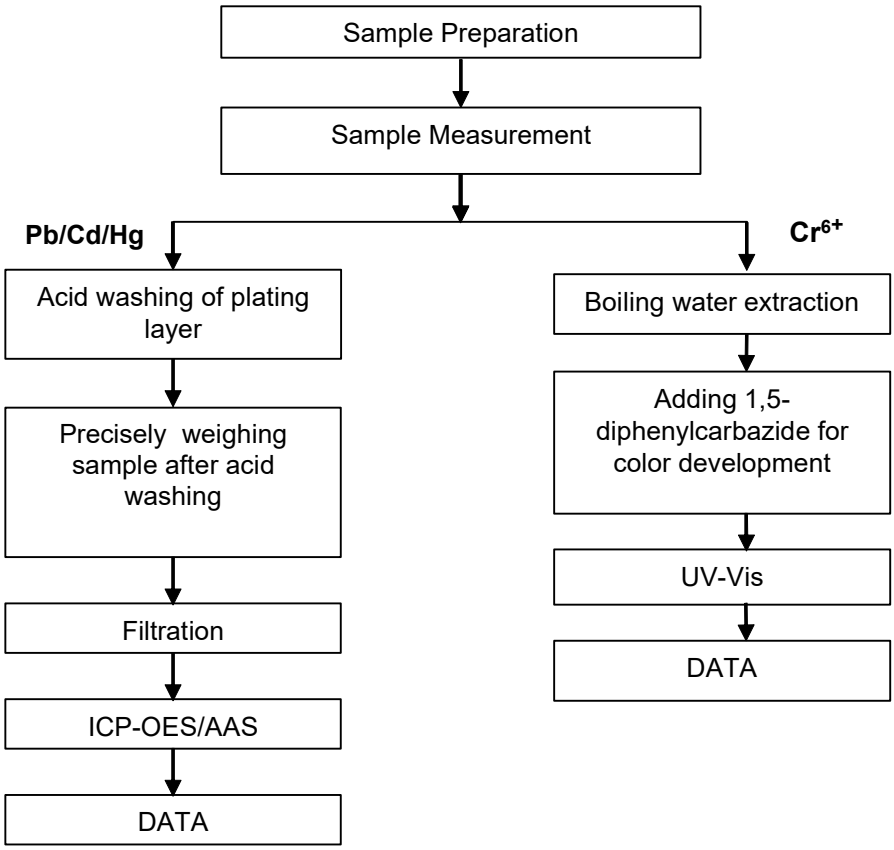
Plating Pb/Cd/Hg/Cr^{6+}Testing Flow Chart



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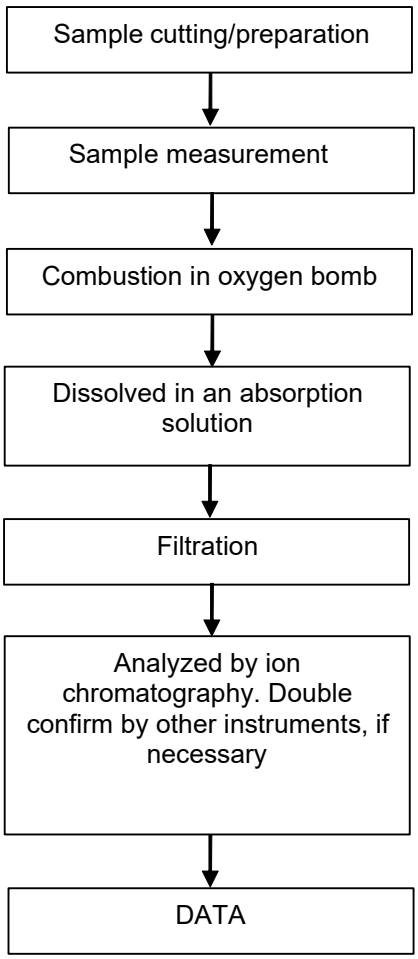
Halogen Testing Flow Chart



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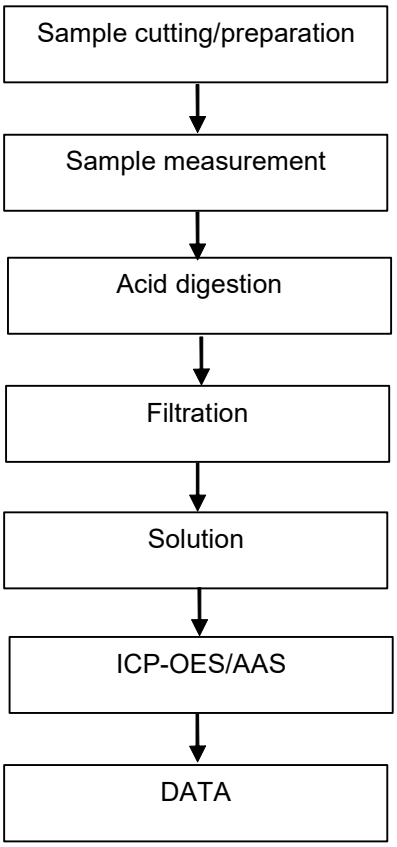
Elementary Testing Flow Chart



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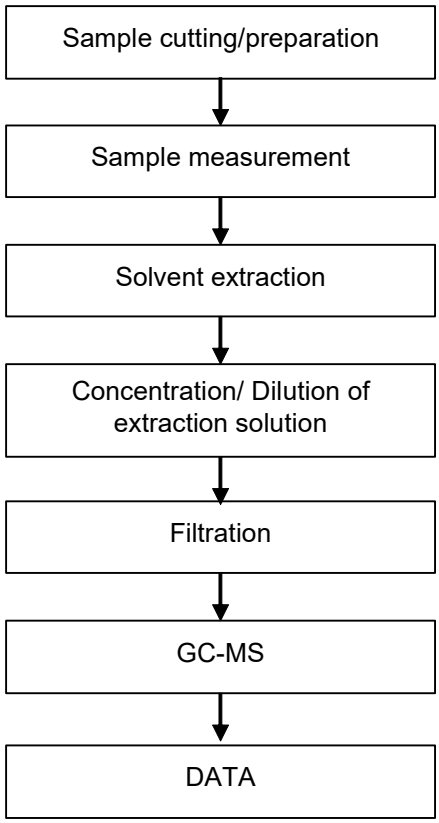
PBBs/PBDEs Testing Flow Chart



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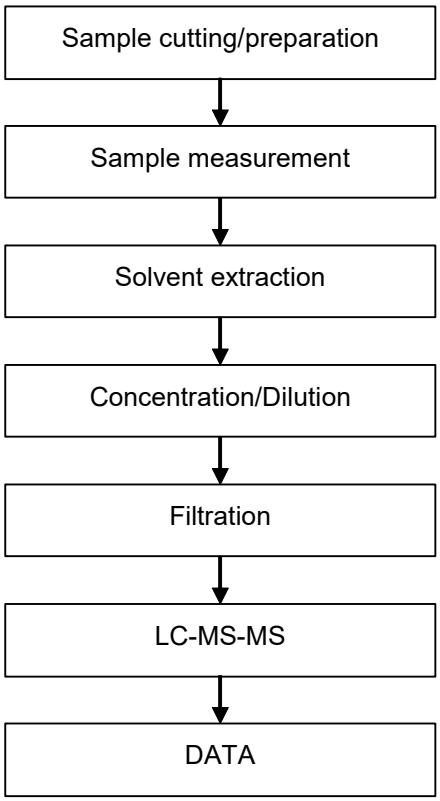
PFOS/PFOA Testing Flow Chart



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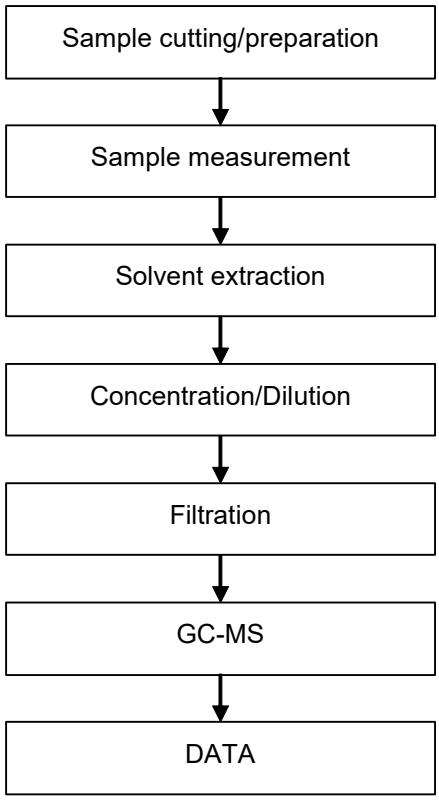
Phthalates Testing Flow Chart



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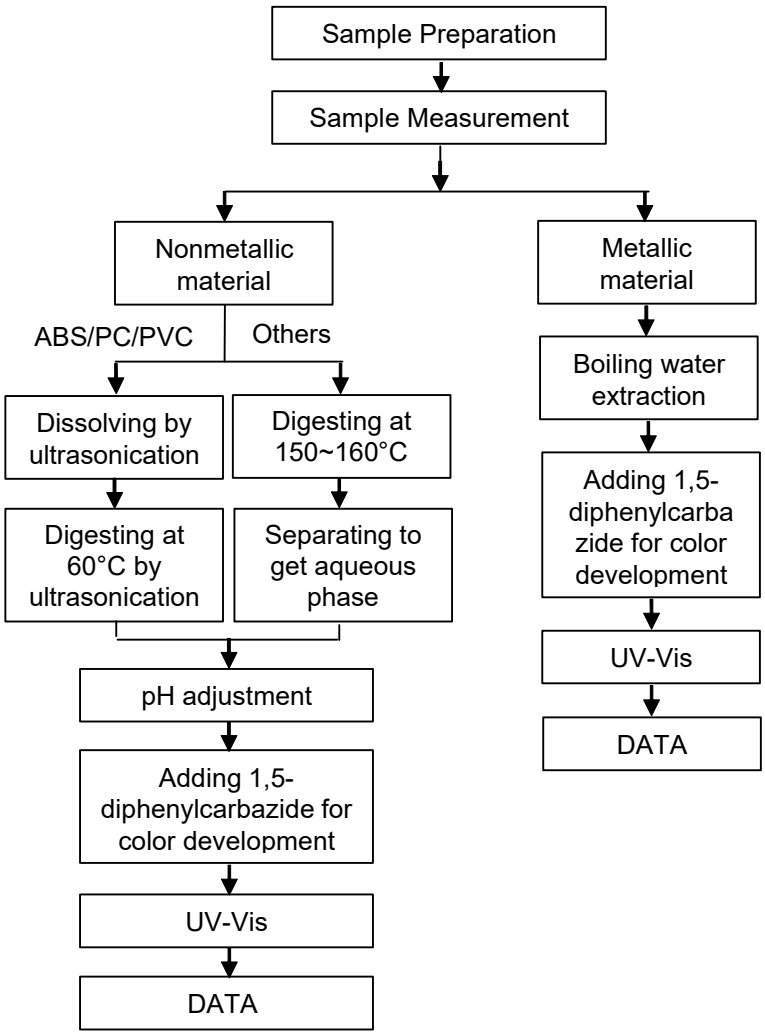
Hexavalent Chromium (Cr(VI)) Testing Flow Chart



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环境管理物质不使用证书
（原材料及原材料厂家 LIST）

向贵司销售的零部件及组件的使用材料、包装材料等中未使用 **DLK**《环境管理物质技术标准》（**508000-D-002**）要求的管理物质（禁止使用对象）及其用途，特此证明。

且：零部件及组件的使用在材料，由以下成分构成。特此报告

1.零件料号：HDM29A-19BM4RN10

以下清单所列均质原材料为本产品中所用到的所有原材料

ITEM Ra	w Material	Raw Material Supplier	Cd Pb		Cr^{6+} Hg		PBB/PBDE	Cl Br		PAHs	第三方测试报告号码
			含量(ppm)	含量(ppm)	含量(ppm)	含量(ppm)	含量(ppm)	含量(ppm)	含量(ppm)	含量(ppm)	
Housing	LCP	摩登	N.D 3		N.D	N.D	N.D	N.D	N.D		SHAEC23008867601
Contact/ Shell	C2680	广铜	N.D 33		N.D	N.D	N.D				CANEC23000500013
Plating Sn	Au	长风	N.D	N.D N.D	N.D		N.D	N.D	N.D		TAOEC2304135201
Plating Au	Ni	长风	N.D	N.D N.D	N.D		N.D	N.D	N.D		TAOEC2304135203
Plating Ni	Matte Sn	长风	N.D	N.D N.D	N.D		N.D	N.D	N.D		TAOEC2304135209

2、 ICP 测试对象物质（塑料（含橡胶）涂料、油墨和线材料中的镉和铅）测试要求的 ICP 数据另附。ICP 测试对象物质的成分表或 MSDS 另附。

备注：请填写该类零部件用到的所有部件、原材料、辅助材料的详细信息。

必须详细、正确的填写部件、原材料、辅助材料的供应商名称、材料型号

主管/职位：管理者代表

公司全称：德为康电子科技有限公司

公司公章：

HDMI®
HIGH-DEFINITION MULTIMEDIA INTERFACE

CHINESE |

HOME SPECIFICATIONS ADOPTERS RESOURCES PRESS EVENTS

HDM21B-19BM4RN10	HDM21B-19BM4RN16	HDM21B-19BM4YN10	HDM21B-19BM4YN16	HDM21B-21BG1RN10
HDM21B-21BG1RN15	HDM21B-21BG1RN18	HDM21B-21BG1YN15	HDM21B-21BM4YN10	HDM22A-19BM2RN10
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HDM27B-19BM4RN10	HDM27B-19BM4YN10	HDM27B-19BM4YN11	HDM28A-19BM2YN11	HDM28A-19BM4YN10
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HDM29A-19BM4YN10	HDM2AA-19BM4YN10	HDM2AB-19BG1RN11	HDM2AB-19BG1RN13	HDM2AB-19BG1YN11
HDM2AB-19BM4RN11	HDM2AB-19BM4YN11	HDM2BD-19BM2YN11	HDM2BD-19BM4YN12	HDM2CB-21BM2RN10
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HDM2HA-19BG1YN10	HDM2HA-19BM4RN10	HDM2HA-19BM4YL10	HDM2HA-19BM4YN10	HDM2KA-19BG1RL10
HDM2KA-19BG1RN1L	HDM2KA-19BM4RL10	HDM2LB-19BG1RL10	HDM2LB-19BG1RN10	HDM2LB-19BG1RN11
HDM2LB-19BG1RN1A	HDM2LB-19BG1RN1B	HDM2LB-19BG1YN10	HDM2LB-19BG1YN11	HDM2LB-19BG2RL1L