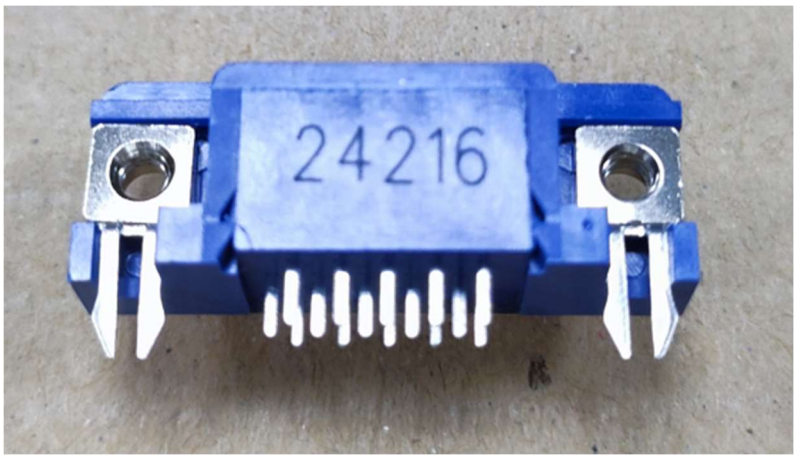
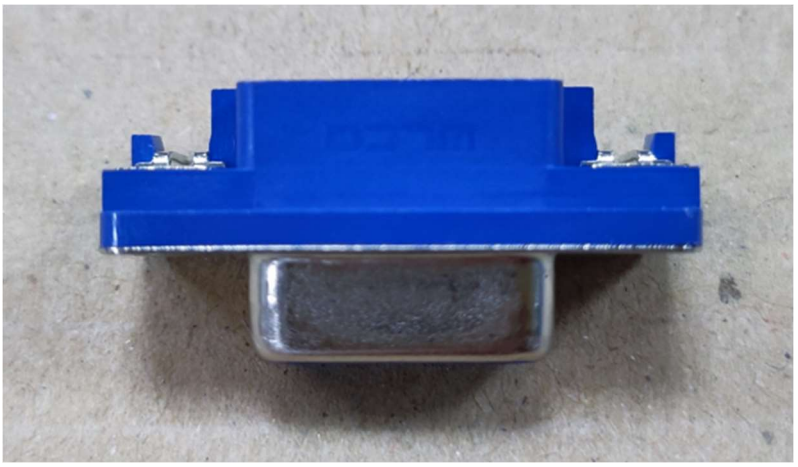
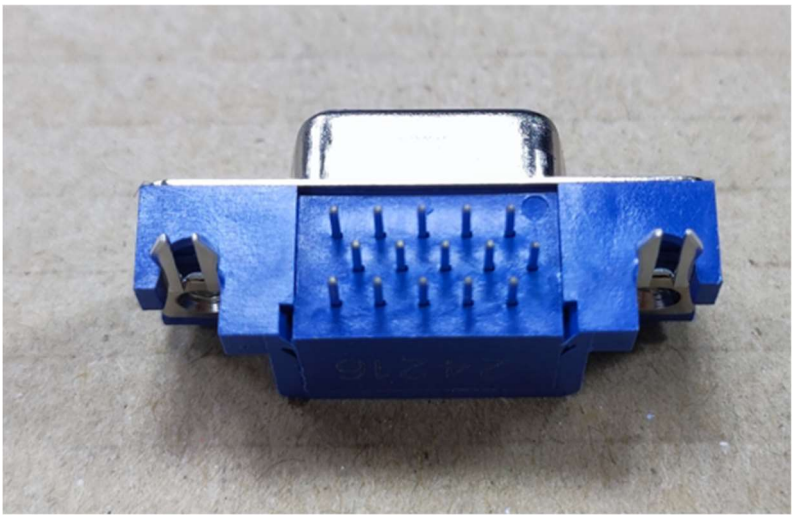
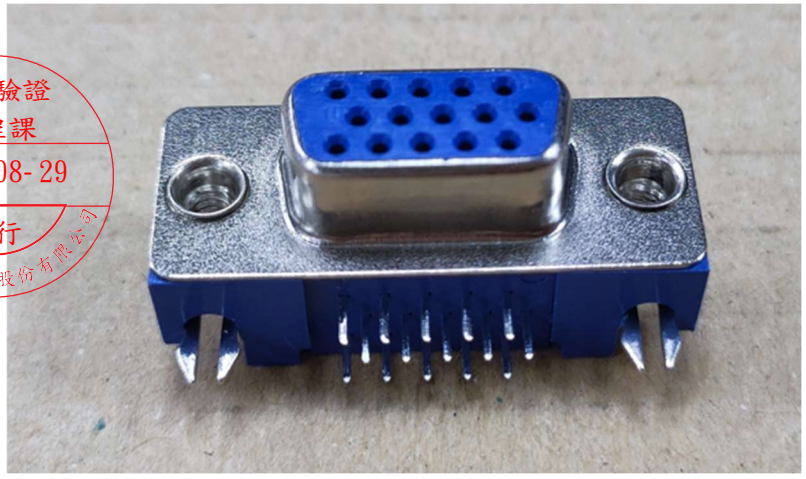








設計驗證
工程課
2024-08-29
發行
宜鼎科技開發股份有限公司

深圳市兴万联电子有限公司

SHENZHEN XING WAN LIAN ELECTRONICS CO.,LTD.

SPECIFICATION FOR APPROVAL

Customer 客户:	钰纬
Cust P/N 客户料号:	3FF01516210(F0300)
Model Name 产品名称:	HDR 15母3.08铆合 PBT蓝胶
Part NO 零件料号:	WLHD-345M
Issued Date 日期:	2024/08/27

ISSUER	ENGINEER	APPROVER	STAMP
邱蓉	李小珍	伍华明	深圳市兴万联电子有限公司 工程承认

CUSTOMER APPROVED

ENGINEER	APPROVER	CHECKER	STAMP
工程課 2024-08-29 發行			

TEL:0755-27911558 FAX:0755-27911970
http:www.wlco.cn
地址:广东省深圳市宝安区福海街道稔田工业区第99栋

目 录

深圳市兴万联电子有限公司		2024/08/27
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WLCO 深圳市兴万联电子有限公司

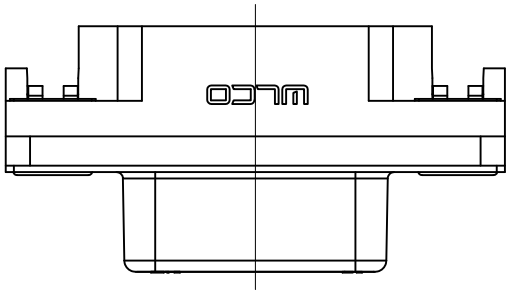
SHENZHEN XING WAN LIAN ELECTRONICS CO.,LTD.

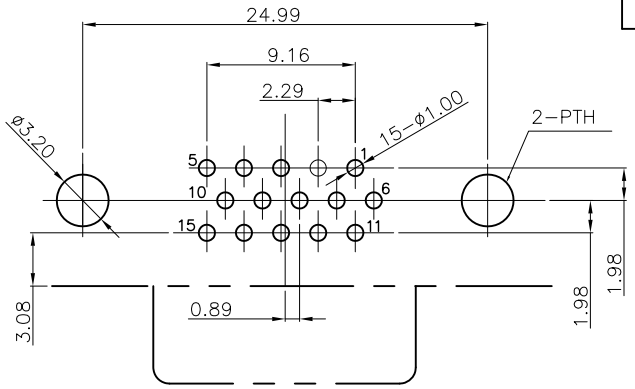
文件修订履历表

版本	日期	制定/修改/废止内容	制定	核准
A	2024/08/27	新版发行	邱蓉	伍华明

RoHS | GP | HF

REV.	ECR/N NO.	DESCRIPTION	DRAWN	DATE
A	/	NEW	MINGKANG.CHENG	2022/04/08





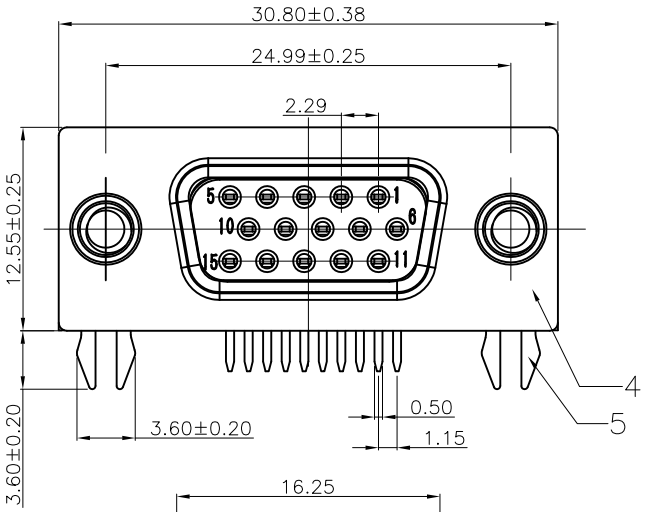
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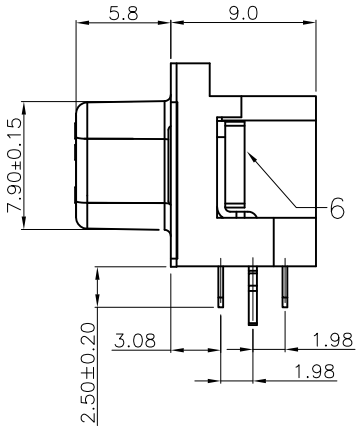
THICKNESS:1.6mm(TOP VIEW))DEFAULT TOLERANCE ±0.05

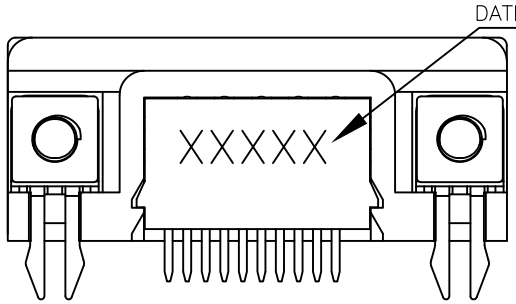
NOTES:
1.MATERIAL:
- 1.1 HOUSING: PBT UL94V-0 COLOUR:BLUE 661C
- 1.2 COVER: PBT UL94V-0 COLOUR:BLUE 661C
- 1.3 CONTACT: COPPER ALLOY
- 1.4 SHELL: SPCC
- 1.5 BOARDLOCK: SPCC
- 1.6 RIVET:COPPER ALLOY

2.PLATING:
- 2.1 CONTACT: Au/NI/SN
- 2.2 SHELL: CU/NI
- 2.3 BOARDLOCK:CU/NI/SN
- 2.4 RIVET: NI

3.SPECIFICATION:
- 3.1 CONTACT CURRENT RATING: 3 AMPS
- 3.2 CONTACT RESISTANCE: 30m OHM MAX
- 3.2 INSULATION RESISTANCE:1000M OHM MIN. AT 500V DC
- 3.3 DIELECTRIC WITHSTANDING VOLT:AC 500V(R.M.S)/1 MINUTE
- 3.4 INSERTION FORCE: 5.0KGF MAX
- 3.5 WITHDRAWAL FORCE: 1.5KGF MIN
- 3.6 DURABILITY: 1000 CYCLES
- 3.7 RECOMMENDED PROCESS: WAVE SOLDERING, PEAK TEMP 265+5°C, 5~10 SECONDS;

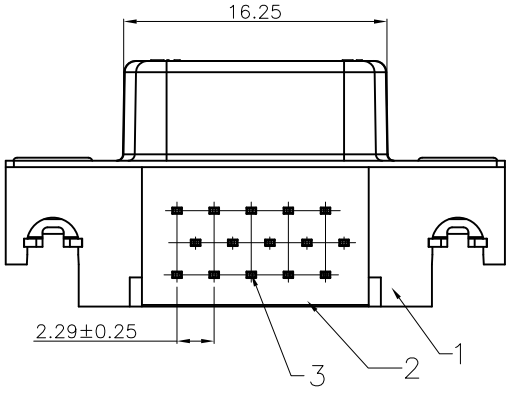






DATE/CODE:XXXXX
- DAY
- WEEK
- YEAR

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2024-08-29
發行
鈺緯科技開發股份有限公司

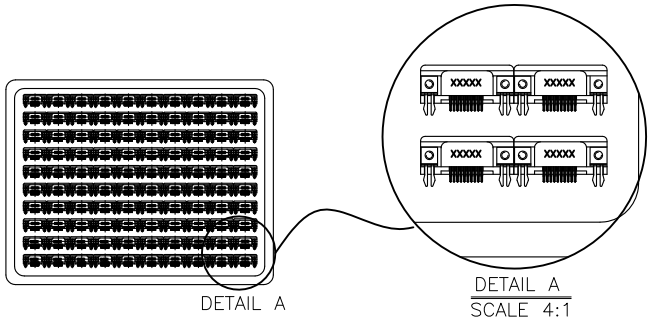


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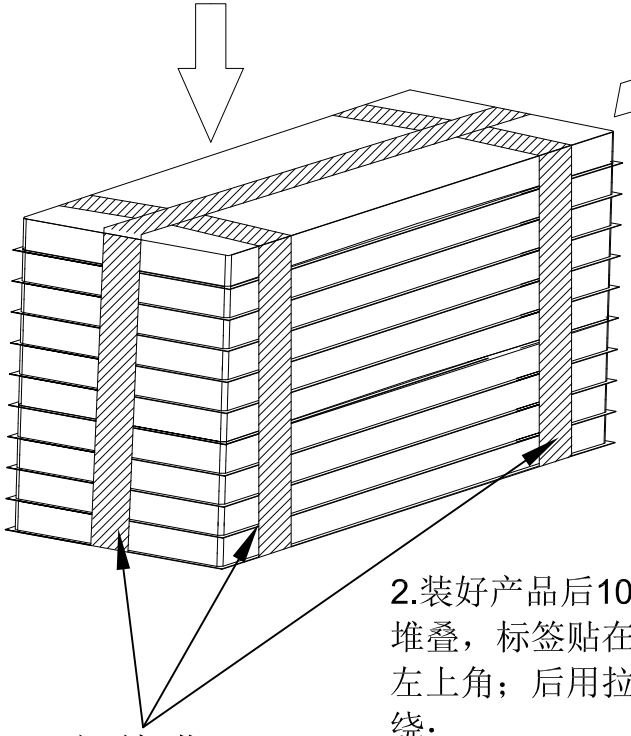
TOLERANCE	MODEL NAME: HDR 15母3.08铆合 PBT蓝胶 UL94V-0 SPCC外壳 端子音叉式 半金Gold Flash针长2.5mm SS鱼叉 吸塑包装				DRAWN: MINGKANG.CHENG
X.X ±0.35 X.XX ±0.25 X.XXX ±0.10 ANGLE ±2.0°	MODEL NO: WLHD-345M				CHECKED: XIAOTAO.WU
	UNIT:	SCALE:	REVISION:	SHEET	APPROVED: HUAMING.WU
	mm	1:1	A	1/1	DATE: 2022/04/08
	WLCO 深圳市兴万联电子有限公司 SHENZHEN XING WAN LIAN ELECTRONICS CO.,LTD.				DWG NO:C-WLHD-345M-01
					FILE: C

RoHS GP HF

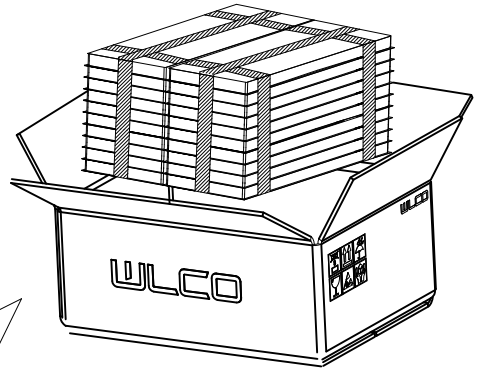
REV.	ECR/N NO.	DESCRIPTION	DRAWN	DATE
A	/	NEW	MINGKANG.CHENG	2022/04/08



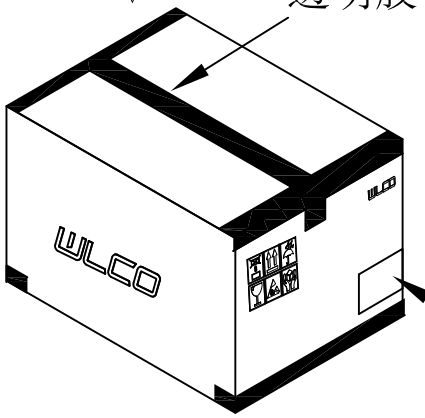
1.产品按图示方向放置，
100PCS/盘;



2.装好产品后10盘按相同方向堆叠，标签贴在最上层吸塑盒左上角；后用拉伸膜工字形缠绕;



3.将缠好的产品放入纸箱中；共2000PCS/箱



4.确认数量OK后用透明胶工字形封好纸箱，并贴上标签；

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2024-08-29
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鈺緯科技開發股份有限公司

TOLERANCE X.X ±0.35 X.XX ±0.25 X.XXX ±0.15 ANGLE ±1.0°	MODEL NAME: HDR 15母3.08卵合 PBT蓝胶 UL94V-0 SPCC外壳 端子 音叉式半金Gold Flash针长2.5mm SS鱼叉 吸塑包装			DRAWN: MINGKANG.CHENG
	MODEL NO: WLHD-345M			CHECKED: WUXIAO.TAO
	UNIT: mm	SCALE: 1:1	REVISION: A	SHEET 1/1	APPROVED: HUAMING.WU
				DATE: 2022/04/08
	WLCO 深圳市兴万联电子有限公司 SHENZHEN XING WAN LIAN ELECTRONICS CO.,LTD.			DWG NO: P-WLHD-345M-01
				FILE: P

PRODUCT SPECIFICATION

1.0 Applicable Connector: Applicable to WLCO D-SUB Series connector.

（适用于 WLCO 公司 D-SUB 系列连接器.）

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

（覆盖范围：此规格书内容含盖 WLCO 公司 D-SUB 系列连接器产品性能及测试方法。）

2.0 Rating（要求）：

2.1 Rated Voltage : 100 V AC,DC（额定电压：100V）

2.2 Rated Current:3.0 A（额定电流：3.0A）

2.3 Electric Pressure: Keeping 60 second in AC 500V/1mA(耐压 500V AC 持续 60 秒）

2.4 Insulation Resistance: 1000 MΩ Min. in DC 500V(绝缘阻最小 1000 兆欧)

2.5 Contact Resistance: 30 mΩ Max. (接触阻抗最大 30 毫欧)

3.0 Test 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.）

3.1 Temperature range : +15℃to35℃. （ 温度：+15℃至 35℃）

3.2 Humidity range: 25%to85%.（湿度：25%至 85%）

3.3 Atmospheric Pressure : 860 to 1060 mber

（大气压力： 860 至 1060 兆帕）

4.0 Mechanical Characteristics（机械性能）

4.1 Insertion Force(for one pin)：240gf/Max.

4.2 Extraction Force(for one pin): 30gf/Min.

4.3 Stretching Force(from insulator to pin):1.0Kgf/Min

4.4 Insertion Force(mating connector): 5.0Kgf Max;

4.5 Extraction Force(mating connector):1.5Kgf Min

5.0Test Methods and Requirements（测试方法和要求）：

5.1Examination of product（检查尺寸）：

Item (条目)	Test Description （测试内容）	Test Methods （测试方法）	Requirement （要求）
5.1.1	Examination of product Outward Appearance Structure （产品外形/尺寸检查）	Shall be confirm with eyes in accordance with each drawing. Shall be confirmed by using proper measuring instruments. （依照图面要求对产品目视检查，再用测量工具，按图面要求测量尺寸）	Outward appearance shall be good without such injurious problem structure shall be meet the design and dimensional requirements of drawing （外观良好，无任何有害问题；结构符合图面设计要求。）

5.2 Electrical performance（电气性能）：

Item (条目)	Test Description （测试内容）	Test Methods （测试方法）	Requirement （要求）
5.2.1	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) （配对的连接器，端子在回路施加直流最大 20mV 10mA 的电流；铁壳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 mΩ maximum. （接触阻抗最大不能超过 30 毫欧）
5.2.2	Insulation Resistance （绝缘阻抗）	Unmated connectors, applied DC 500 Volts for 1minute between adjacent terminal. (ANSI/EIA 364-21, Method 302) （未交配的连接器，在相邻的端子间施加 DC 500V 的电压测试 1 分钟；）	1000MΩ minimum (unmated) （最小为 1000 兆欧）
5.2.3	Dielectric Strength （耐电压）	Unmated connectors, applied AC 500 Volts and leak current 1mA for 1minute between adjacent terminal . (ANSI/EIA 364-20,Method 301) （未交配的连接器，在相邻的端子间施加 AC 500V 的电压与 1mA 漏电流测试 1 分钟；	No Breakdown （没有损坏）

5.3 Mechanical Performance（机械性能）：

Item (条目)	Test Description （测试内容）	Test Methods （测试方法）	Requirement （要求）
5.3.1	Connector Insertion Force（插入力）	Solder each of the plug and receptacle connector to the P.C.Board then do insertion/extraction along the axis 3 times at speed 25mm. After place each of the P.C.Board onto the push-on/pull-off machine to be measurement the insertion force. (ANSI/EIA-364-13) （将公、母座焊接在 PCB 板上，再将 PCB 板置于插拔力实验机上，然后以每分钟 25mm 的速度沿轴向插拔 3 之次后再测试其插入力。）	Insertion force： 5.0Kgf Max. 插入力： 5 .0Kgf Max.
5.3.2	Connector Withdrawal Force （拔出力）	Solder each of the plug and receptacle connector to the P.C.Board then do insertion/extraction along the axis 3 times at speed 25mm. After place each of the P.C.Board onto the push-on/pull-off machine to be measurement the insertion force. (ANSI/EIA-364-13) （将公、母座焊接在 PCB 板上，再将 PCB 板置于插拔力实验机上，然后以每分钟 25mm 的速度沿轴向插拔 3 之次后再测试其拔出力。）	Withdrawal Force：1.5Kgf Min. 拔出力： 1.5Kgf Min.

5.3.3	Durability （寿命）	Solder each of the plug and receptacle connector to the P.C. Board,then place each of the P.C. Board onto the push-on/pull-off machine,then do insertion / Withdrawal 1000 cycles along the axis at speed of 200 ±50 cycles per hours （ANSI/EIA 364-09） （将公、母座焊接在 PCB 上，再将 PCB 板置于耐插拔实验机上，然后以每小时 200±50 次的速度沿轴向插拔 1000 次）	1）Insertion force：5.0Kgf Max . 插入力：5 .0Kgf Max . 2）Withdrawal Force：1.0Kgf Min. 拔出力： 1.0Kgf Min.
5.3.4	Screw torque （螺丝扭力）	Straight locks 2.5 Kg locking force 3 s;Riveting lock is 3.5 Kg, 3 s role. （直锁 2.5Kg 锁紧力作用 3s；铆锁 3.5Kg，作用 3s.）。	Straight locks the reverse torsion 1.0Kg MIN.; 直锁 反扭力至少 1.0Kg Riveting lock he reverse torsion 1.2Kg MIN 铆锁反扭力至少 1.2Kg

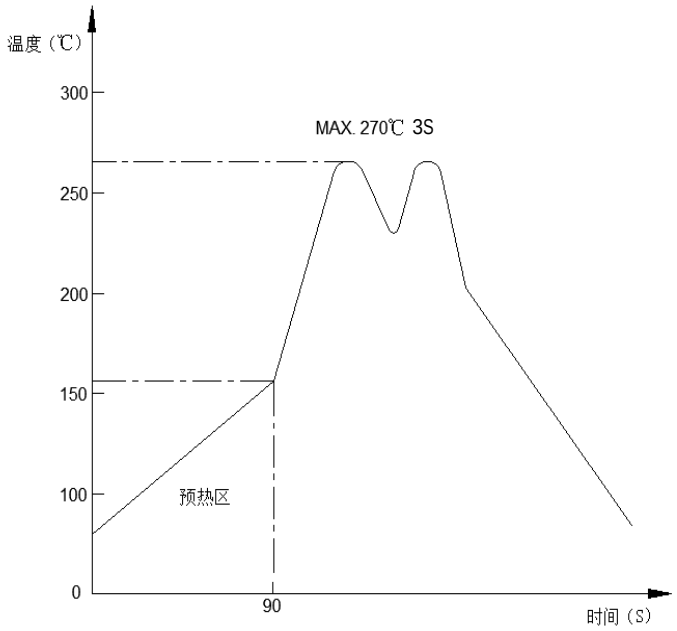
5.4 Environmental Performance（环境性能）：

Item (条目)	Test Description （测试内容）	Test Methods （测试方法）	Requirement （要求）
5.4.1	Salt Spray （盐水喷雾）	Salt density:5% Temperature: 35± 2℃ Furnace front TIME: 12H 盐水浓度：5% 温度：35± 2℃ 时间：炉前 12H EIA-364-26	No oxidation, rust 无氧化、生锈
5.4.2	Withstand humidity （恒温恒湿）	Solder each of the plug and receptacle connector to the P.C.Board ,then mate them together and exposed at temperature of85℃ and humidity of 80-95% for a period of 96 hours. after removal from chamber, socket shall be returned at room condition for a period of 2 hours. the socket shall be capable of. （ANSI/EIA-364-31） （将公母座连接器各自焊接于 PCB 板上后将其对插再暴露在温度为 85℃，湿度为 80-95%的恒温恒湿槽中放置 96 小时进行测试，完成测试后将插座取回在常温常湿下放置 2 小时后测定。）	1）Appearance: no damage（外观无损害） 2）Contact resistance: 30 mΩ Max. （接触阻抗最大 30 毫欧） 3）Insulation resistance: 1000 megaohms minimum. （绝缘阻抗最小 1000 兆欧） 4 ） dielectric withstanding Voltage: AC 500V No Breakdown. （耐电压 AC 500V 测试无损坏。）
5.4.3	Withstand heat （耐热）	The connector shall be exposed in a hot chamber at temperature of 85±2℃ for a period of 96 hours ,shall then be returned at room conditions for 2 hours. the socket shall be capable of satisfactory performance. （ANSI/EIA-364-17） (将连接器暴露在温度为 85±2℃的恒温恒湿槽中放置 96 小时后，再在室温下自然干燥 2 小时后，绝缘部分应无变形、裂痕、金属部分无变色。)	Appearance: no obvious damage on appearance and configuration （外观和构造无损坏）

5.4.4	Withstand cold （耐寒）	The connector shall be exposed in a cold chamber at temperature of -40℃±2℃ for a period of 96hours, shall then be returned at room conditions for 2 hours, the socket shall be capable of satisfactory performance. （ANSI/EIA-364-17） (将连接器暴露在温度为-40±2℃的恒温恒湿槽中放置 96 小时后，再在室温下自然干燥 2 小时后，绝缘部分应无变形、裂痕、金属部分无变色。)	Appearance: no obvious damage on appearance and configuration （外观和构造无损坏）
5.4.5	Composite temperature/humidity cyclic （高低温循环）	The socket shall be subjected to the condition described below, for a total of 5 cycles, first step -55℃±3℃/0.5h, second step: 85℃±3℃ /0.5h ,shall then be returned at room condition for a period of 2 hours . （ANSI/EIA-364-17） (在下列条件下持续进行 5 次循环测试,第一步：-55℃±3℃ /0.5h，第二步：85℃±3 ℃/0.5h，常温常湿中放置 2 小时后测定。)	1）Appearance: no damage（外观无损害) 2）Contact resistance: 30 mΩ Max. （接触阻抗最大 30 毫欧） 3）Insulation resistance: 1000 megaohms minimum. （绝缘阻抗最小 1000 兆欧） 4 ） dielectric withstanding Voltage: AC 500V No Breakdown. （耐电压 AC 500V 测试无损坏。）
5.4.6	Solderability （可焊性）	Immerse the solder pin of the connector in the solder bath at 245℃±3℃ for 3±0.5seconds. After dipped the pin in the flux for 5 seconds. （ANSI/EIA-364-52） （将端子脚浸入助焊剂中 5 秒，然后将端子脚浸入 245℃±3℃的锡炉中 3±0.5 秒.）	Solder wetting:95% of immersed area must show no voids，Pin holes. (粘锡面积：锡附着的面积应超过浸入表面积的 95%以上)
5.4.7	Resistance to soldering heat （耐焊接热）	Place the connector on the P.C.Board,then immerse the solder pin up to the surface of the board in the solder bath at 265℃±5℃ for 3 seconds.（ANSI/EIA-364-52） (将连接器置于 PCB 上,然后将露出 PCB 板表面的 Pin 脚部分浸入 265±5℃的锡炉中 3 秒) Rework make the product weld or remove welding from the PCB board, temperature condition range: 300~350℃, time set up above 3s （手动将产品从 PCB 上焊接或解除时，温度条件为 300~350℃，时间≧3 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)
5.4.8	Drop test （跌落试验）	FCL product fall under 10 kg of 800 mm, 10 ~ 20 kg fell to 600 mm, according to the Angle of 1 3 line 6 face at least 10 times （整箱产品 10KG 以下跌落 800mm，10~20Kg 跌落 600mm，按照 1 角 3 线 6 面至少 10 次跌落）	Packing can't damage, serious deformation, internal product packaging in good condition, material, structure, good appearance, no deformation, wear, the problem such as craze, electrical properties, mechanical properties, environmental performance is normal; （包装箱不能破损，严重变形，内部产品包装完好，物料外观、结构良好，无变形、磨损、开裂等问题，电

			气性能、机械性能、环境性能正常）

5.5.0 Reference temperature wave soldering:



深圳市兴万联电子有限公司

SHENZHEN XING WAN LIAN ELECTRONICS CO.,LTD.

可靠性测试报告

PRODUCT RELIABILITY TEST REPORT

报 告 编 号：20240806001
Report No.

样 品 料 号：WLHD-345M
Sample No.

样 品 名 称： HDR 15母3.08铆合 PBT蓝胶
Sample name.

样 品 数 量：40 PCS
Quantity of samples.

测 试 项 目：Group Test
Test item.

版　　次 ：A
Revision.

制作日期 ：2024/08/06
Production date.

结　　论 ：
Conclusion

Qualification Flow	Pass / Fail	Comments
Test Group A	Pass	All Test targets can meet the requirements
Test Group B	Pass	All Test targets can meet the requirements
Test Group C	Pass	All Test targets can meet the requirements
Test Group D	Pass	All Test targets can meet the requirements
Test Group E	Pass	All Test targets can meet the requirements
Test Group F	Pass	All Test targets can meet the requirements
Test Group G	Pass	All Test targets can meet the requirements
Test Group H	Pass	All Test targets can meet the requirements

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PRODUCT RELIABILITY TEST REPORT

Definitions:

Samples Quantity: 5PCS Receptacle

Test Item: Each of sample make every group of function test

Test Date: 2024/07/15~2024/07/25

Description:

Connector P/N: WLHD-345M

Department: QC Department

Product Specification:HDR 15母3.08铆合 PBT蓝胶

Qualification and Test Item:

Test or Examination	Test Group							
	A	B	C	D	E	F	G	H
	Test Item(a)							
Examination of appearance of product（外观）	1，9	1，9	1，5	1，9	1，3	1，3	1，3	1，6
Contact resistance （接触阻抗）	2，6	2，6	2，4	2，8				3
Dielectric withstanding Voltage（耐电压）		4，8		3，7				5
Insulation Resistance （绝缘阻抗）		3，7		4，6				4
Mating Force（插入力）	3,7							
Unmating Force（拔出力）	4,8							
Durability（耐久）	5							
Solder ability（可焊性）							2	
Composite temperature/ humidity cyclic（高低温循环）		5						
Humidity（恒温恒湿）				5				
Withstand heat（耐热）					2			
Withstand cold（耐寒）						2		
Resistance to soldering heat （耐焊性）								2
Salt Spray（盐雾）			3					

Note：

WLCO

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GroupA TEST REPORT

Applicant: QC Department
Test item: 1.Visual Inspection→2.CR →3.Insertion&withdraw →4.Durability →5.CR →6.Insertion&withdraw →7.Insertion&withdraw
Product: D-SUB CONNECTOR
Part No.: WLHD-345M
Quantity: 5PCS
Sample Received: 2024/7/15
Testing Period: 2024/07/15to2024/07/25
Measuring Environment: Temperature.25±2℃, R.H.58±3%
Testing conditions: According to general D-SUB's product specifications.
1.CR:(1)Contact:V=20mV;A=10mA。
2.Durability :1000 cycles at 200±50 cycles per hour
3.Insertion and Withdrawal speed :25mm/Minute
Sample No.:1,2,3,4,5

Testing Equipment:

Name	Fully automatic plug and unplug testing machine	impedance
Model	1220S	JK2511

Testing Results:

1. Contact Resistance: (Unit:mΩ)

1.1 Before Durability test for Contact

Sample No	#1	#2	#3	#4	#5	Judgement
PIN1	9.82	9.88	10.53	11.44	9.96	
PIN2	9.43	11.24	10.59	11.32	12.34	
PIN3	9.58	12.31	11.42	10.75	12.69	
PIN4	10.88	9.97	12.31	10.78	11.52	
PIN5	9.72	10.95	10.64	12.32	10.58	
PIN6	11.18	9.21	10.22	11.24	10.23	
PIN7	9.31	12.37	12.41	12.31	12.52	
PIN8	9.85	9.97	9.87	9.52	11.97	
PIN9	11.92	10.26	10.45	10.93	11.95	OK
PIN10	9.58	12.31	11.42	10.75	12.69	
PIN11	10.88	9.97	12.31	10.78	11.52	
PIN12	9.72	10.95	10.64	12.32	10.58	
PIN13	11.18	9.21	10.22	11.24	10.23	
PIN14	9.31	12.37	12.41	12.31	12.52	
PIN15	9.85	9.97	9.87	9.52	11.97	
Specifition			MAX	MIN	AVG	
30mΩ/max			12.69	9.21	10.92	

1.2 After Durability test for Contact

Sample No	#1	#2	#3	#4	#5	Judgement
PIN1	14.23	14.57	16.45	15.68	15.47	
PIN2	15.35	13.98	15.64	14.34	16.18	
PIN3	14.89	13.42	16.32	13.59	14.15	
PIN4	15.26	14.32	15.83	13.96	13.58	
PIN5	13.98	14.00	15.46	15.82	13.95	
PIN6	15.69	14.98	16.87	16.45	16.12	
PIN7	16.23	16.12	13.98	15.62	16.21	
PIN8	15.87	16.32	15.74	15.41	14.92	
PIN9	14.59	15.46	15.23	16.42	15.76	OK
PIN10	14.89	13.42	16.32	13.59	14.15	
PIN11	15.26	14.32	15.83	13.96	13.58	
PIN12	13.98	14.00	15.46	15.82	13.95	
PIN13	15.69	14.98	16.87	16.45	16.12	
PIN14	16.23	16.12	13.98	15.62	16.21	
PIN15	15.87	16.32	15.74	15.41	14.92	
Specifition			MAX	MIN	AVG	
30mΩ/max			16.87	13.42	15.21	

2. Insertion and Withdrawal force:(Unit:Kgf)

2.1 Before Durability test :

Test item	Insertion	Withdrawal	Judgement
Spec:	5.0Kgf/Max	1.5Kgf/min	
Sample 1	1.62	1.56	OK
Sample 2	1.61	1.58	OK
Sample 3	1.58	1.59	OK
Sample 4	1.65	1.54	OK
Sample 5	1.55	1.59	OK

2.2 After Durability test:

Test item	Insertion	Withdrawal	Judgement
Spec:	5.0Kgf/Max	1.0Kgf/min	
Sample 1	1.58	1.52	OK
Sample 2	1.57	1.51	OK
Sample 3	1.54	1.48	OK
Sample 4	1.55	1.47	OK
Sample 5	1.56	1.44	OK

3. Visual inspection

Test item	Visual inspection	Visual inspection
	Before Test	After Test
Spec:	No damage	No damage
Sample 1	passed	passed
Sample 2	passed	passed
Sample 3	passed	passed
Sample 4	passed	passed
Sample 5	passed	passed

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GroupB TEST REPORT

Applicant: QC Department

Test item: 1.Visual Inspection—2.CR —3.I.R. —4.DWV —5.Composite temperature/humidity cyclic—6.CR —7.I.R.—8.DWV— 9.Visual Inspection

Product: D-SUB CONNECTOR

Part No.: WLHD-345M

Quantity: 5PCS

Sample Received: 2024/7/15

Testing Period: 2024/07/15to2024/07/25

Measuring Environment: Temperature.25±2℃, R.H.58±3%

Testing conditions: According to general D-SUB's product specifications.
1.CR:(1)Contact:V=20mV;A=10mA.
2.applied DC 500 Volts for 1minute between adjacent terminal.
3.applied AC 500 Volts and leak current 1mA for 1minute between adjacent terminal .
4.–55℃ ±3℃for 30 minutes +85℃±3℃ for 30 minutes of 5 cycles
Sample No.:1,2,3,4,5

Testing Equipment:

Name	Thermal shock chamber	Contact	Withstanding	Insulation tester
Model	QC-TS-50-A	JK2511	LK2672X	SJ7122

Testing Results:

1. Contact Resistance: (Unit:mΩ)

1.1 Before Composite temperature/humidity cyclic test for Contact

Sample No	#1	#2	#3	#4	#5	Judgement
PIN1	9.58	9.88	10.53	11.42	9.96	
PIN2	9.12	11.24	10.59	11.32	12.34	
PIN3	10.23	12.31	11.42	10.78	12.69	
PIN4	11.88	9.97	12.34	10.78	11.52	
PIN5	10.75	10.95	10.64	12.38	11.58	
PIN6	11.24	11.22	9.24	11.21	11.42	
PIN7	12.31	12.35	12.42	12.31	12.31	
PIN8	9.97	9.89	9.39	10.97	9.97	
PIN9	10.95	10.85	10.21	10.92	10.95	OK
PIN10	10.23	12.31	11.42	10.78	12.69	
PIN11	11.88	9.97	12.34	10.78	11.52	
PIN12	10.75	10.95	10.64	12.38	11.58	
PIN13	11.24	11.22	9.24	11.21	11.42	
PIN14	12.31	12.35	12.42	12.31	12.31	
PIN15	9.97	9.89	9.39	10.97	9.97	
Specifition			MAX	MIN	AVG	
30mΩ/max			12.69	9.12	11.10	

1.2 After Composite temperature/humidity cyclic test for Contact

Sample No	#1	#2	#3	#4	#5	Judgement
PIN1	15.35	14.35	13.56	15.68	15.89	
PIN2	14.23	15.34	14.58	12.34	16.18	
PIN3	14.12	13.42	15.78	13.59	14.15	
PIN4	13.65	14.32	15.83	16.13	13.58	
PIN5	13.54	13.64	14.55	15.68	14.78	
PIN6	14.52	15.78	13.24	14.24	15.28	
PIN7	15.12	15.86	14.31	13.31	14.28	
PIN8	14.78	14.52	15.97	15.12	15.23	
PIN9	13.69	15.12	14.56	15.23	13.95	OK
PIN10	14.12	13.42	15.78	13.59	14.15	
PIN11	13.65	14.32	15.83	16.13	13.58	
PIN12	13.54	13.64	14.55	15.68	14.78	
PIN13	14.52	15.78	13.24	14.24	15.28	
PIN14	15.12	15.86	14.31	13.31	14.28	
PIN15	14.78	14.52	15.97	15.12	15.23	
Specifition			MAX	MIN	AVG	
30mΩ/max			16.18	12.34	14.62	

2. Insulation Resistance and dielectric Withstanding Voltage

2.2 Before Composite temperature/humidity cyclic Test：

Test item	Visual Inspection	I/R	DWV
Spec:	No damage	≥1000MΩ	No Breakdown
Sample 1	passed	passed	passed
Sample 2	passed	passed	passed
Sample 3	passed	passed	passed
Sample 4	passed	passed	passed
Sample 5	passed	passed	passed

2.2 After Composite temperature/humidity cyclic Test：

Test item	Visual Inspection	I/R	DWV
Spec:	No damage	≥1000MΩ	No Breakdown
Sample 1	passed	passed	passed
Sample 2	passed	passed	passed
Sample 3	passed	passed	passed
Sample 4	passed	passed	passed
Sample 5	passed	passed	passed

SHENZHENGSHIXINGWANLIAN ELECTRONICS CO.,LTD

Group C TEST REPORT

Applicant: QC Department
Test item: 1.Visual Inspection→2.CR →3.Salt spray →4.CR →5.Visual inspection
Product: D-SUB CONNECTOR
Part No.: WLHD-345M
Quantity: 5PCS
Sample Received: 2024/7/15
Testing Period: 2024/07/15to2024/07/25
Measuring Environment: Temperature.25±2℃, R.H.58±3%
Testing conditions: According to general D-SUB's product specifications.
1.CR:(1)Contact:V=20mV;A=10mA
2.Salt density:5% Temperature: 35± 2℃
3.Duration:Furnace front 12hours
Sample No.:1,2,3,4,5

Testing Equipment:

Name	Salt spray testing machine	Micro-Ohmmeter
Model	QC-60	JK2511

Testing Results:

1. Contact Resistance: (Unit:mΩ)

1.1 Before Salt spray test for Contact

Sample No	#1	#2	#3	#4	#5	Judgement
PIN1	10.53	11.42	9.96	9.82	9.88	
PIN2	10.59	11.32	12.34	9.43	11.24	
PIN3	11.42	10.78	12.69	9.58	12.31	
PIN4	12.34	10.78	11.52	10.88	9.97	
PIN5	10.64	12.38	11.58	9.72	10.95	
PIN6	9.24	11.21	11.42	11.18	9.21	
PIN7	12.42	12.31	12.31	9.31	12.37	
PIN8	9.39	10.97	9.97	9.85	9.97	
PIN9	10.21	10.92	10.95	11.92	10.26	OK
PIN10	11.42	10.78	12.69	9.58	12.31	
PIN11	12.34	10.78	11.52	10.88	9.97	
PIN12	10.64	12.38	11.58	9.72	10.95	
PIN13	9.24	11.21	11.42	11.18	9.21	
PIN14	12.42	12.31	12.31	9.31	12.37	
PIN15	9.39	10.97	9.97	9.85	9.97	
Specifition			MAX	MIN	AVG	
30mΩ/max			12.69	9.21	10.91	

1.2 After Salt spray test for Contact

Sample No	#1	#2	#3	#4	#5	Judgement
PIN1	13.56	15.68	15.89	14.23	14.57	
PIN2	14.58	12.34	16.18	15.35	13.98	
PIN3	15.78	13.59	14.15	14.89	13.42	
PIN4	15.83	16.13	13.58	15.26	14.32	
PIN5	14.55	15.68	14.78	13.98	14.00	
PIN6	13.24	14.24	15.28	15.69	14.98	
PIN7	14.31	13.31	14.28	16.23	16.12	
PIN8	15.97	15.12	15.23	15.87	16.32	
PIN9	14.56	15.23	13.95	14.59	15.46	OK
PIN10	15.78	13.59	14.15	14.89	13.42	
PIN11	15.83	16.13	13.58	15.26	14.32	
PIN12	14.55	15.68	14.78	13.98	14.00	
PIN13	13.24	14.24	15.28	15.69	14.98	
PIN14	14.31	13.31	14.28	16.23	16.12	
PIN15	15.97	15.12	15.23	15.87	16.32	
Specifition			MAX	MIN	AVG	
30mΩ/max			16.32	12.34	14.83	

2. Visual inspection

Test item	Visual inspection	Visual inspection
	Before Test	After Test
Spec:	No oxidation, rust	No oxidation, rust
Sample 1	passed	passed
Sample 2	passed	passed
Sample 3	passed	passed
Sample 4	passed	passed
Sample 5	passed	passed

SHENZHENGSHIXINGWANLIAN ELECTRONICS CO.,LTD

Group D TEST REPORT

Applicant: QC Department
Test item: 1.Visual inepction —2.CR—3.DWV— 4.I.R. —5.Humidity —6.I.R.—7.DWV —8.CR— 9.Visualinspection
Product: D-SUB CONNECTOR
Part No.: WLHD-345M
Quantity: 5PCS
Sample Received: 2024/7/15
Testing Period: 2024/07/15to2024/07/25
Measuring Environment: Temperature.25±2℃, R.H.58±3%
Testing conditions: According to general D-SUB's product specifications.
1.CR:(1)Contact:V=20mV;A=10mA
2.I/R:Unmated:500V DC for 1minute
3..DWV:Umated=500V AC
4.Temperature:+85℃,Humidity: 80 to 95%RH,Duration:96hours
Sample No.:1,2,3,4,5

Testing Equipment:

Name	Humidity Chamber	Contact impedance tester	Withstanding voltage tester	insulation tester
Model	TS-80-40	JK2511	LK2672X	SJ7122

Testing Results:

1. Contact Resistance: (Unit:mΩ)

1.1 Before Humidity test for Contact

Sample No	#1	#2	#3	#4	#5	Judgement
PIN1	11.88	9.88	10.53	11.42	9.96	
PIN2	10.25	11.24	10.59	11.32	12.34	
PIN3	10.26	12.31	11.42	10.78	12.69	
PIN4	11.45	9.97	12.34	10.78	11.52	
PIN5	10.59	10.95	10.64	12.38	11.58	
PIN6	11.24	11.24	11.24	11.24	11.24	
PIN7	12.31	12.31	12.31	12.31	12.31	
PIN8	9.97	9.97	9.97	9.97	9.97	
PIN9	10.95	10.95	10.95	10.95	10.95	OK
PIN10	10.25	11.24	10.59	11.32	12.34	
PIN11	10.26	12.31	11.42	10.78	12.69	
PIN12	11.45	9.97	12.34	10.78	11.52	
PIN13	10.59	10.95	10.64	12.38	11.58	
PIN14	11.24	11.24	11.24	11.24	11.24	
PIN15	12.31	12.31	12.31	12.31	12.31	
Specifition			MAX	MIN	AVG	
30mΩ/max			12.69	9.88	11.26	

1.2 After Humidity for Contact

Sample No	#1	#2	#3	#4	#5	Judgement
PIN1	11.39	11.35	13.56	15.68	12.89	
PIN2	11.65	12.34	11.58	12.34	16.18	
PIN3	11.25	13.42	12.78	13.59	14.15	
PIN4	10.56	14.32	15.83	16.13	13.58	
PIN5	11.24	13.64	12.55	11.68	11.78	
PIN6	12.31	11.24	11.24	11.24	11.24	
PIN7	9.97	12.31	12.31	12.31	12.31	
PIN8	10.95	9.97	9.97	10.58	9.97	
PIN9	10.95	10.95	10.95	10.95	10.95	OK
PIN10	11.25	13.42	12.78	13.59	14.15	
PIN11	10.56	14.32	15.83	16.13	13.58	
PIN12	11.24	13.64	12.55	11.68	11.78	
PIN13	12.31	11.24	11.24	11.24	11.24	
PIN14	9.97	12.31	12.31	12.31	12.31	
PIN15	10.95	9.97	9.97	9.97	9.97	
Specifition			MAX	MIN	AVG	
30mΩ/max			16.18	9.97	12.16	

2. Insulation Resistance and dielectric Withstanding Voltage

2.1 Before Humidity test

Test item	Visual Inspection	I/R	DWV
Spec:	No damage	≥1000MΩ	No Breakdown
Sample 1	passed	passed	passed
Sample 2	passed	passed	passed
Sample 3	passed	passed	passed
Sample 4	passed	passed	passed
Sample 5	passed	passed	passed

2.2 After Humidity test

Test item	Visual Inspection	I/R	DWV
Spec:	No damage	≥1000MΩ	No Breakdown
Sample 1	passed	passed	passed
Sample 2	passed	passed	passed
Sample 3	passed	passed	passed
Sample 4	passed	passed	passed
Sample 5	passed	passed	passed

SHENZHENGSHIXINGWANLIAN ELECTRONICS CO.,LTD

Group E TEST REPORT

Applicant: QC Department
Test item: 1.Visual inepction —2.Withstand heat—3.Visual inepction
Product: D-SUB CONNECTOR
Part No.: WLHD-345M
Quantity: 5PCS
Sample Received: 2024/7/15
Testing Period: 2024/07/15to2024/07/25
Measuring Environment: Temperature.25±2℃, R.H.58±3%
Testing conditions: According to general D-SUB's product specifications.
1. Place in a constant temperature and humidity tank at 85±2℃ for 96 hours
2.After testing, let dry at room temperature for 2 hours
Sample No.:1,2,3,4,5

Testing Equipment:

Name	Humidity Chamber
Model	TS-80-40

Testing Results:

1. Visual inspection

1.1 Before Withstand heat Visual inspection

Test item	Visual Inspection
Spec:	No damage
Sample 1	passed
Sample 2	passed
Sample 3	passed
Sample 4	passed
Sample 5	passed

1.2 After Withstand heat Visual inspection

Test item	Visual Inspection
Spec:	No damage
Sample 1	passed
Sample 2	passed
Sample 3	passed
Sample 4	passed
Sample 5	passed

SHENZHENGSHIXINGWANLIAN ELECTRONICS CO.,LTD

Group F TEST REPORT

Applicant: QC Department
Test item: 1.Visual inepction —2.Withstand cold—3.Visual inepction
Product: D-SUB CONNECTOR
Part No.: WLHD-345M
Quantity: 5PCS
Sample Received: 2024/7/15
Testing Period: 2024/07/15to2024/07/25
Measuring Environment: Temperature.25±2℃, R.H.58±3%
Testing conditions: According to general D-SUB's product specifications.
1. Place in a constant temperature and humidity tank at -40±2℃ for 96 hours
2.After testing, let dry at room temperature for 2 hours
Sample No.:1,2,3,4,5

Testing Equipment:

Name	Humidity Chamber
Model	TS-80-40

Testing Results:

1. Visual inspection

1.1 Before Withstand cold Visual inspection

Test item	Visual Inspection
Spec:	No damage
Sample 1	passed
Sample 2	passed
Sample 3	passed
Sample 4	passed
Sample 5	passed

1.2 After Withstand cold Visual inspection

Test item	Visual Inspection
Spec:	No damage
Sample 1	passed
Sample 2	passed
Sample 3	passed
Sample 4	passed
Sample 5	passed

SHENZHENGSHIXINGWANLIAN ELECTRONICS CO.,LTD

Group G TEST REPORT

Applicant: QC Department
Test item: 1.Visual inepction —2.Solder ability—3.Visual inepction
Product: D-SUB CONNECTOR
Part No.: WLHD-345M
Quantity: 5PCS
Sample Received: 2024/7/15
Testing Period: 2024/07/15to2024/07/25
Measuring Environment: Temperature.25±2℃, R.H.58±3%
Testing conditions: According to general D-SUB's product specifications.
1.After dipped the pin in the flux for 5 seconds.
2.Immerse the solder pin of the connector inthe solder bath at 245℃±3℃ for 3 ±0.5seconds.
Sample No.:1,2,3,4,5

Testing Equipment:

Name	Tin furnace
Model	CM118

Testing Results:

1. Soldering ability

Test item	Soldering ability
Spec:	Tin area >95%
Sample 1	passed
Sample 2	passed
Sample 3	passed
Sample 4	passed
Sample 5	passed

2. Visual inspection

Test item	Visual inspection	Visual inspection
	Before Test	After test
Spec:	No damage	No damage
Sample 1	passed	
Sample 2	passed	
Sample 3	passed	
Sample 4	passed	
Sample 5	passed	

SHENZHENGSHIXINGWANLIAN ELECTRONICS CO.,LTD

Group H TEST REPORT

Applicant: QC Department

Test item: 1.Visual inepction —2.Resistance to soldering heat—3.CR—4.I/R—5.DWV —6.Visual inepction

Product: D-SUB CONNECTOR

Part No.: WLHD-345M

Quantity: 5PCS

Sample Received: 2024/7/15

Testing Period: 2024/07/15to2024/07/25

Measuring Environment: Temperature.25±2℃, R.H.58±3%

Testing conditions: According to general D-SUB's product specifications.

1. Immerse the Pin part in a 265±5 ° C tin oven。

2.Immersed in tin liquid and kept for 3 seconds without damage to the appearance。

Sample No.:1,2,3,4,5

Testing Equipment:

Name	Tin furnace	Withstanding	insulation tester
Model	CM118	LK2672X	SJ7122

Testing Results:

1. Contact Resistance: (Unit:mΩ)

After Resistance to soldering heat test for Contact

Sample No	#1	#2	#3	#4	#5	Judgement
PIN1	10.53	11.44	9.96	9.88	10.43	
PIN2	10.59	11.32	12.34	11.24	10.52	
PIN3	11.42	10.75	12.69	12.31	11.42	
PIN4	12.31	10.78	11.52	9.97	12.31	
PIN5	10.64	12.32	10.58	10.95	10.64	
PIN6	10.22	11.24	10.23	9.21	10.22	
PIN7	12.41	12.31	12.52	12.37	12.43	
PIN8	9.87	9.52	11.97	9.97	9.87	
PIN9	10.45	10.93	11.95	10.26	10.45	OK
PIN10	11.42	10.75	12.69	12.31	11.42	
PIN11	12.31	10.78	11.52	9.97	12.31	
PIN12	10.64	12.32	10.58	10.95	10.64	
PIN13	10.22	11.24	10.23	9.21	10.22	
PIN14	12.41	12.31	12.52	12.37	12.43	
PIN15	9.87	9.52	11.97	9.97	9.87	
Specifition			MAX	MIN	AVG	
30mΩ/max			12.69	9.21	11.10	

2. Before Resistance to soldering heat

Test item	Visual Inspection	I/R	DWV
Spec:	No damage	≥1000MΩ	No Breakdown
Sample 1	passed	passed	passed
Sample 2	passed	passed	passed
Sample 3	passed	passed	passed
Sample 4	passed	passed	passed
Sample 5	passed	passed	passed

3. After Resistance to soldering heat

Test item	Visual Inspection	I/R	DWV
Spec:	No damage	≥1000MΩ	No Breakdown
Sample 1	passed	passed	passed
Sample 2	passed	passed	passed
Sample 3	passed	passed	passed
Sample 4	passed	passed	passed
Sample 5	passed	passed	passed

UL Product iQ®

Model 4830

File Number: E304813

Yellow Card™

ALSO CERTIFIED TO IEC REQUIREMENTS

COMPANY

CHANG CHUN CHEMICAL (ZHANGZHOU) CO LTD

BAOSHENG RD
LONGCHI INDUSTRY PARK
TAIWANESE INVESTMENT ZONE
ZHANGZHOU, Fujian Sheng 363107 China

MODEL INFO

LONGLITE: 4830

Polybutylene Terephthalate (PBT), glass reinforced, furnished as pellets

FLAMMABILITY PROPERTIES	50u"min	VALUE	TEST METHOD
Flammability (3.0 to 3.3 mm, Color: ALL)		V-0	ANSI/UL 94

ISO/IEC FLAMMABILITY PROPERTIES	VALUE	TEST METHOD
Flammability (3.0 to 3.3 mm, Color: ALL)	V-0	IEC 60695-11-10

ELECTRICAL PROPERTIES	VALUE	TEST METHOD
Hot-wire Ignition (HWI) (3.0 to 3.3 mm)	PLC 0	UL 746A
High Amp Arc Ignition (HAI) (3.0 to 3.3 mm)	PLC 1	UL 746A
Comparative Tracking Index (CTI)	PLC 3	UL 746A
High Voltage Arc Tracking Rate (HVTR)	PLC 2	
High Voltage, Low Current Arc Resistance	PLC 7	

THERMAL PROPERTIES	VALUE	TEST METHOD

Relative Thermal Index - Electrical Strength (3.0 to 3.3 mm)	120 °C	UL 746B
Relative Thermal Index - Mechanical Impact (3.0 to 3.3 mm)	125 °C	UL 746B
Relative Thermal Index - Mechanical Strength (3.0 to 3.3 mm)	130 °C	UL 746B

Report Date: 2011-11-17

Revision Date: 2023-05-18

东莞市正伟铜材有限公司

产 品 质 量 保 证 书

METERIAL CERTIFICATION REPORT

客户名称	深圳市兴万联电子有限公司	出货日期	2020-05-07	产品批号	2004122-AA-003	厚度公差	-0.01
牌号	C2680	规格及状态	0.2*23.5 0.2*26.5 0.2*46	净重	2331.6	状态	EH
化学成份%							
Cu%	63.98	P%	0.0002	Fe%	0.0077	Pb%	0.0044
ZN%	35.96	Cd%		Sn%	0.003	Hg%	
机械物理性能							
抗拉强度Mpa	608	伸张率%	18	硬度HV	173	杯突值	/
执行标准	JISH3100			检验员	谢程培	日期	2020年5月6日

东莞市广湖钢铁有限公司产品质量证明书

CERTIFICATE OF PRODUCT QUALITY

2023 年 5 月 11 日　　编号：HL0958643

收货单位PURCHASER：兴万联　　产品名称：冷轧钢卷

检验标准SPECIFICATION：JIS G 3141　　检验情况：合格

产品规格 SPECIFICATION MM	钢卷号 COIL. NO	材质牌号 SYMBOL OF QUALITY	净重 WEIGHT KG	化学成份CHEMICAL COMPOSITION							力学性能MECHANICAL PROPERTIES				
				Fe %	C %	Mn %	Si %	P ‰	S ‰	AI ‰	抗拉强度T.S Mpa	延伸率EL (%)	屈服强度Y.S Mpa	杯突 (mm)	硬度 (HV)
0.30X1000	DL08691	SPCC-SB	6527	98	0.04	0.16	0.06	0.22	0.24		394	39	228		139

质量控制中心（盖章）　　审核：韩治　　制表人：林森

慈 溪 市 掌 起 国 荣 塑 料 五 金 厂

Cixi City Zhangqi Guorong Plastic Hardware Factory

产 品 质 量 证 明 书

Product quality certificate

客户名称(USER):兴万联　　批号(LOT NO): 17052541　　日期(DATE): 2017-5-25

合同编号 Contract No.	产 品 名 称 及 规 格 Item & Specification							实发数量(Kg) Quantity		
	牌 号 Code	名 称 Name		规 格(mm) Specification		长 度(mm) Length				
	C3604	铜铆钉		5.4*5.4						
化 学 成 份 Chemical composition	元 素 Chemical element	铜 Cu	铅 Pb	锡 Sn	铁 Fe	铝 Al	秘 Bi	镉 Cd	锌 Zn	杂质总和 Impurity Sum
	实测 Measute Date	59.2	2.9	0.53	0.35	0.037	0.004	0.0032	余量	无
机 械 性 能 Machinery function	抗 拉 强 度(Mpa) Tensile Strength		延 伸 率(%) Elongation		硬 度(HV) Hardness			制 造 方 法 Manufacture method		
	420		10		120			车制		

检验员签字(INSPECTOR SIGUATURE):颜华　　公司公章 Company Chop

Test Report

Report No. A2230503784101002

Company Name shown on Report	GUANGDONG ZHONGCHENG SPECIAL MATERIAL CO., LTD.
Address	ROOM 101-501, BUILDING 22, AREA B, WANYANG ZHONGCHUANG CITY, NO.1 SHUANGYANG ROAD, YANGQIAO TOWN, BOLUO COUNTY, HUIZHOU CITY

The following sample(s) and sample information was/were submitted and identified by/on the behalf of the applicant

Sample Name	PBT
Sample Received Date	Sep. 26, 2023
Testing Period	Sep. 26, 2023 to Oct. 7, 2023
Test Requested	As specified by client, to test Lead (Pb), Cadmium (Cd), Mercury (Hg), Hexavalent Chromium (Cr(VI)), Polybrominated Biphenyls (PBBs), Polybrominated Diphenyl Ethers (PBDEs), Phthalates (DBP, BBP, DEHP, DIBP) in the submitted sample(s).
Test Method	Please refer to the following page(s).
Test Result(s)	Please refer to the following page(s).

Approved by: Hill Zheng

Hill Zheng

Technical Manager

Date: Oct. 7, 2023

No. R262621786

Test Report

Report No. A2230503784101002

Test Method

Test Item(s)	Test Method	Measured Equipment(s)
Lead (Pb)	IEC 62321-5:2013	ICP-OES
Cadmium (Cd)	IEC 62321-5:2013	ICP-OES
Mercury (Hg)	IEC 62321-4:2013+AMD1:2017 CSV	ICP-OES
Hexavalent Chromium (Cr(VI))	IEC 62321-7-2:2017 and/or determination of Total Chromium by IEC 62321-5:2013	UV-Vis/ICP-OES
Polybrominated Biphenyls (PBBs)	IEC 62321-6:2015	GC-MS
Polybrominated Diphenyl Ethers (PBDEs)	IEC 62321-6:2015	GC-MS
Phthalates (DBP, BBP, DEHP, DIBP)	IEC 62321-8:2017	GC-MS

CTI 华测检测

Test Report

Report No. A2230503784101002

Test Result(s)

Tested Item(s)	Result	MDL
	002	
Lead (Pb)	N.D.	2 mg/kg
Cadmium (Cd)	N.D.	2 mg/kg
Mercury (Hg)	N.D.	2 mg/kg
Hexavalent Chromium (Cr(VI))	N.D.	8 mg/kg

Tested Item(s)	Result	MDL
	002	
Polybrominated Biphenyls (PBBs)		
Monobromobiphenyl	N.D.	5 mg/kg
Dibromobiphenyl	N.D.	5 mg/kg
Tribromobiphenyl	N.D.	5 mg/kg
Tetrabromobiphenyl	N.D.	5 mg/kg
Pentabromobiphenyl	N.D.	5 mg/kg
Hexabromobiphenyl	N.D.	5 mg/kg
Heptabromobiphenyl	N.D.	5 mg/kg
Octabromobiphenyl	N.D.	5 mg/kg
Nonabromobiphenyl	N.D.	5 mg/kg
Decabromobiphenyl	N.D.	5 mg/kg

Tested Item(s)	Result	MDL
	002	
Polybrominated Diphenyl Ethers (PBDEs)		
Monobromodiphenyl ether	N.D.	5 mg/kg
Dibromodiphenyl ether	N.D.	5 mg/kg
Tribromodiphenyl ether	N.D.	5 mg/kg
Tetrabromodiphenyl ether	N.D.	5 mg/kg
Pentabromodiphenyl ether	N.D.	5 mg/kg
Hexabromodiphenyl ether	N.D.	5 mg/kg
Heptabromodiphenyl ether	N.D.	5 mg/kg
Octabromodiphenyl ether	N.D.	5 mg/kg
Nonabromodiphenyl ether	N.D.	5 mg/kg
Decabromodiphenyl ether	168 mg/kg	5 mg/kg

Test Report

Report No. A2230503784101002

Test Result(s)

Tested Item(s)	Result	MDL
	002	
Phthalates (DBP, BBP, DEHP, DIBP)		
Dibutyl phthalate (DBP) CAS#:84-74-2	N.D.	50 mg/kg
Butyl benzyl phthalate (BBP) CAS#:85-68-7	N.D.	50 mg/kg
Di-(2-ethylhexyl) phthalate (DEHP) CAS#:117-81-7	N.D.	50 mg/kg
Diisobutyl phthalate (DIBP) CAS#:84-69-5	N.D.	50 mg/kg

Sample/Part Description

No.	CTI Sample ID	Description
1	002	Blue plastic grains

Remark: **The sample(s) had been dissolved totally tested for Lead, Cadmium, Mercury.**

-MDL = Method Detection Limit

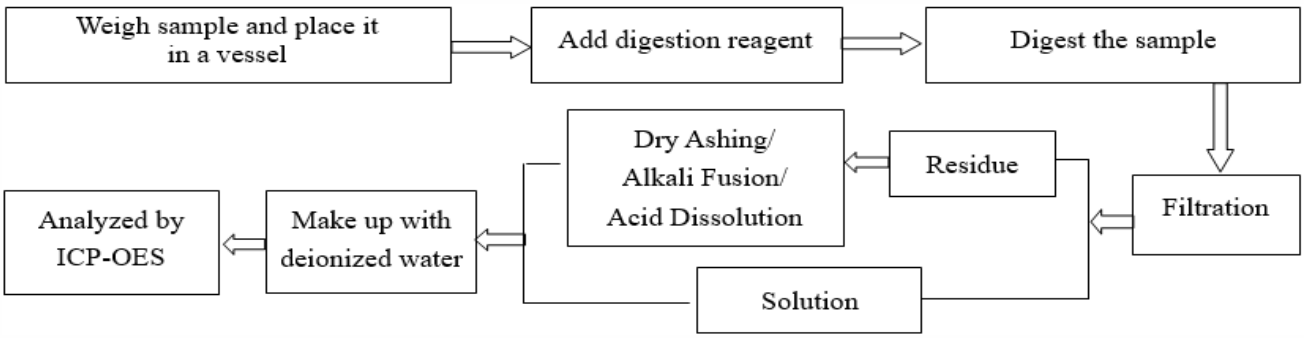
-N.D. = Not Detected (<MDL)

-mg/kg = ppm = parts per million

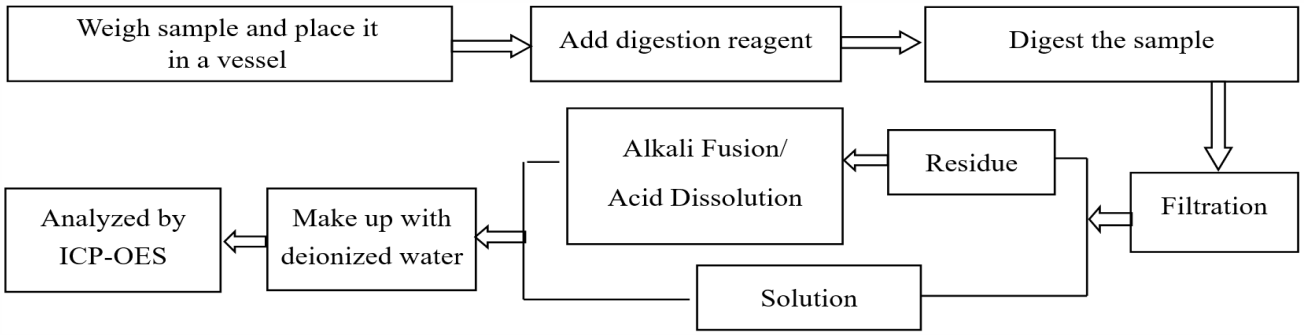
Test Report

Test Process

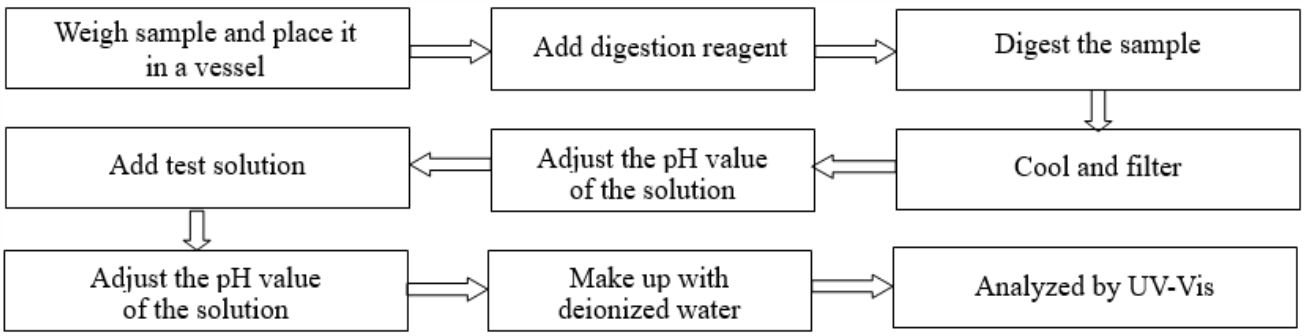
1. Lead (Pb), Cadmium (Cd), Chromium (Cr)



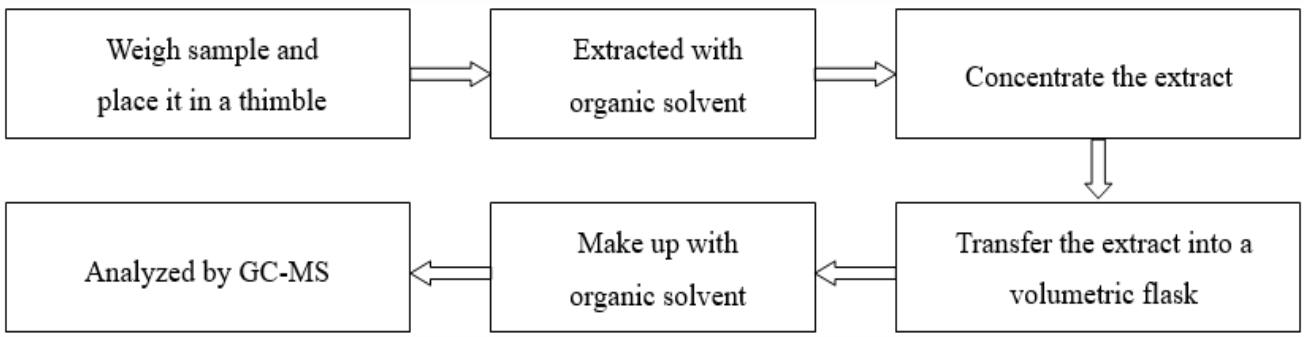
2. Mercury (Hg)



3. Hexavalent Chromium (Cr(VI))

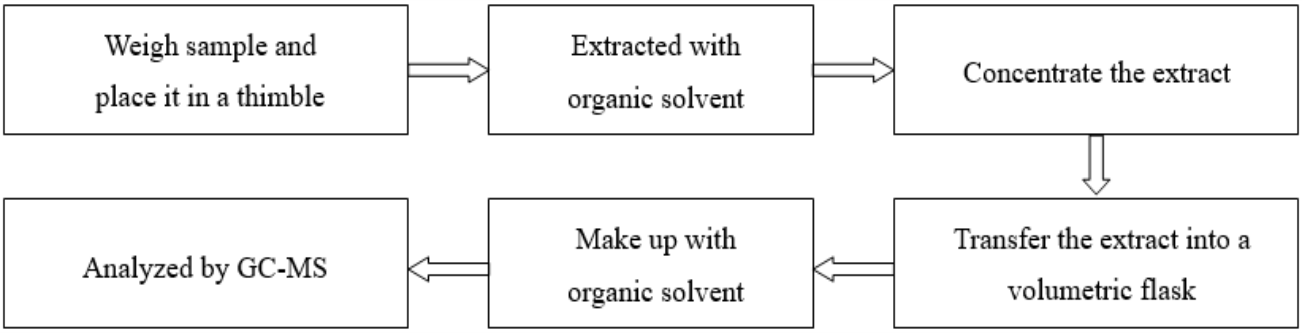


4. Polybrominated Biphenyls (PBBs), Polybrominated Diphenyl Ethers (PBDEs)



Test Report

5. Phthalates (DBP, BBP, DEHP, DIBP)



Test Report

Report No. A2230503784101002

Photo(s) of the sample(s)



Statement:

1. This report is considered invalid without approved signature, special seal and the seal on the perforation;
2. The Company Name shown on Report and Address, the sample(s) and sample information was/were provided by the applicant who should be responsible for the authenticity which CTI hasn't verified;
3. The result(s) shown in this report refer(s) only to the sample(s) tested;
4. Without written approval of CTI, this report can't be reproduced except in full;
5. In case of any discrepancy between the English version and Chinese version of the testing reports (if generated), the Chinese version shall prevail.

*** End of report ***

Test Report

No.: CANEC23014582001 **Date:** Dec 01, 2023

Client Name: DONGGUAN ZHENGWEI COPPER CO.,LTD

Client Address: ROOM 101, BUILDING 1, NO.11 KUNMINGROAD LIAOBUTOWN DONGGUANCITY GUANGDONG PROVINCE

Sample Name: C2680 (H65)

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

SGS Job No.: GZP23-019918

Sample Receiving Date: Nov 21, 2023

Testing Period: Nov 21, 2023 ~ Nov 27, 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

Arsene Ye

Arsene Ye
Approved Signatory

scan to see the report

98E379E2

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t (86-20) 82155555 www.sgsgroup.com.cn
t (86-20) 82155555 sgs.china@sgs.com

Test Result(s):

Test Part Description：

SN ID	Sample No.	SGS Sample ID	Description
SN1	A1	CAN23-0145820-0001.C001	Brassy metal

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	A1
Cadmium(Cd)	100	mg/kg	2	ND
Lead(Pb)	1000	mg/kg	2	15
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

SGS-CSTC Standards Technical Services Co., Ltd. Guangzhou Branch Testing Center, Chemical Laboratory
检验检测专用章 Inspection & Testing Services

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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) ▼ = a. The sample is positive for Cr(VI) if the Cr(VI)concentration is greater than 0.13 μg/cm². 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/cm²). The coating is considered a non-Cr(VI) 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.

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.

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

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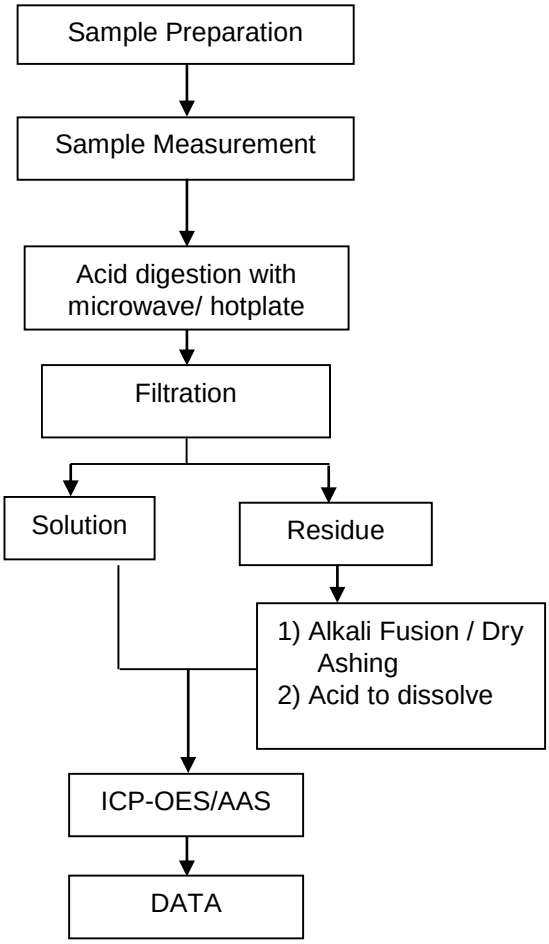
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Elements Testing Flow Chart

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

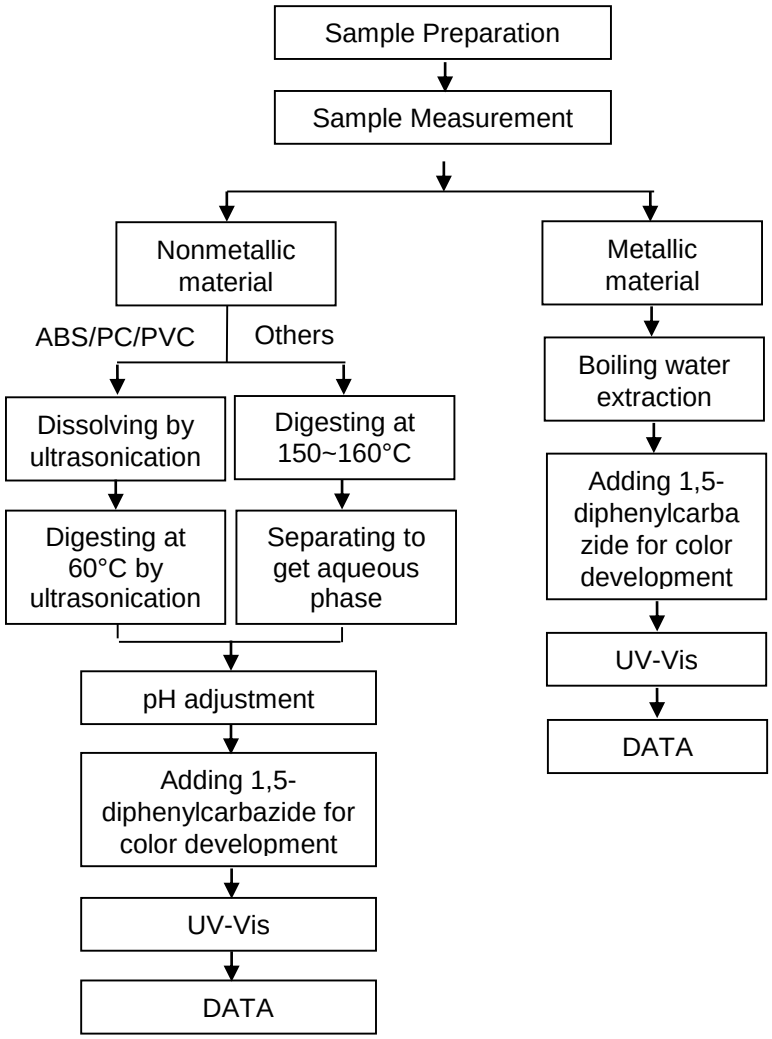


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ATTACHMENTS

Hexavalent Chromium (Cr(VI)) Testing Flow Chart

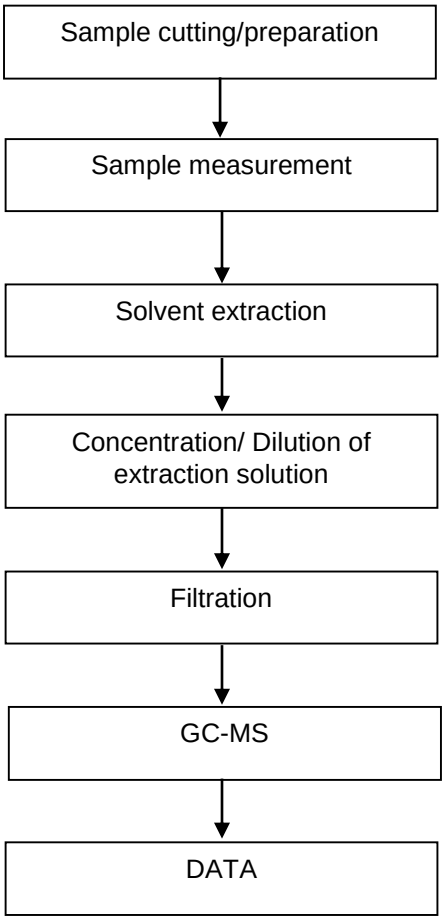


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PBBs/PBDEs Testing Flow Chart

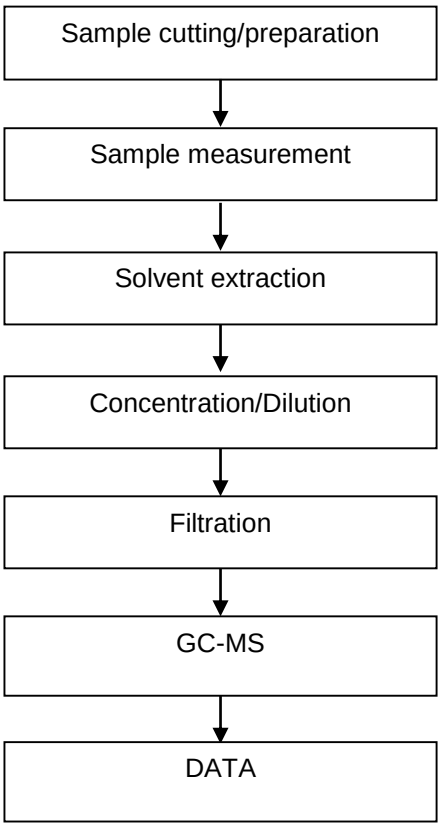


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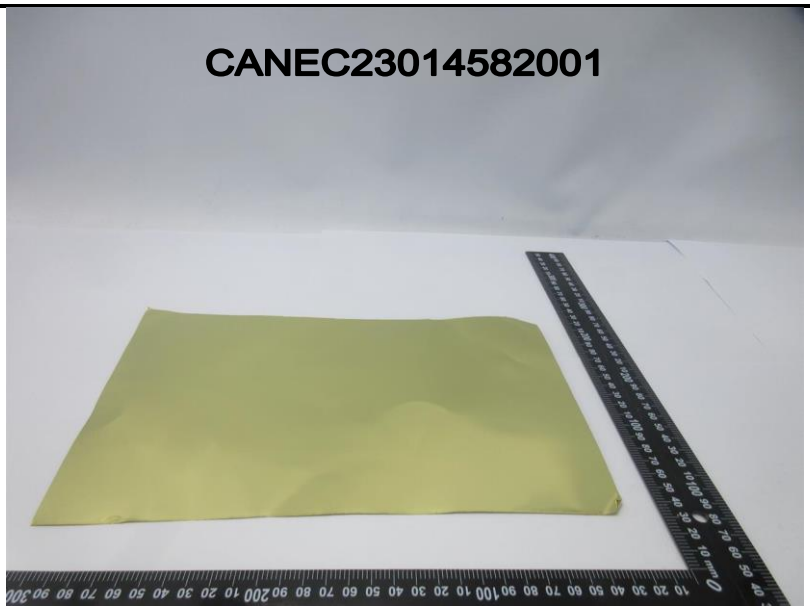
Phthalates Testing Flow Chart



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Sample Photo:



CAN23-0145820-0001.C001

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Test Report

No.: CANPC24003959701 **Date:** Mar 13, 2024

Client Name: DONGGUAN GUANG HU STEEL PRODUCTS COMPANY LIMITED

Client Address: 101, BUILDING 2, NO. 3 JUQI ZHENXING ROAD, HUMEN TOWN, DONGGUAN CITY

Sample Name: SPCC-SD/B SPCEN

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

SGS Job No.: GZPC2403001123

Sample Receiving Date: Mar 07, 2024

Testing Period: Mar 07, 2024 ~ Mar 13, 2024

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 and Hexavalent chromium	Pass

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

Arsene Ye

Arsene Ye
Approved Signatory

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Test Result(s):

Test Part Description：

SN ID	Sample No.	SGS Sample ID	Description
SN1	001	CAN24-0039597-0001.C001	Silver gray metal

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 and Hexavalent chromium

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

Test Item(s)	Limit	Unit(s)	MDL	001
Lead (Pb)	1000	mg/kg	2	ND
Mercury (Hg)	1000	mg/kg	2	ND
Cadmium (Cd)	100	mg/kg	2	ND
Hexavalent Chromium (Cr(VI))▼	-	μg/cm²	0.10	ND

Notes:

(1) The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863.
(2) IEC 62321 series is equivalent to EN 62321 series.
(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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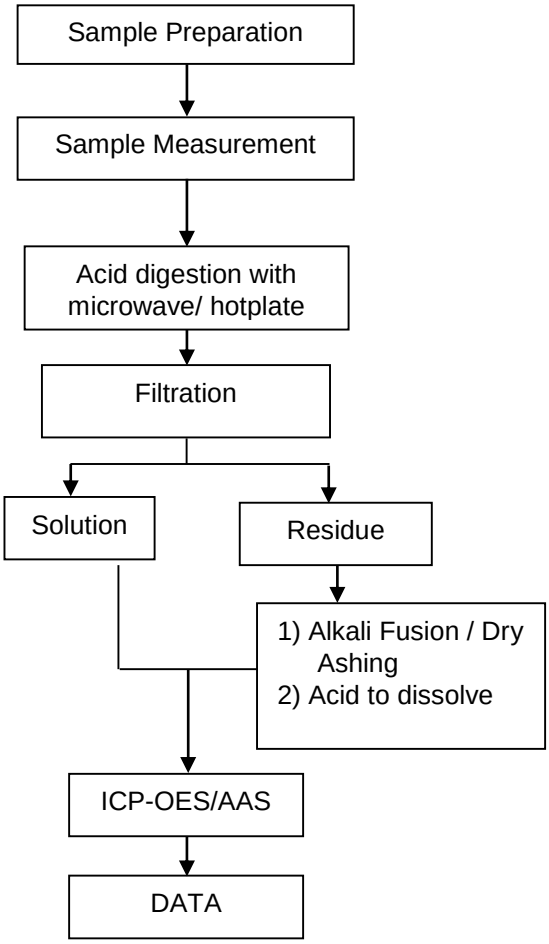
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Elements Testing Flow Chart

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

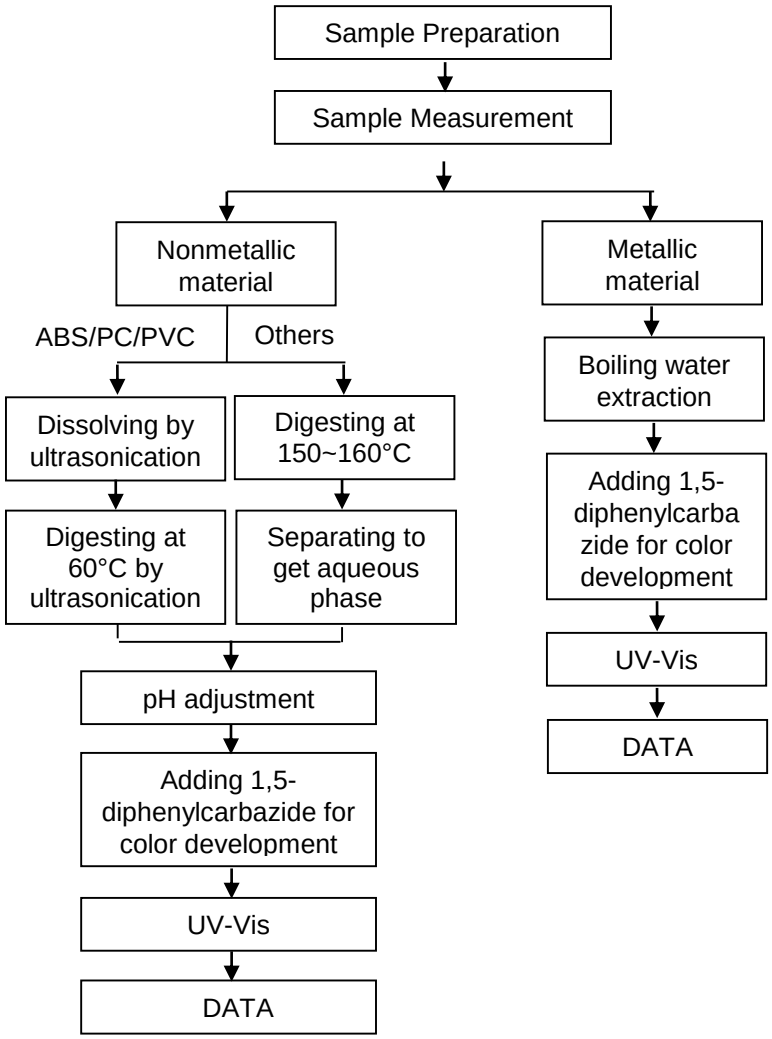


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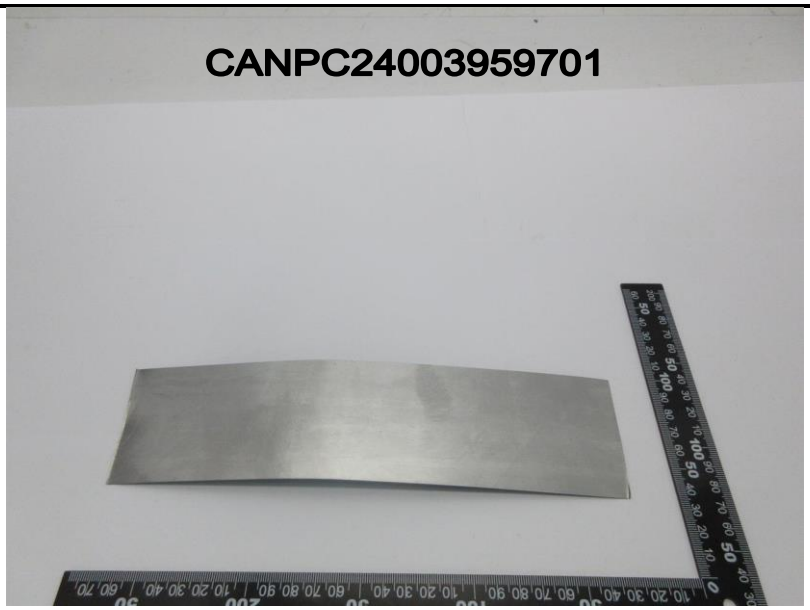
Hexavalent Chromium (Cr(VI)) Testing Flow Chart



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CAN24-0039597-0001.C001

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Test Report

No.: SZXEC23002546203 **Date:** Oct 25, 2023

Client Name: CIXI CITY ZHANGQI GUORONG PLASTIC HARDWARE FACTORY

Client Address: ZHANGQI INDUSTRIAL PARK, ZHANGQI TOWN, CIXI CITY, ZHEJIANG PROVINCE

Sample Name: C3604 copper H59 screw rivet small hardware

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

SGS Job No.: SZP23-023717

Sample Receiving Date: Oct 19, 2023

Testing Period: Oct 19, 2023 ~ Oct 25, 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
Element(s)	See Results

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

Fay Yuan
Approved Signatory

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Test Result(s):

Test Part Description：

SN ID	Sample No.	SGS Sample ID	Description
SN1	A2	SZX23-0025462-0001.C002	Silver-gray metal

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	A2
Cadmium(Cd)	100	mg/kg	2	39
Lead(Pb)	1000	mg/kg	2	22008▲
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	A2
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/cm². 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/cm²). The coating is considered a non-Cr(VI) 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.

Element(s)

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

Test Item(s)	Unit(s)	MDL	A2
Beryllium(Be)	mg/kg	5	ND

Remark▲: According to the declaration from the client, Lead (Pb) is exempted by EU RoHS directive 2011/65/EU based on |ANNEX III 6(c)|: Copper alloy containing up to 4 % lead by weight.

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.

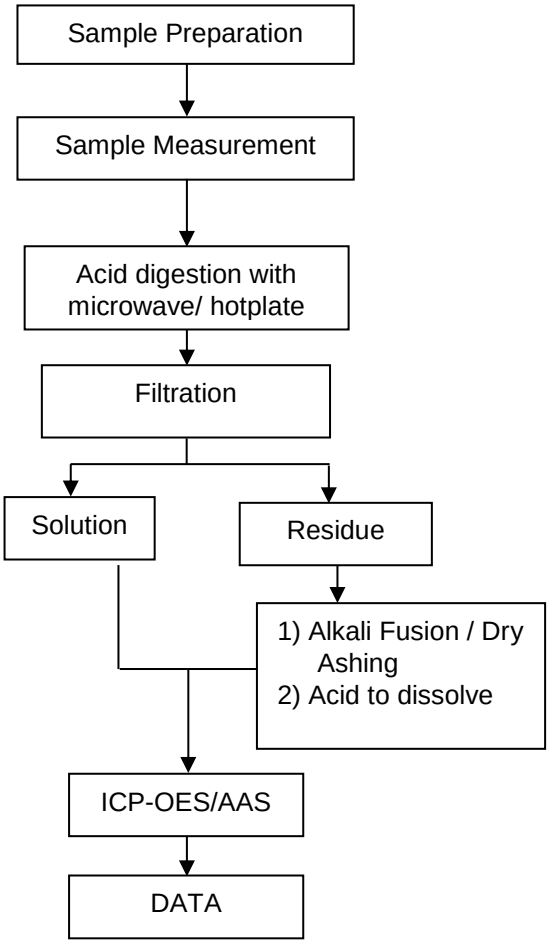
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Elements Testing Flow Chart

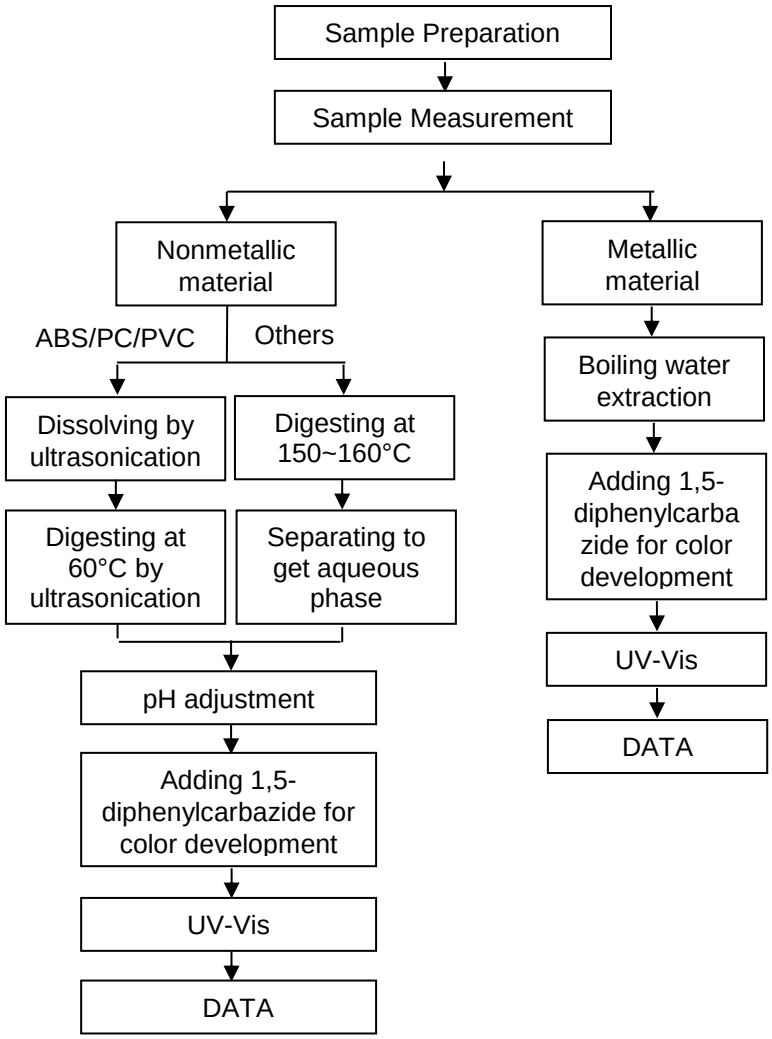
These samples were dissolved totally by pre-conditioning method according to below flow chart.



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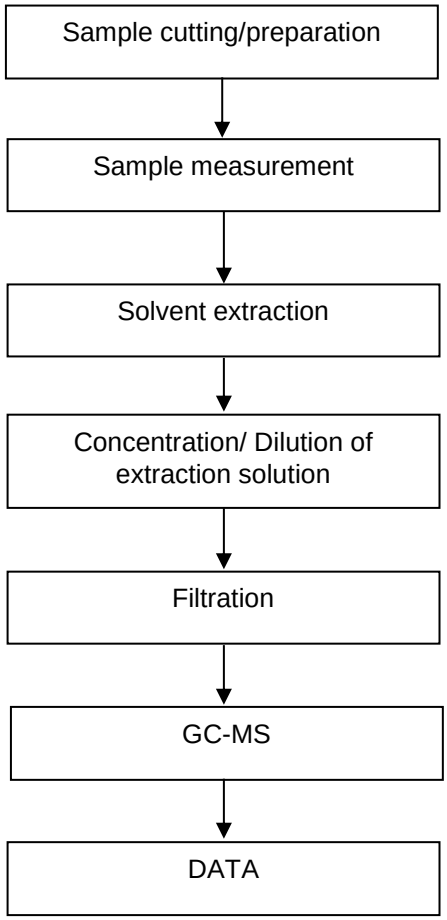
Hexavalent Chromium (Cr(VI)) Testing Flow Chart



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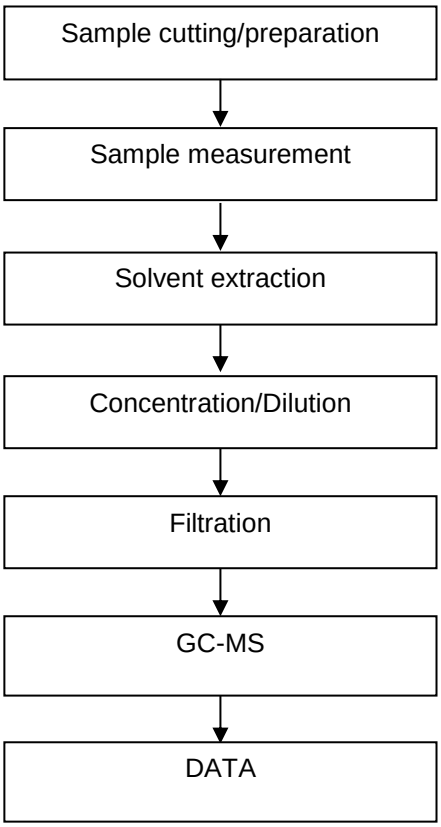
PBBs/PBDEs Testing Flow Chart



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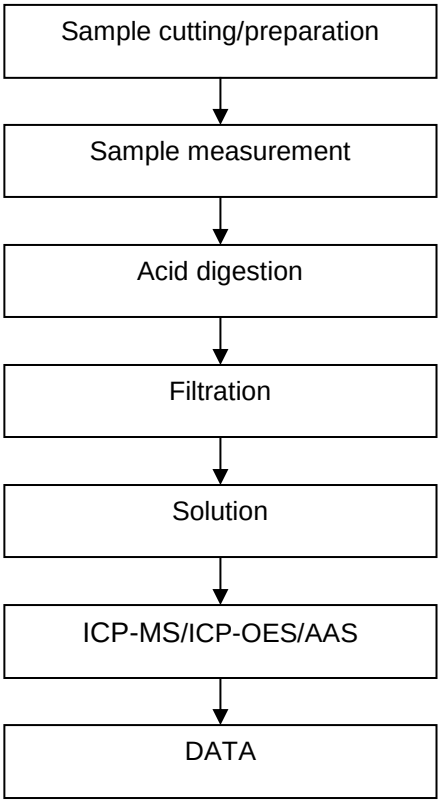
Phthalates Testing Flow Chart



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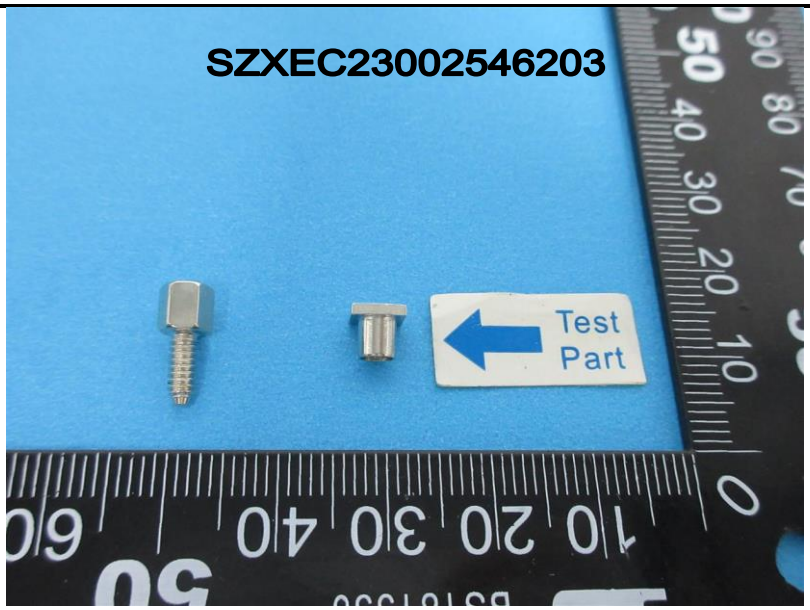
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Sample Photo:



SZX23-0025462-0001.C002

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Test Report

No.: SZXEC23003170105 **Date:** Dec 21, 2023

Client Name: DONGGUAN XINHUA PRECISION TECHNOLOGY CO. LTD /DONGGUAN SHUNHANG METAL PRODUCTS CO., LTD.

Client Address: BUILDING B, SHUNHANG ROAD, LIHAI MIDDLE ROAD, ENVIRONMENTAL PROTECTION CITY, SHATIAN TOWN, DONGGUAN CITY/ BUILDING B, SHUNHANG ROAD, LIHAI MIDDLE ROAD, ENVIRONMENTAL PROTECTION CITY, SHATIAN TOWN, DONGGUAN CITY

Sample Name: Phosphorus copper Gold plating

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

SGS Job No.: SZP23-032581

Sample Receiving Date: Dec 15, 2023

Testing Period: Dec 15, 2023 ~ Dec 21, 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. Shenzhen Branch

Fay Yuan
Approved Signatory

scan to see the report
E7680B23

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Test Result(s):

Test Part Description：

SN ID	Sample No.	SGS Sample ID	Description
SN1	A3	SZX23-0031701-0001.C003	Silvery metal with golden plating

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	A3
Cadmium(Cd)	100	mg/kg	2	ND
Lead(Pb)	1000	mg/kg	2	ND
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	A3
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/cm². 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/cm²). The coating is considered a non-Cr(VI) 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.

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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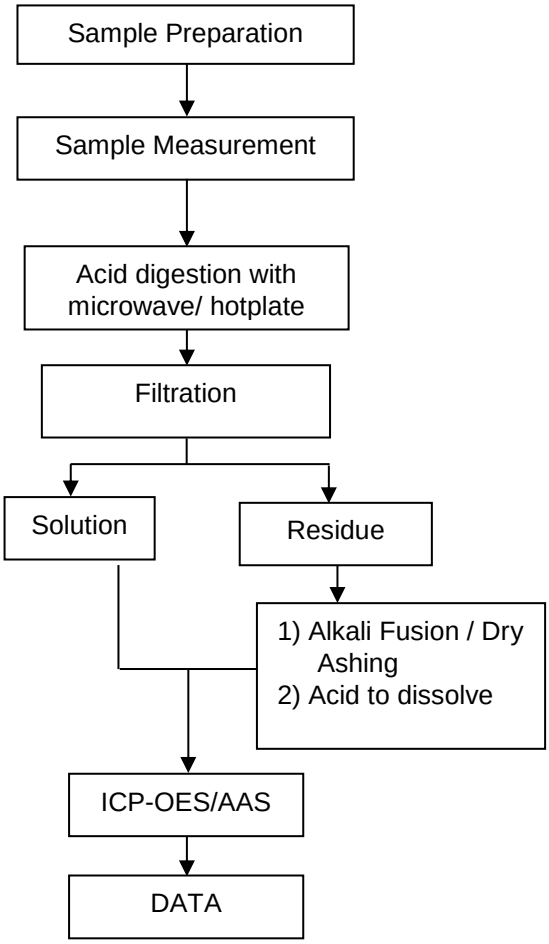
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Elements Testing Flow Chart

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

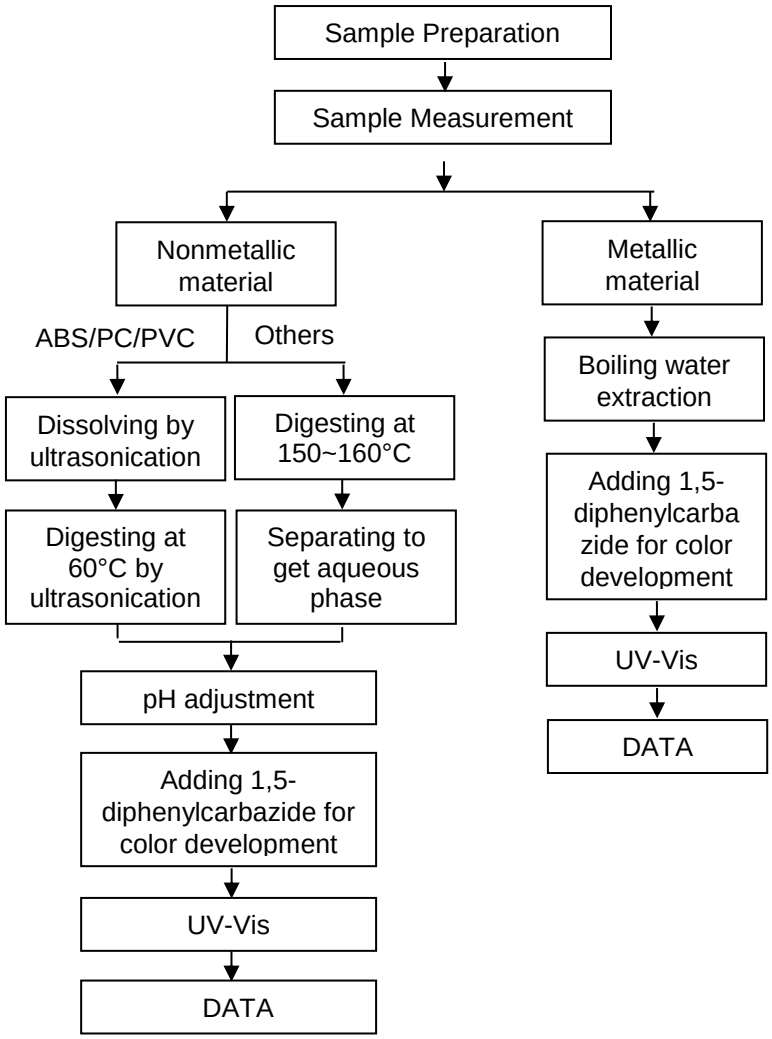


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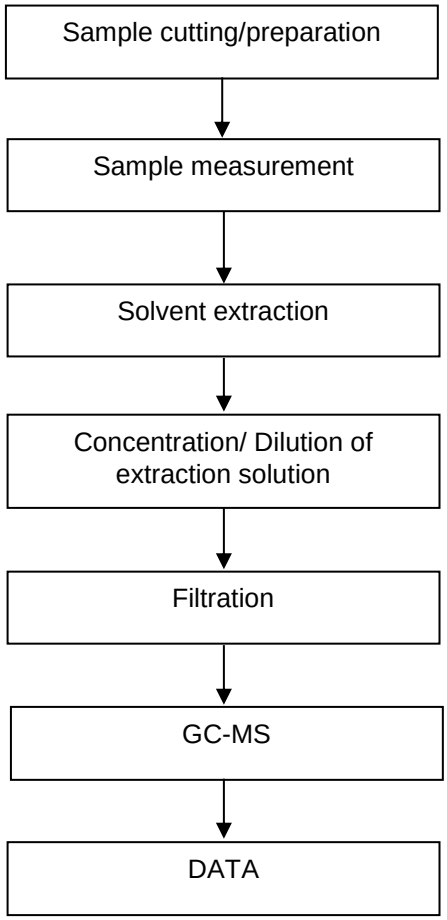
Hexavalent Chromium (Cr(VI)) Testing Flow Chart



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PBBs/PBDEs Testing Flow Chart

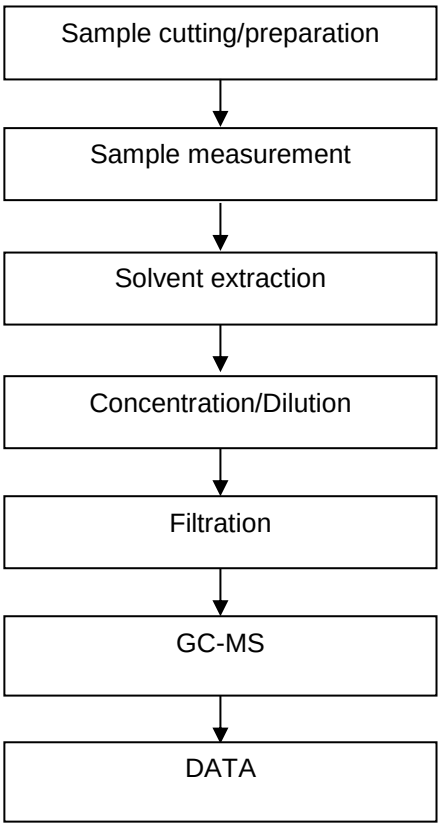


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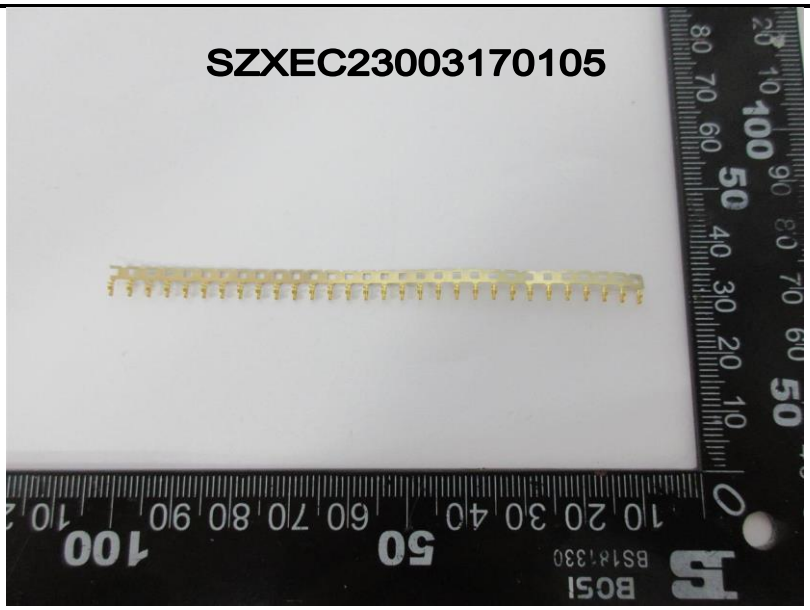
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Phthalates Testing Flow Chart



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Sample Photo:



SZX23-0031701-0001.C003

SGS authenticate the photo on original report only

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Test Report

No.: CANEC24002924405 **Date:** Feb 28, 2024

Client Name: DONGGUAN SHUNHANG METAL PRODUCTS CO., LTD./DONGGUAN XINHUA PRECISION TECHNOLOGY CO. LTD

Client Address: BUILDING B, SHUNHANG ROAD, LIHAI MIDDLE ROAD, ENVIRONMENTAL PROTECTION CITY, SHATIAN TOWN, DONGGUAN CITY/BUILDING B, SHUNHANG ROAD, LIHAI MIDDLE ROAD, ENVIRONMENTAL PROTECTION CITY, SHATIAN TOWN, DONGGUAN CITY

Sample Name: Nickel plating

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

SGS Job No.: SZP24-005326

Sample Receiving Date: Feb 22, 2024

Testing Period: Feb 22, 2024 ~ Feb 28, 2024

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 (PBB), Polybrominated diphenyl ethers (PBDE), 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

Dongyu Xie
Approved Signatory

scan to see the report
EC2FAD36

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Test Result(s):

Test Part Description：

SN ID	Sample No.	SGS Sample ID	Description
SN1	A3	CAN24-0029244-0001.C003	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

EU RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU - Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBB), Polybrominated diphenyl ethers (PBDE), 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/AAS, UV-Vis and GC-MS.

Test Item(s)	Limit	Unit(s)	MDL	A3
Lead (Pb)	1000	mg/kg	2	38
Mercury (Hg)	1000	mg/kg	2	ND
Cadmium (Cd)	100	mg/kg	2	ND
Hexavalent Chromium (Cr(VI))▼	-	µg/cm²	0.10	ND
Polybromobiphenyl (PBB)	1000	mg/kg	-	ND
Monobrominated biphenyl (MonoBB)	-	mg/kg	5	ND
Dibrominated biphenyl (DiBB)	-	mg/kg	5	ND
Tribrominated biphenyl (TriBB)	-	mg/kg	5	ND
Tetrabrominated biphenyl (TetraBB)	-	mg/kg	5	ND
Pentabrominated biphenyl (PentaBB)	-	mg/kg	5	ND
Hexabrominated biphenyl (HexaBB)	-	mg/kg	5	ND
Heptabrominated biphenyl (HeptaBB)	-	mg/kg	5	ND
Octabrominated biphenyl (OctaBB)	-	mg/kg	5	ND
Nonabrominated biphenyl (NonaBB)	-	mg/kg	5	ND
Decabrominated biphenyl (DecaBB)	-	mg/kg	5	ND
Polybromodiphenyl ether(PBDE)	1000	mg/kg	-	ND
Monobrominated diphenyl ether (MonoBDE)	-	mg/kg	5	ND
Dibrominated diphenyl ether (DiBDE)	-	mg/kg	5	ND
Tribrominated diphenyl ether (TriBDE)	-	mg/kg	5	ND
Tetrabrominated diphenyl ether (TetraBDE)	-	mg/kg	5	ND
Pentabrominated diphenyl ether (PentaBDE)	-	mg/kg	5	ND
Hexabrominated diphenyl ether (HexaBDE)	-	mg/kg	5	ND
Heptabrominated diphenyl ether (HeptaBDE)	-	mg/kg	5	ND

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Test Item(s)	Limit	Unit(s)	MDL	A3
Octabrominated diphenyl ether (OctaBDE)	-	mg/kg	5	ND
Nonabrominated diphenyl ether (NonaBDE)	-	mg/kg	5	ND
Decabrominated diphenyl ether (DecaBDE)	-	mg/kg	5	ND
Bis(2-ethylhexyl) phthalate (DEHP)	1000	mg/kg	50	ND
Butyl benzyl phthalate (BBP)	1000	mg/kg	50	ND
Dibutyl phthalate (DBP)	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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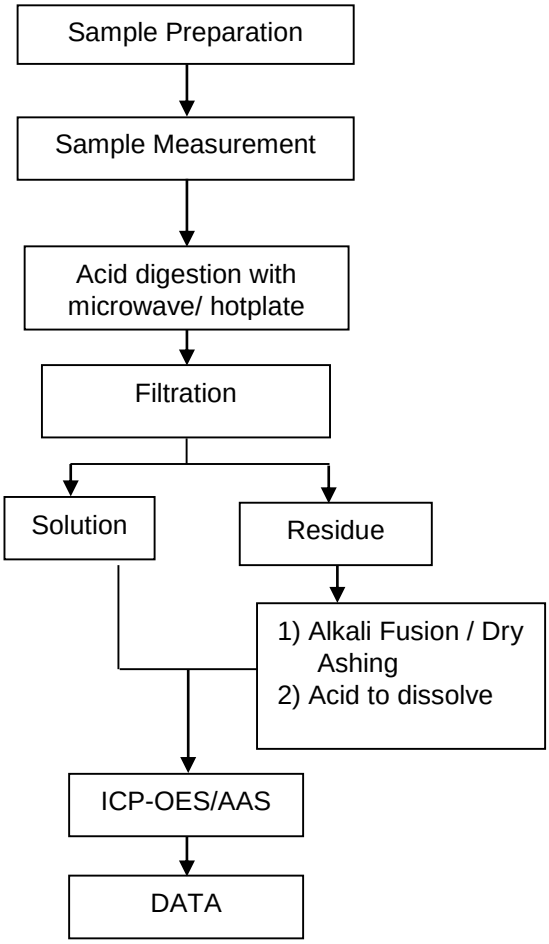
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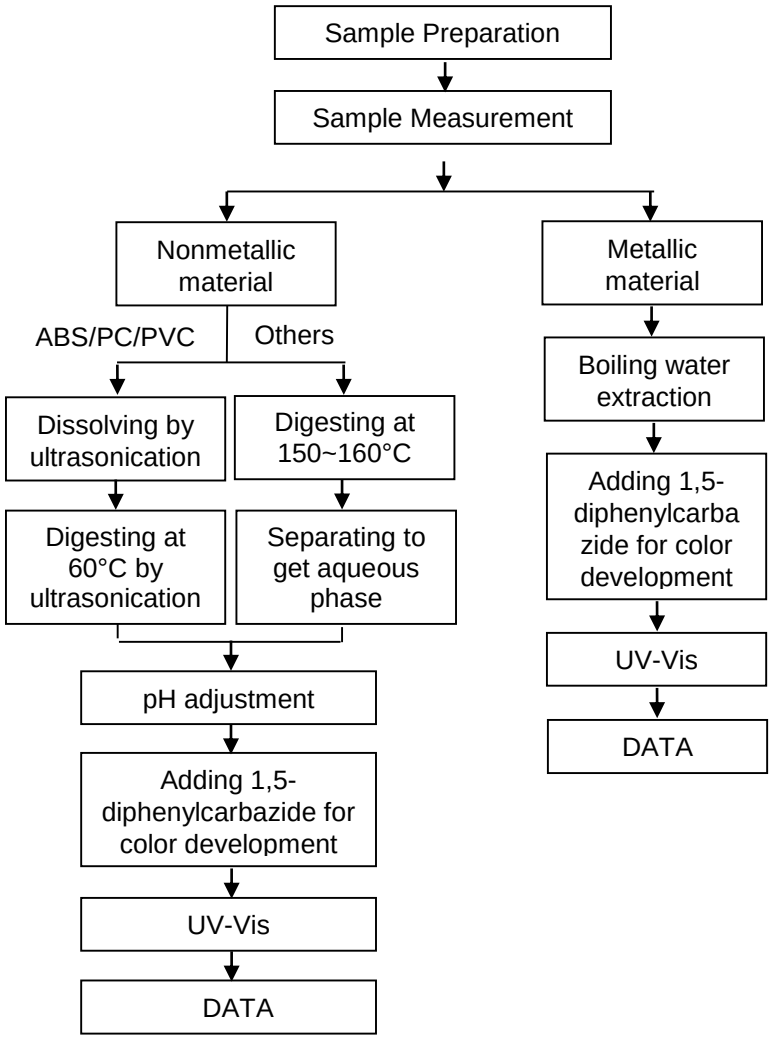


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Hexavalent Chromium (Cr(VI)) Testing Flow Chart

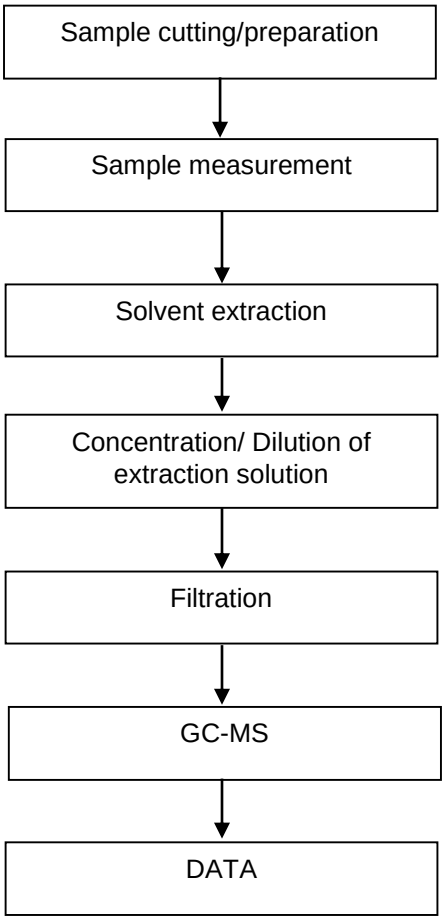


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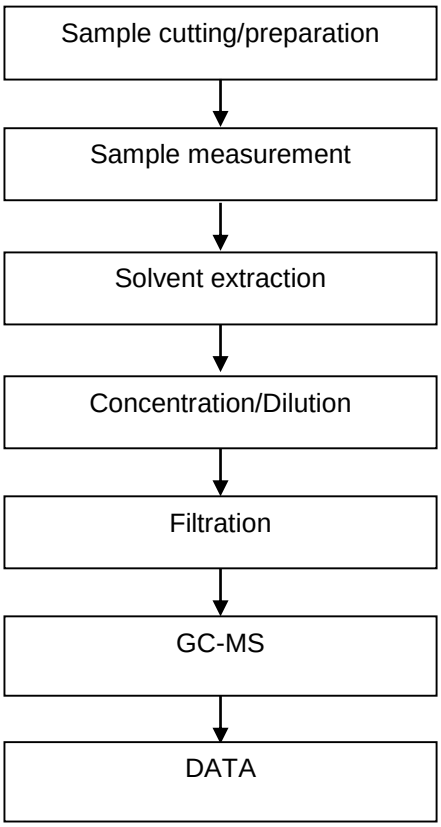


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Phthalates Testing Flow Chart



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Sample Photo:



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Test Report

No.: SZXEC23003170107 **Date:** Dec 21, 2023

Client Name: DONGGUAN XINHUA PRECISION TECHNOLOGY CO. LTD /DONGGUAN SHUNHANG METAL PRODUCTS CO., LTD.

Client Address: BUILDING B, SHUNHANG ROAD, LIHAI MIDDLE ROAD, ENVIRONMENTAL PROTECTION CITY, SHATIAN TOWN, DONGGUAN CITY/ BUILDING B, SHUNHANG ROAD, LIHAI MIDDLE ROAD, ENVIRONMENTAL PROTECTION CITY, SHATIAN TOWN, DONGGUAN CITY

Sample Name: Phosphorus copper Bright-tin plating

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

SGS Job No.: SZP23-032581

Sample Receiving Date: Dec 15, 2023

Testing Period: Dec 15, 2023 ~ Dec 21, 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. Shenzhen Branch

Fay Yuan
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	A4	SZX23-0031701-0001.C004	Silvery metal with silvery plating

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	A4
Cadmium(Cd)	100	mg/kg	2	ND
Lead(Pb)	1000	mg/kg	2	29
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	A4
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/cm². 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/cm²). The coating is considered a non-Cr(VI) 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.

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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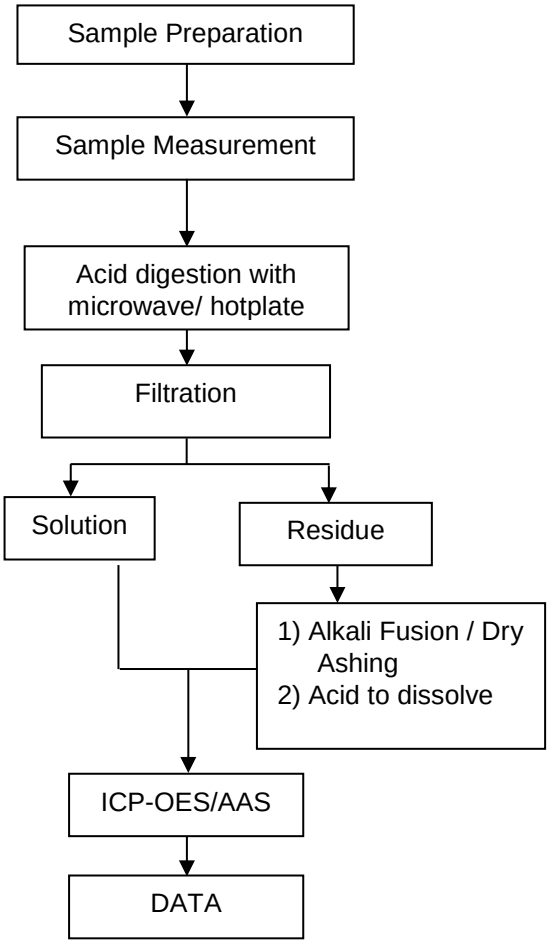
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Elements Testing Flow Chart

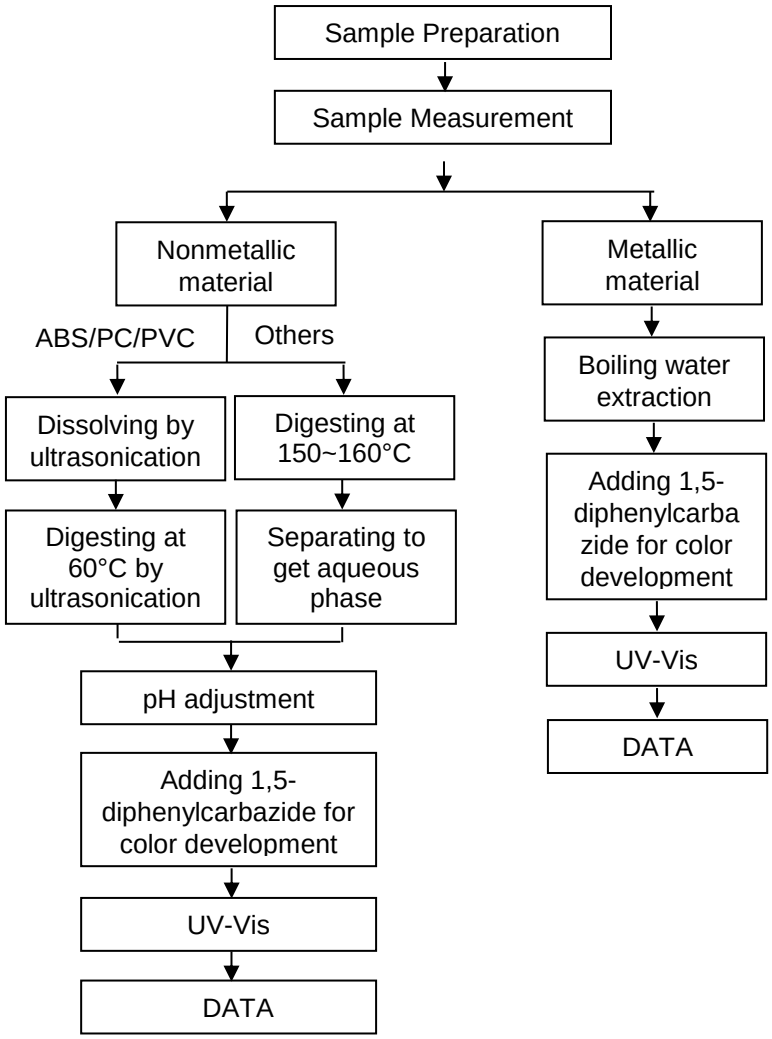
These samples were dissolved totally by pre-conditioning method according to below flow chart.



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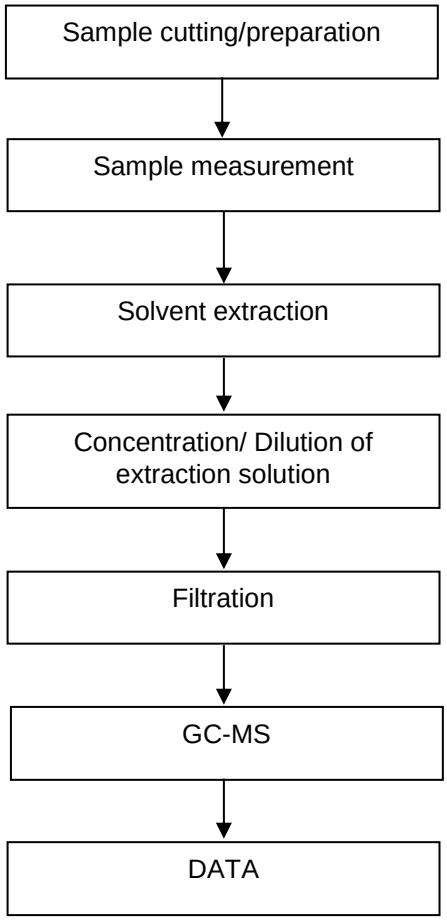
Hexavalent Chromium (Cr(VI)) Testing Flow Chart



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PBBs/PBDEs Testing Flow Chart

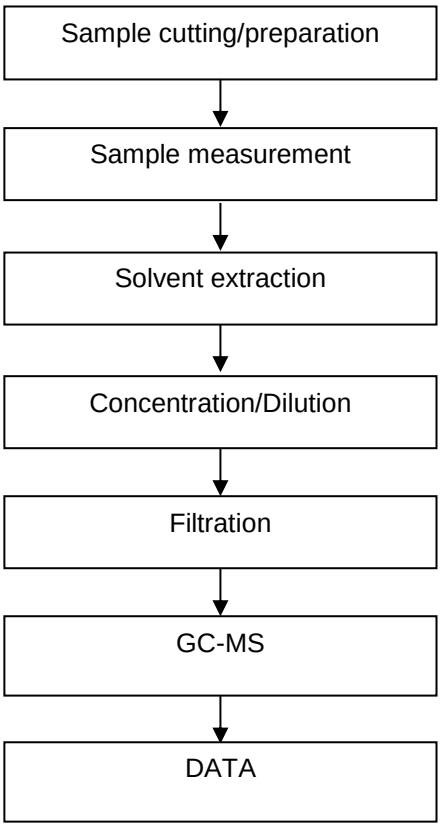


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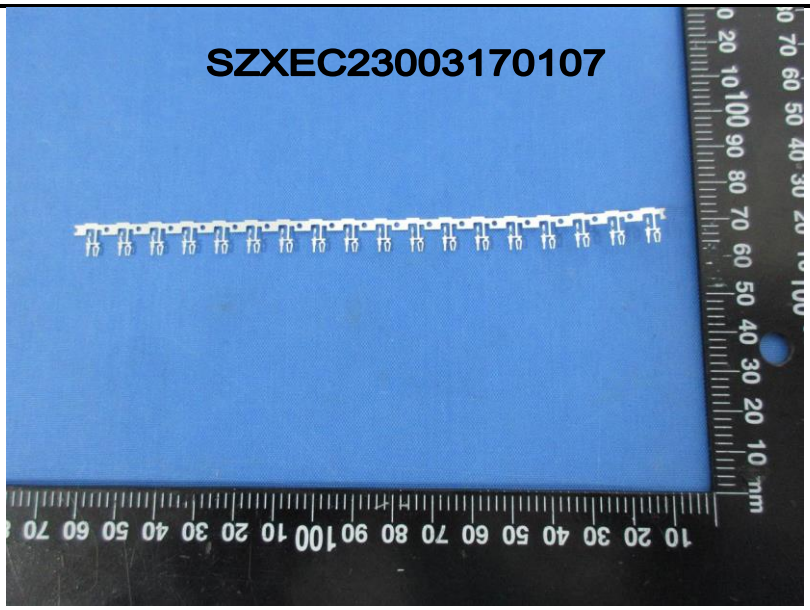
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Phthalates Testing Flow Chart



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Sample Photo:



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报告编号 A2240422652101003E
Report No. A2240422652101003E

报告抬头公司名称 Company Name shown on Report 深圳市瑞云峰（鸿科治）实业有限公司
SHENZHENRUIYUNFENG(HONGKEZHI)INDUSTRY LIMITDE COMPANY

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1.2.3FLOOR NO 2BUILD,B,AREA,NO,6INDUSTRIALZONE,GONGHEVILLAGE, SHAJINGSTREET,BAOAN,SHENZHEN

以下测试之样品及样品信息由申请者提供并确认
The following sample(s) and sample information was/were submitted and identified by/on the behalf of the applicant

样品名称 Sample Name	镀铜工件 Copper-plated work
样品接收日期 Sample Received Date	2024.07.16 Jul. 16, 2024
样品检测日期 Testing Period	2024.07.16-2024.07.19 Jul. 16, 2024 to Jul. 19, 2024

检测要求 根据客户要求，对所提交样品中的铅(Pb)，镉(Cd)，汞(Hg)，六价铬(Cr(VI))，多溴联苯(PBBs)，多溴二苯醚(PBDEs)，邻苯二甲酸酯(DBP，BBP，DEHP，DIBP)进行测试。

Test Requested As specified by client, to test Lead (Pb), Cadmium (Cd), Mercury (Hg), Hexavalent Chromium (Cr(VI)), Polybrominated Biphenyls (PBBs), Polybrominated Diphenyl Ethers (PBDEs), Phthalates (DBP, BBP, DEHP, DIBP) in the submitted sample(s).

检测依据/检测结果 Test Method/Test Result(s) 请参见下页。
Please refer to the following page(s).

批 准 Approved by 郑晴涛
技术经理 Technical Manager

日 期 Date 2024.07.19

No. R677509037

检测报告
Test Report

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结论 Conclusion

测试样品 Tested Sample	依据标准/指令 According to standard/directive	结果 Result
提交样品 Submitted Sample	欧盟RoHS指令2011/65/EU及其修订指令(EU) 2015/863 RoHS Directive 2011/65/EU with amendment (EU) 2015/863	符合 PASS

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符合表示检测结果满足欧盟RoHS指令2011/65/EU及其修订指令(EU) 2015/863要求的限值。
PASS means that the results shown on the report comply with the limits set by RoHS Directive 2011/65/EU with amendment (EU) 2015/863.

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检测依据 Test Method

测试项目 Test Item(s)	测试方法 Test Method	测试仪器 Measured Equipment(s)
铅 Lead (Pb)	参考IEC 62321-5:2013 Refer to IEC 62321-5:2013	ICP-OES
镉 Cadmium (Cd)	参考IEC 62321-5:2013 Refer to IEC 62321-5:2013	ICP-OES
汞 Mercury (Hg)	参考IEC 62321-4:2013+AMD1:2017 CSV Refer to IEC 62321-4:2013+AMD1:2017 CSV	ICP-OES
六价铬 Hexavalent Chromium (Cr(VI))	IEC 62321-7-1:2015	UV-Vis
多溴联苯 Polybrominated Biphenyls (PBBs)*	IEC 62321-6:2015	GC-MS
多溴二苯醚 Polybrominated Diphenyl Ethers (PBDEs)*	IEC 62321-6:2015	GC-MS
邻苯二甲酸酯 Phthalates (DBP, BBP, DEHP, DIBP)*	IEC 62321-8:2017	GC-MS

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检测结果 Test Result(s)

测试项目 Tested Item(s)	结果 Result	方法检出限 MDL	限值 Limit
	003		
铅 Lead (Pb)	N.D.	2 mg/kg	1000 mg/kg
镉 Cadmium (Cd)	N.D.	2 mg/kg	100 mg/kg
汞 Mercury (Hg)	N.D.	2 mg/kg	1000 mg/kg
六价铬 Hexavalent Chromium (Cr(VI))	N.D. ▼	0.10 μg/cm² (LOQ)	1000 mg/kg

测试项目 Tested Item(s)	结果 Result	方法检出限 MDL	限值 Limit
	003		
多溴联苯 Polybrominated Biphenyls (PBBs)*			
一溴联苯 Monobromobiphenyl	N.D.	5 mg/kg	1000 mg/kg
二溴联苯 Dibromobiphenyl	N.D.	5 mg/kg	
三溴联苯 Tribromobiphenyl	N.D.	5 mg/kg	
四溴联苯 Tetrabromobiphenyl	N.D.	5 mg/kg	
五溴联苯 Pentabromobiphenyl	N.D.	5 mg/kg	
六溴联苯 Hexabromobiphenyl	N.D.	5 mg/kg	
七溴联苯 Heptabromobiphenyl	N.D.	5 mg/kg	
八溴联苯 Octabromobiphenyl	N.D.	5 mg/kg	
九溴联苯 Nonabromobiphenyl	N.D.	5 mg/kg	
十溴联苯 Decabromobiphenyl	N.D.	5 mg/kg	

测试项目 Tested Item(s)	结果 Result	方法检出限 MDL	限值 Limit
	003		
多溴二苯醚 Polybrominated Diphenyl Ethers (PBDEs)*			
一溴二苯醚 Monobromodiphenyl ether	N.D.	5 mg/kg	1000 mg/kg
二溴二苯醚 Dibromodiphenyl ether	N.D.	5 mg/kg	
三溴二苯醚 Tribromodiphenyl ether	N.D.	5 mg/kg	
四溴二苯醚 Tetrabromodiphenyl ether	N.D.	5 mg/kg	
五溴二苯醚 Pentabromodiphenyl ether	N.D.	5 mg/kg	
六溴二苯醚 Hexabromodiphenyl ether	N.D.	5 mg/kg	
七溴二苯醚 Heptabromodiphenyl ether	N.D.	5 mg/kg	
八溴二苯醚 Octabromodiphenyl ether	N.D.	5 mg/kg	
九溴二苯醚 Nonabromodiphenyl ether	N.D.	5 mg/kg	
十溴二苯醚 Decabromodiphenyl ether	N.D.	5 mg/kg	

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检测结果 Test Result(s)

测试项目 Tested Item(s)	结果 Result	方法检出限 MDL	限值 Limit
	003		
邻苯二甲酸酯 Phthalates (DBP, BBP, DEHP, DIBP)*			
邻苯二甲酸二丁酯 Dibutyl phthalate (DBP) CAS#:84-74-2	N.D.	50 mg/kg	1000 mg/kg
邻苯二甲酸丁基苄基酯 Butyl benzyl phthalate (BBP) CAS#:85-68-7	N.D.	50 mg/kg	1000 mg/kg
邻苯二甲酸二(2-乙基)己酯 Di-(2-ethylhexyl) phthalate (DEHP) CAS#:117-81-7	N.D.	50 mg/kg	1000 mg/kg
邻苯二甲酸二异丁酯 Diisobutyl phthalate (DIBP) CAS#:84-69-5	N.D.	50 mg/kg	1000 mg/kg

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样品/部位描述 Sample/Part Description

序号 No.	CTI样品ID CTI Sample ID	描述 Description
1	003	铜色镀层 Cupreous plating

备注: **对于检测铅，镉，汞之样品已消解完全。**

-N.D. = 未检出（小于方法检出限或定量限）

-mg/kg = ppm = 百万分之一

-1000 mg/kg = 0.1%

-LOQ = 定量限，六价铬的定量限为0.10 μg/cm²

-▼六价铬浓度小于0.10 μg/cm²，样品未检出六价铬。由于未获知样品的存储条件和生产日期，样品的六价铬测试结果仅能代表测试时样品含六价铬的状态。

Remark: **The sample(s) had been dissolved totally tested for Lead, Cadmium, Mercury.**

-MDL = Method Detection Limit

-N.D. = Not Detected (<MDL or LOQ)

-mg/kg = ppm = parts per million

-1000 mg/kg = 0.1%

-LOQ = Limit of Quantification, The LOQ of Hexavalent chromium is 0.10 μg/cm²

-▼ The sample is negative for Cr(VI) − The Cr(VI) concentration is below 0.10 μg/cm². The coating is considered a non-Cr(VI) based coating. 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.

注释: **-“*”表示该项目/方法不在CNAS认可范围内。**

-本报告中的数据结果供科研、教学、企业内部质量控制、企业产品研发等目的用。

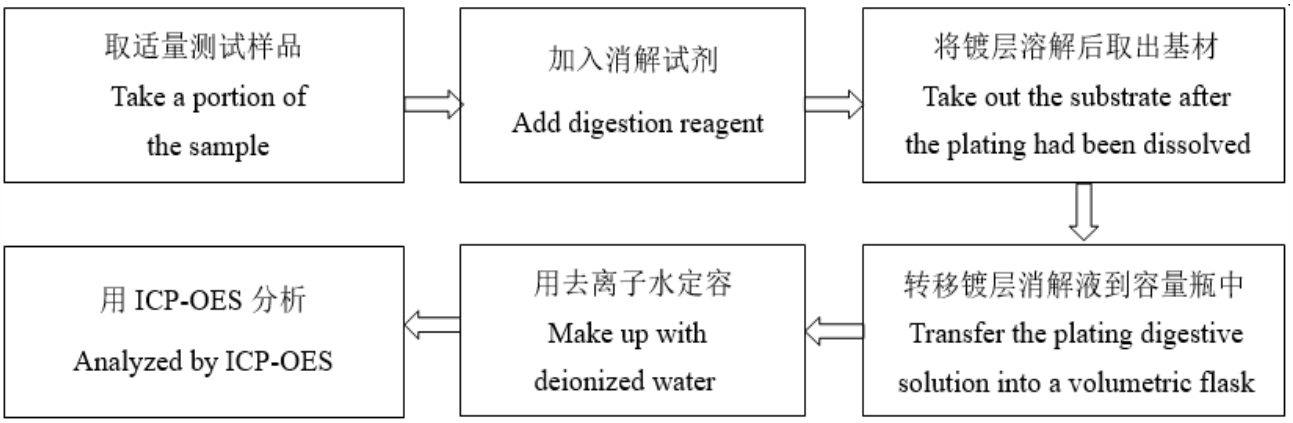
Note: **-“*” indicates the item(s)/method(s) is (are) not in CNAS accreditation scope.**

-The testing data and result(s) in this report is(are) just for scientific research, education, internal quality control and product development etc.

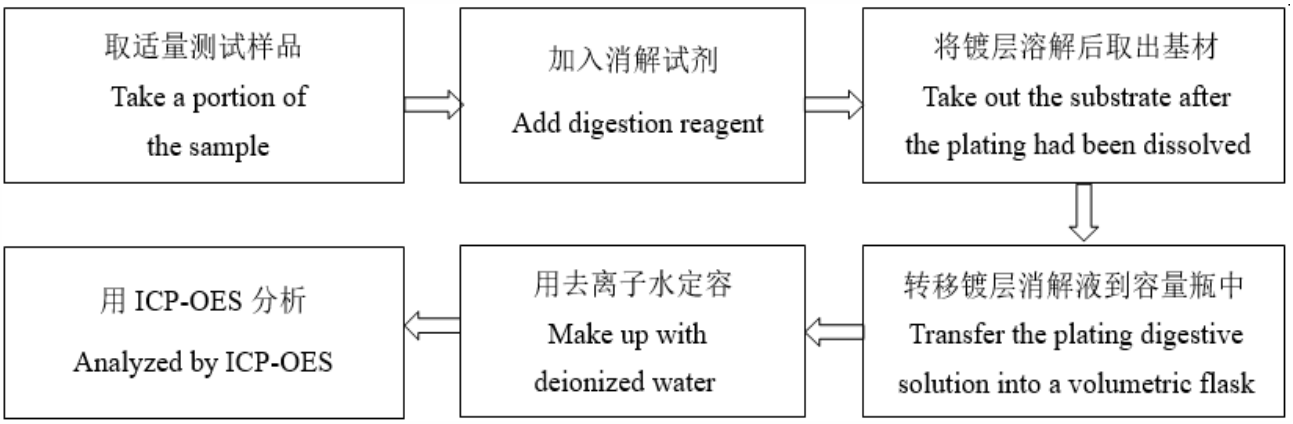
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检测流程 Test Process

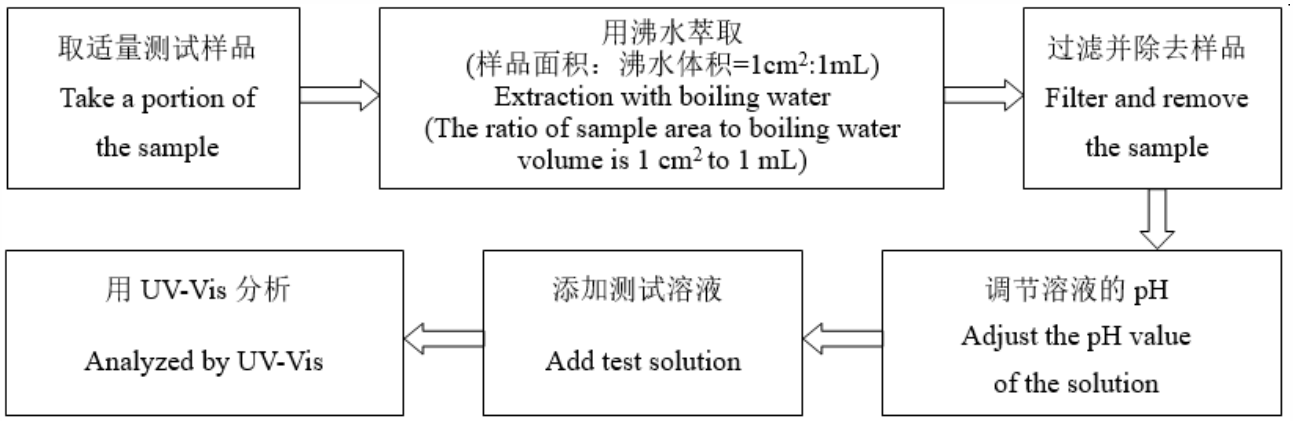
1. 铅(Pb)， 镉(Cd)
   Lead (Pb), Cadmium (Cd)



2. 汞(Hg)
   Mercury (Hg)

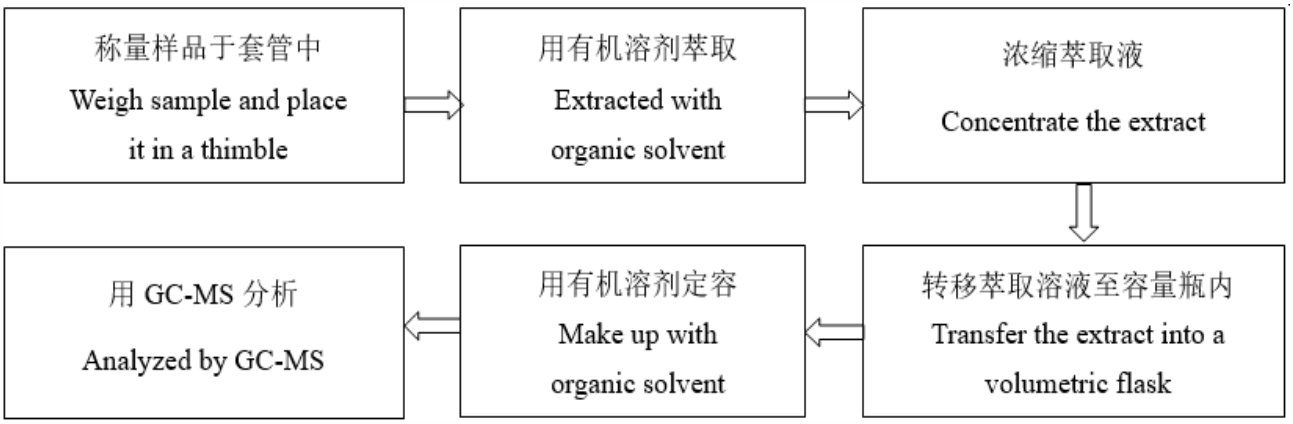


3. 六价铬(Cr(VI))
   Hexavalent Chromium (Cr(VI))



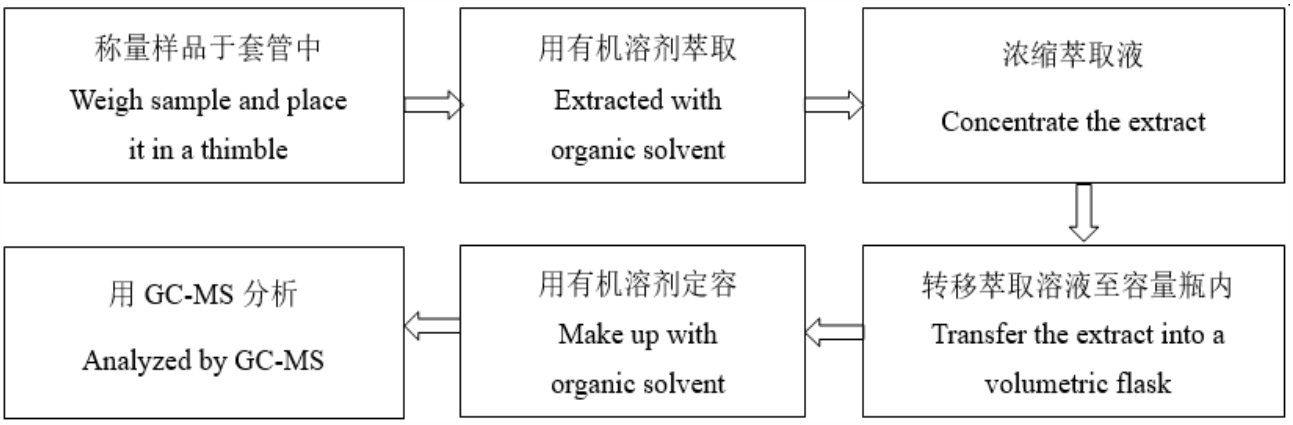
4. 多溴联苯(PBBs)， 多溴二苯醚(PBDEs)

Polybrominated Biphenyls (PBBs), Polybrominated Diphenyl Ethers (PBDEs)



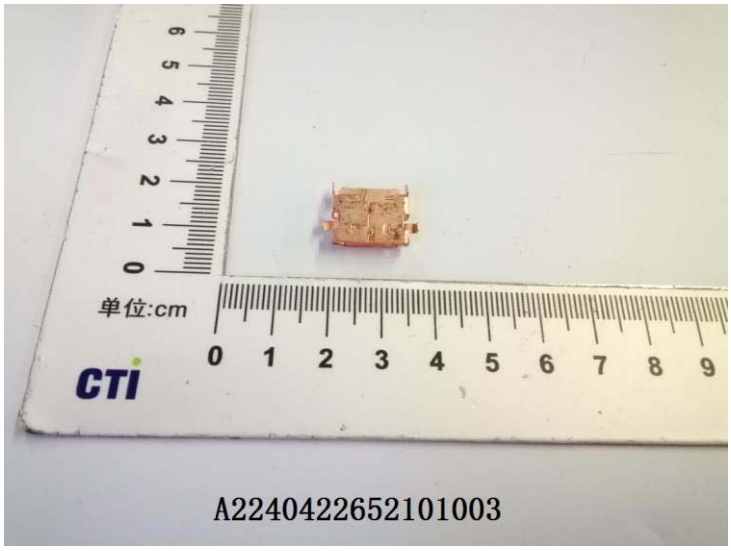
5. 邻苯二甲酸酯(DBP， BBP， DEHP， DIBP)

Phthalates (DBP, BBP, DEHP, DIBP)



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样品图片
Photo(s) of the sample(s)



声明Statement：

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   This report is considered invalid without approved signature, special seal and the seal on the perforation;
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   The Company Name shown on Report and Address, the sample(s) and sample information was/were provided by the applicant who should be responsible for the authenticity which CTI hasn’t verified;
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   The result(s) shown in this report refer(s) only to the sample(s) tested;
4. 除非另有说明，报告参照ILAC-G8:09/2019 / CNAS-GL015:2022使用简单接受(w=0)二元判定规则进行符合性判定；
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报告结束
*** End of report ***