

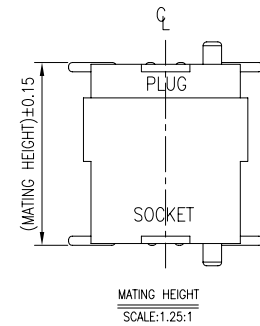
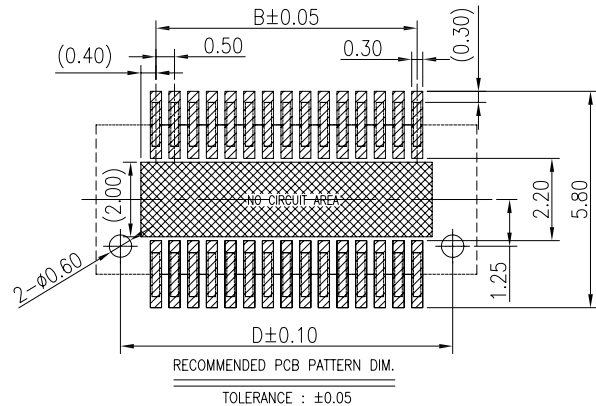
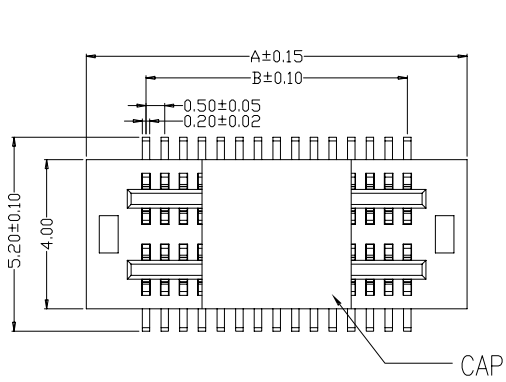
Catalogue of specifications for approval

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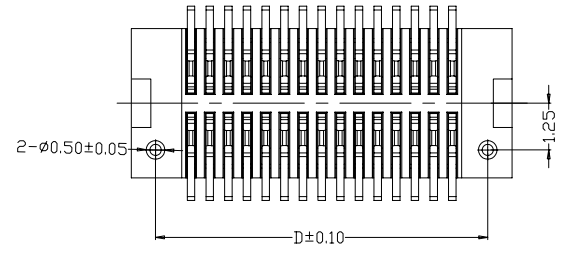
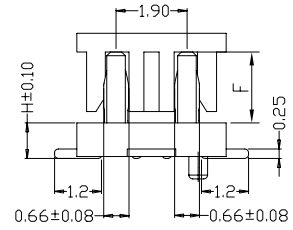
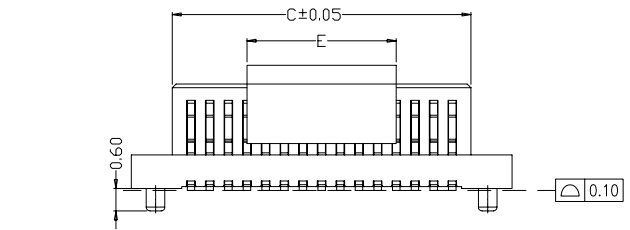
REV.	DATE	ECN NO.	MODIFICATION	APPROVER
A	2017/07/17	/	NEW	Vicky

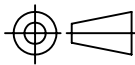


PIN NO.	A.	B.	C.	D.	E.
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6	4.20	1.00	2.06	2.90	
8	4.70	1.50	2.56	3.40	
10	5.20	2.00	3.06	3.90	
12	5.70	2.50	3.56	4.40	
14	6.20	3.00	4.06	4.90	
16	6.70	3.50	4.56	5.40	
18	7.20	4.00	5.06	5.90	
20	7.70	4.50	5.56	6.40	
22	8.20	5.00	6.06	6.90	
24	8.70	5.50	6.56	7.40	8.00
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28	9.70	6.50	7.56	8.40	
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32	10.70	7.50	8.56	9.40	
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40	12.70	9.50	10.56	11.40	
42	13.20	10.00	11.06	11.90	
44	13.70	10.50	11.56	12.40	8.00
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48	14.70	11.50	12.56	13.40	
50	15.20	12.00	13.06	13.90	
54	16.20	13.00	14.06	14.90	
56	16.70	13.50	14.56	15.40	
58	17.20	14.00	15.06	15.90	
60	17.70	14.50	15.56	16.40	
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68	19.70	16.50	17.56	18.40	
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74	21.20	18.00	19.06	19.90	
76	21.70	18.50	19.56	20.40	
78	22.20	19.00	20.06	20.90	
80	22.70	19.50	20.56	21.40	
82	23.20	20.00	21.06	21.90	
84	23.70	20.50	21.56	22.40	
86	24.20	21.00	22.06	22.90	8.00
88	24.70	21.50	22.56	23.40	
90	25.20	22.00	23.06	23.90	
92	25.70	22.50	23.56	24.40	
94	26.20	23.00	24.06	24.90	
96	26.70	23.50	24.56	25.40	
98	27.20	24.00	25.06	25.90	
100	27.70	24.50	25.56	26.40	

SPECIFICATIONS:  
Voltage Rating:60V DC  
Current Rating: 0.5A Max.(Each Pin)  
Contact Resistance: 60mΩ MAX  
Insulation Resistance: 800MΩ MIN  
Dielectric Withstanding : AC 500V  
Operating Temperature : -40°C~+105°C  
Contact Material: Copper Alloy  
Insulator Material: Thermoplastic,UL94V-0  
Plating: Gold Flash

MATING HEIGHT	PLUG (H.)	SOCKET (H.)	F
3.0	0.8	2.2	1.6
3.5	1.3	2.2	1.6
4.0	1.0	3.0	1.9
4.5	1.0	3.5	1.9
5.0	1.0	4.0	1.9
5.5	1.0	4.5	1.9
6.0	2.0	4.0	1.9
6.5	2.0	4.5	1.9



GENERAL TOLERANCE				UNITS mm		NAME: BTB		ATOM® 深圳市爱特姆科技有限公司 SHENZHEN ATOM TECHNOLOGY CO., LTD.			
SELECT	✓			MAT'L		PART NO: BTB050***—M1D****		TITLE: BTB0.5mm 2*XP 双槽 公座 带定位柱 带夹持盖			
TOL. ON.	1	2	3			APPD: Jason		DWG NO. ATOM—A03509			
X.XXX	±0.05	±0.05	±0.15	FINISH		CHKD: Vicky		 SCALE SHEET REV			
X.XX	±0.15	±0.13	±0.25			DR: Jillian					
X.X	±0.25	±0.25	±0.50	Q'TY							
X.		±0.38	±1.00								
ANGLE	±2'										

## PRODUCT SPECIFICATION

### 1. SCOPE

#### 1.. CONTENTS

This specification covers the performance, tests and quality requirements for the 0.5mm/0.8mm Pitch Side-inserted BOARD to BOARD SMD Type Connector .

### 2. APPLICABLE DOCUMENT

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

### 3. REQUIREMENTS

#### 3.1. DESIGN AND CONSTRUCTION

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

#### 3.2. MATERIALS

- A. Housing: Thermoplastic, UL94V-0.
- B. Terminal: Copper alloy, Gold plated under-plated Ni overall.

#### 3.3. RATINGS

- A. Voltage rating:60V DC
- B. Current rating: 0.5A Max.( Each Pin)
- C. Operating Temperature: - 40℃ to +105℃ (Including terminal temperature rise)
- D. Operating Humidity range: Relative humidity 93%Max
- E. Storage temperature range:20±8℃
- F. Storage Humidity range: Relative humidity 60%Max

#### 3.4. PERFORMANCE REQUEIREMENT AND TEST DESCRIPTION

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

Product Description	BTB 系列		Product NO:		
			REVISION	DATE	SHEET NO
APPROVED BY	CHECKED BY	MADE BY	A/0	2015.6.12	1/5
Vicky Xian	Doris	Jillian	DOCUMENT NO	BTB-001	

## PRODUCT SPECIFICATION

测试项目 TEST ITEM		规格 REQUIREMENT	测试方式/条件 PROCEDURE
1	外观检查 Examination of Product	符合图面外观，无任何形状损坏 Meets requirements of product Drawing. No physical damage.	目视检查 Visual inspection.
电气特性 ELECTRICAL REQUIREMENT			
2	接触电阻 Contact Resistance	60mΩ 以下。 60mΩ Max.	将样品成对连接，开放电压 20mV 以下； 限电流 100mA 的状态下进行测试。 Mate The sample connectors, measure by dry circuit, 20mV Max., 100mA Max. (EIA-364-23)
3	绝缘阻抗 Insulation Resistance	800MΩ 以上。 800MΩ Min.	未连接的样品，提供相邻端子间或端子与地面间加 DC 500V 进行绝缘阻抗测试。 Unmated The sample connectors, apply 500V DC between adjacent terminal or ground. (EIA-364-21)
4	耐电压 Dielectric withstanding Voltage	目视外观无任何击穿损坏 No Breakdown 电流泄漏: 1 mA max. Current leakage: 1 mA max.	未连接的样品，提供相邻端子间或端子与地面间加 AC 500V (有效值) 历时 1 分钟下测定耐电压。 Unmated The sample connectors, Apply 500 V AC for 1minute Test between adjacent circuit of unmated connector. (EIA-364-20)
机械特性 MECHANICAL REQUIREMENT			
5	接触保持力 Contact Retention Force	0.03Kgf/Pin {0.294N} 以上 0.03Kgf//Pin {0.294N} Min.	将样品成对连接，以操作速度每分钟位移 25±3mm 进行接触保持力测试。 Load shall be applied on each at a speed of 25±3mm/minute as shown below then pin retention force shall be measured.
6	插入力 Insertion Force	0.08KgfxN Max. (N=Pins) 0.08KgfxN Max. (N=Pins)	将成对连接器焊板连接，以操作速度每分钟位移 25±3mm 进行插入力测试。 Mate The sample connectors shall be soldered on a board and inserted and separated at speed of 25±3mm/min. (EIA-364-13)
Product Description	BTB 系列		Product NO:
			REVISION      DATE      SHEET NO
APPROVED BY	CHECKED BY	MADE BY	A/0      2015.6.12      2/5
Vicky Xian	Doris	Jillian	DOCUMENT NO      BTB-001

## PRODUCT SPECIFICATION

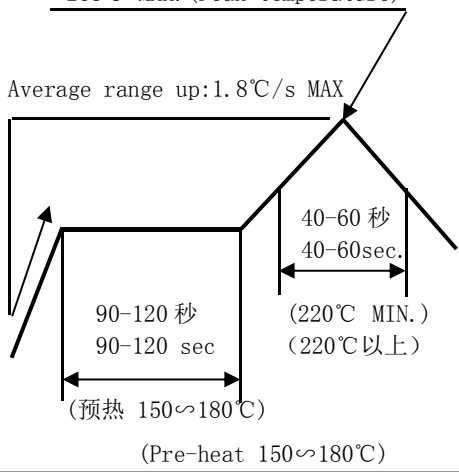
测试项目 TEST ITEM		规格 REQUIREMENT		测试方式/条件 PROCEDURE		
机械特性 MECHANICAL REQUIREMENT						
7	耐插拔 Durability	外 观 Appearance	目 视 外 观 无 任 何 损坏异状 No Damage	将样品成对连接，以操作速度每分钟位移 25±3mm 进行 30 次插拔测试。  Mate The sample connectors should be mounted in the tester and fully mated and unmated the number of 30cycles specified at the rate of 25±3 mm/min. (EIA-364-09)		
		接触阻抗 Contact Resistance	90mΩ 以下. 90mΩ Max.			
8	耐振动 Vibration (按需测试)	接触阻抗 Contact Resistance	90mΩ 以下. 90mΩ Max.	通过 DC 电流 1mA, 位移相对距离 1.5mm, 振动周期 10~55~10Hz 在 1 分钟内，持续 2 小时，方向在 X, Y, Z 轴做测试  Mate connectors and subject to the following vibration conditions for period of 2 hours in each of 3 mutually perpendicular axes passing DC 1mA during the test. Amplitude:1.5mm P-P frequency:10~55~10 Hz in 1 minute (EIA-364-28 Condition I)		
		外观 Appearance	目 视 外 观 无 任 何 损坏异状 No Damage			
		瞬间断电 Discontinuity	1 μ sec 以下. 1 μ sec Max.			
环境特性及其它性能（ENVIRONMENT PERFORMANCE AND OTHERS）						
9	温升 Temperature Rising (按需测试)	负载额定电流下温度 30℃ 30℃ Max. Under loaded rating current		量测通过成对连样品接最大容许电流时，样品接触点这温升。  Mate The sample connectors and measure the temperature rise of contact when the maximum AC rated current is passed. (EIA-364-70 METHOD 2)		
10	耐热性 Heat Resistance (按需测试)	外观 Appearance	目 视 外 观 无 任 何 损坏异状 No Damage	将样品成对连接置于环境温度 105±2℃测试时间 96 小时。再置放于室温下 1~2 小时。  Mate The sample connectors shall expose to 105 ± 2 °C for 96 hours. Upon completion of the exposure period, the test specimens shall be conditioned at ambient room condition for 1to2 hours, after which the specified measurements shall be performed.		
		接触阻抗 Contact Resistance	90mΩ 以下. 90mΩ Max.			
Product Description		BTB 系列		Product NO:		
				REVISION	DATE	SHEET NO
APPROVED BY		CHECKED BY	MADE BY	A/0	2015.6.12	3/5
Vicky Xian		Doris	Jillian	DOCUMENT NO	BTB-001	

## PRODUCT SPECIFICATION

测试项目 TEST ITEM		规格 REQUIREMENT		测试方式/条件 PROCEDURE
环境特性及其它性能（ENVIRONMENT PERFORMANCE AND OTHERS）				
11	耐寒性 Cold Resistance (按需测试)	外观 Appearance	目视外观无任何 损坏异状 No Damage	将样品成对连接置于环境温度-40±2℃测试 时间 96 小时。再置放于室温下 1~2 小时。 Mate The sample connectors shall expose to -40±2℃ for 96 hours. Upon completion of the exposure period, the test specimens shall be conditioned at ambient room condition for 1to2 hours, after which the specified measurements shall be performed.
		接触阻抗 Contact Resistance	90mΩ 以下. 90mΩ Max.	
12	耐湿性 Humidity (按需测试)	接触阻抗 Contact Resistance	90mΩ 以下. 90mΩ Max.	将样品成对连接置于环境温度 40±2℃，相对 湿度 90~95%，测试时间 96 小时。再置放于 室温下 1~2 小时。 Mate The sample connectors shall expose to 40±2℃ relative humidity 90~95% for 96 hours. Upon completion of the exposure period, the test specimens shall be conditioned at ambient room condition for 1to2 hours, after which the specified measurements shall be performed.
		耐电压 Dielectric Strength	需能符合电压 试 No Breakdown	
		外观 Appearance	目视外观无任何 损坏异状 No Damage	
		绝缘阻抗 Insulation Resistance	500MΩ 以上 500MΩ Min.	
13	盐水喷雾 Salt Spray	外观 Appearance	目视外观无任何 损坏异状 No Damage	35±2℃、5±1%的盐水喷雾 1. 镀锡区至少 12 小时 2. 镀金区 1-3u"至少 24 小时 3. 镀金区 5u"以上至少 48 小时 试验后常温水洗；再室温干燥。 35±2℃、5±1% salt spray 1. Sn plated area at least 12 hours 2. Au plated area 1-3u" for at least 24 hours 3. Au plated area 5u" for at least 48 hours Clean by normal-temperature water after test and then dry under room temperature.

Product Description	BTB 系列		Product NO:		
			REVISION	DATE	SHEET NO
APPROVED BY	CHECKED BY	MADE BY	A/0	2015.6.12	4/5
Vicky Xian	Doris	Jillian	DOCUMENT NO	BTB-001	

## PRODUCT SPECIFICATION

测试项目 TEST ITEM		规格 REQUIREMENT		测试方式/条件 PROCEDURE
环境特性及其它性能（ENVIRONMENT PERFORMANCE AND OTHERS）				
14	焊锡性 Solder ability	润湿性 Solder Wetting	润湿面积 95%以上, 并不得有漏焊针孔现象。 95% of immersed area must show no voids, pin holes.	锡温 245±5℃，将导电端子浸入锡炉液面至 Housing 距离锡面 0.1mm 位置，焊锡时间 3±0.5 秒。 Tip of solder tails and fitting mails into the molten solder (held at 245±5℃) up to 0.1mm from the Housing for 3±0.5sec onds. (EIA-364-52)
15	耐焊接热 Resistance to soldering heat	外观 Appearance	经过两次回流焊，无损坏、变形 No Damage after 2 times of reflow	1). Reflow part 260±5℃ Peak 220℃ MIN. 60sec.MAX. 2). Pre-heat part 180℃, 0~120sec. * Refer to reflow temperature profile. 

Product Description	BTB 系列		Product NO:		
			REVISION	DATE	SHEET NO
APPROVED BY	CHECKED BY	MADE BY	A/0	2015.6.12	5/5
Vicky Xian	Doris	Jillian	DOCUMENT NO	BTB-001	

## 样品尺寸检测报告

日期: 2021. 4. 26

NO: RD05421042606

客户		品名规格			BTB0.5mm 2*35P 双槽 公座 带定位柱 合高H=4.0mm 带夹持盖 卷装 (黑色)					工厂料号		BTB050080-M1D08200			测试工具		卡尺/二次元	
样品号 序号	标准尺寸	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	判 定	
A	22.70±0.15	22.72	22.73	22.71	22.72												■OK □NG	
B	19.50±0.10	19.53	19.52	19.51	19.52												■OK □NG	
C	20.50±0.05	20.49	20.51	20.52	20.51												■OK □NG	
D	21.40±0.10	21.38	21.39	21.40	21.39												■OK □NG	
E	8.00±0.15	7.98	7.99	8.00	8.00												■OK □NG	
F	1.9±0.25	1.91	1.92	1.92	1.91												■OK □NG	
G	0.50±0.05	0.52	0.51	0.52	0.51												■OK □NG	
H	1.0±0.10	0.98	0.99	1.00	0.99												■OK □NG	
I	0.20±0.02	0.20	0.21	0.21	0.20												■OK □NG	
J	4.00±0.15	4.01	4.02	4.02	4.01												■OK □NG	
K	5.20±0.10	5.22	5.23	5.22	5.23												■OK □NG	
L	0.60±0.15	0.62	0.63	0.62	0.63												■OK □NG	
M	0.50±0.05	0.50	0.51	0.50	0.51												■OK □NG	
N	1.2±0.25	1.19	1.20	1.21	1.21												■OK □NG	
O	1.2±0.25	1.22	1.21	1.20	1.21												■OK □NG	
P	0.66±0.08	0.68	0.67	0.66	0.67												■OK □NG	
Q	0.66±0.08	0.67	0.68	0.66	0.67												■OK □NG	
R	1.90±0.15	1.92	1.92	1.93	1.93												■OK □NG	
S	0.25±0.15	0.26	0.25	0.26	0.25												■OK □NG	
T	平面度0.10MAX	0.05	0.04	0.04	0.05												■OK □NG	
																	□OK □NG	
外观检验:无外观不良																	■OK □NG	
检验判定: ■OK □NG																		

核准:Vicky

审核:邓金梁

检验员:程莹黎



RoHS限用物质成份调查表

NO:RD06821010401

物料名称 (Part number)	序號 (Number)	組成成份 (Component)	材質 (Material)	10种有害物质的含量（单位：PPM） Ten hazardous material content(unit:PPM)										报告编号 (Report number)	检测日期 (Test date)	到期日期(有效 期一年) (Expire date) (one year of validity)
				铅(Pb)	汞(Hg)	镉(Cd)	六价铬 (Cr6+)	鄰苯二甲 酸二丁酯 (DBP)	鄰苯二甲 酸丁苯甲 酯(BBP)	鄰苯二甲 酸二 (DEHP)	鄰苯二甲 酸二異丁 酯(DIBP)	聚溴联苯 (PBB)	聚溴二苯 醚 (PBDE)			
BTB	1	塑胶	PA9T	10	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	CANEC2009495113	2020.06.24	2021.06.24
	2	端子	C5191	12	N.D	N.D	Negative	/	/	/	/	/	/	CANEC2009495129	2020.06.24	2021.06.24
	3	电镀	Au	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	/	/	A2200288192101002	2020.08.28	2021.08.28
			Ni	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	/	/	A2200288192101001	2020.08.28	2021.08.28

核准:Doris

审核:邓金梁

制定:Iris

表单编号:ATOM-MF-RD068 A/0



## Test Report

No. CANEC2009495113

Date: 24 Jun 2020

Page 1 of 9

SHENZHEN ATOM TECHNOLOGY CO.,LTD

CHANGFENG INDUSTRIAL PARK,ZONE #68,BAO'AN DISTRICT,SHENZHEN CITY,CHINA

The following sample(s) was/were submitted and identified on behalf of the clients as : PA9T Black

SGS Job No. : CP20-029748 - SZ

Date of Sample Received : 15 Jun 2020

Testing Period : 15 Jun 2020 - 23 Jun 2020

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

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

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

Conclusion : Based on the performed tests on submitted sample(s), the results of Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs) and Phthalates such as Bis(2-ethylhexyl) phthalate (DEHP) , Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) , and Diisobutyl phthalate (DIBP) comply with the limits as set by RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU.

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

Jessie Li

Jessie Li  
Approved Signatory



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Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: [CN.Doccheck@sgs.com](mailto:CN.Doccheck@sgs.com)

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

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## Test Report

No. CANEC2009495113

Date: 24 Jun 2020

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Test Results :

### Test Part Description :

Specimen No.	SGS Sample ID	Description
SN1	CAN20-094951.007	Black plastic grains

Remarks :

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

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

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

<u>Test Item(s)</u>	<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>007</u>
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1,000	mg/kg	2	10
Mercury (Hg)	1,000	mg/kg	2	ND
Hexavalent Chromium (CrVI)	1,000	mg/kg	8	ND
Sum of PBBs	1,000	mg/kg	-	ND
Monobromobiphenyl	-	mg/kg	5	ND
Dibromobiphenyl	-	mg/kg	5	ND
Tribromobiphenyl	-	mg/kg	5	ND
Tetrabromobiphenyl	-	mg/kg	5	ND
Pentabromobiphenyl	-	mg/kg	5	ND
Hexabromobiphenyl	-	mg/kg	5	ND
Heptabromobiphenyl	-	mg/kg	5	ND
Octabromobiphenyl	-	mg/kg	5	ND
Nonabromobiphenyl	-	mg/kg	5	ND
Decabromobiphenyl	-	mg/kg	5	ND
Sum of PBDEs	1,000	mg/kg	-	ND
Monobromodiphenyl ether	-	mg/kg	5	ND
Dibromodiphenyl ether	-	mg/kg	5	ND
Tribromodiphenyl ether	-	mg/kg	5	ND
Tetrabromodiphenyl ether	-	mg/kg	5	ND
Pentabromodiphenyl ether	-	mg/kg	5	ND



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Test Item(s)	Limit	Unit	MDL	007
Hexabromodiphenyl ether	-	mg/kg	5	ND
Heptabromodiphenyl ether	-	mg/kg	5	ND
Octabromodiphenyl ether	-	mg/kg	5	ND
Nonabromodiphenyl ether	-	mg/kg	5	ND
Decabromodiphenyl ether	-	mg/kg	5	ND
Dibutyl phthalate (DBP)	1,000	mg/kg	50	ND
Butyl benzyl phthalate (BBP)	1,000	mg/kg	50	ND
Bis (2-ethylhexyl) phthalate (DEHP)	1,000	mg/kg	50	ND
Diisobutyl Phthalates (DIBP)	1,000	mg/kg	50	ND

### Notes :

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

[https://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101:::FSP\\_ORG\\_ID,FSP\\_LANG\\_ID:1258637,25](https://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101:::FSP_ORG_ID,FSP_LANG_ID:1258637,25)

(2) 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.

(3) The restriction of DEHP, BBP, DBP and DIBP shall not apply to toys which are already subject to the restriction of DEHP, BBP, DBP and DIBP through entry 51 of Annex XVII to Regulation (EC) No 1907/2006.

### Red Phosphor

Test Method : SGS In-house method (GZTC CHEM-TOP-215-01), analysis was performed by PY-GC/MS/ICP-OES.

Test Item(s)	Unit	MDL	007
Red phosphorus	mg/kg	500	ND

### Phthalate

Test Method : With reference to EN14372: 2004. Analysis was performed by GC-MS.

Test Item(s)	CAS NO.	Unit	MDL	007
Diisononyl Phthalate (DINP)	28553-12-0 / 68515-48-0	%(w/w)	0.010	ND
Di-n-octyl Phthalate (DNOP)	117-84-0	%(w/w)	0.003	ND
Diisodecyl Phthalate (DIDP)	26761-40-0 / 68515-49-1	%(w/w)	0.010	ND



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**Notes :**

(1) DBP,BBP,DEHP, DIBP Reference information: Entry 51 of Regulation (EU) 2018/2005 amending Annex XVII of REACH Regulation (EC) No 1907/2006:

i) Shall not be used as substances or in mixtures, individually or in any combination of DBP, BBP, DEHP & DIBP, in concentrations equal to or greater than 0.1 % by weight of the plasticised material, in toys and childcare articles.

ii) Shall not be placed on the market in toys or childcare articles, individually or in any combination of DBP, BBP, DEHP, in concentrations equal to or greater than 0.1 % by weight of the plasticised material. In addition, DIBP shall not be placed on the market after 7 July 2020 in toys or childcare articles, individually or in any combination of DBP, BBP, DEHP & DIBP, in concentrations equal to or greater than 0.1 % by weight of the plasticised material.

iii) shall not be placed on the market after 7 July 2020 in articles, individually or in any combination of DBP, BBP, DEHP & DIBP, in concentrations equal to or greater than 0.1 % by weight of the plasticised material in the articles.

Please refer to Regulation (EU) 2018/2005 to get more detail information

(2) DINP, DNOP, DIDP Reference information: Entry 52 of Regulation (EU) 2015/326 amending Annex XVII of REACH Regulation (EC) No 1907/2006.

i) Shall not be used as substances or in mixtures, in concentrations greater than 0.1 % by weight of the plasticised material, in toys and childcare articles which can be placed in the mouth by children.

ii) Such toys and childcare articles containing these phthalates in a concentration greater than 0.1 % by weight of the plasticised material shall not be placed on the market.

Please refer to Regulation (EU) 2015/326 to get more detail information

**AfPS GS 2019:01 PAK - Polycyclic Aromatic Hydrocarbons (PAHs)**

Test Method : With reference to AfPS GS 2019:01 PAK, analysis was performed by GC-MS.

<u>Test Item(s)</u>	<u>CAS NO.</u>	<u>Unit</u>	<u>MDL</u>	<u>007</u>
Naphthalene(NAP)	91-20-3	mg/kg	0.1	ND
Phenanthrene(PHE)	85-01-8	mg/kg	0.1	ND
Anthracene(ANT)	120-12-7	mg/kg	0.1	ND
Fluoranthene(FLT)	206-44-0	mg/kg	0.1	ND
Pyrene(PYR)	129-00-0	mg/kg	0.1	ND
Benzo(a)anthracene(BaA)	56-55-3	mg/kg	0.1	ND
Chrysene(CHR)	218-01-9	mg/kg	0.1	ND
Benzo(b)fluoranthene(BbF)	205-99-2	mg/kg	0.1	ND
Benzo(j)fluoranthene(BjF)	205-82-3	mg/kg	0.1	ND
Benzo(k)fluoranthene(BkF)	207-08-9	mg/kg	0.1	ND
Benzo(a)pyrene(BaP)	50-32-8	mg/kg	0.1	ND
Benzo(e)pyrene(BeP)	192-97-2	mg/kg	0.1	ND
Indeno(1,2,3-c,d)pyrene(IPY)	193-39-5	mg/kg	0.1	ND



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Test Item(s)	CAS NO.	Unit	MDL	007
Dibenzo(a,h)anthracene(DBA)	53-70-3	mg/kg	0.1	ND
Benzo(g,h,i)perylene(BPE)	191-24-2	mg/kg	0.1	ND
Sum of 4 PAHs (Phenanthrene, Pyrene, Anthracene, Fluoranthene)	-	mg/kg	-	ND
Sum of 15 PAHs	-	mg/kg	-	ND

### AfPS ( German commission for Product Safety ) : PAHs requirements

Parameter (mg/kg)	Category 1	Category 2		Category 3	
	Materials intended to be placed in the mouth, or materials coming into long-term contact with skin (more than 30s) during the intended use -in toys according to Directive 2009/48/EC or -for the use by children <sup>a,b</sup> up to 3 years of age.	a. use by children	b. other consumer products	a. use by children	b. other consumer products
Benzo(a)pyrene (BaP)	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo(e)pyrene (BeP)	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo(a)anthracene (BaA)	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo(b)fluoranthene (BbF)	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo(j)fluoranthene (BjF)	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo(k)fluoranthene (BkF)	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Chrysene (CHR) mg/kg	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Dibenzo(a,h)anthracene (DBA)	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo(g,h,i)perylene (BPE)	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Indeno(1,2,3-cd)pyrene (IPY)	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Phenanthrene (PHE), pyrene (PYR), anthracene (ANT), fluoranthene (FLT)	< 1 Sum	< 5 Sum	< 10 Sum	< 20 Sum	< 50 Sum
Naphthalene (NAP)	< 1	< 2		< 10	
Sum of 15 PAHs	< 1	< 5	< 10	< 20	< 50

#### Note:

<sup>a</sup> A "Child" is legally defined as a person before reaching the age of 14 years.

<sup>b</sup> Use by children includes both active and passive contact by children.

<sup>c</sup> Definition "short-term repetitive contact" taken from REACH Annex XVII entry 50 amendment (Regulation (EC) No. 1272/2013)

<sup>d</sup> According to the definition of the German Product Safety Act (ProdSG) (chapter 1 Article 2 No. 28) "foreseeable use" shall mean the use of a product in a manner that the person placing it on the market, has not intended, but which could be reasonably foreseeable.

**Remark:** The German committee on Product Safety (AfPS) published a new PAHs document (AfPS GS 2019:01 PAK) on April 10, 2020, which will be binding for the issue of GS mark certificate from July 1, 2020.



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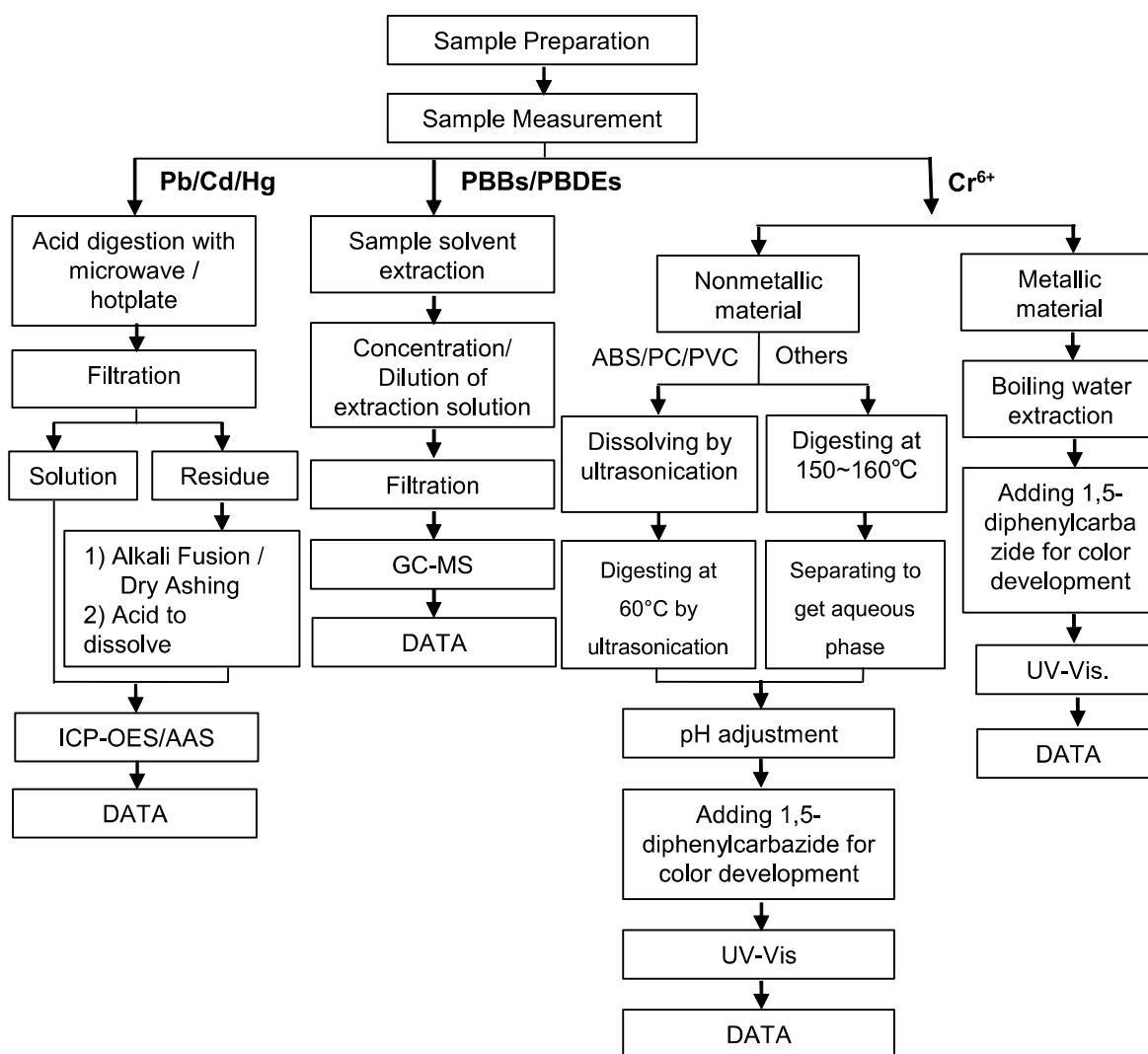
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### Pb/Cd/Hg/Cr<sup>6+</sup>/PBBs/PBDEs Testing Flow Chart

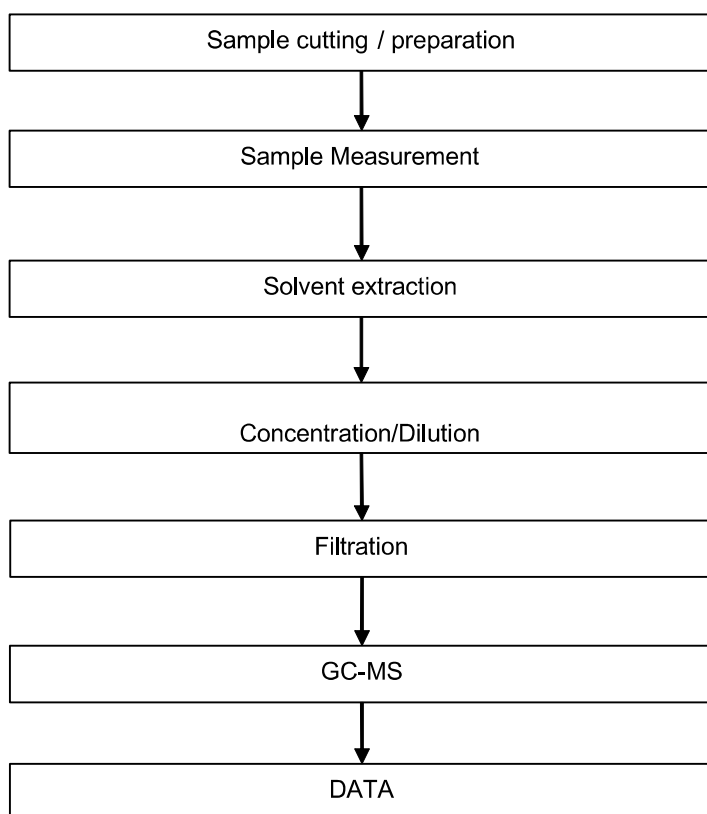
- 1) These samples were dissolved totally by pre-conditioning method according to below flow chart.  
(Cr<sup>6+</sup> and PBBs/PBDEs test method excluded).





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## Phthalates Testing Flow Chart



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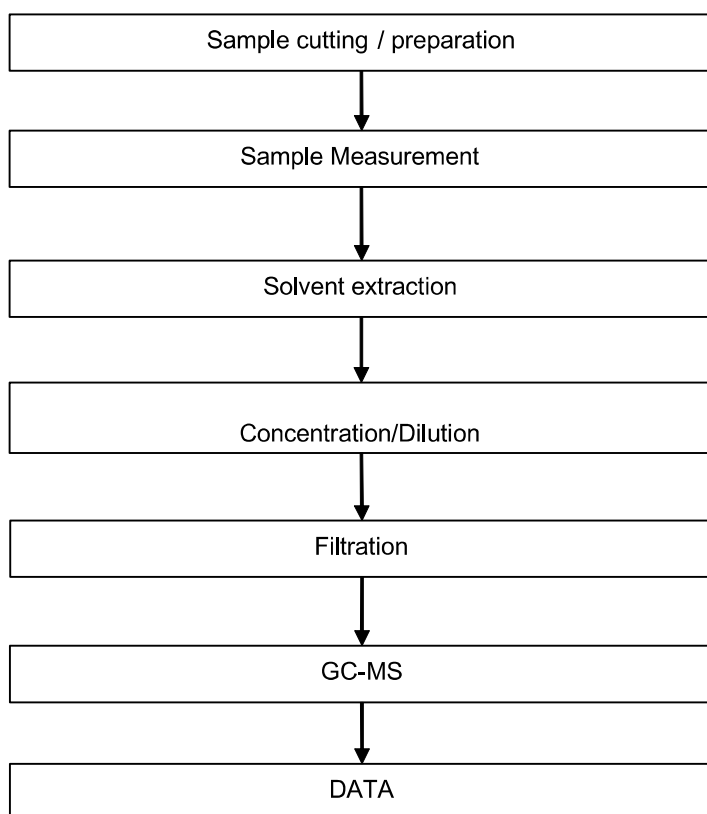
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## PAHs Testing Flow Chart



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Sample photo:



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\*\*\* End of Report \*\*\*



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## Test Report

No. CANEC2009495129

Date: 24 Jun 2020

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SHENZHEN ATOM TECHNOLOGY CO.,LTD

CHANGFENG INDUSTRIAL PARK,ZONE #68,BAO'AN DISTRICT,SHENZHEN CITY,CHINA

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

SGS Job No. : CP20-029748 - SZ

Date of Sample Received : 15 Jun 2020

Testing Period : 15 Jun 2020 - 23 Jun 2020

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

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

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

Conclusion : Based on the performed tests on submitted sample(s), the results of Lead, Mercury, Cadmium, Hexavalent chromium comply with the limits as set by RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU.

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

Jessie Li

Jessie Li  
Approved Signatory



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## Test Report

No. CANEC2009495129

Date: 24 Jun 2020

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Test Results :

### Test Part Description :

Specimen No.	SGS Sample ID	Description
SN1	CAN20-094951.015	Copper-colored metal

Remarks :

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

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

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

Test Item(s)	Limit	Unit	MDL	015
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1,000	mg/kg	2	12
Mercury (Hg)	1,000	mg/kg	2	ND
Hexavalent Chromium (Cr(VI))▼	-	µg/cm <sup>2</sup>	0.10	ND

Notes :

- (1) The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863. IEC 62321 series is equivalent to EN 62321 series  
[https://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101:::FSP\\_ORG\\_ID,FSP\\_LANG\\_ID:1258637,25](https://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101:::FSP_ORG_ID,FSP_LANG_ID:1258637,25)
- (2) ▼= a. The sample is positive for CrVI if the CrVI concentration is greater than 0.13 µg/cm<sup>2</sup>. 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/cm<sup>2</sup>). The coating is considered a non-CrVI based coating  
c. The result between 0.10 µg/cm<sup>2</sup> and 0.13 µg/cm<sup>2</sup> is considered to be inconclusive - unavoidable coating variations may influence the determination  
Information on storage conditions and production date of the tested sample is unavailable and thus Cr(VI) results represent status of the sample at the time of testing.



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Guangzhou Branch Testing Center Chemical Laboratory.

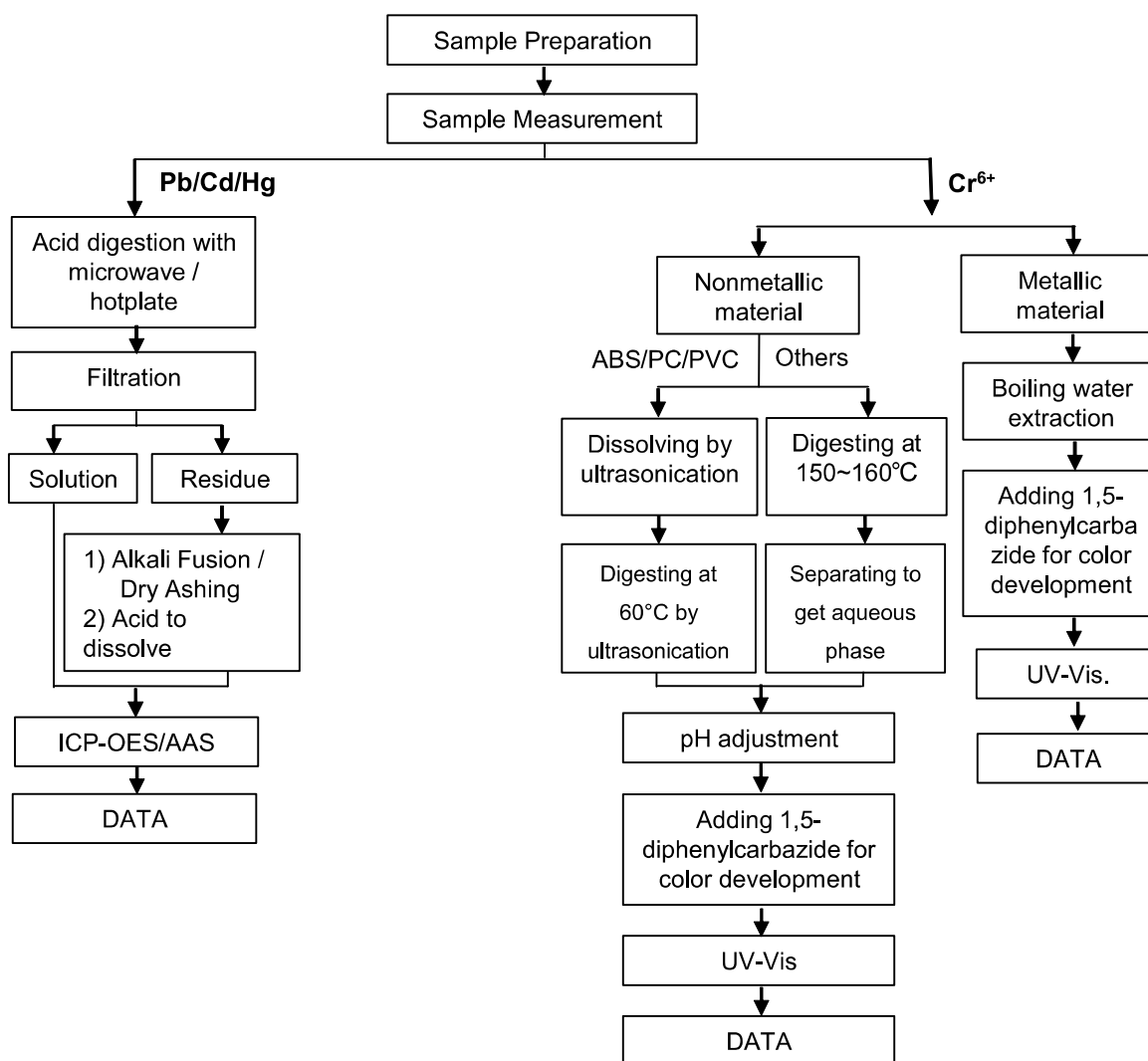
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中国·广州·经济技术开发区科学城科珠路198号 邮编: 510663 t (86-20) 82155555 f (86-20) 82075113 e [sgs.china@sgs.com](mailto:sgs.china@sgs.com)

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## ATTACHMENTS

### Pb/Cd/Hg/Cr<sup>6+</sup> Testing Flow Chart

- 1) These samples were dissolved totally by pre-conditioning method according to below flow chart.  
(Cr<sup>6+</sup> test method excluded).







## Test Report

No. CANEC2009495129

Date: 24 Jun 2020

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Sample photo:



SGS authenticate the photo on original report only

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# Test Report



Page 1 of 6

**Report No.** A2200288192101002

**Company Name** HENG JI PLA TING(HUI ZHOU ) CO.,LTD

**shown on Report**

**Address** LONGXI ELECTRO PLATING ENVIRONMENTAL PROTECTION INDUSTRIAL  
PARK 408A-2F

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

**Sample Name** Terminal Gold plating layer  
**Part No.** DC-2  
**Item No.** HJDZDC200817-G  
**Sample Received Date** Aug. 25, 2020  
**Testing Period** Aug. 25, 2020 to Aug. 28, 2020

**Test Requested** As specified by client, to test Lead(Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium(Cr(VI)), Phthalates (DBP, BBP, DEHP, DIBP), Arsenic(As), Beryllium(Be), Fluorine (F), Chlorine (Cl), Bromine (Br), Iodine (I), Perfluorooctane Sulfonates(PFOS), Perfluorooctanoic Acid(PFOA) in the submitted sample(s).

**Test Method** Please refer to the following page(s).

**Test Result(s)** Please refer to the following page(s).



Tested by

Grace Sun

Approved by

Hill Zheng

Hill Zheng

Technical Manager

Reviewed by

Jori Xia

Date

Aug. 28, 2020

No. R338857076

CTI Building, Xing Dong Community, Xin'an Sub-district, Bao'an District, Shenzhen City, Guangdong Province, P.R. China

CTI Building, Xing Dong Community, Xin'an Sub-district, Bao'an District, Shenzhen City, Guangdong Province, P.R. China

# Test Report

Report No. A2200288192101002

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## 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 62321-7-1:2015	UV-Vis
Phthalates (DBP, BBP, DEHP, DIBP)	IEC 62321-8:2017	GC-MS
Arsenic(As)	Refer to US EPA 3050B:1996 & US EPA 6010D:2018	ICP-OES
Beryllium(Be)	Refer to US EPA 3050B:1996 & US EPA 6010D:2018	ICP-OES
Fluorine (F)	Refer to EN 14582:2016	IC
Chlorine (Cl)	Refer to EN 14582:2016	IC
Bromine (Br)	Refer to EN 14582:2016	IC
Iodine (I)	Refer to EN 14582:2016	IC
Perfluorooctane Sulfonates(PFOS)	Refer to US EPA 3550C:2007 & US EPA 8321B:2007	LC-MS-MS
Perfluorooctanoic Acid(PFOA)	Refer to US EPA 3550C:2007 & US EPA 8321B:2007	LC-MS-MS



# Test Report

Report No. A2200288192101002

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## Test Result(s)

Tested Item(s)	Result	MDL
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. ▼	0.10 µg/cm <sup>2</sup> (LOQ)
Tested Item(s)	Result	MDL
<b>Phthalates (DBP, BBP, DEHP, DIBP)</b>		
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
Tested Item(s)	Result	MDL
Arsenic(As)	N.D.	10 mg/kg
Beryllium(Be)	N.D.	2 mg/kg
Tested Item(s)	Result	MDL
Fluorine(F)	N.D.	10 mg/kg
Chlorine(Cl)	N.D.	10 mg/kg
Bromine(Br)	N.D.	10 mg/kg
Iodine(I)	N.D.	10 mg/kg
Tested Item(s)	Result	MDL
Perfluorooctane Sulfonates(PFOS)	N.D.	0.5 µg/m <sup>2</sup>
Tested Item(s)	Result	MDL
Perfluorooctanoic Acid(PFOA)	N.D.	0.5 µg/m <sup>2</sup>

**Sample/Part Description** Metal with golden plating

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

-MDL = Method Detection Limit

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

-mg/kg = ppm = parts per million

-LOQ = Limit of Quantification, The LOQ of Hexavalent chromium is 0.10 µg/cm<sup>2</sup>

-▼The sample is negative for Cr(VI) – The Cr(VI) concentration is below 0.10 µg/cm<sup>2</sup>. The coating is considered a non-Cr(VI) based coating.

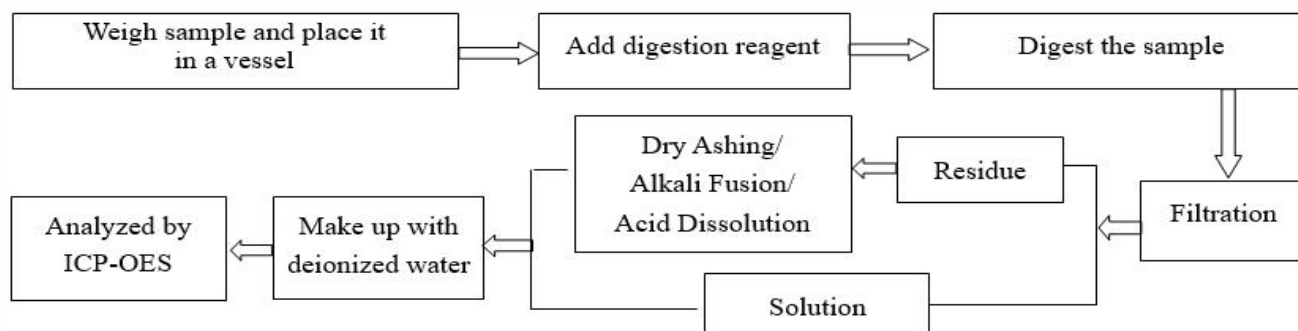
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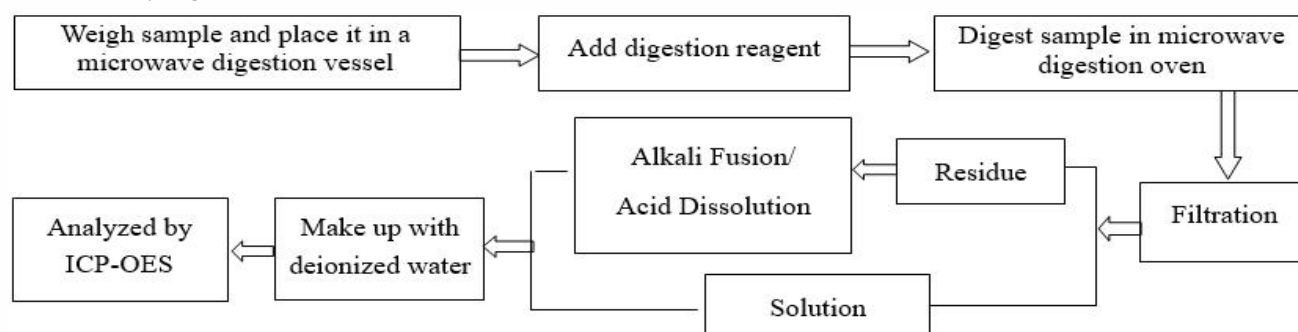
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## Test Process

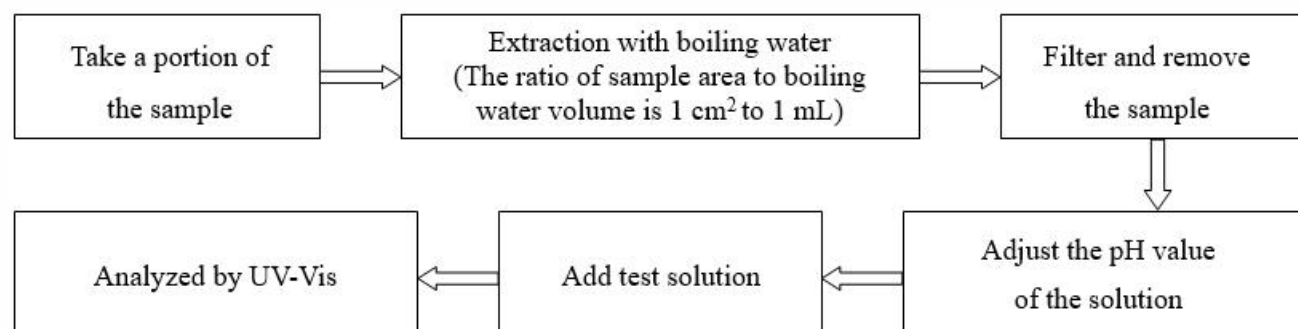
### 1. Lead(Pb), Cadmium(Cd)



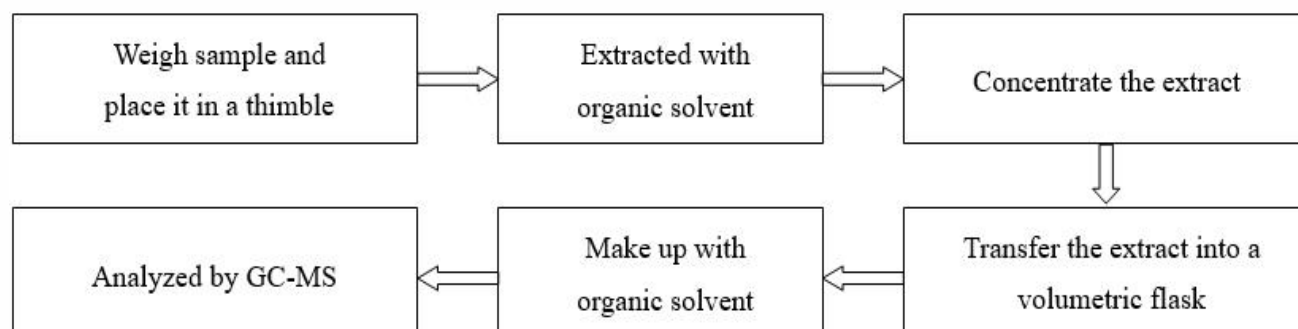
### 2. Mercury(Hg)



### 3. Hexavalent Chromium(Cr(VI))



### 4. Phthalates (DBP, BBP, DEHP, DIBP)

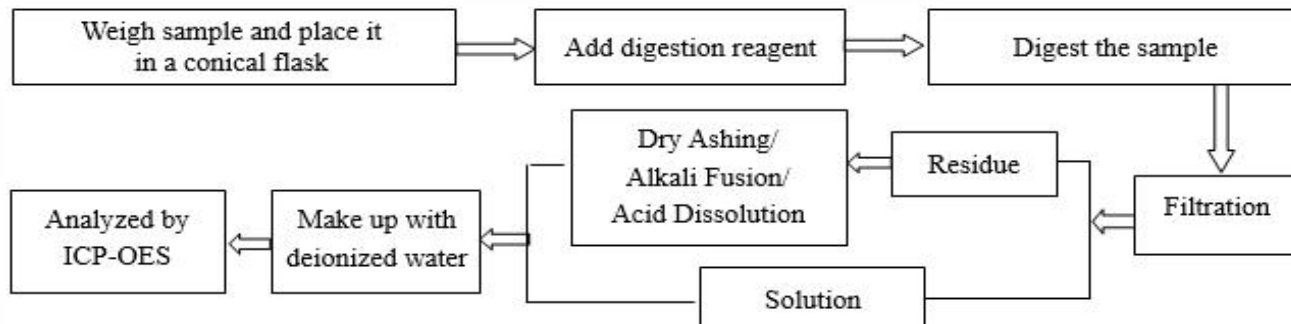


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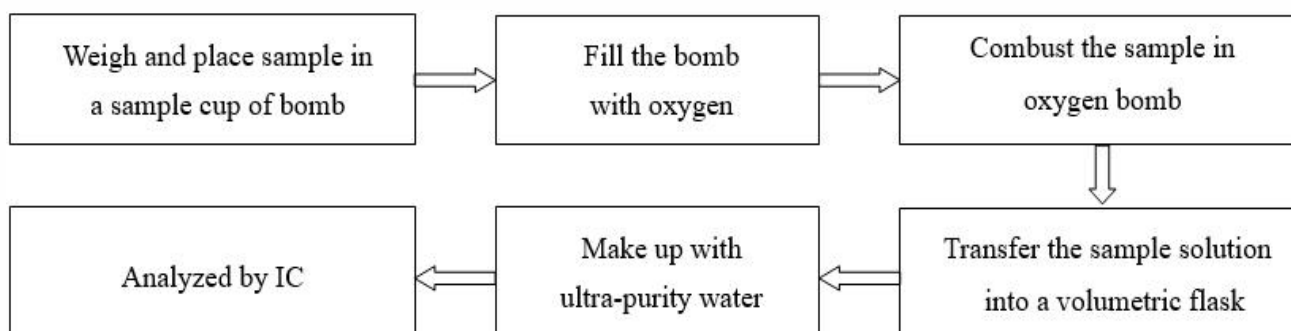
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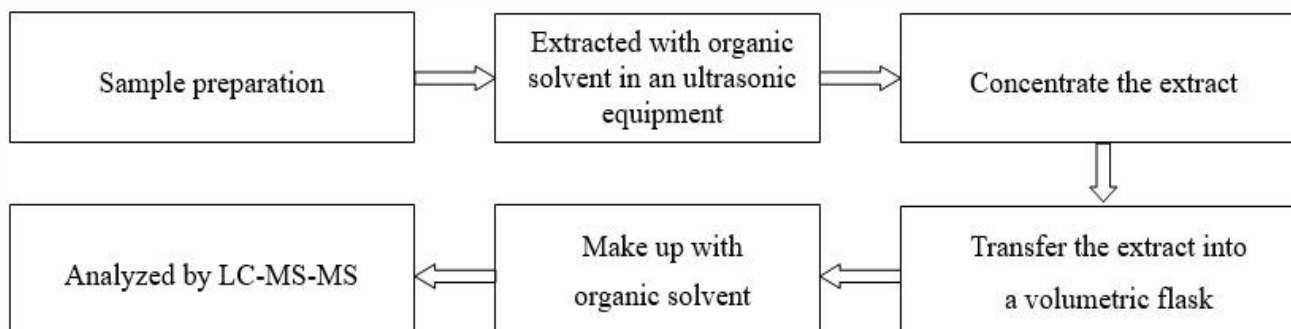
## 5. Arsenic(As), Beryllium(Be)



## 6. Fluorine (F), Chlorine (Cl), Bromine (Br), Iodine (I)



## 7. Perfluorooctane Sulfonates(PFOS), Perfluorooctanoic Acid(PFOA)

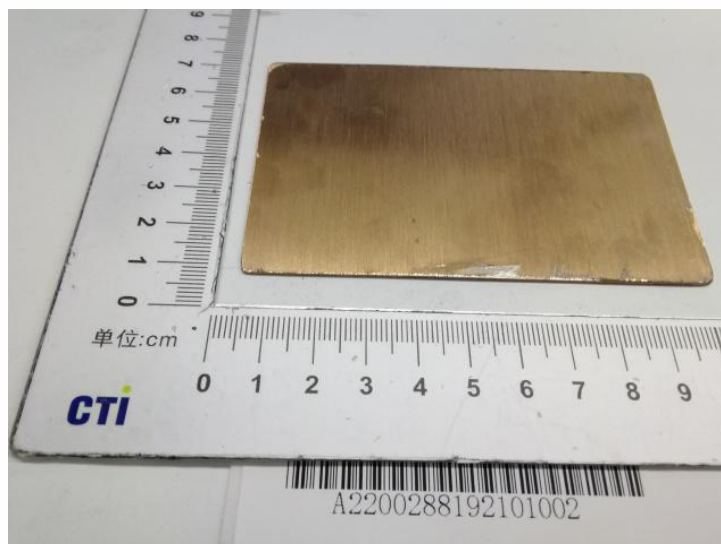


# Test Report

Report No. A2200288192101002

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## Photo(s) of the sample(s)



### Statement:

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# Test Report



Page 1 of 6

**Report No.** A2200288192101001

**Company Name** HENG JI PLA TING(HUI ZHOU ) CO.,LTD

**shown on Report**

**Address** LONGXI ELECTRO PLATING ENVIRONMENTAL PROTECTION INDUSTRIAL  
PARK 408A-2F

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

**Sample Name** Terminal Nickel plating layer  
**Part No.** DC-1  
**Item No.** HJDZDC200817-N  
**Sample Received Date** Aug. 25, 2020  
**Testing Period** Aug. 25, 2020 to Aug. 28, 2020

**Test Requested** As specified by client, to test Lead(Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium(Cr(VI)), Phthalates (DBP, BBP, DEHP, DIBP), Arsenic(As), Beryllium(Be), Fluorine (F), Chlorine (Cl), Bromine (Br), Iodine (I), Perfluorooctane Sulfonates(PFOS), Perfluorooctanoic Acid(PFOA) in the submitted sample(s).

**Test Method** Please refer to the following page(s).

**Test Result(s)** Please refer to the following page(s).



Tested by

Grace Sun

Approved by

Hill Zheng

Hill Zheng

Technical Manager

Reviewed by

Jori Xia

Date

Aug. 28, 2020

No. R338857076

CTI Building, Xing Dong Community, Xin'an Sub-district, Bao'an District, Shenzhen City, Guangdong Province, P.R. China

CTI Building, Xing Dong Community, Xin'an Sub-district, Bao'an District, Shenzhen City, Guangdong Province, P.R. China

# Test Report

**Report No.** A2200288192101001

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**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 62321-7-1:2015	UV-Vis
Phthalates (DBP, BBP, DEHP, DIBP)	IEC 62321-8:2017	GC-MS
Arsenic(As)	Refer to US EPA 3050B:1996 & US EPA 6010D:2018	ICP-OES
Beryllium(Be)	Refer to US EPA 3050B:1996 & US EPA 6010D:2018	ICP-OES
Fluorine (F)	Refer to EN 14582:2016	IC
Chlorine (Cl)	Refer to EN 14582:2016	IC
Bromine (Br)	Refer to EN 14582:2016	IC
Iodine (I)	Refer to EN 14582:2016	IC
Perfluorooctane Sulfonates(PFOS)	Refer to US EPA 3550C:2007 & US EPA 8321B:2007	LC-MS-MS
Perfluorooctanoic Acid(PFOA)	Refer to US EPA 3550C:2007 & US EPA 8321B:2007	LC-MS-MS

# Test Report

Report No. A2200288192101001

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## Test Result(s)

Tested Item(s)	Result	MDL
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. ▼	0.10 µg/cm <sup>2</sup> (LOQ)
Tested Item(s)	Result	MDL
<b>Phthalates (DBP, BBP, DEHP, DIBP)</b>		
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
Tested Item(s)	Result	MDL
Arsenic(As)	N.D.	10 mg/kg
Beryllium(Be)	N.D.	2 mg/kg
Tested Item(s)	Result	MDL
Fluorine(F)	N.D.	10 mg/kg
Chlorine(Cl)	N.D.	10 mg/kg
Bromine(Br)	N.D.	10 mg/kg
Iodine(I)	N.D.	10 mg/kg
Tested Item(s)	Result	MDL
Perfluorooctane Sulfonates(PFOS)	N.D.	0.5 µg/m <sup>2</sup>
Tested Item(s)	Result	MDL
Perfluorooctanoic Acid(PFOA)	N.D.	0.5 µg/m <sup>2</sup>

**Sample/Part Description** Metal with silvery plating

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

-MDL = Method Detection Limit

-N.D. = Not Detected (&lt;MDL or LOQ)

-mg/kg = ppm = parts per million

 -LOQ = Limit of Quantification, The LOQ of Hexavalent chromium is 0.10 µg/cm<sup>2</sup>

 -▼The sample is negative for Cr(VI) – The Cr(VI) concentration is below 0.10 µg/cm<sup>2</sup>. The coating is considered a non-Cr(VI) based coating.



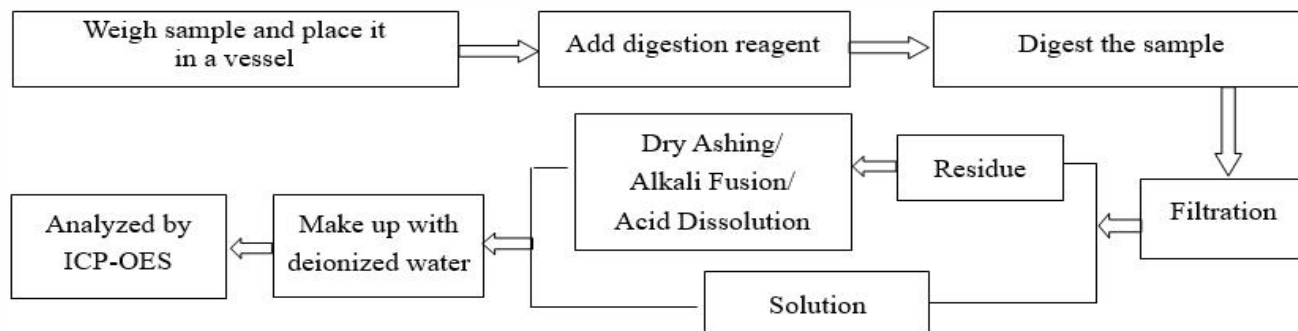
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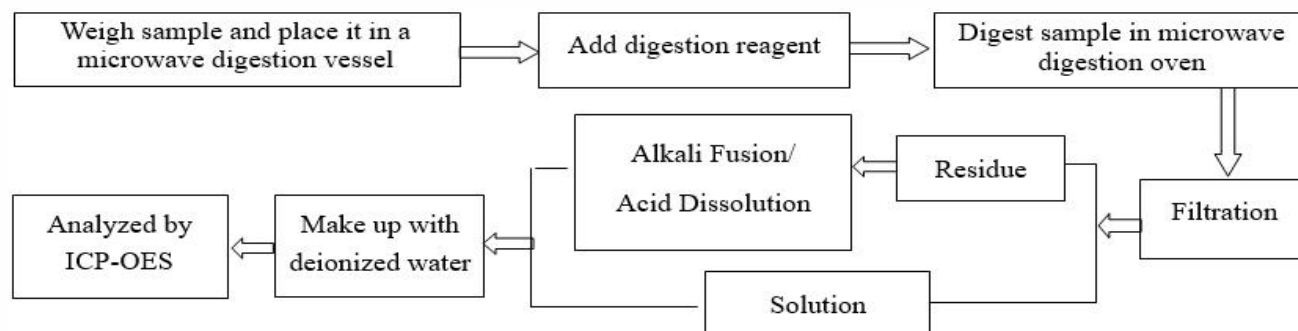
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## Test Process

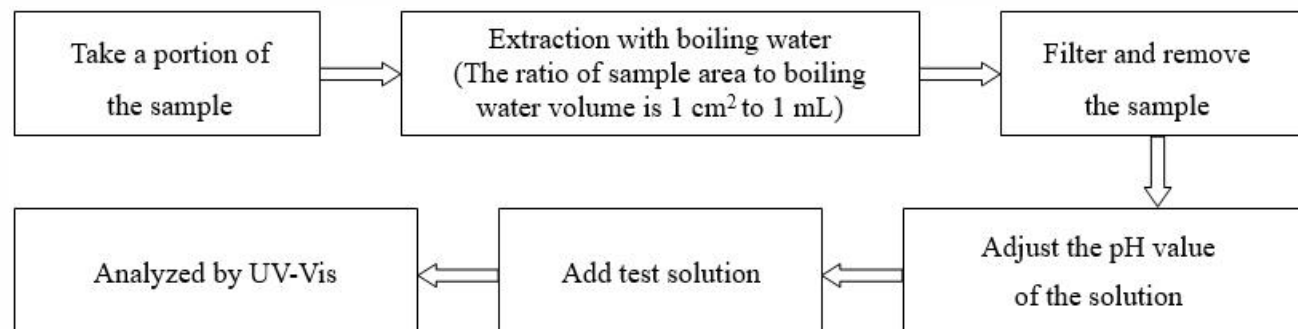
### 1. Lead(Pb), Cadmium(Cd)



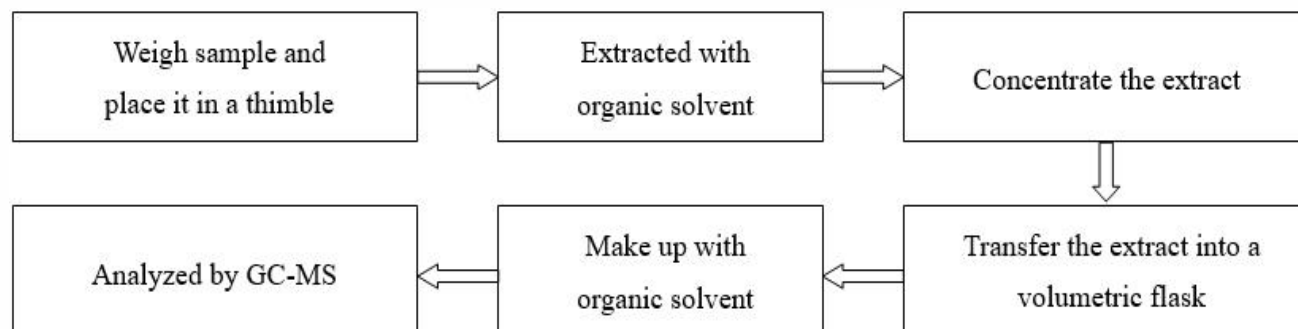
### 2. Mercury(Hg)



### 3. Hexavalent Chromium(Cr(VI))



### 4. Phthalates (DBP, BBP, DEHP, DIBP)



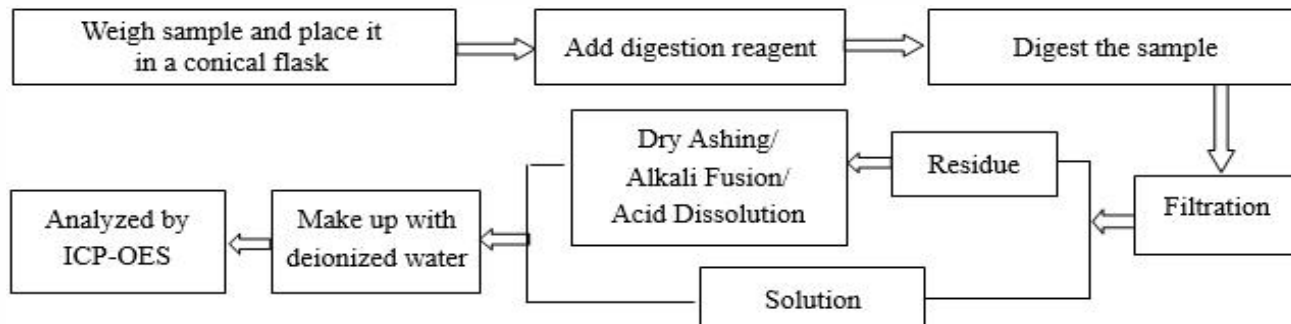


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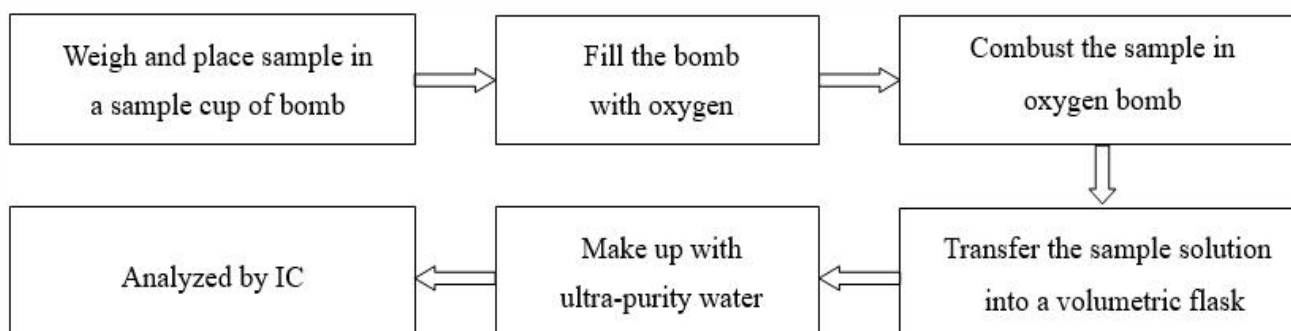
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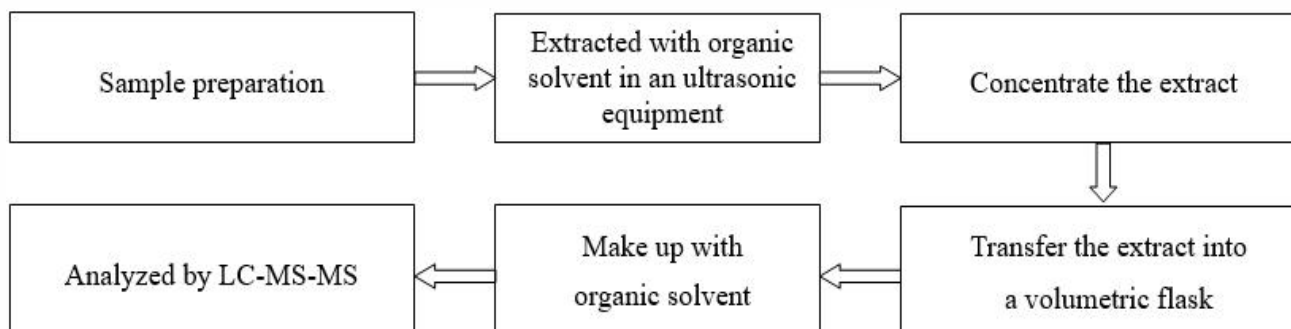
## 5. Arsenic(As), Beryllium(Be)



## 6. Fluorine (F), Chlorine (Cl), Bromine (Br), Iodine (I)



## 7. Perfluorooctane Sulfonates(PFOS), Perfluorooctanoic Acid(PFOA)



# Test Report

Report No. A2200288192101001

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## Photo(s) of the sample(s)



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