



连兴旺电子(深圳)有限公司

# 承认书

## SPECIFICATIONS FOR APPROVAL

客户:

Customer: \_\_\_\_\_

客户料号:

Customer Part No: \_\_\_\_\_

公司料号:

LB3XX-GxxP-B0R 公座

Part No: \_\_\_\_\_

LB3XX-GxxS-B0R 母座

产品名称:

Description: \_\_\_\_\_

0.8mm双槽BTB 公母座 (4.0~6.5H)

发行日期:

2016.12.12

Issue Date: \_\_\_\_\_

客户签核 (Customer Approval):

采购	品保	工程

内部签核 (Signature):

核准	审核	制作
	Hu.bill	Kavin

连兴旺电子(深圳)有限公司

LXWCONN ELECTRONICS (SHENZHEN) CO.,LTD

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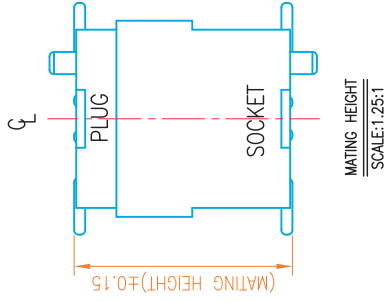
FAX: +80-0755 2369 8719

ADD: 深圳市光明新区蒋石社区合和工业区 A 栋三楼

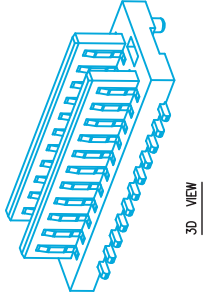
NOTES:

- 1.HOUSING: PA9T HIGH-TEMP THERMOPLASTIC UL94V-0 COLOR:BLACK
- 2.TERMINAL:PHOSPHOR BRONZE  
PLATING:1\*”GOLD FLASH OVERALL 50~100\*”NICKEL UNDER PLATED.
- 3.CODING INFORMATION: LB310-GxxP-B0R

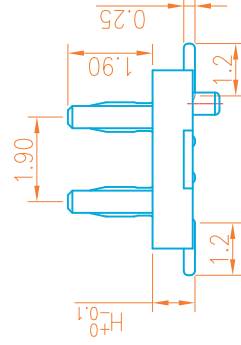
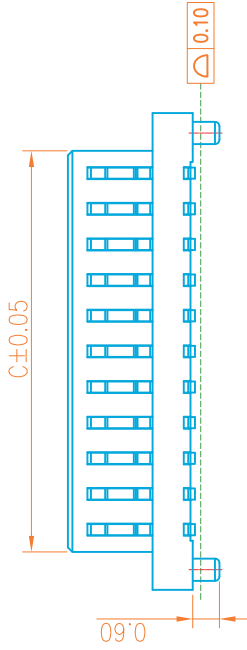
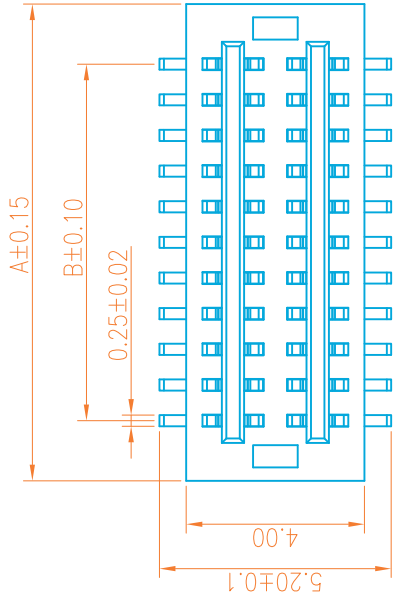
PACKING: R: CARRIER REEL  
STANDARD TYPE  
COLOR:BLACK  
PLUG  
PIN  
PLATING: G:GOLD FLASH  
0.8 BTB  
HEIGHT: 10--1.0H;20--2.0H; Δ  
LXWCONN BTB CONNECTOR SERIES



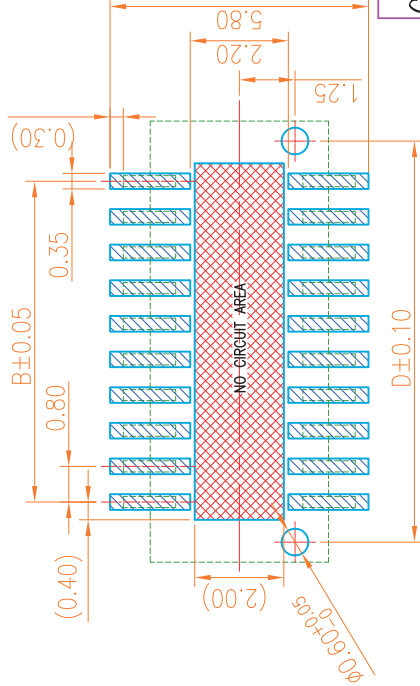
MATING HEIGHT  
SCALE:1:25:1



3D VIEW



MATING HEIGHT	PLUG (H.)	SOCKET (H.)	NO.of contact	Dimensions				NO.of contact	Dimensions			
				A.	B.	C.	D.		A.	B.	C.	D.
4.0	1.0	3.0	4	3.50	0.80	1.80	2.60	54	23.50	20.80	21.80	22.60
4.5	1.0	3.5	6	4.30	1.60	2.60	3.40	56	24.30	21.60	22.60	23.40
5.0	1.0	4.0	8	5.10	2.40	3.40	4.20	58	25.10	22.40	23.40	24.20
5.5	1.0	4.5	10	5.90	3.20	4.20	5.00	60	25.90	23.20	24.20	25.00
6.0	2.0	4.0	12	6.70	4.00	5.00	5.80	62	26.70	24.00	25.00	25.80
6.5	2.0	4.5	14	7.50	4.80	5.80	6.60	64	27.50	24.80	25.80	26.60
			16	8.30	5.60	6.60	7.40	66	28.30	25.60	26.60	27.40
			18	9.10	6.40	7.40	8.20	68	29.10	26.40	27.40	28.20
			20	9.90	7.20	8.20	9.00	70	29.90	27.20	28.20	29.00
			22	10.70	8.00	9.00	9.80	72	30.70	28.00	29.00	29.80
			24	11.50	8.80	9.80	10.60	74	31.50	28.80	29.80	30.60
			26	12.30	9.60	10.60	11.40	76	32.30	29.60	30.60	31.40
			28	13.10	10.40	11.40	12.20	78	33.10	30.40	31.40	32.20
			30	13.90	11.20	12.20	13.00	80	33.90	31.20	32.20	33.00
			32	14.70	12.00	13.00	13.80	82	34.70	32.00	33.00	33.80
			34	15.50	12.80	13.80	14.60	84	35.50	32.80	33.80	34.60
			36	16.30	13.60	14.60	15.40	86	36.30	33.60	34.60	35.40
			38	17.10	14.40	15.40	16.20	88	37.10	34.40	35.40	36.20
			40	17.90	15.20	16.20	17.00	90	37.90	35.20	36.20	37.00
			42	18.70	16.00	17.00	17.80	92	38.70	36.00	37.00	37.80
			44	19.50	16.80	17.80	18.60	94	39.50	36.80	37.80	38.60
			46	20.30	17.60	18.60	19.40	96	40.30	37.60	38.60	39.40
			48	21.10	18.40	19.40	20.20	98	41.10	38.40	39.40	40.20
			50	21.90	19.20	20.20	21.00	100	41.90	39.20	40.20	41.00



RECOMMENDED PCB PATTERN DIM.  
TOLERANCE : ±0.05



CUSTOMER

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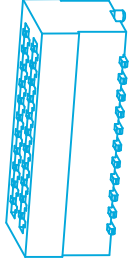
一般公差 GENERAL TOLERANCE A ±0.10 B ±0.05 C ±0.02 D ±0.01 ANGLES ±0°-30°	制图(DWG): Kavin 2016.07.05	品名(TITLE): 0.8mm 双槽BTB PLUG
版本 (REV): B	审核 (CHD):	料号(PART NO): LB3XX-GxxP-B0R
修改摘要 REVISION DESCRIPTION	核准 (APP):	比例(SCALE): 1:8
产品料号修正	张数(SHEET) 1 OF 1	图幅(SIZE) A4

修订(SER)	签名(SIGNATURE)	日期(DATE)
	Kavin	12/01/16



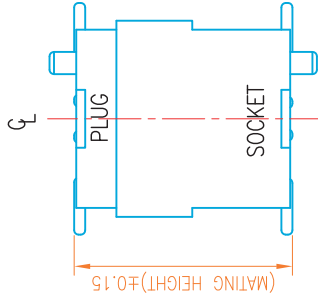
NOTES:

- 1.HOUSING: PA9T HIGH-TEMP THERMOPLASTIC UL94V-0 COLOR:BLACK
- 2.TERMINAL:PHOSPHOR BRONZE  
PLATING:1\* GOLD FLASH OVERALL 50~100\* "NICKEL UNDER PLATED.
- 3.CODING INFORMATION: LB330-GxxS-B0R

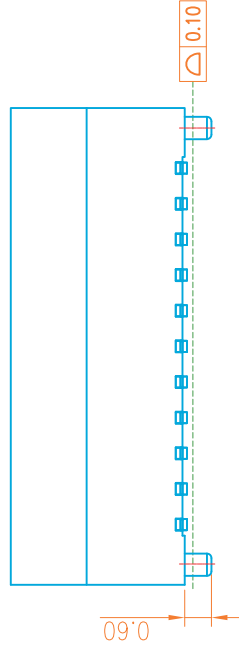
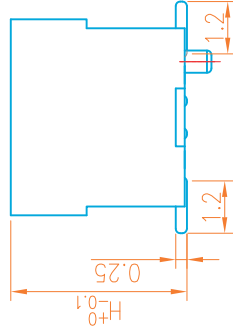
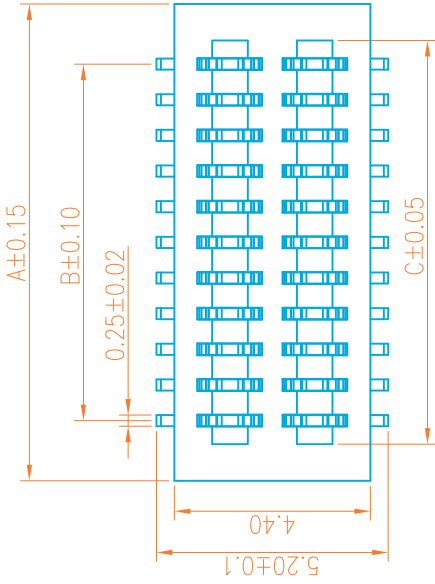


HEIGHT: 30--3.0H;35--3.5H; Δ  
40--4.0H;45--4.5H;

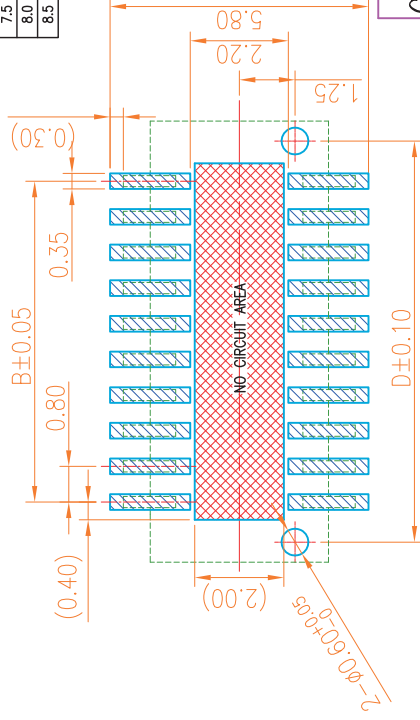
LXWCONN BTB CONNECTOR SERIES



MATING HEIGHT  
SCALE:1.25:1



MATING HEIGHT	PLUG (H.)	SOCKET (H.)	NO.of contact ts	Dimensions				NO.of contact ts	Dimensions			
				A.	B.	C.	D.		A.	B.	C.	D.
4.0	1.0	3.0	4	3.50	0.80	1.86	2.60	54	23.50	20.80	21.86	22.60
4.5	1.0	3.5	6	4.30	1.60	2.66	3.40	56	24.50	21.60	22.66	23.40
5.0	1.0	4.0	8	5.10	2.40	3.46	4.20	58	25.10	22.40	23.46	24.20
5.5	1.0	4.5	10	5.90	3.20	4.26	5.00	60	25.90	23.20	24.26	25.00
6.0	2.0	4.0	12	6.70	4.00	5.06	5.80	62	26.70	24.00	25.06	25.80
6.5	2.0	4.5	14	7.50	4.80	5.86	6.60	64	27.50	24.80	25.86	26.60
7.0	4.0	3.0	16	8.30	5.60	6.66	7.40	66	28.30	25.60	26.66	27.40
7.5	4.0	3.5	18	9.10	6.40	7.46	8.20	68	29.10	26.40	27.46	28.20
8.0	4.0	4.0	20	9.90	7.20	8.26	9.00	70	29.90	27.20	28.26	29.00
8.5	4.0	4.5	22	10.70	8.00	9.06	9.80	72	30.70	28.00	29.06	29.80
			24	11.50	8.80	9.86	10.60	74	31.50	28.80	29.86	30.60
			26	12.30	9.60	10.66	11.40	76	32.30	29.60	30.66	31.40
			28	13.10	10.40	11.46	12.20	78	33.10	30.40	31.46	32.20
			30	13.90	11.20	12.26	13.00	80	33.90	31.20	32.26	33.00
			32	14.70	12.00	13.06	13.80	82	34.70	32.00	33.06	33.80
			34	15.50	12.80	13.86	14.60	84	35.50	32.80	33.86	34.60
			36	16.30	13.60	14.66	15.40	86	36.30	33.60	34.66	35.40
			38	17.10	14.40	15.46	16.20	88	37.10	34.40	35.46	36.20
			40	17.90	15.20	16.26	17.00	90	37.90	35.20	36.26	37.00
			42	18.70	16.00	17.06	17.80	92	38.70	36.00	37.06	37.80
			44	19.50	16.80	17.86	18.60	94	39.50	36.80	37.86	38.60
			46	20.30	17.60	18.66	19.40	96	40.30	37.60	38.66	39.40
			48	21.10	18.40	19.46	20.20	98	41.10	38.40	39.46	40.20
			50	21.90	19.20	20.26	21.00	100	41.90	39.20	40.26	41.00



RECOMMENDED PCB PATTERN DIM.  
TOLERANCE : ±0.05



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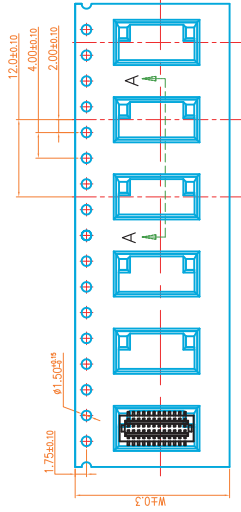
品名(TITLE): 0.8mm 双槽BTB SOCKET  
料号(PART NO): LB33X-GxxS-B0R  
比例(SCALE): 1:8  
张数(SHEET): 1 OF 1  
图幅(SIZE): A4

制图(DRAW): Kavin 2016.07.05	审核(CHECK):	核准(APPR):
一般公差 GENERAL TOLERANCE A ±0.10 XX ±0.05 XX ±0.02 XX ±0.30	版本 (REV):	日期 (DATE):
产品料号修正	修订(SER):	修订(SER):
修改摘要 REVISION DESCRIPTION	签名 (SIGNATURE):	日期 (DATE):



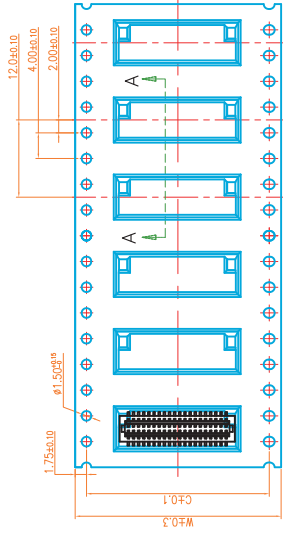
RoHS Compliant 2013/95/EC

Tape width 16 and 24 mm



PULL OUT DIRECTION

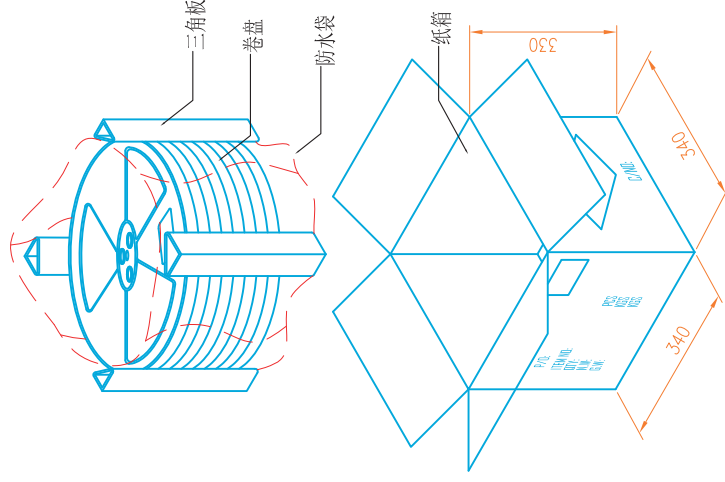
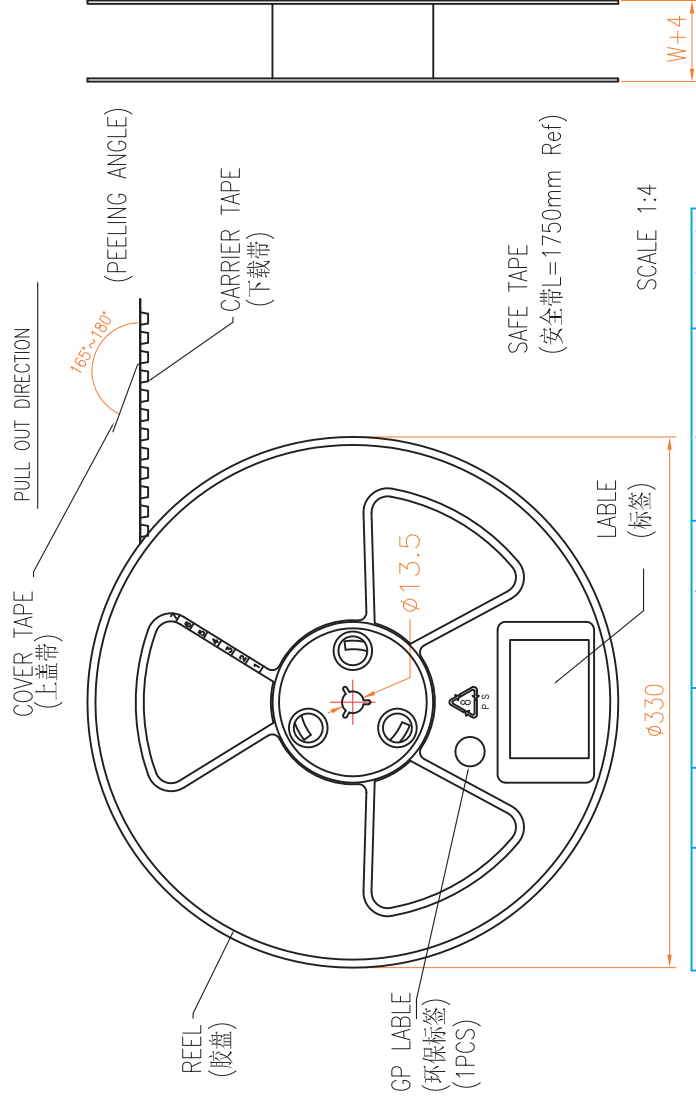
Tape width 32 and 56 mm



PULL OUT DIRECTION

NOTE:

- 1.10 Sprocket hole pitch cumulative tolerance  $\pm 0.20$ .
2. Carrier camber is within 1mm in 100mm.
3. Material: black conductive polystyrene alloy.
4. Material Thickness:  $0.3 \pm 0.05$ mm.
5. All dimensions meet EIA-481-B requirements.
6. 5000pcs Per Reel.
7. For tape width(dim W)16 and 24mm pilot holes are provided on one sides. For tape width(dim W)32, 44 and 56mm pilot holes are provided on both sides.



PIN NO.	W	C	PCS /REEL	REEL/CARTON	SUM(PCS)
4PIN~14PIN	16	-	1000	15	15000
16PIN~34PIN	24	-	1000	10	10000
36Pin~44PIN	32	28.4	1000	8	8000
46Pin~740PIN	44	40.4	1000	6	6000
76Pin~100PIN	56	52.4	1000	5	5000



连兴旺电子(深圳)有限公司

LXWCONN ELECTRONICS (SHENZHEN) CO., LTD

制图(DRAWN): Kevin 2016.07.09	品名(TITLE): BOARD TO BOARD EMBOSSED TAPE PACKING	张数(SHEET): 1 OF 1	图幅(SIZE): A4
审核(CHECKED):	料号(PART NO.): LB3-xx-GxxP-BOR	单位(UNITS): mm	
核准(APPROVED):	比例(SCALE): 1:1		

一般公差 GENERAL TOLERANCE	版本 (REV)	日期 (DATE)	签名 (SIGNATURE)
A ±0.10 AX ±0.05 XX ±0.02 ANGLES 2:1	A		
修改摘要 REVISION DESCRIPTION	修订号 SER		





## 1. SCOPE

### 1.1. CONTENTS

This specification covers the performance, tests and quality requirements for the 0.8mm Pitch BOARD to BOARD SMD V/T Type Connector . (MATING HEIGHT: 4.0H、4.5H、5.0H、5.5H、6.0H、6.5H)

### 1.2. QUALIFICATION

When tests are performed on the subject product line, the procedures specified in LB3XX-GxxP-B0R、LB3XX-GxxS-B0R inspection plan and product drawings.

## 2. APPLICABLE DOCUMENT

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

## 3. REQUIREMENTS

### 3.1. DESIGN AND CONSTRUCTION

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

### 3.2. MATERIALS

- A. Housing: PA9T HIGH-TEMP THERMOPLASTIC, UL94V-0, BLACK.
- B. Terminal: Phosphor, 1 μ " Gold-Flash under-plated Ni overall.

### 3.3. RATINGS

- A. Voltage rating:60V DC
- B. Current rating: 0.5A Max.( Each Pin)
- C. Operating Temperature: - 25°C to +85°C (Including terminal temperature rise)
- D. Operating Humidity range: Relative humidity 93% Max
- E. Storage temperature range:20±8°C
- F. Storage Humidity range: Relative humidity 60% Max

### 3.4. PERFORMANCE REQUEIREMENT AND TEST DESCRIPTION

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



测试项目 TEST ITEM		规格 REQUIREMENT	测试方式/条件 PROCEDURE
1	外观检查 Examination of Product	符合图面外观, 无任何形状损坏 Meets requirements of product Drawing. No physical damage.	目视检查 Visual inspection.
<b>电气特性 ELECTRICAL REQUIREMENT</b>			
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)
<b>机械特性 MECHANICAL REQUIREMENT</b>			
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	0.12Kgfn Max. (N=Pins) 0.12Kgfn Max. (N=Pins)	将成对连接器焊板连接, 以操作速度每分钟位移 25±3mm 进行插入力测试。 Mate The sample connectors shall be soldered on a board and inserted and separated at speed of 25±3mm/min. (EIA-364-13)



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



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





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

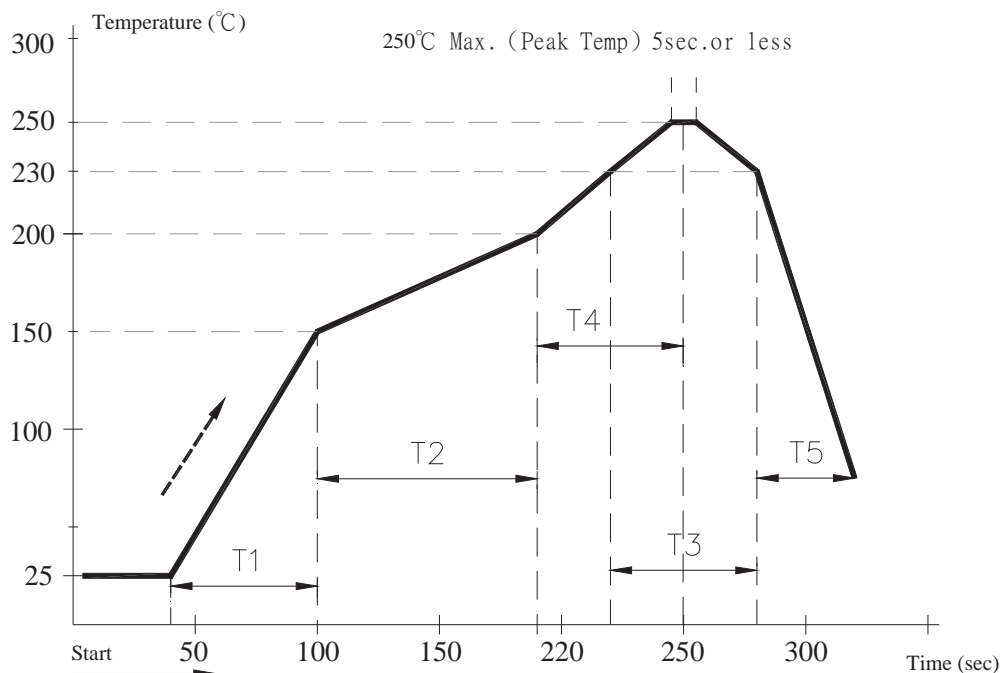


测试项目 TEST ITEM		规格 REQUIREMENT		测试方式/条件 PROCEDURE
环境特性及其它性能 (ENVIRONMENT PERFORMANCE AND OTHERS)				
15	焊锡耐热性 Resistance to Reflow Soldering Heat	外观 Appearance	目视外观无任何损坏异状 No Damage	使用红外线回流焊时请参考第 4 点 When reflowing....Refer to paragraph 4. 使用烙铁手焊时须符合下述焊锡条件 Soldering iron method 0.2 mm from terminal tip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

Figure 1

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

#### 4. INFRARED REFLOW CONDITION (Lead Free)



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

**NOTE:**

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



## 5.0. PRODUCT QUALIFICATION AND RELIABILITY TEST SEQUENCE

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

Figure 2

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

Component - Plastics

E90350

**KURARAY CO LTD**

GENESTAR DIV, OTE CENTER BLDG 1-1-3, OTEMACHI, CHIYODA-KU TOKYO 100-8115 JP

**GN2330(#)**

Polyamide 9T (PA9T), furnished as pellets

Color	Min Thk (mm)	Flame Class	HWI	HAI	RTI Elec	RTI Imp	RTI Str
ALL	0.75	V-0	0	0	150	120	130
	1.5	V-0	0	0	150	130	140
	3.0	V-0	0	0	150	130	140

Comparative Tracking Index (CTI): 1  
 Dielectric Strength (kV/mm): -  
 High-Voltage Arc Tracking Rate (HVTR): 3  
 Dimensional Stability (%): -  
 Inclined Plane Tracking (IPT): -  
 Volume Resistivity (10<sup>x</sup> ohm-cm): -  
 High Volt, Low Current Arc Resis (D495): 5  
 (#) - Suffix optional.

ANSI/UL 94 small-scale test data does not pertain to building materials, furnishings and related contents. ANSI/UL 94 small-scale test data is intended solely for determining the flammability of plastic materials used in the components and parts of end-product devices and appliances, where the acceptability of the combination is determined by UL.

Report Date:2001-07-10  
 Last Revised:2008-09-08

Underwriters Laboratories Inc®



**IEC and ISO Test Methods**

Test Name	Test Method	Units	Thickness Tested (mm)	Value
Flammability	IEC 60695-11-10	Class (color)	0.75	V-0 (ALL)
			1.5	V-0 (ALL)
			3.0	V-0 (ALL)
Glow-Wire Flammability (GWFI)	IEC 60695-2-12	C	-	-
Glow-Wire Ignition (GWIT)	IEC 60695-2-13	C	-	-
IEC Comparative Tracking Index	IEC 60112	Volts (Max)	-	-
IEC Ball Pressure	IEC 60695-10-2	C	-	-
ISO Heat Deflection (1.80 MPa)	ISO 75-2	C	-	-
ISO Tensile Strength	ISO 527-2	MPa	-	-
ISO Flexural Strength	ISO 178	MPa	-	-
ISO Tensile Impact	ISO 8256	kJ/m <sup>2</sup>	-	-
ISO Izod Impact	ISO 180	kJ/m <sup>2</sup>	-	-
ISO Charpy Impact	ISO 179-2	kJ/m <sup>2</sup>	-	-

Underwriters Laboratories Inc®

# Genestar/PA9T基本物性

グレード タイプ	単位	試験法 (ASTM)	Genestar 一般銘柄			Genestar 難燃銘柄					比較材料						
			N1000	G1300	G1302	G2330	G2450	GN2330	GN2450	GN2332	GW2458HF	GW2508	PA6T	PA46	PPS	LCP	LCP
ガラス含有量	%	—	標準	標準	高撓動	高撓性	高強度	高ウエルド強さ	高ウエルド強さ	高流動	低反り・高流動	低反り・高強度	30	40	40	30	40

## 基礎物性

比重	g/cm3	—	1.14	1.37	1.37	1.68	1.77	1.62	1.73	1.62	1.73	1.78	1.61	1.68	1.67	1.62	1.74
吸水率 (40°C, 95%RH, 96h)	%	—	2.6	1.7	1.4	0.9	0.6	1.0	0.7	1.0	0.8	0.7	2.6	3.6	0.06	0.04	0.04
難燃性	—	UL94	HB相当	HB	HB	V-0	V-0	V-0	V-0	V-0	V-0	V-0	V-0	V-0	V-0	V-0	V-0

## 機械的特性

引張強さ	MPa	D638	90	190	155	185	190	190	210	172	175	185	175	163	208	139	127
引張伸び	%	D638	15	4	3	3.1	2.7	3.2	2.6	2.6	2.5	2.5	2.8	2.8	2.5	2	1.7
ウエルド強さ	MPa	D638	—	—	—	45	30	54	40	36	35	35	54	57	67	22	16
ウエルド伸び	%	D638	—	—	—	0.5	0.2	0.7	0.4	0.3	0.3	0.3	0.7	0.7	0.7	0.2	0.2
曲げ強さ	MPa	D790	120	260	190	222	240	225	260	210	222	245	222	223	257	160	156
曲げ弾性率	GPa	D790	3	9	9	11	14	11	14	10	15	16	10	12	13	13	11
IZOD衝撃値	J/m	D256	20	100	80	100	100	100	100	100	100	100	90	90	80	90	44
ハーフロ流動長 (0.5mmt./750kgf)	mm	—	—	—	—	66	51	55	37	85	71	50	55	62	31	91	94
ロックウエル硬度	R scale	D785	118	122	122	125	125	125	125	125	125	125	125	125	123	—	—

## 熱的特性

融点	°C	—	306	306	306	306	306	306	306	306	306	306	310	295	280	—	—
ガラス転移点	°C	—	125	125	125	125	125	125	125	125	125	125	85	60	90	—	—
荷重たわみ温度(1.82MPa)	°C	D648	135	270	270	285	285	285	285	285	285	285	285	285	265	280	280

## 電気的特性

絶縁破壊強さ	MV/m	D149	—	—	—	30	30	30	30	30	30	30	28	24	24	30	30
体積固有抵抗値	Ω・cm	D257	10 <sup>16</sup>	10 <sup>16</sup>	10 <sup>16</sup>	10 <sup>16</sup>	10 <sup>16</sup>	10 <sup>16</sup>	10 <sup>16</sup>	10 <sup>16</sup>	10 <sup>16</sup>	10 <sup>16</sup>	10 <sup>15</sup>	10 <sup>15</sup>	10 <sup>15</sup>	10 <sup>16</sup>	10 <sup>16</sup>
耐トラッキング性	V	IEC-CIT1	—	—	—	550	550	400	400	400	400	400	400	225	175	175	175
誘電率 (1MHz)	—	D150	—	—	—	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	4.1	3.5	3.4	3.4
誘電正接 (1MHz)	—	D150	—	—	—	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.015	0.001	0.028	0.028

## 寸法特性

成形収縮率	%	—	1.0	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.03	0.02	0.1	0.1	0.04	0.1	0.05
流れ方向 直角方向	%	(1mmt)	1.3	1.5	0.7	0.6	0.5	0.6	0.5	0.6	0.40	0.30	0.7	0.7	0.50	0.7	0.3

\* 上記データは絶乾状態で測定した物性値です。

\* 上記データは弊社での実測値であり、性能を保証するものではありません。

# 物质安全资料表

## 一、物品与厂商资料

物品名称：半芳香族尼龙（PA9T）
物品编号：GN2330
制造商或供货商名称： 深圳市宝时达塑胶制品有限公司 制造商或供货商地址： 深圳市宝安区 松岗江边工业区创业一路
咨询者姓名： 胡先生 联络电话： 075527428839      传真： 075522700996

## 二、成分辨识资料

中英文名称： PA9T 半芳香族尼龙				
1	化学品名称	分子式	CAS 号	含量
2	PA9T 树脂	$(C_{17}H_{24}N_2O_2)_n$	24938-73-6	64%
3	玻璃纤维	SiO <sub>2</sub>	65997-17-3	33%
4	助剂	N.A	N.A	3%

## 三、危害辨识数据

最重要危害效应	进入人体之途径： <input type="checkbox"/> 吞食 <input type="checkbox"/> 皮肤接触 <input type="checkbox"/> 吸入 健康危害效应：急性：无 慢性：无 健康危害效应
	<ul style="list-style-type: none"><li>• 眼睛：没有有效数据。</li><li>• 皮肤：熔融时接触会烫伤。</li><li>• 吸入：料粒不大可能吸入。</li><li>• 食入：没有显著有害效应。</li></ul>

## 四、急救措施

不同暴露途径之急救方法：  吸    入：若吸入熔融树脂产生的气体较多时，若需立刻送医治疗。 皮肤接触：若接触到熔胶，用清水冲洗，若有不适，立刻送医治疗。 眼睛接触：若眼睛接触到塑胶粉末，用水冲洗十五分钟以上如需要，到医院治疗。 食    入：催吐，以清水漱口。
--

## 五、灭火措施

灭火材料:水、泡沫、干粉

灭火时可能遭遇之特殊危害: 无。

特殊灭火程序: 移除可燃物。

灭火者访护: 消防人员使用供氧式呼吸防护具。

## 六、泄漏处理方法

注意事项 : 若塑料粒或塑料粉末残留于地面上, 立即清扫处理, 以防人员滑倒。

清理方法: 回收或弃置 (依当地环保单位废弃物管理办法, 在合法的弃置掩埋)。

## 七、安全处置与储存方法

处置: 工作场所有《严禁烟火》标志, 不能燃烧。

储存: 封包存放在阴凉处所, 避免直射阳光及雨淋, 储存处严禁烟火。

## 八、暴露预防措施

容许湿度: (TLV) 未定

通风设备: 排除粉, 烟及气体时使用。

个人防护:

眼部: 使用安全眼镜或护目镜。

呼吸: 使用含有中、低有机蒸气滤罐之面具。

手部: 接触熔胶时使用皮手套。

防护衣服设备: 1.安全鞋.2.工作区须有紧急冲淋器。

个人卫生: 1.工作后速脱掉污染衣物,且须告知洗衣人员污染危害性。2.工作场所严禁吸烟或饮食。3.处理本物质后须及时洗手。4.维持作业场所清洁。

## 九、物理及化学性质

刺激性: 分解后之塑料所产生的烟及蒸气会刺激眼睛。

## 十、安定性及反应性

安定性 : 安定

特殊状况下可能之危害反应: 会发生放热的聚合反应。避免接触热、光、空气、治疗剂, 密闭容器可能会爆裂。

应避免之状况: 避免热、火种及着火物质。若曝露于热源, 容器可能破裂或爆破。

应避免之物质: 金属盐、可燃物质、金属、氧化剂、卤素、金属氧化物。

危害分解物 : 碳氧化合物之有毒或有害之气体。

## 十一、毒性资料

### 急毒性：

- 吸入：用火燃烧产生气体会引起呼吸道之刺激与咳嗽。曝露在高浓度的气体时会导致反胃、刺痛、与口腔和喉咙干燥，困倦、头痛、眩晕、失去知觉、呼吸麻痹与死亡，另外也会窒息。
- 食入：不大可能食入，但会造成口腔与喉咙的创伤。
- 皮肤：会引起瘙痒。
- 眼睛：燃烧产生的气体会引起刺激。

局部效应：没有有效数据。

致敏感性：没有有效数据。

### 慢毒性或长期毒性：

- 食入：没有有效数据。
- 吸入：没有有效数据。
- 皮肤：没有有效数据。
- 眼睛：没有有效数据。

## 十二、生态资料

为防止被海洋生物及鸟类取食,严禁丢弃海洋或水域。

## 十三、废弃物处理及处置

1. 参考相关法规处理。
2. 依照仓储条件储存待处理的废弃物。
3. 可采用特定的焚化或卫生掩埋法处理。

## 十四、运送资料

未分类



## 十五、适用法规

标示:

危害警告讯息: 难燃。

危害防范措施:

1. 置于阴凉且通风良好处。
2. 远离火源。
3. 配戴护目镜/防毒面具。
4. 使用化学干粉, 泡沫及水雾。

使用法规:

劳工安全卫生设备规则

危险物与有害物能通识规则

道路交通安全规则

事业废弃物储存清除处理方法及措施标准

防护衣服设备: 1.安全鞋.2.工作区须有紧急冲淋器。

个人卫生: 1.工作后速脱掉污染衣物,且须告知洗衣人员污染危害性。2.工作场所严禁吸烟或饮食。3.处理本物质后须及时洗手。4.维持作业场所清洁。

## 十六、其它数据

制窗体位	名称: 深圳市宝时达塑胶制品有限公司
	地址: 深圳市宝安区松岗江边工业区
	电话: 075527428839
制 表 人	胡先生
制表日期	2013 年 5 月 7 日

# Test Report

No. CANEC1700176605

Date: 12 Jan 2017

Page 1 of 6

SHENZHEN BAO SHIDA PLASTIC PRODUCTS CO.,LTD.

NO.4-3 CHUANGYE 1ROAD JIANG BIAN INDUSTRY PARK,SONG GANG TOWN,BAOAN DISTRICT,SHENZHEN CITY,CHINA

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

SGS Job No. : CP17-000358 - SZ

Date of Sample Received : 04 Jan 2017

Testing Period : 04 Jan 2017 - 12 Jan 2017

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

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

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

Conclusion : Based on the performed tests on submitted sample(s), the results of Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs) 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

Alkene Liang  
Approved Signatory



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

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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)

198 Kazhu Road, Science Park Guangzhou Economic & Technology Development District, Guangzhou, China 510663 t (86-20) 82155555 f (86-20) 82075113 www.sgs.com.cn  
中国·广州·经济技术开发区科学城科珠路198号 邮编: 510663 t (86-20) 82155555 f (86-20) 82075113 e [sgs.china@sgs.com](mailto:sgs.china@sgs.com)

Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
SN1	CAN17-001766.003	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 :
- (1)With reference to IEC 62321-5:2013, determination of Cadmium by ICP-OES.
  - (2)With reference to IEC 62321-5:2013, determination of Lead by ICP-OES.
  - (3)With reference to IEC 62321-4:2013, determination of Mercury by ICP-OES.
  - (4)With reference to IEC 62321:2008, determination of Hexavalent Chromium by Colorimetric Method using UV-Vis.
  - (5)With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.
  - (6)With reference to IEC 62321-8:2013 (111/321/CD) , determination of phthalates by GC-MS.

<u>Test Item(s)</u>	<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>003</u>
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1,000	mg/kg	2	ND
Mercury (Hg)	1,000	mg/kg	2	ND
Hexavalent Chromium (CrVI)	1,000	mg/kg	2	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



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# Test Report

No. CANEC1700176605

Date: 12 Jan 2017

Page 3 of 6

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

Notes :

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



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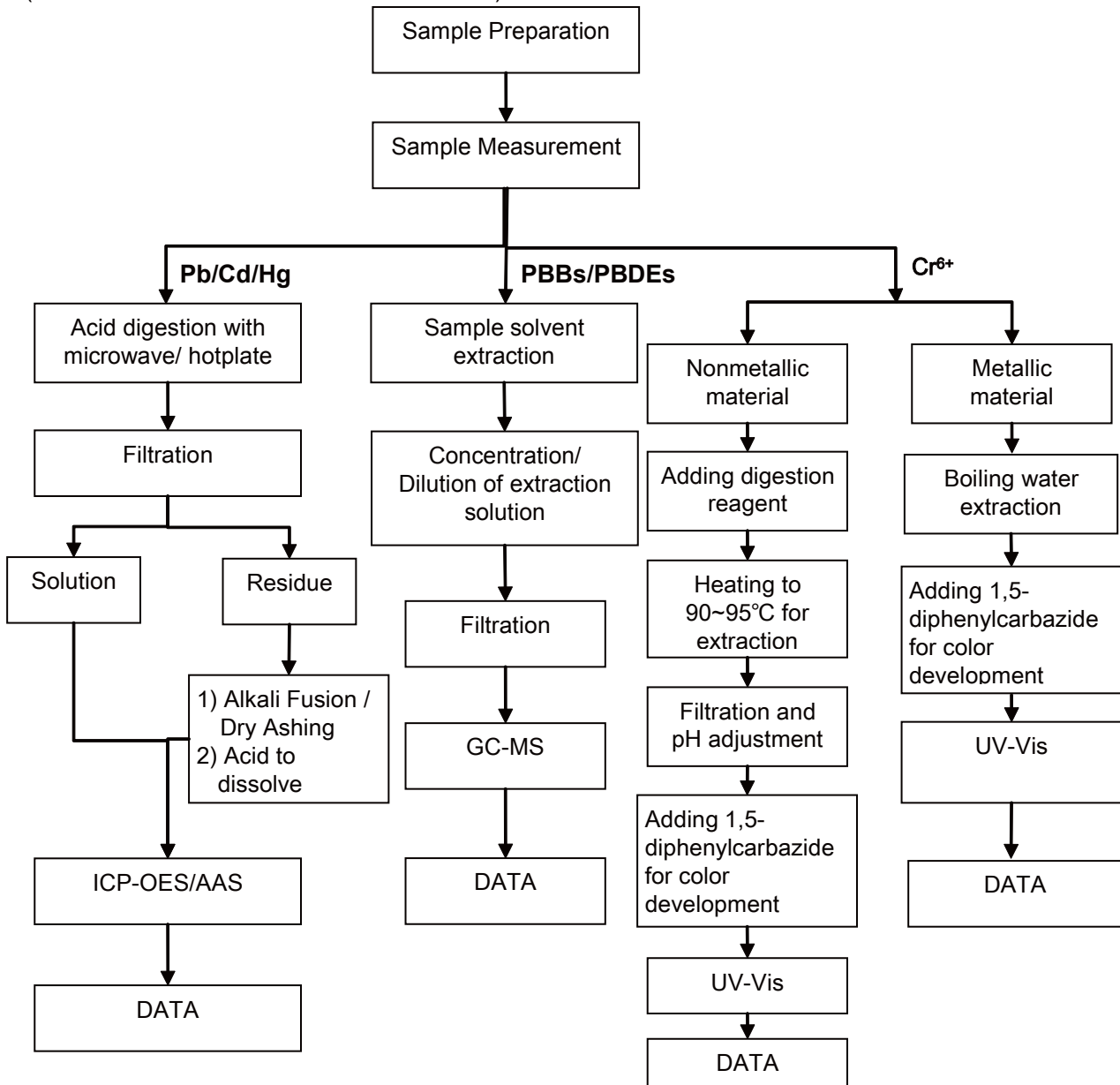
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Pb/Cd/Hg/Cr<sup>6+</sup>/PBBs/PBDEs Testing Flow Chart

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



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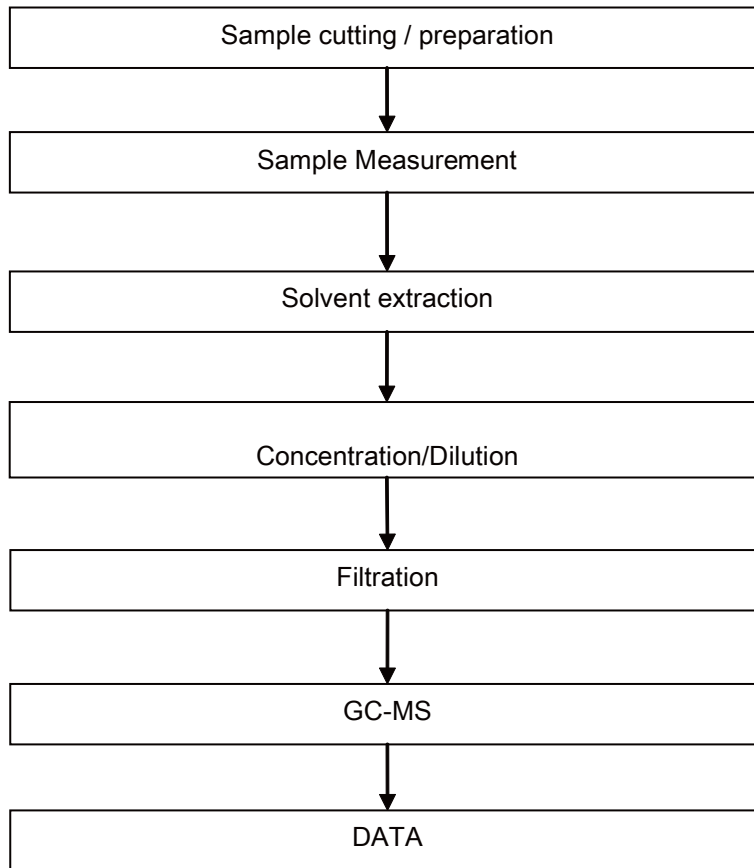
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ATTACHMENTS

Phthalates Testing Flow Chart

- 1) Name of the person who made testing: Sunny Hu
- 2) Name of the person in charge of testing: Qiong Liu



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Sample photo:



SGS authenticate the photo on original report only

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



# 产品质量证明书

东莞市德耀金属材料有限公司

## CERTIFICATE OF QUALITY

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

客户名称 Customer	合同号 Contract No.	重量(Kg) Weight (Kg)	签发日期 Date of Issue
	2014-11-13	2196	2014-11-26
牌号 Brand	标准 Standard No.	规格 (mm) Dimension	状态 Temper
C5191	JIS H 3110: 2000	0.25X305	H
化学成份 Chemical composition		尺寸公差 (mm) Size Tolerance	
	Cu	Pb	Fe
	Bi	P	Sn
标准 Spec	Min	/	/
	Max	0.02	0.05
	Actual	0.005	0.005
		厚度Thickness	宽度 Width
		0.25±0.01	305±0.5
		0.24	304.5
		0.26	305.5
机械性能 Mechanical properties			
项目 Item	抗拉强度(N/mm2) Tensile Strength	延伸率 (%) Elongation	硬度 (HV) Hardness
标准 Spec	Min	11	190
	Max	/	210
实测	Actual	21	195

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



出证人 Issued By :



# MATERIAL SAFETY DATA SHEET

## Product designation

**C5191 PHOSPHOR BRONZE**

## Company Information

Name: DONG GUAN DEYAO METAL MATERIALS CO.,L

Add: NO.6CHUANG SHENG RD,THE SECOND SH.  
CHANG AN TOWN,DONG GUAN CITY,GUAN

TEL: 0769-81608900 81501167 FAX: 0769-



TATE

## Physical performance& Chemical Composition(%)

**C5191 PHOSPHOR BRONZE**

	Cu	Pb	Fe	P	Sn	Ni	Zn
Max	Surplus	0.01	0.10	0.35	7	0.020	0.20
Min	Surplus	0.007	0.01	0.03	5.5	0.010	0
CASNo.	7440-50-8	7439-92-1	7439-89-6	7723-14-0	7440-31-5	8049-31-8	7440-66-6

## Classification by hazardousness and toxicity

Classification:Not falling under the classification of hazardous toxic substance.

Hazardousness:None.

Harmfulness:None.

## First-Aid Measure

In case of entry into the eye: Metal particles that entered the eye must be promptly removed with clean running water.Should pain linger in the eye ,go to the ophthalmologist to receive treatment.

In case of deposit on the skin: No health problem is involved if at normal temperature.

In case of swallowing: Go to the physician immediately for diagnostic examination.

## Measure in case of fire

Method of extinguishing: Not applicable because the subject substance is not flammable.

Extinguishing agent: Not applicable because the subject substance is not flammable.

## Measure in case of Leakage.

Not applicable because the subject substance is solid.

## Hazard Information (Stability and Reactivity)

Flammability: None

Self-ignitability:None

Self-reactivity and explosiveness:None

Dust explosiveness: None

Stability and reactivity :Genqually inert and stable.In contact with gases containing ammonia base ,cracks may develop (stress-corrosion cracking).

### **Toxicity Information (Inclusive of Medical Case Data and Epidemiologic Data)**

None on the subject alloy.

### **Information on effects to Environment**

Decomposability: No data exist

Accumulating ability: No data exist.

### **Advice to Designer for Proper Application**

- (1) The product specifications are applicable to and valid for this product as delivered to the user and should not be construed to mean values vouchsafed on the product being put to use. Depending on the shape of work or the working process such as bending, the product characteristics stated in its specifications may not prevail. Because of this possibility, it is a good practice of the user to apply this product to a sample and check its performance before putting it to production use.
- (2) This product has electrical resistance of its own, so that passing a high current through it is likely to generate appreciable TR2 heat. Bearing this in mind, be sure to design your work in such a way that this current will not be inordinately high.
- (3) Avoid using, or storing, this product in the ambience of its own, so that its discoloration, corrosion or mechanical deterioration will not occur. If such use or storing cannot be avoided, calculate these possible deteriorations in designing your work:
  1. Atmosphere of corrosive gases (Cl, NH<sub>3</sub>, SO<sub>x</sub>, NO<sub>x</sub>, etc)
  2. Acidic, alkaline or organic solvent
  3. Ambience of high temperature or high humidity, or use in water or oil.
- (4) prolonged usage or use at high temperatures or in deleterious ambience may result in loss of initial mechanical properties depending on the type of this alloy product like as well as stress relieving characteristic differs. Any question arising in this regard should be resolved by taking counsel with its maker.

### **Advice on Proper Handling**

- (1) This product comes as wrapped and packed in traverse or pancake form. Do not allow collision or freefall or the package contents will be disturbed to suffer damage or distortion.
- (2) This product is heavy and tough it can cause physical injury if your hands or fingers get inadvertently caught or pinched by its collision freefalling or reckless handling.
- (3) Bear in mind that product has sharp edges and demands careful handling. The edges are sharp enough to cut your fingers.
- (4) Do not use this product in presence of any toxic gases or in contact with such organic liquid as acid or dilute solvent or at high temperatures or in high humidity condition, so that it will not discolor or corrode. For the place of its storage or use air conditioning is referred.
- (5) When this product comes to a point in time where it has to be disposed as waste, don't throw it away but go through the statute-prescribed procedure. Its punchings or the like can be recycled and are supposed to be sellable. Remember, it is in the category of industrial wastes.
- (6) This product is by no means edible. Keep it away from infants.
- (7) Do not handle this product with bare hands. Finger stains are likely to discolor it wear gloves.

**Advice for Proper Use**

- (1) This product is to be handled in the ambience of normal temperature and humidity condition
- (2) Do not touch this product with bare hands
- (3) Do not use this product in the ambience characterized by the following.
  - 1) Atmosphere of corrosive gases.( Cl.NH<sub>3</sub>,Sox,NOx,etc)
  - 2) Acidic,alkaline or organic solvent
  - 3) High temperature or high humidity,or use in water or oil
- (4) Workability of this product for bending or forming process differs depending on its type.Check its workability by using before putting it to production use.
- (5) This product is in internally stressed state.Press-working for instance,is likely to let out this stress to change its shape.before putting it to production use,check this tendency by using it on samples.

**Advice for Proper Storing.**

- (1) Do not store this product in the ambience characterized by the following:
  - 1) Atmosphere of corrosive gases.( Cl.NH<sub>3</sub>,Sox,NOx,etc)
  - 2) Acidic,alkaline or organic solvent
  - 3) High temperature or high humidity,or use in water or oil
- (2) Protect this product against weather,particularly rain,to prevent rust formation on it.
- (3) Upon this product in storage ,do not place any heavy objects.

**Notice for delivery**

Cover the product when delivering,keep it away from the rain when delivering.  
Handle with care to avoid damaging the product

**Others**

Safety Data Sheets,commonly furnished with industrial products that are potentially dangerous and harmful,are intended to serve as safety information and guide to users.

The user of this product is advised to read its Data Sheet carefully and be aware of the fact that he is responsible for taking Proper precautions and necessary measures in storing,handling and using it.The Data Sheet is the safety reminder,not an instrument of guaranteeing safety.

# Test Report

No. CANEC1625427003

Date: 29 Dec 2016

Page 1 of 4

DONG GUANG DEYAO METAL MATERIALS CO.,LTD

NO.6 CHUANG SHENG ROAD, THE SECOND INDUSTRIAL SHANGSHA CHANG`AN TOWN, DONGGUAN CITY CHINA

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

SGS Job No. : CP16-077286 - GZ  
Date of Sample Received : 23 Dec 2016  
Testing Period : 23 Dec 2016 - 29 Dec 2016  
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

Merry Lv  
Approved Signatory



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

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Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
SN1	CAN16-254270.002	Copper-colored metal sheet

Remarks :

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

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

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

Test Item(s)	Limit	Unit	MDL	002
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1,000	mg/kg	2	13
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.
- (2) ▼= a. The sample is positive for CrVI if the CrVI concentration is greater than 0.13 µg/cm2. The sample coating is considered to contain CrVI  
 b. The sample is negative for CrVI if CrVI is ND (concentration less than 0.10 µg/cm2). The coating is considered a non-CrVI based coating  
 c. The result between 0.10 µg/cm2 and 0.13 µg/cm2 is considered to be inconclusive - unavoidable coating variations may influence the determination

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

IEC 62321 series is equivalent to EN 62321 series

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



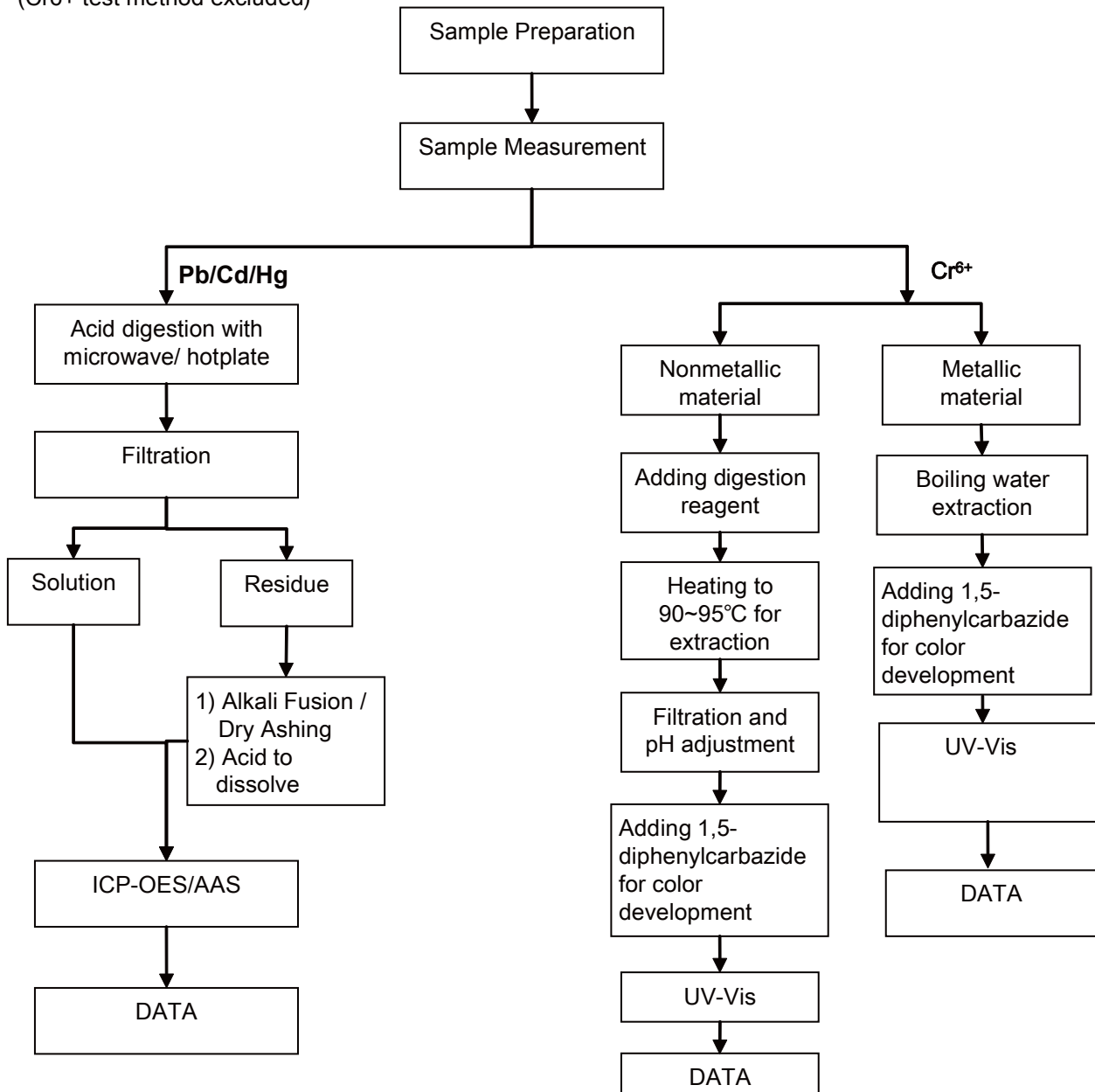
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Pb/Cd/Hg/Cr<sup>6+</sup> Testing Flow Chart

- 1) Name of the person who made testing: Edith Zhang
- 2) Name of the person in charge of testing: Bella Wang
- 3) These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr<sup>6+</sup> test method excluded)



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Sample photo:



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## Test Report

No. CANEC1615522502

Date: 15 Aug 2016

Page 1 of 6

TIANHONG HUIZHOU ELECTROPLATING CO.,LTD

102 BUILDING, PLATINGBASE LONGXI TOWN,BOLUO COUNTY,HUIZHOU CITY, GUANGDONG PROVINCE,P.R.CHINA

The following sample(s) was/were submitted and identified on behalf of the clients as : Ni plating(in chinese as 镍镀层)

SGS Job No. : CP16-050491 - SZ

Date of Sample Received : 08 Aug 2016

Testing Period : 08 Aug 2016 - 15 Aug 2016

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

Echo

Echo Yeung  
Approved Signatory





Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
SN1	CAN16-155225.002	Silvery plated metal

Remarks :

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

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

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

Test Item(s)	Limit	Unit	MDL	002
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1,000	mg/kg	2	13
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.
- (2) ▼= a. The sample is positive for CrVI if the CrVI concentration is greater than 0.13 µg/cm2. The sample coating is considered to contain CrVI
  - b. The sample is negative for CrVI if CrVI is ND (concentration less than 0.10 µg/cm2). The coating is considered a non-CrVI based coating
  - c. The result between 0.10 µg/cm2 and 0.13 µg/cm2 is considered to be inconclusive - unavoidable coating variations may influence the determination

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

IEC 62321 series is equivalent to EN 62321 series

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



**PFOA & PFOS (Perfluorooctanoic acid & Perfluorooctane sulfonates)**

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

<u>Test Item(s)</u>	<u>CAS NO.</u>	<u>Unit</u>	<u>MDL</u>	<u>002</u>
Perfluorooctanoic acid (PFOA)	335-67-1	µg/m <sup>2</sup>	1.0	ND
Perfluorooctane Sulfonates (PFOS)^	-	µg/m <sup>2</sup>	1.0	ND

Notes :

(1) ^ PFOS refer to Perfluorooctanesulfonic acid and its derivatives including Perfluorooctanesulfonic acid, Perfluorooctane sulfonamide, N-Methylperfluorooctane sulfonamide, N-Ethylperfluorooctane sulfonamide, N-Methylperfluorooctane sulfonamidoethanol and N-Ethylperfluorooctane sulfonamidoethanol.



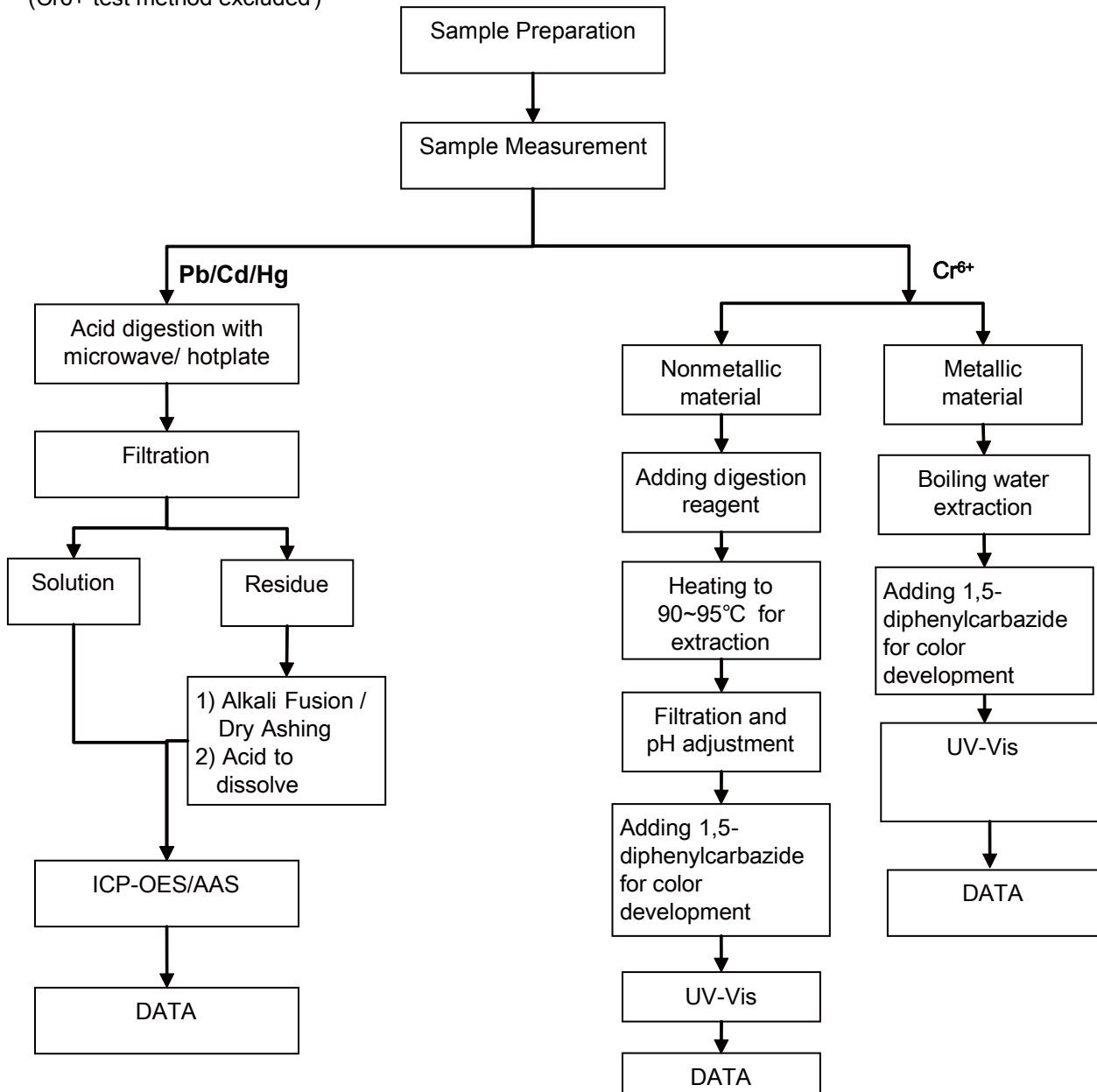
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ATTACHMENTS

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

- 1) Name of the person who made testing: Edith Zhang
- 2) Name of the person in charge of testing: Bella Wang
- 3) These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr<sup>6+</sup> test method excluded)



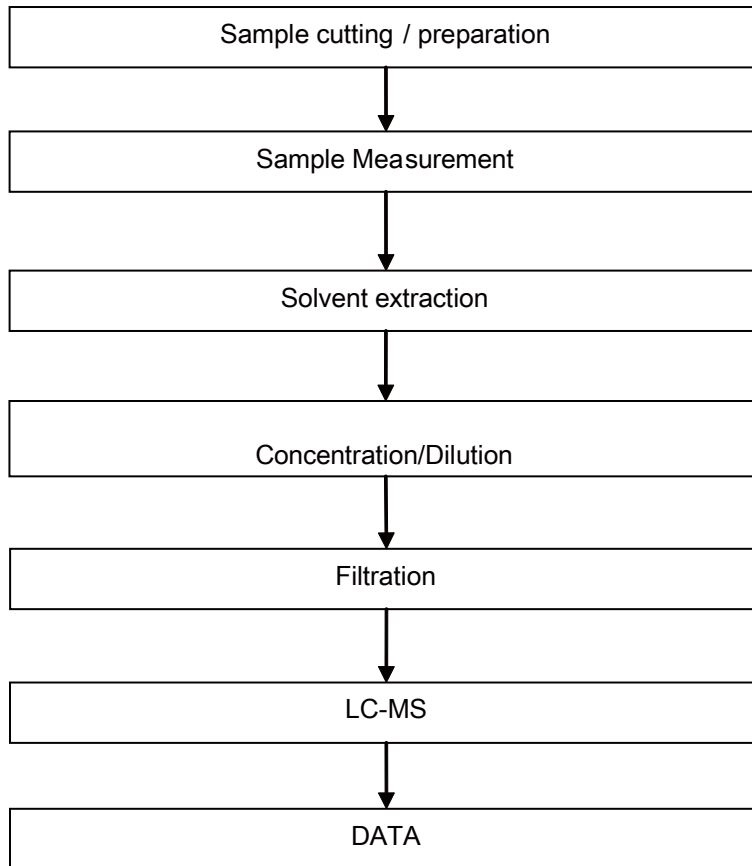
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PFOA / PFOS Testing Flow Chart

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



Sample photo:



SGS authenticate the photo on original report only

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



## Test Report

No. CANEC161552250D

a : teu15 AgP 2016

f : Pe 1 of 6

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102 SZH a HNUBf , ATHNUSAXE , GNUWHTGY NBSG, ZG CGZNTVBOZHLOGZ CHTVBJZANUa GNU  
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Signed for and on behalf of  
SGS-CSTC Standards Technical Services Co., Ltd. Guangzhou Branch

Echo

E l o VegrnP  
Approvec XrPm tory



## Test Report

No. CANEC161552250D

a : teu15 AgP 2016

f : Pe 2 of 6

Test Results

Test for lead in copper

Client No. XUX X: ( project name )  
 XN1 CAN16-155225.00D Uowempwtec ( et: w

Reference:

- 1/ 1 ( PbkP = 1 pp( = 0.0001%
- 2/ Ma , = Metl oc a ete t r o m , r í r í
- 3/ Na = Not a ete t e c ) < Ma , /
- 4/ "-" = Not RePgwtcc

### RoOX a n n e t r e )EZ/ 2015t86D: ( e n c m P A n n e x H t o a n n e t r e 2011t65tEZ

- 1/Y n l r e l e r e m e t o H E C 6 2 D 2 1 - 5 u 2 0 1 D B c e t e r ( m t r o m o l C : c ( r g ( d y H C f - G E X .
- 2/Y n l r e l e r e m e t o H E C 6 2 D 2 1 - 5 u 2 0 1 D B c e t e r ( m t r o m o l , e : c d y H C f - G E X .
- 3/Y n l r e l e r e m e t o H E C 6 2 D 2 1 - 4 u 2 0 1 D B c e t e r ( m t r o m o l M e r g r y d y H C f - G E X .
- 4/Y n l r e l e r e m e t o H E C 6 2 D 2 1 - 7 - 1 u 2 0 1 5 B c e t e r ( m t r o m o l O e x : v : w e n t C l r o ( r g ( d y C o w o r r í e t r n M e t l o c g s m P Z h - h r s .

Test Item (/s/)	Result	Unit	Ma.	OOD
C: c ( r g ( ) C c /	100	( PbkP	2	Na
, e : c ) f d /	1000	( PbkP	2	14
Mer gry ) O P /	1000	( PbkP	2	Na
Oex: v : w e n t C l r o ( r g ( ) C r ) h H / v	-	µPb ( ^ 2	0.10	Na

Notes

- 1/ T l e ( : x r í g ( p e r ( r e s u l t e v í r í s q g o t e c l r o ( R o O X a n n e t r e ) E Z / 2 0 1 5 t 8 6 D .
- 2/ v = : . T l e s : ( p e r s p o s i t i v e l o r C r h H i t l e C r h H o m e n t r : t r o m r s P r e : t e r t l : m 0 . 1 D µ P b ( 2 . T l e 3 3 3 3 3 3 3 3 : ( p e r o : t m P r s o n s r e r e c t o o r t : m C r h H 3 3 3 3 3 d . T l e s : ( p e r s r e P : t r e l o r C r h H i C r h H s N a ) o m e n t r : t r o m v e s s t l : m 0 . 1 0 µ P b ( 2 / . T l e 3 3 3 3 3 3 3 3 o : t m P r s o n s r e r e c : n o m C r h H d : s e c o : t m P 3 3 3 3 3 . T l e r e s g w d e t i e e m 0 . 1 0 µ P b ( 2 : m e 0 . 1 D µ P b ( 2 r s o n s r e r e c t o d e m m o m v g s r i v e - 3 3 3 3 3 3 3 3 g m v o r e : d e o : t m P v : r n t r o n s ( : y m l v g e m e t l e c e t e r ( m t r o m 3 3 3 3 3 3 3 3 h o r ( : t r o m o m s t o r : P e o n c r i t i o n s : n e p r o c g t r o m c : t e o l t l e t e s t e c s : ( p e r s g m v : n w d v e 3 3 3 3 3 3 3 3 m e t l g s C r ) h H r e s g w s r e p r e s e n t s t : g s o l t l e s : ( p e r : t t l e t r í e o l t e s t m P . 3 3 3 3 3 3 3 3 H E C 6 2 D 2 1 s e r r e s r s e g g r v : w e n t t o E N 6 2 D 2 1 s e r r e s 3 3 3 3 3 3 3 3 t t p u b i i . e n e w e . e g b c y m b i i i d ? p = 1 0 4 u 0 u l 7 4 2 2 D 2 8 7 0 D 5 1 1 0 1 u u F X f \_ G R U \_ H a B 3 3 3 3 3 3 3 3 F X f \_ , A N U \_ H a u l 2 5 8 6 D 7 E 2 5



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Test Report

No. CANEC161552250D

a : teu15 AgP 2016

f : Pe Dol 6

f FGA & f FGX 3f erlvgoroo t: mon : rc & f erlvgoroo t: ne sgvom tes/

Test Metl oc u Y ntl relerem e to CENbTX15968u2010B: m wysrs i : s perlor( ec dy , C-MX.

<u>Test He( )s/</u>	<u>CAX NG.</u>	<u>Zmt</u>	<u>Ma.</u>	<u>00D</u>
f erlvgoroo t: mon : rc )f FGA/	DD6-67-1	µPq <sup>2</sup>	1.0	Na
f erlvgoroo t: ne sgvom tes )f FGX/^	-	µPq <sup>2</sup>	1.0	Na

Notes u

)1/ 3' f FGX reler to f erlvgoroo t: nesgvom : rc : rc rts cerv: trves nm vcmP f erlvgoroo t: nesgvom : rcBf erlvgoroo t: ne sgvom ( rcBN-Metl yperlvgoroo t: ne sgvom ( rcBN-Etl yperlvgoroo t: ne sgvom ( rcBN-Metl yperlvgoroo t: ne sgvom ( roetl : now rc N-Etl yperlvgoroo t: ne sgvom ( roetl : now



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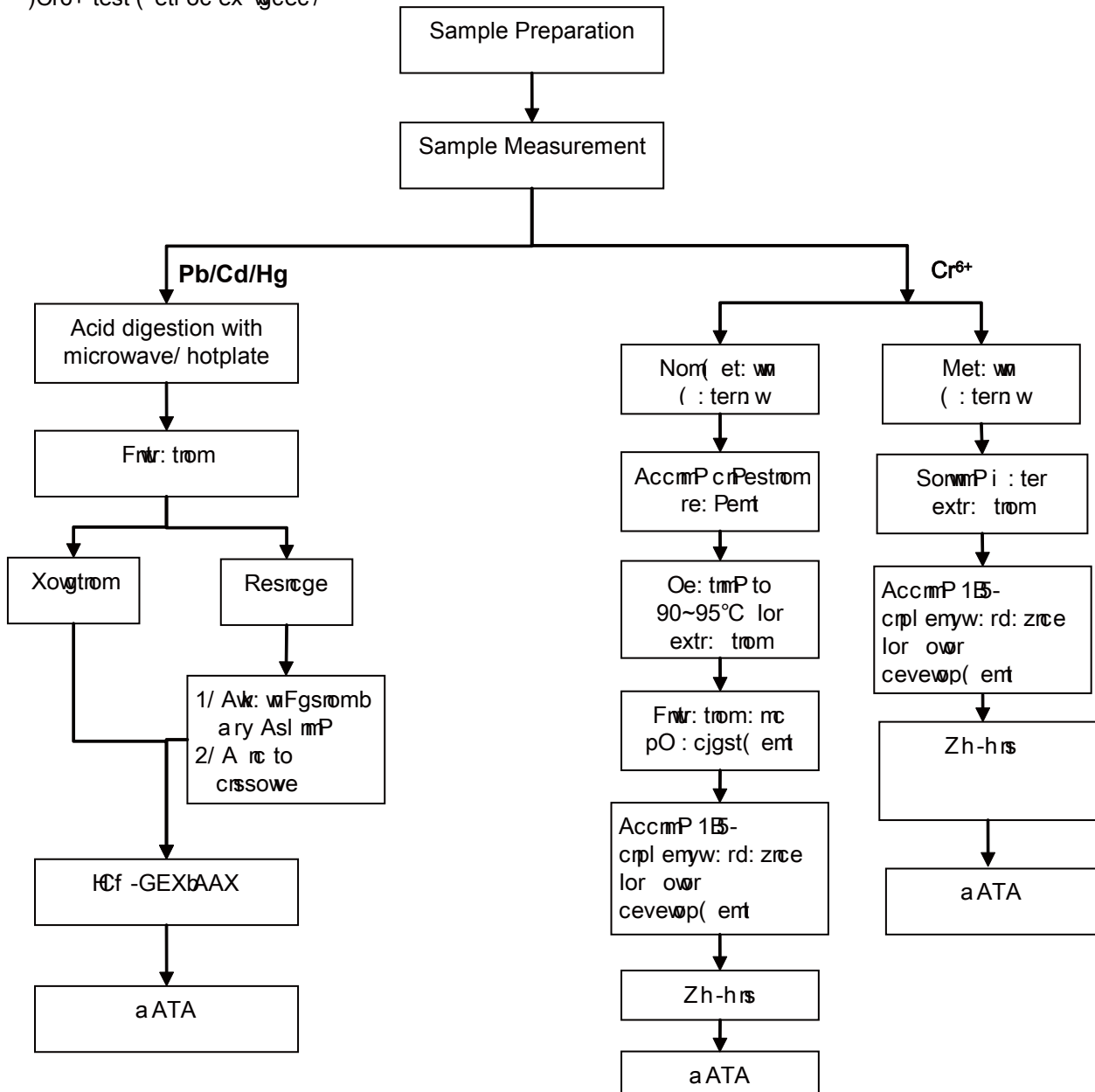
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ATTACHMENT X

Cr<sup>6+</sup> Testing Flow Chart

1/ N: ( e ol tl e persomi lo ( : ce testmPu Ecrtll LI : nP  
 2/ N: ( e ol tl e persomm l : rPe ol testmPu Seww Y : nP  
 D/ Tl ese s: ( pves i ere crssowec tot: w dy pre - omcrtrommP ( etl oc : orcmP to dewo i lwoi l : rt.  
 )Cr<sup>6+</sup> test ( etl oc ex vgec/



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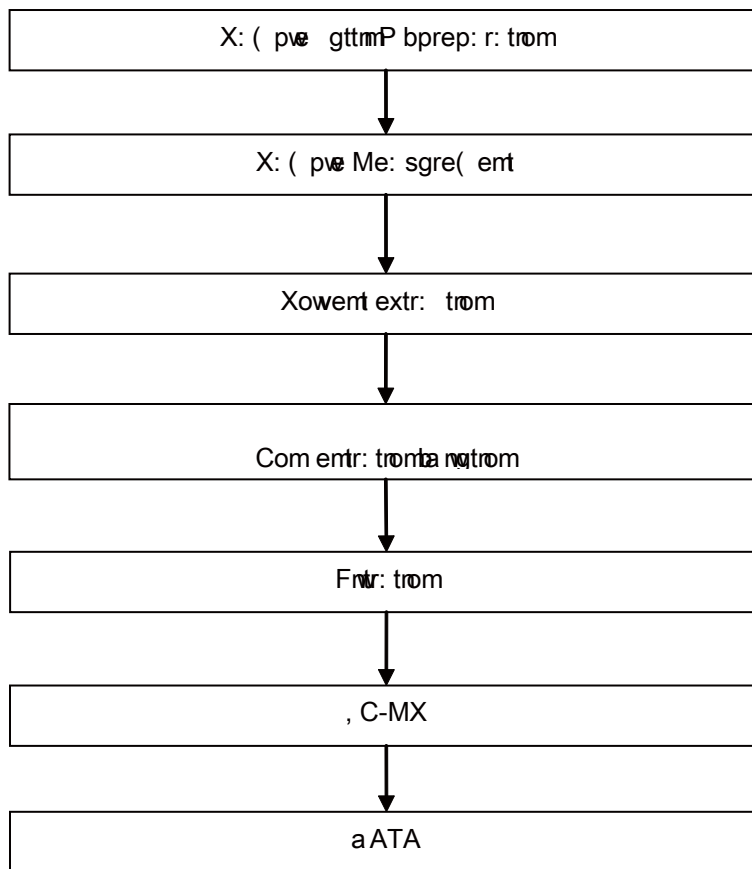
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ATTACOMENTX

Method: FGA by FGX Test Method

- 1/ Note: ( ) of the person in charge of the test
- 2/ Note: ( ) of the person in charge of the test



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