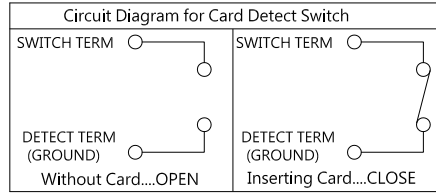
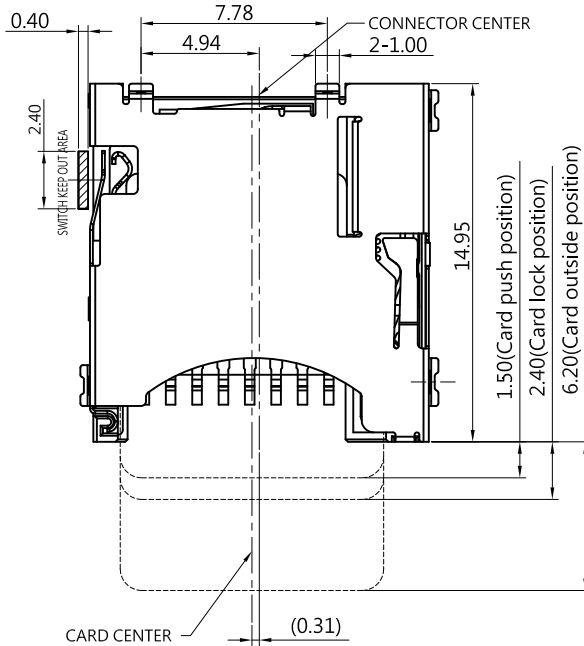
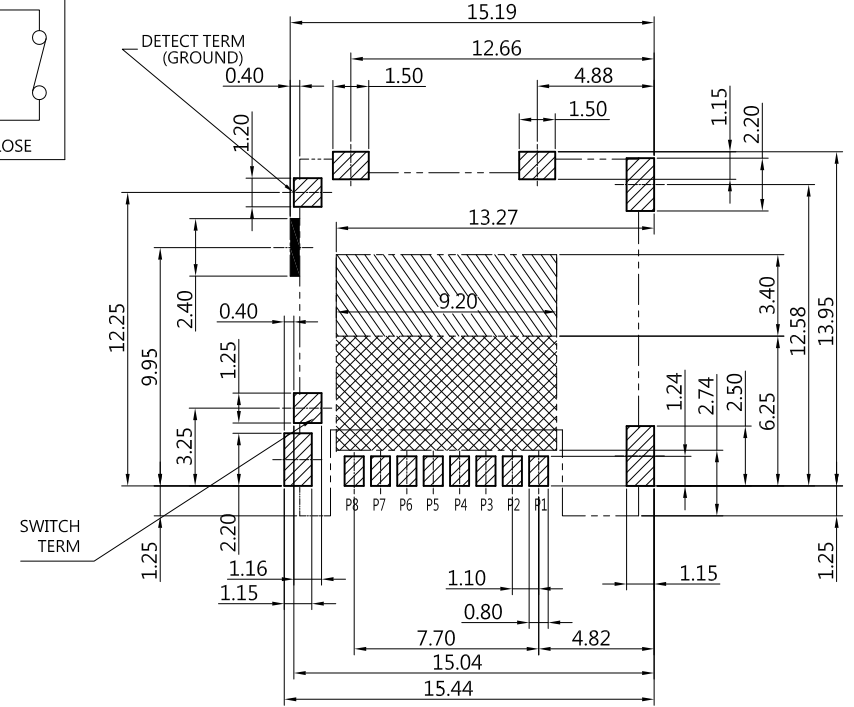
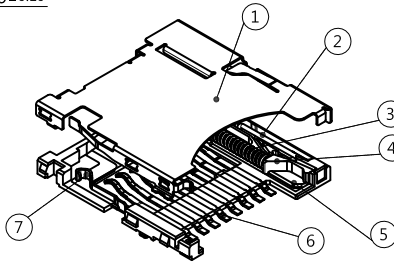
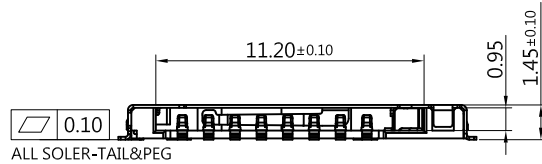


REV.	ECN NO OR DESCRIPTION	REVISED	DATE
▽	PROPOSE ONLY	ALLEN	2009.11.08



TERM 1	DATA 2
TERM 2	CD/DATA 3
TERM 3	CMD
TERM 4	VDD
TERM 5	CLK
TERM 6	VSS
TERM 7	DATA 0
TERM 8	DATA 1



PROHIBITED AREA  
 PATTERN PROHIBITED AREA  
 SOLDERPROHIBITED AREA

RECOMMENDED PCB PATTERN LAYOUT(TOP VIEW)

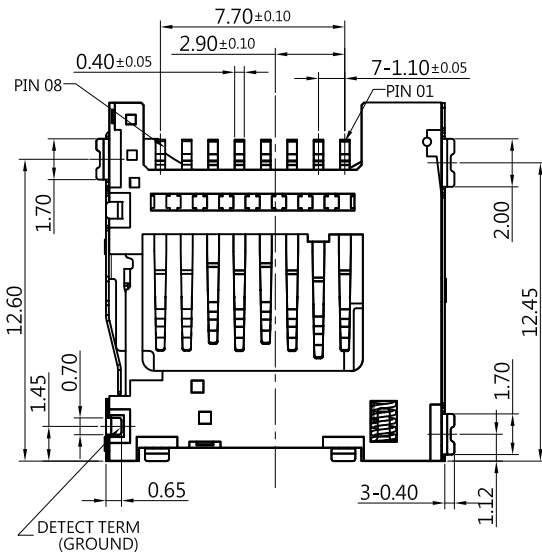
- \*NOTES:**
- COPLANARTY SPEC. FOR ALL SOLDER TAILS AND SOLDER PADS IS 0.1mm MAX.
  - ELECTRICAL CHARACTERISTICS:
    - CURRENT RATING: 0.5 Amp. MAX.
    - VOLTAGE: 100V DC. MAX.
    - LOW LEVEL CONTACT RESISTANCE: 100 mOhms MAX. INITIALLY.
    - DIELECTRIC WITHSTANDING VOLTAGE: 500V AC MIN. FOR 1 MINUTE.
    - INSULATION RESISTANCE: (INITIAL) 1000MOhms MIN.. (FINAL) 100MOhms MIN. BY APPLYING 500V DC ON MATED AND UNMATED CONNECTORS THROUGH MIL-STD-202, METHOD 302.
  - MECHANICAL CHARACTERISTICS:
    - DURABILITY: 5000 CYCLES.
    - OPERATING TEMP. RANGE: -25°C TO 85°C. [INCLUDING TERMINAL TEMP. RISE]
    - STORAGE TEMP.: -40°C TO 85°C.
  - DIMENSIONS MARKED WITH AREA MAJOR CHECKED DIMENSIONS.
  - HARMFUL MATERIAL CONTROL PLEASE FOLLOW DOC. NO. "EPI12".
  - QUANTITY OF PRODUCTS: 1400PCS/REEL



7. PART No.: T 0 PP - 15 01 08- 06 G

T-FLASH  
0=WITHOUT POST  
PP=PUSH Type.  
15:HEIGHT 1.45mm

G=gold flash  
06=Product Order  
Pin NO. 8=8Pin  
01=NORMAL TYPE.



⑦	SWITCH PIN	1	COPPER ALLOY	GOLD PLATING
⑥	TERMINAL	8	COPPER ALLOY	GOLD PLATING
⑤	HOUSING	1	THERMAL PLASTIC	
④	SLIDER	1	THERMAL PLASTIC	
③	SPRING	1	SUS	
②	CAM FOLLOWER	1	SUS	
①	SHELL	1	SUS	Ni PLATING
NO.	PART NAME	Q'TY	DESCRIPTION	

UNLESS OTHERWISE SPECIFIED TOLERANCES

DECIMALS:	ANGLES:
X :±0.5	X :±2°
X.X :±0.20	X.X :±1°
X.XX :±0.10	

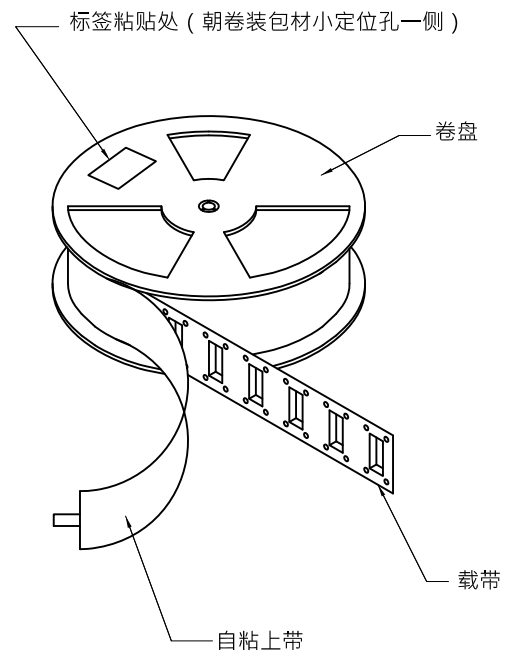
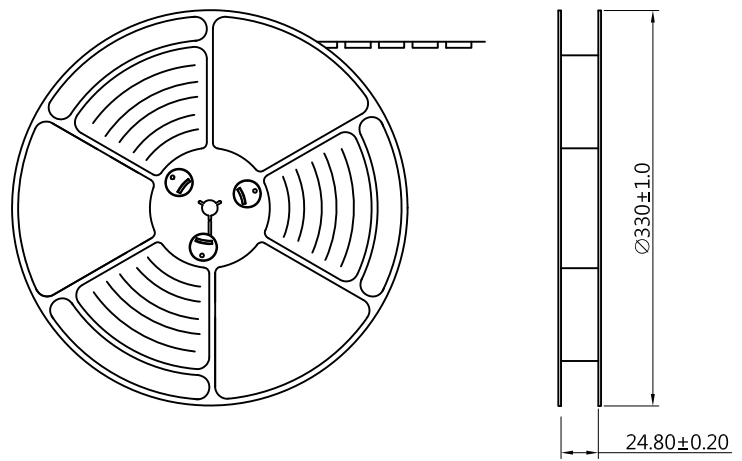
**深圳市顺宏康科技有限公司**

TITLE	1.45mm Push Micro SD CARD CONN.(NORMAL OPEN)			
DWN	ALLEN	PART NO.	SHK-10357	
CHKD	KEVIN	SCALE:1:1	UNIT: mm	
APVD	ERIC.W	SIZE: A3	SHEET:1OF 1	REV: A1

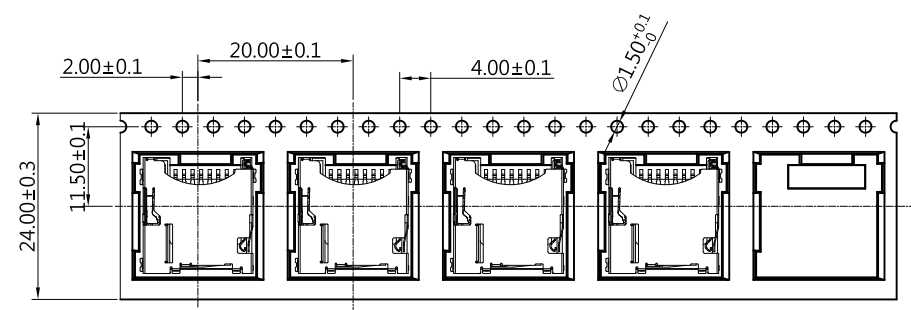
CUSTOMER COPY

REV.	ECN NO OR DESCRIPTION	REVISED	DATE
▽	PROPOSE ONLY	ALLEN	2009.11.08

出料方向  
PULL OUT DIRECTEON



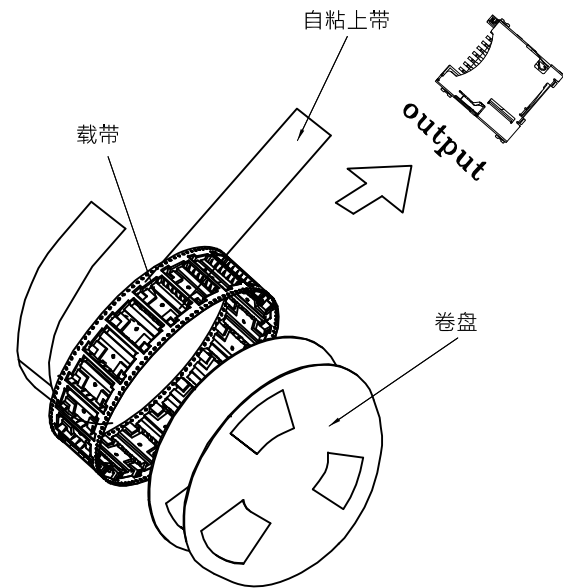
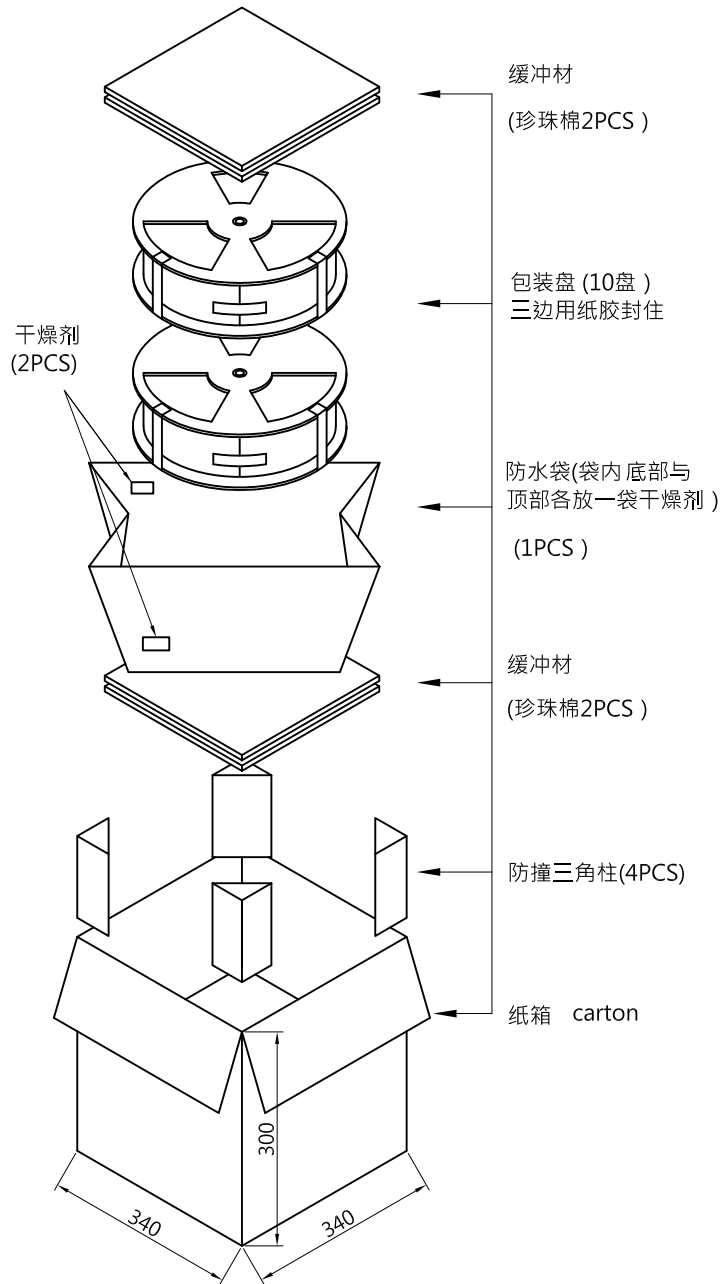
出料方向  
PULL OUT DIRECTEON



深圳市顺宏康科技有限公司

UNLESS OTHERWISE SPECIFIED TOLERANCES		TITLE 1.45mm Push Micro SD CARD CONN.(NORMAL OPEN)			
DECIMALS:	ANGLES:	DWN	ALLEN	PART NO.	SHK-10357
X :±0.5	X :±2°	CHKD	KEVIN	SCALE:1:1	UNIT: mm
X.X :±0.20	XX :±1°	APVD	ERIC.W	SIZE: A3	SHEET:1OF 1
X.XX :±0.10		CUSTOMER COPY			
					REV: A1

REV.	ECN NO OR DESCRIPTION	REVISED	DATE
▽	PROPOSE ONLY	ALLEN	2009.11.08



10	干燥剂	2PCS
9	三角压线条	4PCS
8	珍珠棉	4PCS
7	纸箱	1PCS
6	保护带	10PCS
5	自粘上带	30.6M*10
4	卷盘	10PCS
3	PE防水袋	1PCS
2	载带	10pcs
1	TF1.45卡座	15000PCS

备注：

- 1.每卷载带前后各留15PCS空格不使用.
- 2.每卷载带包装1500PCS产品.
- 3.以自粘上带覆盖经包装机冷封包装.
- 4.以保护带覆盖于外圈再以胶带固定并粘贴卷盘标签.
- 5.将10卷包装好的产品放入PE防水袋,防水袋的上下各放置2PCS珍珠棉,以胶带固定PE防水袋.
- 6.将包装好的10卷产品放入纸箱,四周用三角压线条固定;外箱用胶带呈“工”字形封口.
- 7.外箱标签的贴法请参照客户资料.



UNLESS OTHERWISE SPECIFIED TOLERANCES		深圳市顺宏康科技有限公司			
DECIMALS:	ANGLES:	TITLE	1.45mm Push Micro SD CARD CONN.(NORMAL OPEN)		
X :±0.5	X :±2°	DWN	ALLEN	PART NO.	SHK-10357
X.X :±0.20	X.X :±1°	CHKD	KEVIN	SCALE:1:1	UNIT: mm
X.XX :±0.10		APVD	ERIC.W	SIZE: A3	SHEET:1OF 1
CUSTOMER COPY					

	主題 SUBJECT : SPEC for Tran Flash Card Series Push-Push Type	产品料号 Part NO: TOPP-150108-06G	
		PAGE	Revision
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\*\*\*\*\* CONTENT \*\*\*\*\*

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	APPROVED	CHECKED	PREPARED	ISSUED BY:
BY				
DATE				

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	主題 SUBJECT :  SPEC for Tran Flash Card Series Push-Push Type	产品料号 Part NO: TOPP-150108-06G	
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## 1. SCOPE

### 1.1 Content

This product specification defines the product performance and the test methods to ascertain the performance of the Tran Flash Card, which is designed and manufactured by KRCONN Co. LTD

### 1.2 Qualification

Tests are to be performed per the procedures stated in this specification. All inspections shall be conducted using the inspection plan for this product and the product drawing.

## 2. DOCUMENTS

MIL-STD-1344A	Test method for electrical components
MIL-STD-202	Test method for electrical components
EIA364	Test method for electrical components
JIS C 0020	Test method for electrical components
MIL-G-45204C	Specification for gold plating
IEC-512-3	IEC standard for current carrying capacity tests
QQ-N-290A	Specification for nickel plating
MIL-P-81728A	Specification for tin/lead plating
MIL-T-10727B	Specification for tin plating
UL498	UL standard for safety of attachment plug and receptacle

## 3. Requirement

### 3.1. Design

This connector shall have the dimensions as shown in Customer Drawing, and be inter mate able with the PCB shown in the same drawing.

### 3.2. MATERIAL

The bills of material and product number of Connectors are described in Customer Drawing.

### 3.3. MARKING

Ink spray of manufacturer's name, industry recognized logo, or customer approved marks. Is optional.

### 3.4 Test Description

Unless otherwise specified, the test and measurement shall be performed at ambient

	主題 SUBJECT : SPEC for Tran Flash Card Series Push-Push Type	产品料号 Part NO: TOPP-150108-06G	
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environment conditions.

### 3.5 Applicable Standard

Parameter	Requirement	Parameter	Requirement
Operating Temperature Range	-20° C to+70° C	Storage Temperature Range	-40° C to +85° C
Voltage	5V	Storage Humidity Range	55° C /95%RH max.
Rating Current	0.5A		

## 4. Performance Requirement

### 4.1. Visual Examination

Test Method/Condition	Requirements
Visually, functionally inspected per applicable product drawing.	<ol style="list-style-type: none"> <li>1. Each area must be finished well and there must be not rust, scratches, cracks and inferior or peeling plating, etc.</li> <li>2. That may prove harmful in terms of product function.</li> <li>3. Product shall be conforming to the Requirements of applicable product Drawing.</li> </ol>

### 4.2. Mechanical Characteristics

#### 4.2.1 Insertion/Ejection Force

Test Method/Condition	Requirements
Solder PCBA and product together, perform insertion and removal at a speed of approximately 25 ±3 mm/minute.	<ol style="list-style-type: none"> <li>1. Card insertion force value: 3~7N Max.</li> <li>2. Card ejects force 3~7N.</li> </ol>

	主題 SUBJECT : <b>SPEC for Tran Flash Card Series          Push-Push Type</b>	产品料号 Part NO: <b>TOPP-150108-06G</b>	
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#### 4.2.2 Durability

Test Method/Condition	Requirements
In accordance with EIA-364-C class 1.1, Perform insertion and removal with Trans Flash Card for 5000 times and measure. At a rate of between 400 and 600 times per hour. Change the card every 1000 times.	1. Contact resistance: 140mΩ max. (After test) 2. Insulation Resistance: 100 MΩ minimum. (After test)

#### 4.2.3 Vibration

Test Method/Condition	Requirements
MIL-STD-202, Method 201A, connect the terminals to make a circuit in series with the card inserted and conduct the test while conducting DC 1mA. 1. Vibration frequency range: 10-55 Hz 2. Total amplitude: 1.5mm 3. Sweep ratio: 10-50-10Hz, approx: 1 minute 4. Method of changing the sweep vibration frequency: logarithmic or linear 5. Direction of vibration: three perpendicular directions including 6. Duration: 2h each (6h in total)	1. No electrical discontinuity of more than 0.1 μs during the test. 2. No physical damage occurs on the parts.

#### 4.2.4. Shock

Test Method/Condition	Requirements
Connector shall be measured after following test. 1. Mounting method: normal mounting method 2. Acceleration: 490 m/s <sup>2</sup> 3. Duration: 11ms 4. Test direction: 6 directions 5. Number of shocks: 3 times per direction	1. No electrical discontinuity of more than 0.1 μs during the test. 2. No physical damage occurs on the parts.

### 4.3 Electrical Characteristics:

#### 4.3.1 Low Level Contact Resistance



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Test Method/Condition	Requirements
<p>With regard to measurement, Conductor resistance down to the soldered. Parts of the terminals are included.</p> <p>1. With dummy card (PCB) attached. 2. Apply 1mA, 20mV Max.</p>	<p>1. 100m<math>\Omega</math> Max. (Initial) 2. 140m<math>\Omega</math> Max. (After test)</p>

#### 4.3.2 Insulation Resistance

Test Method/Condition	Requirements
<p>Apply a voltage of DC 500V for 60<math>\pm</math>5s to between adjacent terminals and measure.</p>	<p>1. 1000 M<math>\Omega</math> Min. (Initial) 2. 100M<math>\Omega</math> Min. (After test)</p>

#### 4.3.3 Dielectric Withstanding Voltage

Test Method/Condition	Requirements
<p>MIL-STD-1344A, Method 3003.1. Apply 500V AC for 1 minute.</p>	<p>There must be no breakdown</p>

### 4.4 Environmental Characteristics:

#### 4.4.1 High temperature resistance

Test Method/Condition	Requirements
<p>In accordance with MIL-STD-202 test method 108A, condition B, leave the connector in a test chamber at 85<math>^{\circ}</math>C for 96Hours. Measure the sample before the start of the test and after completion. Outside the chamber for between one and two Hours</p>	<p>1. Contact resistance: 140m<math>\Omega</math> MAX. (After test) 2. Insulation Resistance: 100 M<math>\Omega</math> minimum. (After test) 3. No physical damage must occur during the test</p>

	主題 SUBJECT : <b>SPEC for Tran Flash Card Series          Push-Push Type</b>	产品料号 Part NO: <b>TOPP-150108-06G</b>	
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#### 4.4.2 Thermal Shock

Test Method/Condition	Requirements
In accordance with MIL-STD-202 test method 107G, condition A, put the connector through 10cycles of temperature change, 10cycles consisting of -40°C and 85°C for each 1hour perform measurements before the first cycle and after completion of the final cycle. Outside the test chamber for between one and two hours	1.Contact resistance: 140mΩ max. (After test) 2. Insulation Resistance: 100 MΩ minimum. (After test) 3. No physical damage must occur during the test

#### 4.4.3 Low temperature resistance

Test Method/Condition	Requirements
In accordance with JIS C 0020, leave the connector in a test chamber at -40°C for 96Hours. Measure the sample before the start of the test and after completion. Outside the chamber for between one and two Hours. Water drops shall be removed.	1.Contact resistance: 140mΩ max. (After test) 2. Insulation Resistance: 100 MΩ minimum. (After test) 3. No physical damage must occur during the test

#### 4.4.4Salt Spray

Test Method/Condition	Requirements
MIL-STD-1344A Exposed at 35 ± 2°C,5% salt water spray for 72H with connectors engaged	No evidence of damage. The electrical performances should meet the spec. specified.

#### 4.4.5 Humidity test

Test Method/Condition	Requirements
In accordance with MIL-STD-202 test method 103B, condition B, leave the connector in a test chamber at 40°C and 90% - 95% (RH) for 96Hours. Measure the sample before the start of the test and after completion. Outside the chamber for between one and two Hours. Water drops shall be removed.	1.Contact resistance: 140mΩ max. (After test) 2. Insulation Resistance: 100 MΩ minimum. (After test) 3. No physical damage must occur during the test

#### 4.4.6 Temperature Raise

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	SPEC for Tran Flash Card Series Push-Push Type	TOPP-150108-06G	
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Test Method/Condition	Requirements
Contacts series-wire apply test current of 0.5 A DC to the circuit, and measure the temperature rising by probing on soldering areas on contact.	30°C max.

#### 4.4.7 Solder-ability

Test Method/Condition	Requirements
Dip soldered terminals into flux and melted solder as follows Solder temperature: 230±5 °C Solder time: 3±0.5 sec	95% of immersed area must show no voids, pin holes. (Exclusion on cutting side)

#### 4.4.8 Resistance to Soldering Heat

Test Method/Condition	Requirements
<p>The test shall be conducted under the following conditions.</p> <p>Re-flow soldering: It is a re-flow of the company recommendation method based on the company recommendation temperature profile setting. The measurement shall be made after going back to normal room temperature.</p> <p>Manual soldering: Wattage of soldering iron :15W; Diameter of soldering iron tip: <math>\phi</math> 1mm; Temperature of soldering iron tip: 350±5°C; Soldering time: 3s max.</p>	<p>Contact resistance:140m<math>\Omega</math> max. (After test)</p>



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# Group Test Report

Report No.: KR201201CS04

Part No.: TOPP-150108-06G

Refer Doc.: RS1211003

Test Date: 2012/01/5-2012/01/20

Test Dept.: Quality Control

Approved: Simon    Checked:Kevin.Deng    Prepared: King Hsu

## 1. Test requirement and condition

Parameter	Requirement	Parameter	Requirement
Operating Temperature Range	-20° C to +70° C	Storage Temperature Range	-40° C to +85° C
Voltage	5V	Storage Humidity Range	55° C /95%RH max.
Rating Current	0.5A		

## 2. Group Test

### 2.1 Group A

Item	Test Methods	Requirements	Conclusion												
Visual& Examination	Visually, functionally inspected per applicable product drawing.	1. Each area must be finished well and there must be not rust, scratches, cracks and inferior or peeling plating, etc. 2. That may prove harmful in terms of product function. 3. Product shall be conforming to the Requirements of applicable product Drawing.	pass												
Insulation Resistance	Apply a voltage of DC 500V for 60± 5s to between adjacent terminals and measure.	1000 MΩ Min.	pass												
		<table border="1"> <thead> <tr> <th>Result (MΩ)</th> <th>Min</th> <th>Max</th> <th>Average</th> </tr> </thead> <tbody> <tr> <td></td> <td>3800</td> <td>83000</td> <td>5569</td> </tr> </tbody> </table>		Result (MΩ)	Min	Max	Average		3800	83000	5569				
Result (MΩ)	Min	Max	Average												
	3800	83000	5569												
Dielectric Withstanding Voltage	MIL-STD-1344A, Method 3003.1. Apply 500V AC for 1 minute.	There must be no breakdown	pass												
Low level contact resistance	With regard to measurement, Conductor resistance down to the soldered. Parts of the terminals are included: 1. With dummy card (PCB) attached.2. Apply 1mA, 20mV Max.	100 mΩ MAX.	pass												
		<table border="1"> <thead> <tr> <th>Result (mΩ)</th> <th>Min</th> <th>Max</th> <th>Average</th> </tr> </thead> <tbody> <tr> <td></td> <td>9.85</td> <td>15.92</td> <td>11.37</td> </tr> </tbody> </table>		Result (mΩ)	Min	Max	Average		9.85	15.92	11.37				
Result (mΩ)	Min	Max	Average												
	9.85	15.92	11.37												
Insertion/Ejection Force	Solder PCBA and product together, perform insertion and removal at a speed of approximately 25 ± 3 mm/minute.	1. Card insertion force value: 3~7N Max. 2. Card ejects force 3~7N.	pass												
		<table border="1"> <thead> <tr> <th>Result (Kgf)</th> <th>Min</th> <th>Max</th> <th>Average</th> </tr> </thead> <tbody> <tr> <td>insertion</td> <td>5.5</td> <td>4.5</td> <td>5.0</td> </tr> <tr> <td>ejection</td> <td>5.5</td> <td>4.5</td> <td>5</td> </tr> </tbody> </table>		Result (Kgf)	Min	Max	Average	insertion	5.5	4.5	5.0	ejection	5.5	4.5	5
		Result (Kgf)		Min	Max	Average									
insertion	5.5	4.5	5.0												
ejection	5.5	4.5	5												
Durability	In accordance with EIA-364-C class 1.1, Perform insertion and removal with Trans Flash Card for 5000 times and measure. At a rate of between 400 and 600 times per hour. Change the card every 1000 times.	No physical damage.	pass												

Insertion/Ejection Force	Solder PCBA and product together, perform Tray insertion and removal at a speed of approximately 25±3 mm/minute.	1. insertion force: 0.5 Kgf Max. 2. ejection force 0.3 Kgf Min.			pass	
		Result (Kgf)	Min	Max		Average
		insertion	3.85	3.27		3.51
		ejection	3.85	3.27	3.51	
Insulation Resistance	Apply a voltage of DC 500V for 60±5s to between adjacent terminals and measure.	100MΩ Min. (After test)			pass	
		Result (MΩ)	Min	Max		Average
			3800	8300	5569	
Low level contact resistance	<p>With regard to measurement, Conductor resistance down to the soldered. Parts of the terminals are included.</p> <p>1. With dummy card (PCB) attached. 2. Apply 1mA, 20mV Max.</p>	140mΩ Max.			pass	
		Result (mΩ)	Min	Max		Average
			12.15	19.27	14.37	

## 2.2 Group B

Item	Test Methods	Requirements	Conclusion					
Visual& Examination	Visually, functionally inspected per applicable product drawing.	<p>1. Each area must be finished well and there must be not rust, scratches, cracks and inferior or peeling plating, etc.</p> <p>2. That may prove harmful in terms of product function.</p> <p>3. Product shall be conforming to the Requirements of applicable product Drawing.</p>	pass					
Shock	<p>Connector shall be measured after following test.</p> <p>1. Mounting method: normal mounting method 2. Acceleration: 490 m/s<sup>2</sup> 3. Duration: 11ms 4. Test direction: 6 directions 5. Number of shocks: 3 times per direction</p>	No electrical discontinuity of more than 0.1 μs during the test.	pass					
		<table border="1"> <tr> <td>Result (s)</td> <td>Min</td> <td>Max</td> <td>Average</td> </tr> <tr> <td></td> <td>0.00001</td> <td>0.001</td> <td>0.004</td> </tr> </table>		Result (s)	Min	Max	Average	
Result (s)	Min	Max	Average					
	0.00001	0.001	0.004					

Vibration	MIL-STD-202, Method 201A, connect the terminals to make a circuit in series with the card inserted and conduct the test while conducting DC 1mA. 1. Vibration frequency range: 10-55 Hz 2. Total amplitude: 1.5mm 3. Sweep ratio: 10-50-10Hz, approx: 1 minute 4. Method of changing the sweep vibration frequency: logarithmic or linear 5. Direction of vibration: three perpendicular directions including 6. Duration: 2h each (6h in total)	No electrical discontinuity of more than 0.1 $\mu$ s during the test.			pass
		Result ( $\mu$ s)	Min 0.00001	Max 0.001	
Visual& Examination	Visually, functionally inspected per applicable product drawing.	1. Each area must be finished well and there must be not rust, scratches, cracks and inferior or peeling plating, etc. 2. That may prove harmful in terms of product function. 3. Product shall be conforming to the Requirements of applicable product Drawing.			pass

### 2.3 Group C

Item	Test Methods	Requirements	Conclusion								
Visual& Examination	Visually, functionally inspected per applicable product drawing.	1. Each area must be finished well and there must be not rust, scratches, cracks and inferior or peeling plating, etc. 2. That may prove harmful in terms of product function. 3. Product shall be conforming to the Requirements of applicable product Drawing.	pass								
Low level contact resistance	With regard to measurement, Conductor resistance down to the soldered. Parts of the terminals are included. 1. With dummy card (PCB) attached. 2. Apply 1mA, 20mV Max.	100 m $\Omega$ MAX.  <table border="1"> <tr> <td>Result (m<math>\Omega</math>)</td> <td>Min</td> <td>Max</td> <td>Average</td> </tr> <tr> <td></td> <td>9.89</td> <td>15.1</td> <td>12.66</td> </tr> </table>	Result (m $\Omega$ )	Min	Max	Average		9.89	15.1	12.66	pass
Result (m $\Omega$ )	Min	Max	Average								
	9.89	15.1	12.66								
Insulation Resistance	MIL-STD-202, Method 302, Apply 500V DC on mated and unmated connectors.	1000 M $\Omega$ minimum.  <table border="1"> <tr> <td>Result (M<math>\Omega</math>)</td> <td>Min</td> <td>Max</td> <td>Average</td> </tr> <tr> <td></td> <td>2000</td> <td>100000</td> <td>7000</td> </tr> </table>	Result (M $\Omega$ )	Min	Max	Average		2000	100000	7000	pass
Result (M $\Omega$ )	Min	Max	Average								
	2000	100000	7000								



Thermal Shock	MIL-STD-202, Method 107 Subject mated connector to 10 cycles between $-55 \pm 3 \text{ }^\circ\text{C}$ / 30 minutes and $+85 \pm 3 \text{ }^\circ\text{C}$ / 30 minutes	No evidence of damage			pass	
Humidity test	MIL-STD-202, Method 106 Mate dummy card and subject to 10 cycles of humidity-temperature changes between $-10^\circ\text{C}$ and $65^\circ\text{C}$ at 95% R.H.	No evidence of damage			pass	
Visual& Examination	Visually, functionally inspected per applicable product drawing.	1. Each area must be finished well and there must be not rust, scratches, cracks and inferior or peeling plating, etc. 2. That may prove harmful in terms of product function. 3. Product shall be conforming to the Requirements of applicable product Drawing.			pass	
Low level contact resistance	With regard to measurement, Conductor resistance down to the soldered. Parts of the terminals are included. 1. With dummy card (PCB) attached. 2. Apply 1mA, 20mV Max.	140m $\Omega$ MAX			pass	
		Result (m $\Omega$ )	Min	Max		Average
			12.7	18.4	16.04	
Insulation Resistance	MIL-STD-202, Method 302, Apply 500V DC on mated and unmated connectors.	100 M $\Omega$ minimum.			pass	
		Result (M $\Omega$ )	Min	Max		Average
			800	5000	2050	

## 2.4 Group D

Item	Test Methods	Requirements			Conclusion	
Visual& Examination	Visually, functionally inspected per applicable product drawing.	1. Each area must be finished well and there must be not rust, scratches, cracks and inferior or peeling plating, etc. 2. That may prove harmful in terms of product function. 3. Product shall be conforming to the Requirements of applicable product Drawing.			pass	
Low level contact resistance	With regard to measurement, Conductor resistance down to the soldered. Parts of the terminals are included. 1. With dummy card (PCB) attached. 2. Apply 1mA, 20mV Max.	100 m $\Omega$ MAX.			pass	
		Result (m $\Omega$ )	Min	Max		Average
			8.9	15.1	12.73	

Insulation Resistance	MIL-STD-202, Method 302, Apply 500V DC on mated and unmated connectors.	1000 M $\Omega$ minimum.			pass
		Result (M $\Omega$ )	Min	Max	
		3000	100000	8000	
High temperature resistance	Mate dummy card and exposed to 85 $\pm$ 3 $^{\circ}$ C for 96 hours. It shall be maintained at standard atmospheric condition for 30 min after measurement shall be made.	No evidence of damage			pass
Low temperature resistance	With regard to measurement, Conductor resistance down to the soldered. Parts of the terminals are included. 1. With dummy card (PCB) attached. 2. Apply 1mA, 20mV Max.	No evidence of damage			pass
Visual& Examination	Visually, functionally inspected per applicable product drawing.	1. Each area must be finished well and there must be not rust, scratches, cracks and inferior or peeling plating, etc. 2. That may prove harmful in terms of product function. 3. Product shall be conforming to the Requirements of applicable product Drawing.			pass
Low level contact resistance	With regard to measurement, Conductor resistance down to the soldered. Parts of the terminals are included. 1. With dummy card (PCB) attached. 2. Apply 1mA, 20mV Max.	140 m $\Omega$ MAX			pass
		Result (m $\Omega$ )	Min	Max	
		11.7	19.4	17.98	
Insulation Resistance	MIL-STD-202, Method 302, Apply 500V DC on mated and unmated connectors.	100 M $\Omega$ minimum.			pass
		Result (M $\Omega$ )	Min	Max	
		800	5000	2050	

## 2.5 Group E

Item	Test Methods	Requirements	Conclusion
Visual& Examination	Visually, functionally inspected per applicable product drawing.	1. Each area must be finished well and there must be not rust, scratches, cracks and inferior or peeling plating, etc. 2. That may prove harmful in terms of product function. 3. Product shall be conforming to the Requirements of applicable product Drawing.	pass

Temperature Raise	Contacts series-wire apply test current of 0.5 A DC to the circuit, and measure the temperature rising by probing on soldering areas on contact.	30°C max.			pass
		Result (°C)	Min	Max	
			1.2	3.8	2.04
Low level contact resistance	With regard to measurement, Conductor resistance down to the soldered. Parts of the terminals are included. 1. With dummy card (PCB) attached. 2. Apply 1mA, 20mV Max.	140 mΩ MAX			pass
		Result (mΩ)	Min	Max	
			14.8	18.7	16.17

## 2.5 Group F

Item	Test Methods	Requirements	Conclusion		
Visual& Examination	Visually, functionally inspected per applicable product drawing.	1. Each area must be finished well and there must be not rust, scratches, cracks and inferior or peeling plating, etc. 2. That may prove harmful in terms of product function. 3. Product shall be conforming to the Requirements of applicable product Drawing.	pass		
Low level contact resistance	With regard to measurement, Conductor resistance down to the soldered. Parts of the terminals are included. 1. With dummy card (PCB) attached. 2. Apply 1mA, 20mV Max.	100 mΩ MAX.		pass	
		Result (mΩ)	Min		Max
			9.7	12.41	11.73
Insulation Resistance	Apply a voltage of DC 500V for 60± 5s to between adjacent terminals and measure.	1000 MΩ Min.			pass
		Result (mΩ)	Min	Max	
			2E5	1E4	3E4
Dielectric Withstanding Voltage	MIL-STD-1344A, Method 3003.1. Apply 500V AC for 1 minute.	There must be no breakdown			pass
Salt Spray	MIL-STD-202, Method 1010 5% salt concentration 24 hours 35 ± 3 °C..	No evidence of damage			pass
Visual& Examination	Visually, functionally inspected per applicable product drawing.	1. Each area must be finished well and there must be not rust, scratches, cracks and inferior or peeling plating, etc. 2. That may prove harmful in terms of			pass

		product function. 3. Product shall be conforming to the Requirements of applicable product Drawing.						
Low level contact resistance	With regard to measurement, Conductor resistance down to the soldered. Parts of the terminals are included. 1. With dummy card (PCB) attached. 2. Apply 1mA, 20mV Max.	140 mΩ MAX	pass					
		<table border="1"> <tr> <td>Result (mΩ)</td> <td>Min</td> <td>Max</td> <td>Average</td> </tr> <tr> <td></td> <td>13.27</td> <td>18.14</td> <td>15.97</td> </tr> </table>		Result (mΩ)	Min	Max	Average	
Result (mΩ)	Min	Max	Average					
	13.27	18.14	15.97					
Insulation Resistance	Apply a voltage of DC 500V for 60±5s to between adjacent terminals and measure.	100 MΩ Min.	pass					
		<table border="1"> <tr> <td>Result (mΩ)</td> <td>Min</td> <td>Max</td> <td>Average</td> </tr> <tr> <td></td> <td>800</td> <td>5000</td> <td>4200</td> </tr> </table>		Result (mΩ)	Min	Max	Average	
Result (mΩ)	Min	Max	Average					
	800	5000	4200					
Dielectric Withstanding Voltage	MIL-STD-1344A, Method 3003.1. Apply 500V AC for 1 minute.	There must be no breakdown	pass					

## 2.5 Group G

Item	Test Methods	Requirements	Conclusion					
Visual& Examination	Visually, functionally inspected per applicable product drawing.	1. Each area must be finished well and there must be not rust, scratches, cracks and inferior or peeling plating, etc. 2. That may prove harmful in terms of product function. 3. Product shall be conforming to the Requirements of applicable product Drawing.	pass					
Low level contact resistance	With regard to measurement, Conductor resistance down to the soldered. Parts of the terminals are included. 1. With dummy card (PCB) attached. 2. Apply 1mA, 20mV Max.	100 mΩ MAX.	pass					
		<table border="1"> <tr> <td>Result (mΩ)</td> <td>Min</td> <td>Max</td> <td>Average</td> </tr> <tr> <td></td> <td>11.4</td> <td>16.3</td> <td>13.76</td> </tr> </table>		Result (mΩ)	Min	Max	Average	
Result (mΩ)	Min	Max	Average					
	11.4	16.3	13.76					
Solder ability	Dip soldered terminals into flux and melted solder as follows Solder temperature. 230±5 °C Solder time: 3±0.5 sec	95% of immersed area must show no voids, pin holes. (Exclusion on cutting side)	pass					
Resistance to Soldering Heat	The test shall be conducted under the following conditions. Re-flow soldering: It is a re-flow of the company recommendation method based on the company recommendation temperature profile setting. The measurement shall be	No physical damage must occur during the test	pass					

	made after going back to normal room temperature. Manual soldering: Wattage of soldering iron :15W; Diameter of soldering iron tip: $\phi$ 1mm; Temperature of soldering iron tip: 350±5°C; Soldering time: 3s max.										
Visual& Examination	Visually, functionally inspected per applicable product drawing.	1. Each area must be finished well and there must be not rust, scratches, cracks and inferior or peeling plating, etc. 2. That may prove harmful in terms of product function. 3. Product shall be conforming to the Requirements of applicable product Drawing.	pass								
Low level contact resistance	With regard to measurement, Conductor resistance down to the soldered. Parts of the terminals are included. 1. With dummy card (PCB) attached. 2. Apply 1mA, 20mV Max.	140 mΩ MAX  <table border="1"> <thead> <tr> <th>Result (mΩ)</th> <th>Min</th> <th>Max</th> <th>Average</th> </tr> </thead> <tbody> <tr> <td></td> <td>15.7</td> <td>21.5</td> <td>18.32</td> </tr> </tbody> </table>	Result (mΩ)	Min	Max	Average		15.7	21.5	18.32	pass
Result (mΩ)	Min	Max	Average								
	15.7	21.5	18.32								

### 3. Inclosure:

#### 3.1 Insertion & Withdrawal Test



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以下測試樣品係由申請廠商所提供及確認 (The following sample(s) was/were submitted and identified by/on behalf of the applicant as) :

送樣廠商(Sample Submitted By) : JX NIPPON OIL & ENERGY CORPORATION  
SPECIALTY CHEMICALS & MATERIALS COMPANY ORGANIZATION  
ADVANCED POLYMERS BUSINESS UNIT.  
樣品名稱(Sample Description) : LIQUID CRYSTAL POLYMER  
樣品型號(Style/Item No.) : XYDAR MG-350BPRL  
收件日期(Sample Receiving Date) : 2016/02/23  
測試期間(Testing Period) : 2016/02/23 TO 2016/03/04

### 測試需求(Test Requested) :

- (1) 依據客戶指定，參考RoHS2011/65/EU Annex II及其修訂指令(EU) 2015/863測試鎘、鉛、汞、六價鉻、多溴聯苯、多溴聯苯醚，DBP, BBP, DEHP, DIBP. (As specified by client, with reference to RoHS 2011/65/EU Annex II and amending Directive (EU) 2015/863 to determine Cadmium, Lead, Mercury, Cr(VI), PBBs, PBDEs, DBP, BBP, DEHP, DIBP contents in the submitted sample.)
- (2) 其他測試項目請見下一頁。(Please refer to next pages for the other item(s).)

測試結果(Test Results) : 請見下一頁 (Please refer to next pages).

結論(Conclusion) : (1) 根據客戶所提供的樣品，其鎘、鉛、汞、六價鉻、多溴聯苯、多溴聯苯醚，DBP, BBP, DEHP, DIBP的測試結果符合RoHS指令暨(EU) 2015/863之限值要求。(Based on the performed tests on submitted samples, the test results of Cadmium, Lead, Mercury, Cr(VI), PBBs, PBDEs, DBP, BBP, DEHP, DIBP comply with the limits as set by RoHS and amending Directive (EU) 2015/863.)

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

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### 測試結果(Test Results)

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

測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測 極限值 (MDL)	結果 (Result)	限值 (Limit)
				No. 1	
鎘 / Cadmium (Cd)	mg/kg	參考IEC 62321-5: 2013方法, 以感應 耦合電漿原子發射光譜儀檢測. / With reference to IEC 62321-5: 2013 and performed by ICP-AES.	2	n. d.	100
鉛 / Lead (Pb)	mg/kg	參考IEC 62321-5: 2013方法, 以感應 耦合電漿原子發射光譜儀檢測. / With reference to IEC 62321-5: 2013 and performed by ICP-AES.	2	3.14	1000
汞 / Mercury (Hg)	mg/kg	參考IEC 62321-4: 2013方法, 以感應 耦合電漿原子發射光譜儀檢測. / With reference to IEC 62321-4: 2013 and performed by ICP-AES.	2	n. d.	1000
六價鉻 / Hexavalent Chromium Cr(VI)	mg/kg	參考IEC 62321: 2008方法, 以UV-VIS 檢測. / With reference to IEC 62321: 2008 and performed by UV- VIS.	2	n. d.	1000
銻 / Antimony (Sb)	mg/kg	參考US EPA 3052方法, 以感應耦合電 漿原子發射光譜儀檢測. / With reference to US EPA Method 3052. Analysis was performed by ICP-AES.	2	n. d.	-
鈹 / Beryllium (Be)	mg/kg	參考US EPA 3052方法, 以感應耦合電 漿原子發射光譜儀檢測. / With reference to US EPA Method 3052. Analysis was performed by ICP-AES.	2	n. d.	-

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測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測 極限值 (MDL)	結果 (Result)	限值 (Limit)
				No. 1	
三氧化二銻 / Antimony trioxide (Sb <sub>2</sub> O <sub>3</sub> )* (CAS No. : 1309-64-4)	mg/kg	參考US EPA 3052方法, 以感應耦合電漿原子發射光譜儀檢測. / With reference to US EPA Method 3052. Analysis was performed by ICP-AES. **	-	n. d.	-
全氟辛烷磺酸 / Perfluorooctane sulfonates (PFOS-Acid, Metal Salt, Amide)	mg/kg	參考US EPA 3550C: 2007方法, 以液相層析/質譜儀檢測. / With reference to US EPA 3550C: 2007. Analysis was performed by LC/MS.	10	n. d.	-
全氟辛酸 / PFOA (CAS No. : 335-67-1)	mg/kg	參考US EPA 3550C: 2007方法, 以液相層析/質譜儀檢測. / With reference to US EPA 3550C: 2007. Analysis was performed by LC/MS.	10	n. d.	-
六溴環十二烷及所有主要被辨別出的異構物 / Hexabromocyclododecane (HBCDD) and all major diastereoisomers identified ( $\alpha$ -HBCDD, $\beta$ -HBCDD, $\gamma$ -HBCDD) (CAS No. : 25637-99-4 and 3194-55-6 (134237-51-7, 134237-50-6, 134237-52-8))	mg/kg	參考IEC 62321: 2008方法, 以氣相層析/質譜儀檢測. / With reference to IEC 62321: 2008 method. Analysis was performed by GC/MS.	5	n. d.	-
聚氯乙烯 / PVC	**	以紅外光譜分析及焰色法檢測. / Analysis was performed by FTIR and FLAME Test.	-	Negative	-
中鏈氯化石蠟 / Medium-Chained Chlorinated Paraffins (C14-C17) (MCCP) (CAS No. : 85535-85-9)	mg/kg	參考US EPA 3550C方法, 以氣相層析/質譜儀檢測. / With reference to US EPA 3550C method. Analysis was performed by GC/MS.	100	n. d.	-
五氯酚 / Pentachlorophenol (PCP) (CAS No. : 87-86-5)	mg/kg	參考US EPA 8041A方法, 以氣相層析/質譜儀檢測. / With reference to US EPA 8041A method. Analysis was performed by GC/MS.	1	n. d.	-

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測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測 極限值 (MDL)	結果 (Result)	限值 (Limit)
				No. 1	
鄰苯二甲酸丁苯甲酯 / BBP (Butyl Benzyl phthalate) (CAS No. : 85-68-7)	%	參考EN 14372, 以氣相層析/質譜儀檢測。 / With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n. d.	0.1
鄰苯二甲酸二(2-乙基己基)酯 / DEHP (Di-(2-ethylhexyl) phthalate) (CAS No. : 117-81-7)	%	參考EN 14372, 以氣相層析/質譜儀檢測。 / With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n. d.	0.1
鄰苯二甲酸二異癸酯 / DIDP (Di-isodecyl phthalate) (CAS No. : 26761-40-0; 68515-49-1)	%	參考EN 14372, 以氣相層析/質譜儀檢測。 / With reference to EN 14372. Analysis was performed by GC/MS.	0.01	n. d.	-
鄰苯二甲酸二異壬酯 / DINP (Di-isononyl phthalate) (CAS No. : 28553-12-0; 68515-48-0)	%	參考EN 14372, 以氣相層析/質譜儀檢測。 / With reference to EN 14372. Analysis was performed by GC/MS.	0.01	n. d.	-
鄰苯二甲酸二正辛酯 / DNOP (Di-n-octyl phthalate) (CAS No. : 117-84-0)	%	參考EN 14372, 以氣相層析/質譜儀檢測。 / With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n. d.	-
鄰苯二甲酸二丁酯 / DBP (Dibutyl phthalate) (CAS No. : 84-74-2)	%	參考EN 14372, 以氣相層析/質譜儀檢測。 / With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n. d.	0.1
鄰苯二甲酸二異丁酯 / DIBP (Di-isobutyl phthalate) (CAS No. : 84-69-5)	%	參考EN 14372, 以氣相層析/質譜儀檢測。 / With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n. d.	0.1
鄰苯二甲酸二正己酯 / DNHP (Di-n-hexyl phthalate) (CAS No. : 84-75-3)	%	參考EN 14372, 以氣相層析/質譜儀檢測。 / With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n. d.	-
鄰苯二甲酸二戊酯 / Di-n-pentyl phthalate (CAS No. : 131-18-0)	%	參考EN 14372, 以氣相層析/質譜儀檢測。 / With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n. d.	-

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測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測 極限值 (MDL)	結果 (Result)	限值 (Limit)
				No. 1	
<b>多溴聯苯總和 / Sum of PBBs</b>	mg/kg	參考 IEC 62321-6: 2015 方法, 以氣相層析/質譜儀檢測. / With reference to IEC 62321-6: 2015 and performed by GC/MS.	-	n. d.	1000
一溴聯苯 / Monobromobiphenyl	mg/kg		5	n. d.	-
二溴聯苯 / Dibromobiphenyl	mg/kg		5	n. d.	-
三溴聯苯 / Tribromobiphenyl	mg/kg		5	n. d.	-
四溴聯苯 / Tetrabromobiphenyl	mg/kg		5	n. d.	-
五溴聯苯 / Pentabromobiphenyl	mg/kg		5	n. d.	-
六溴聯苯 / Hexabromobiphenyl	mg/kg		5	n. d.	-
七溴聯苯 / Heptabromobiphenyl	mg/kg		5	n. d.	-
八溴聯苯 / Octabromobiphenyl	mg/kg		5	n. d.	-
九溴聯苯 / Nonabromobiphenyl	mg/kg		5	n. d.	-
十溴聯苯 / Decabromobiphenyl	mg/kg		5	n. d.	-
<b>多溴聯苯醚總和 / Sum of PBDEs</b>	mg/kg		-	n. d.	1000
一溴聯苯醚 / Monobromodiphenyl ether	mg/kg		5	n. d.	-
二溴聯苯醚 / Dibromodiphenyl ether	mg/kg		5	n. d.	-
三溴聯苯醚 / Tribromodiphenyl ether	mg/kg		5	n. d.	-
四溴聯苯醚 / Tetrabromodiphenyl ether	mg/kg		5	n. d.	-
五溴聯苯醚 / Pentabromodiphenyl ether	mg/kg		5	n. d.	-
六溴聯苯醚 / Hexabromodiphenyl ether	mg/kg		5	n. d.	-
七溴聯苯醚 / Heptabromodiphenyl ether	mg/kg		5	n. d.	-
八溴聯苯醚 / Octabromodiphenyl ether	mg/kg		5	n. d.	-
九溴聯苯醚 / Nonabromodiphenyl ether	mg/kg	5	n. d.	-	
十溴聯苯醚 / Decabromodiphenyl ether	mg/kg	5	n. d.	-	

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# 測試報告

# Test Report

號碼(No.) : CE/2016/24181

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JX NIPPON OIL & ENERGY CORPORATION  
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 ADVANCED POLYMERS BUSINESS UNIT.  
 3-1, YAKO 2-CHOME, KAWASAKI - KU, KAWASAKI CITY 210-8545 JAPAN

測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測 極限值 (MDL)	結果 (Result)	限值 (Limit)
				No. 1	
鹵素 / Halogen					
鹵素 (氟) / Halogen-Fluorine (F) (CAS No. : 14762-94-8)	mg/kg	參考BS EN 14582:2007, 以離子層析儀 分析. / With reference to BS EN 14582:2007. Analysis was performed by IC.	50	346	-
鹵素 (氯) / Halogen-Chlorine (Cl) (CAS No. : 22537-15-1)	mg/kg		50	n. d.	-
鹵素 (溴) / Halogen-Bromine (Br) (CAS No. : 10097-32-2)	mg/kg		50	n. d.	-
鹵素 (碘) / Halogen-Iodine (I) (CAS No. : 14362-44-8)	mg/kg		50	n. d.	-

### 備註(Note) :

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

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

PFOS濃度在物質或製備中不得超過0.001%(10ppm), 在半成品、成品或零部件中不得超過0.1%(1000ppm), 在紡織品或塗層材料中不得超過1µg/m<sup>2</sup>。

(Outlawing PFOS as substances or preparations in concentrations above 0.001% (10ppm), in semi-finished products or articles or parts at a level above 0.1%(1000ppm), in textiles or other coated materials above 1µg/m<sup>2</sup>.)

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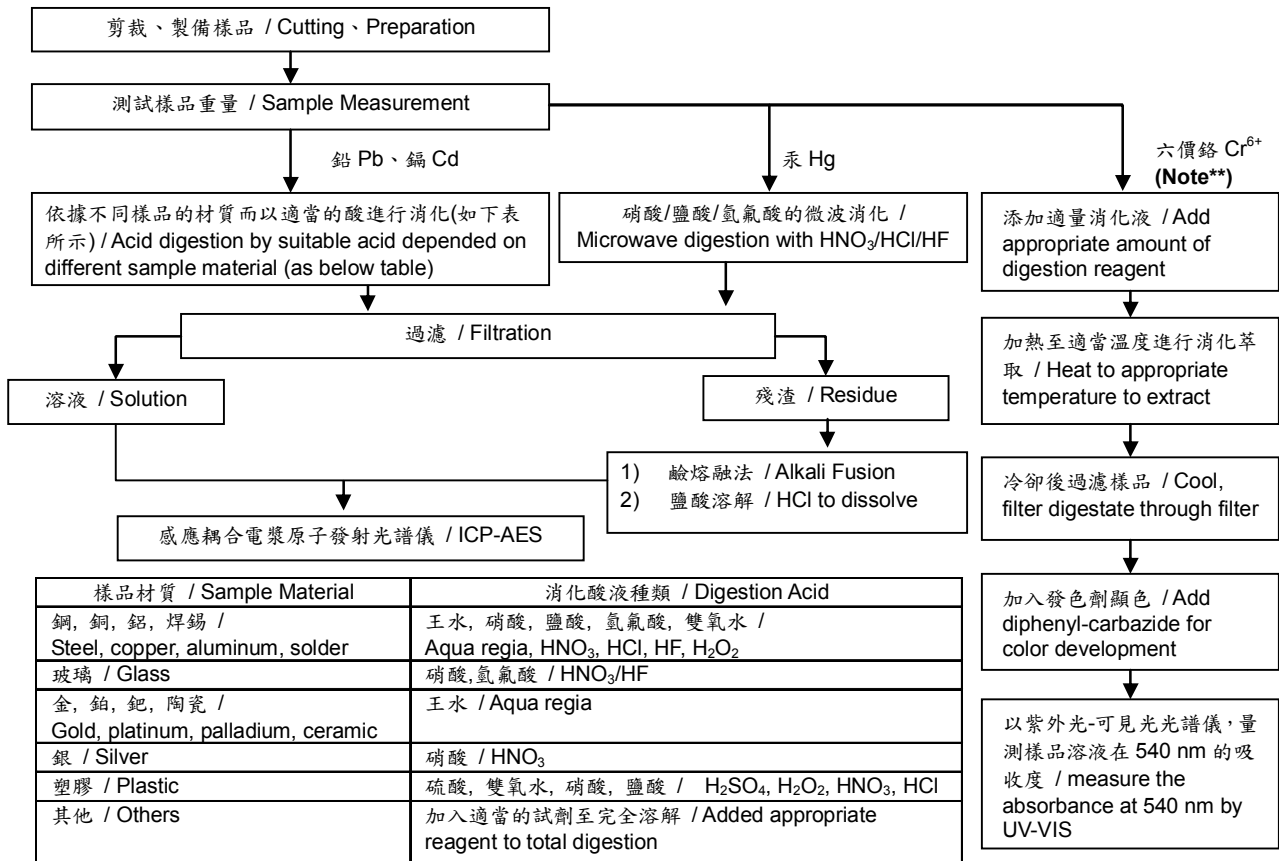


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根據以下的流程圖之條件，樣品已完全溶解。(六價鉻測試方法除外)

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

- 測試人員：楊登偉 / Technician : Climbgreat Yang
- 測試負責人：張啟興 / Supervisor: Troy Chang



**Note\*\* (For IEC 62321)**

- (1) 針對非金屬材料加入鹼性消化液，加熱至 90~95°C 萃取。 / For non-metallic material, add alkaline digestion reagent and heat to 90~95°C.
- (2) 針對金屬材料加入純水，加熱至沸騰萃取。 / For metallic material, add pure water and heat to boiling.

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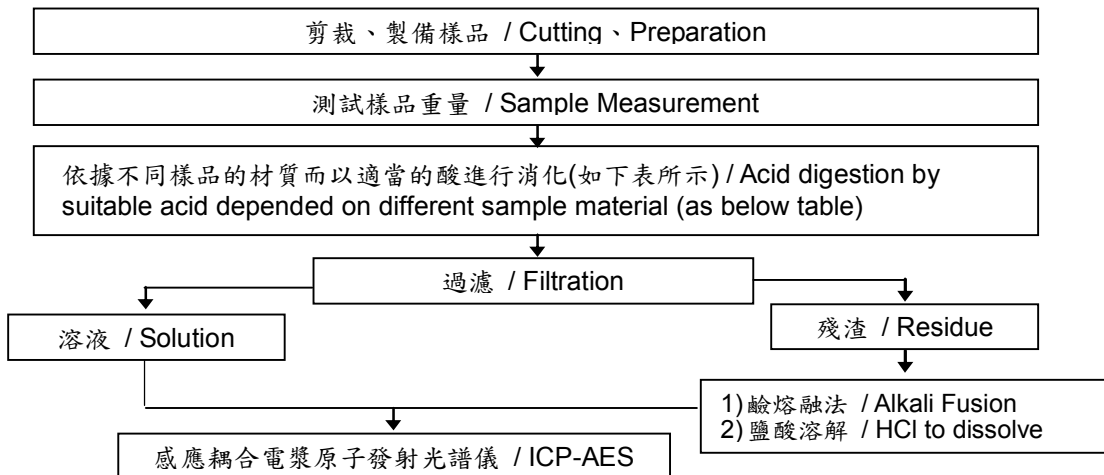


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根據以下的流程圖之條件，樣品已完全溶解。 / These samples were dissolved totally by pre-conditioning method according to below flow chart.

- 測試人員：楊登偉 / Technician: Climbgreat Yang
- 測試負責人：張啟興 / Supervisor: Troy Chang

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



鋼,銅,鋁,焊錫 / Steel, copper, aluminum, solder	王水,硝酸,鹽酸,氫氟酸,雙氧水 / Aqua regia, HNO <sub>3</sub> , HCl, HF, H <sub>2</sub> O <sub>2</sub>
玻璃 / Glass	硝酸,氫氟酸 / HNO <sub>3</sub> /HF
金,鉑,鈀,陶瓷 / Gold, platinum, palladium, ceramic	王水 / Aqua regia
銀 / Silver	硝酸 / HNO <sub>3</sub>
塑膠 / Plastic	硫酸,雙氧水,硝酸,鹽酸 / H <sub>2</sub> SO <sub>4</sub> , H <sub>2</sub> O <sub>2</sub> , HNO <sub>3</sub> , HCl
其他 / Others	加入適當的試劑至完全溶解 / Added appropriate reagent to total digestion

## 測試報告

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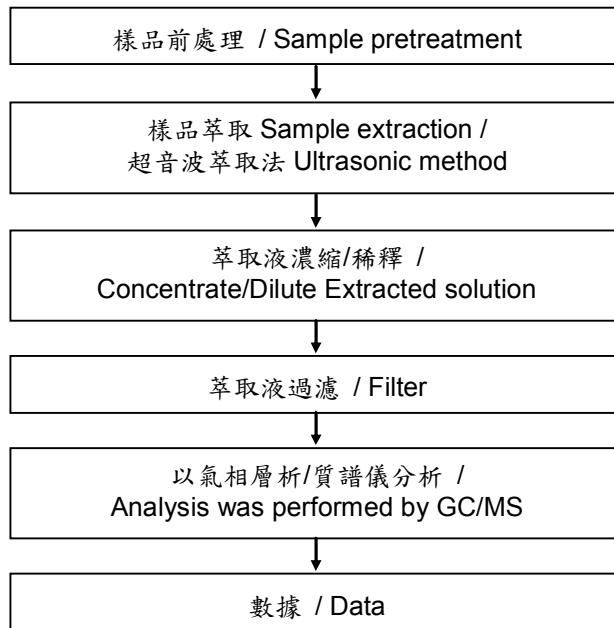
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### 氯化石蠟分析流程圖 / Chlorinated Paraffins analytical flow chart

- 測試人員：林建宇 / Technician: Roy Lin
- 測試負責人：張啟興 / Supervisor: Troy Chang



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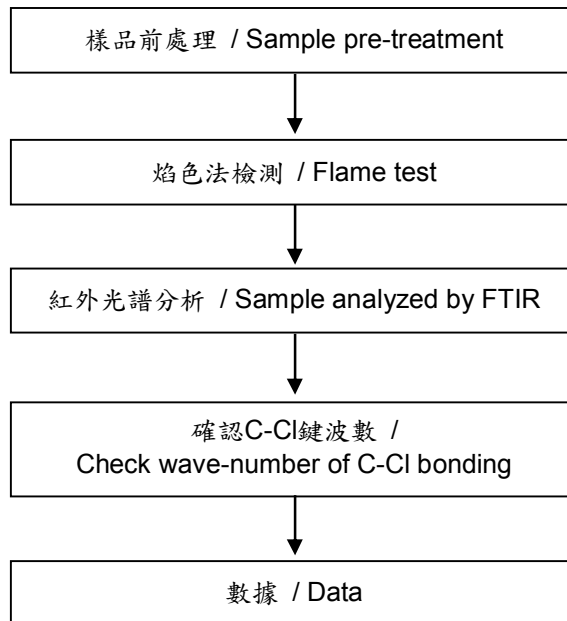


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### 聚氯乙稀物質判定分析流程圖 /

#### Analysis flow chart for determination of PVC in material

- 測試人員：林建宇 / Technician: Roy Lin
- 測試負責人：張啟興 / Supervisor: Troy Chang



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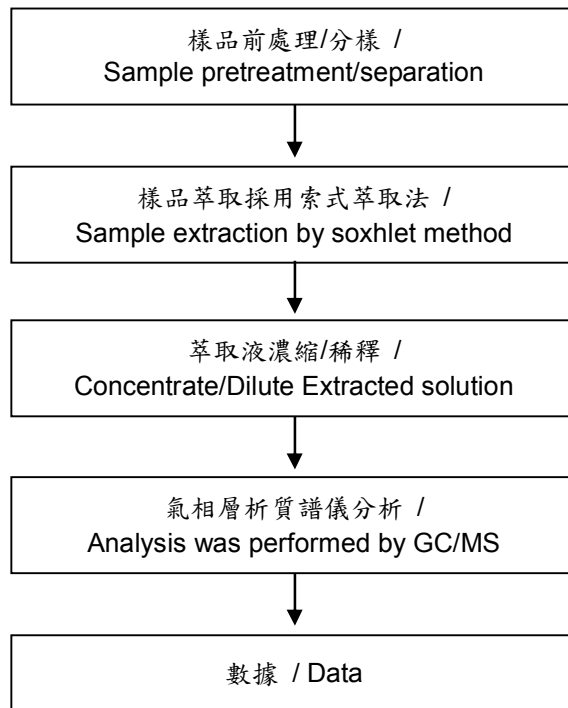


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### 可塑劑分析流程圖 / Analytical flow chart of phthalate content

- 測試人員：翁賜彬 / Technician: Roman Wong
- 測試負責人：張啟興 / Supervisor: Troy Chang

#### 【測試方法/Test method: EN 14372】



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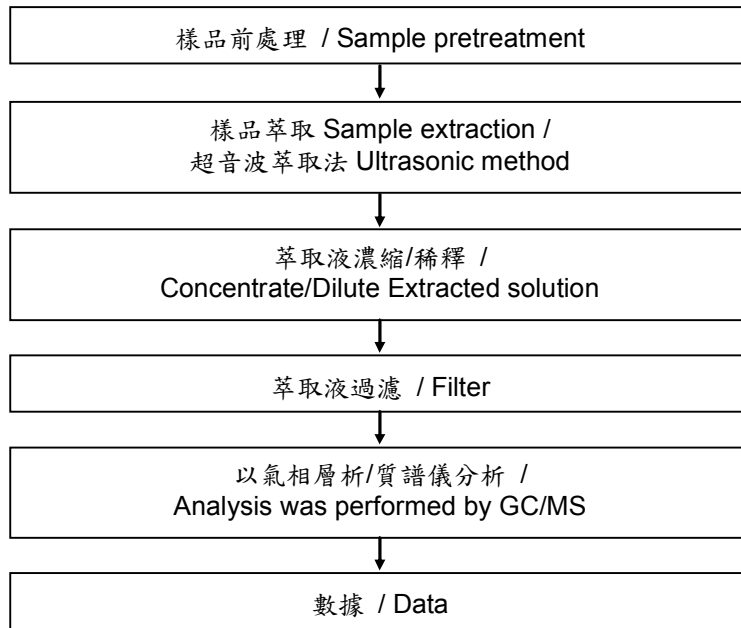
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### 六溴環十二烷分析流程圖 / HBCDD analytical flow chart

- 測試人員：翁賜彬 / Technician: Roman Wong
- 測試負責人：張啟興 / Supervisor: Troy Chang



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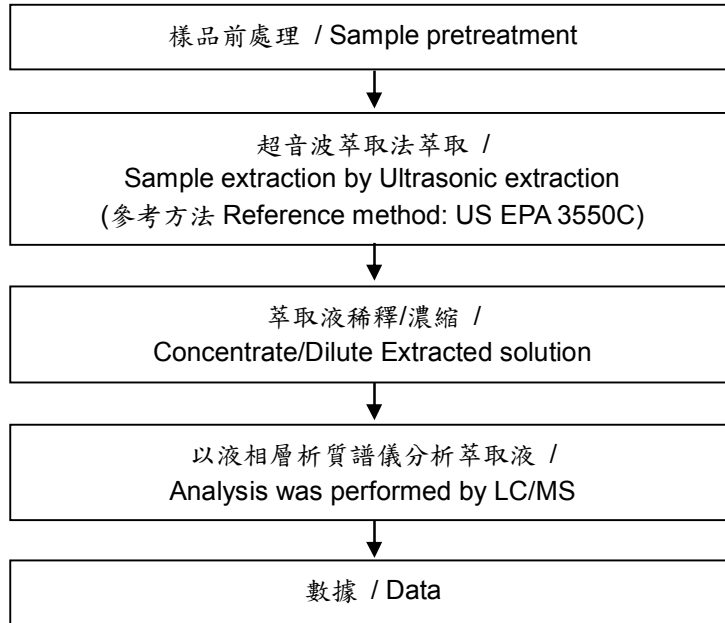
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### 全氟辛酸/全氟辛烷磺酸分析流程圖 / PFOA/PFOS analytical flow chart

- 測試人員：翁賜彬 / Technician: Roman Wong
- 測試負責人：張啟興 / Supervisor: Troy Chang



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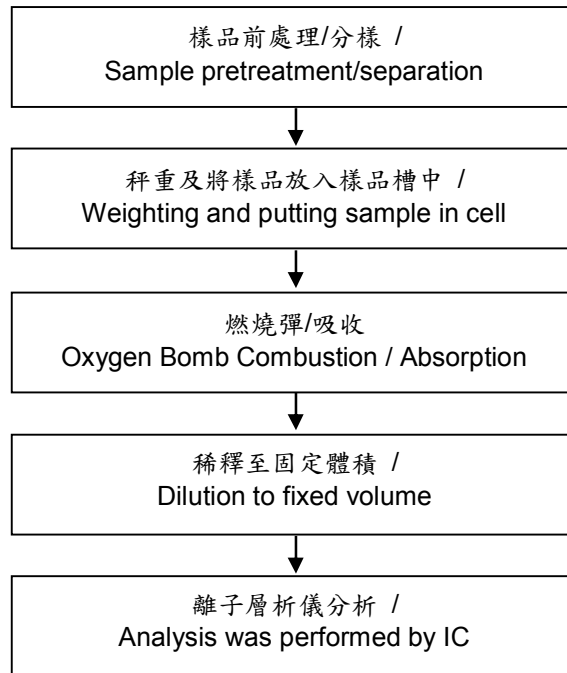
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### 鹵素分析流程圖 / Analytical flow chart of halogen content

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



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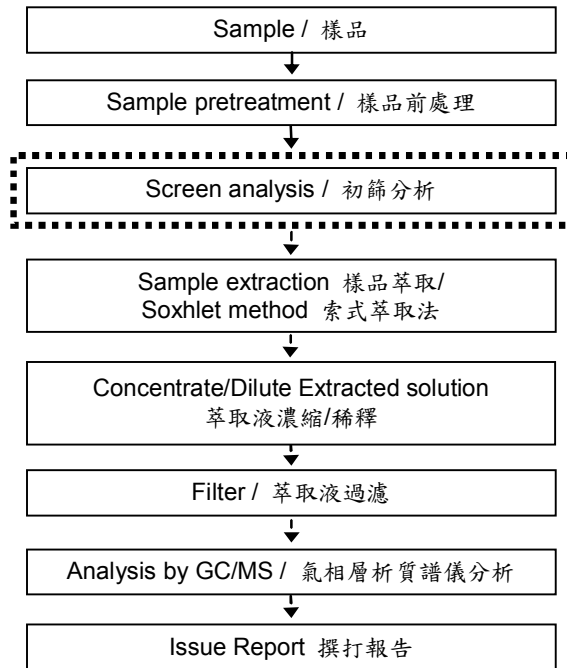


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### 多溴聯苯/多溴聯苯醚分析流程圖 / PBB/PBDE analytical FLOW CHART

- 測試人員：翁賜彬 / Technician: Roman Wong
- 測試負責人：張啟興 / Supervisor: Troy Chang

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



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

### CE/2016/24181



\*\* 報告結尾 (End of Report) \*\*



佛山市顺德区世隆精密金属有限公司  
中国佛山市顺德区陈村镇石州工业区13号之一

以下测试之样品是由申请者所提供及确认: 304

SGS工作编号: CP16-001396 - GZ

样品接收日期: 2016年01月08日

测试周期: 2016年01月08日 - 2016年01月13日

测试要求: 根据客户要求测试

测试方法: 请参见下一页

测试结果: 请参见下一页

结论: 基于所送样品进行的测试, 镉、铅、汞、六价铬、多溴联苯(PBBs)、多溴二苯醚(PBDEs)的测试结果符合欧盟RoHS指令2011/65/EU附录II的修正指令(EU) 2015/863的限值要求。

通标标准技术服务有限公司广州分公司  
授权签名

张浩华

Trophy Zhang 张浩华  
批准签署人

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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)

测试结果:

测试样品描述:

SN1

CAN16-004759.003

银灰色金属片(3#)

备注:

- (1) 1 mg/kg = 0.0001%
- (2) MDL = 方法检测限
- (3) ND = 未检出 (< MDL)
- (4) "-" = 未规定

测试方法:

- (1)参考IEC 62321-5:2013, 用ICP-OES测定镉的含量
- (2)参考IEC 62321-5:2013, 用ICP-OES测定铅的含量
- (3)参考IEC 62321-4:2013, 用ICP-OES测定汞的含量
- (4)参考IEC 62321-7-1:2015, 用紫外-可见分光光度计比色法测定六价铬的含量
- (5)参考IEC 62321-6:2015, 用GC-MS测定PBBs(多溴联苯)和PBDEs(多溴二苯醚)的含量

测试项目	限值	单位	MDL	003
镉 (Cd)	100	mg/kg	2	ND
铅 (Pb)	1,000	mg/kg	2	ND
汞 (Hg)	1,000	mg/kg	2	ND
六价铬(Cr(VI))▼	-	µg/cm <sup>2</sup>	0.10	ND
多溴联苯之和(PBBs)	1,000	mg/kg	-	ND
一溴联苯	-	mg/kg	5	ND
二溴联苯	-	mg/kg	5	ND
三溴联苯	-	mg/kg	5	ND
四溴联苯	-	mg/kg	5	ND
五溴联苯	-	mg/kg	5	ND
六溴联苯	-	mg/kg	5	ND
七溴联苯	-	mg/kg	5	ND
八溴联苯	-	mg/kg	5	ND
九溴联苯	-	mg/kg	5	ND
十溴联苯	-	mg/kg	5	ND
多溴二苯醚之和(PBDEs)	1,000	mg/kg	-	ND
一溴二苯醚	-	mg/kg	5	ND
二溴二苯醚	-	mg/kg	5	ND



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测试项目	限值	单位	MDL	003
三溴二苯醚	-	mg/kg	5	ND
四溴二苯醚	-	mg/kg	5	ND
五溴二苯醚	-	mg/kg	5	ND
六溴二苯醚	-	mg/kg	5	ND
七溴二苯醚	-	mg/kg	5	ND
八溴二苯醚	-	mg/kg	5	ND
九溴二苯醚	-	mg/kg	5	ND
十溴二苯醚	-	mg/kg	5	ND

备注:

- (1) 最大允许极限值引用自RoHS指令(EU) 2015/863。
- (2) ▼=a. 当六价格的浓度高于0.13  $\mu\text{g}/\text{cm}^2$ 时, 样品为阳性, 即含有六价格;
  - b. 当六价格的浓度为ND(低于0.10  $\mu\text{g}/\text{cm}^2$ )时, 样品为阴性, 即未检测到六价格;
  - c. 当六价格的浓度介于0.10  $\mu\text{g}/\text{cm}^2$ 与0.13  $\mu\text{g}/\text{cm}^2$ 之间时, 无法直接判定是否检测到六价格, 因不同个体的样品表面差异可能会影响测定结果;

由于未获知样品的存储条件和生产日期, 样品的六价格测试结果仅能代表测试时样品含六价格的状态。

IEC 62321 系列等同于 EN 62321 系列

[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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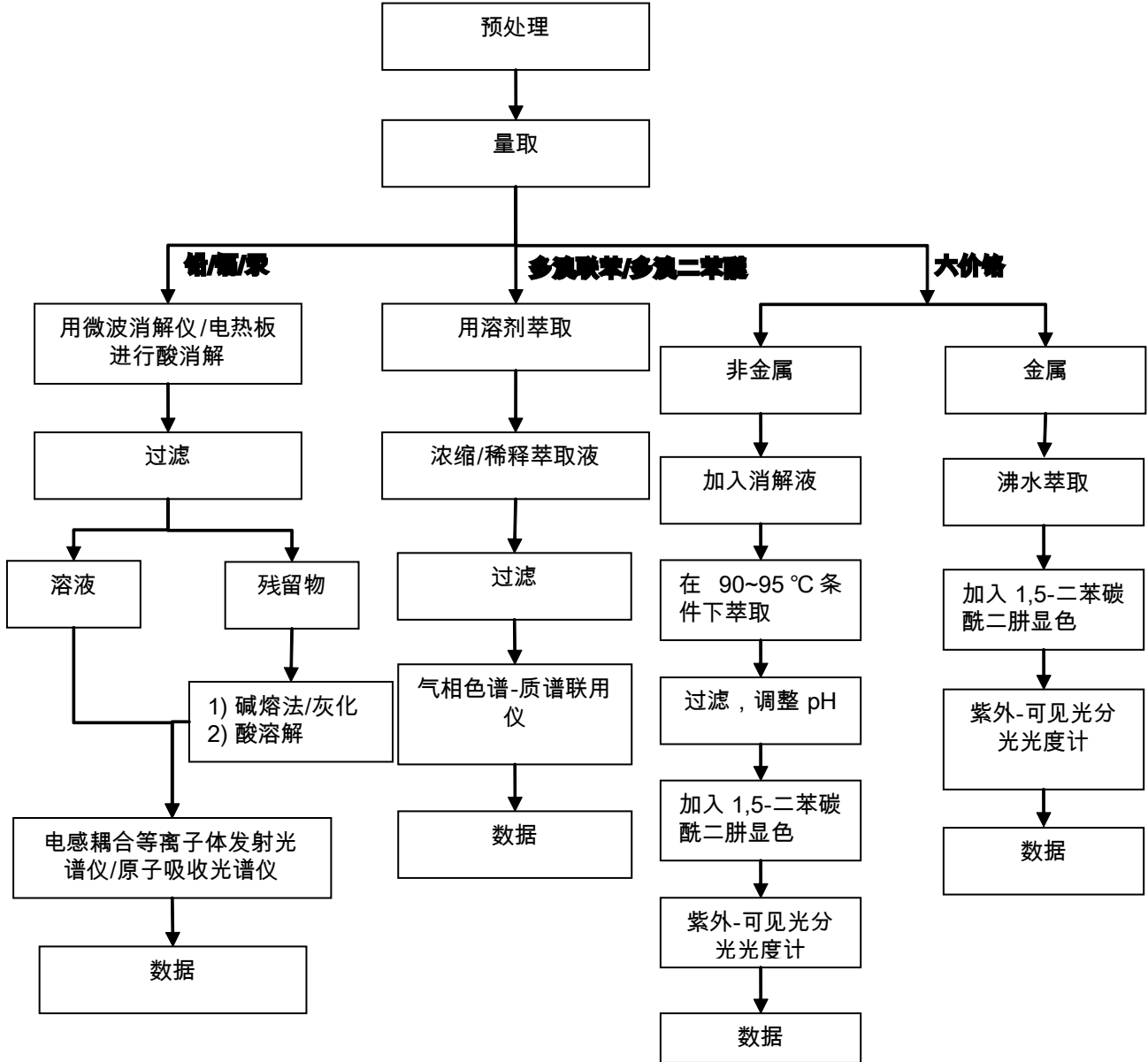
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## 附件

### Pb/Cd/Hg/Cr<sup>6+</sup>/PBBs/PBDEs 测试流程图

- 1) 分析人员: 肖戈 / 胡香云
- 2) 项目负责人: 汪丹 / 余晓璐
- 3) 样品按照下述流程被完全消解 (六价铬和多溴联苯 / 多溴二苯醚测试除外)。





样品照片:



此照片仅限于随SGS正本报告使用

\*\*\* 报告完 \*\*\*



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DONGGUAN CITY JIN LE METAL MATERIAL CO., LTD  
DONGGUAN CITY CHANGAN SHATOU COMMUNITY IN YUCHENG ROAD NO.22

The following sample(s) was/were submitted and identified on behalf of the clients as : C5210

SGS Job No. : GZIN1512055833PC - GZ  
Date of Sample Received : 24 Dec 2015  
Testing Period : 24 Dec 2015 - 31 Dec 2015  
Test Requested : Selected test(s) as requested by client.  
Test Method : Please refer to next page(s).  
Test Results : Please refer to next page(s).  
Conclusion : Based on the performed tests on submitted sample(s), the results of Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs) comply with the limits as set by RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU.

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



Merry Lv  
Approved Signatory



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Test Results :

Test Part Description :



SN1



CAN15-225329.002



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

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.  
 (5)With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.

Test Item(s)	Limit	Unit	MDL	002
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1,000	mg/kg	2	11
Mercury (Hg)	1,000	mg/kg	2	ND
Hexavalent Chromium (Cr(VI))▼	-	µg/cm <sup>2</sup>	0.10	ND
Sum of PBBs	1,000	mg/kg	-	ND
Monobromobiphenyl	-	mg/kg	5	ND
Dibromobiphenyl	-	mg/kg	5	ND
Tribromobiphenyl	-	mg/kg	5	ND
Tetrabromobiphenyl	-	mg/kg	5	ND
Pentabromobiphenyl	-	mg/kg	5	ND
Hexabromobiphenyl	-	mg/kg	5	ND
Heptabromobiphenyl	-	mg/kg	5	ND
Octabromobiphenyl	-	mg/kg	5	ND
Nonabromobiphenyl	-	mg/kg	5	ND
Decabromobiphenyl	-	mg/kg	5	ND
Sum of PBDEs	1,000	mg/kg	-	ND
Monobromodiphenyl ether	-	mg/kg	5	ND



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<u>Test Item(s)</u>	<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>002</u>
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

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/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.  
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)



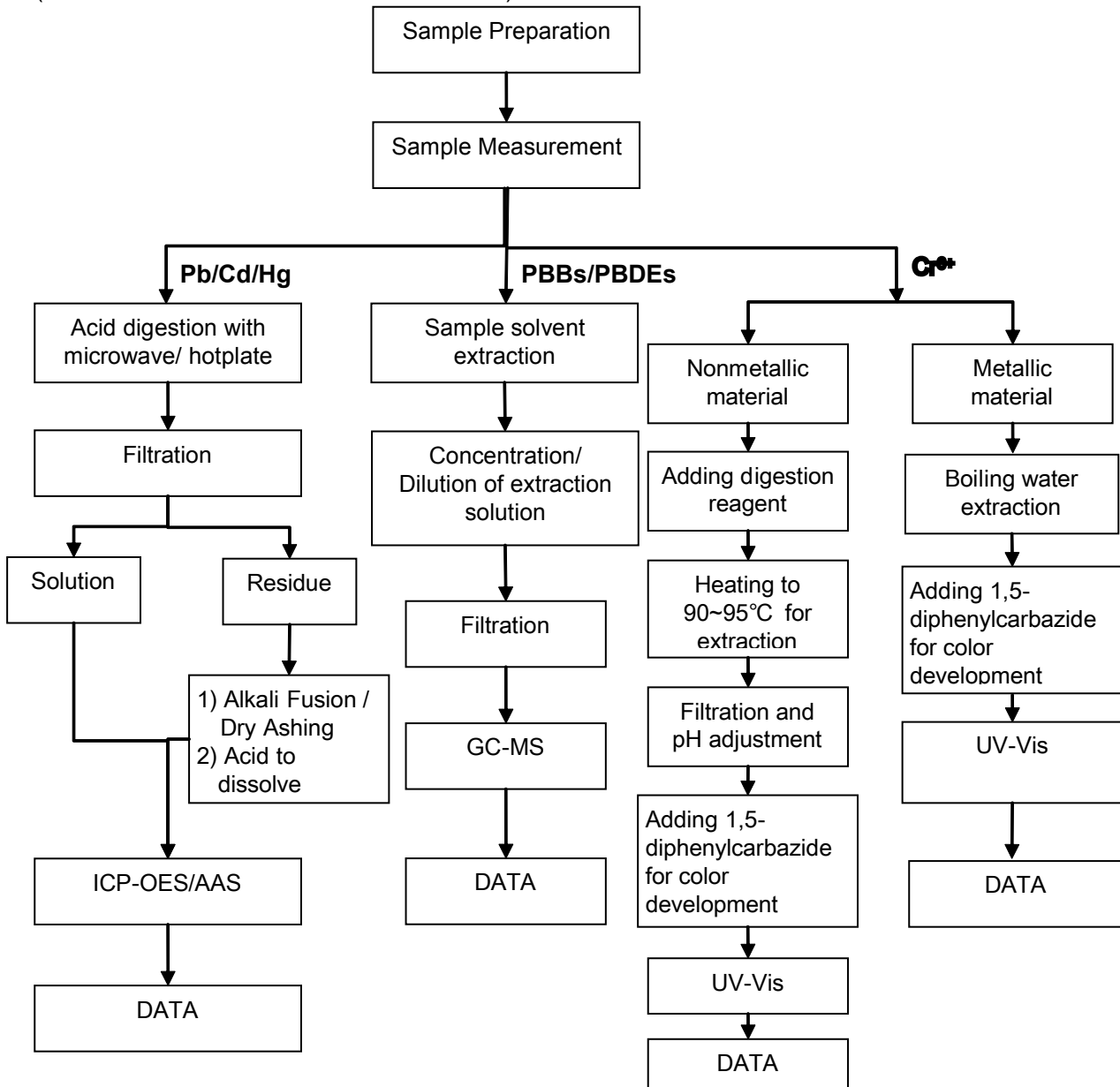
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## ATTACHMENTS

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

- 1) Name of the person who made testing: Bruce Xiao / Sunny Hu
- 2) Name of the person in charge of testing: Bella Wang / Cutey Yu
- 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).

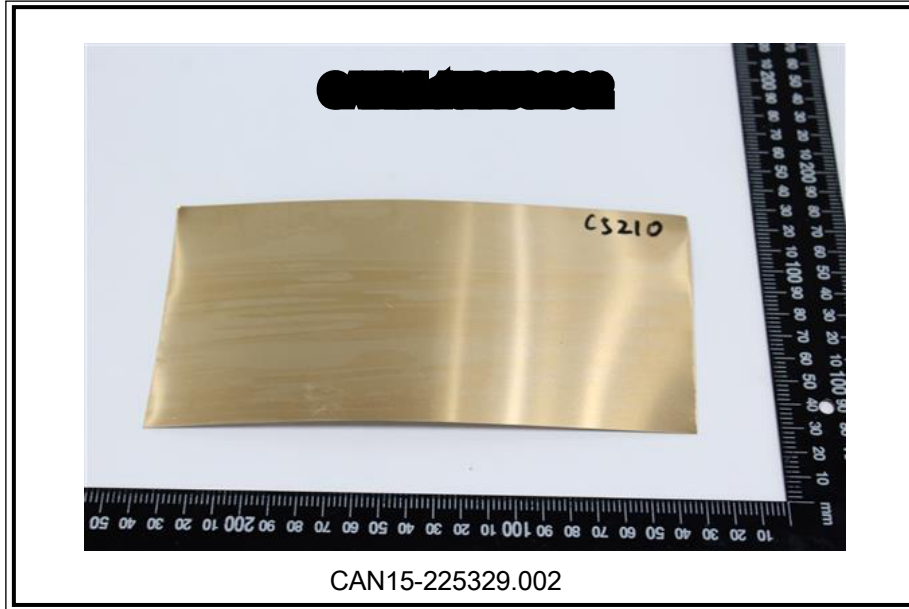


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