

# Specification for Approval

**Date:** 2014/06/03

**Customer :** 東莞台慶

**TAI-TECH P/N:** SSL6D28SF-SERIES

**CUSTOMER P/N:** \_\_\_\_\_

**DESCRIPTION:** \_\_\_\_\_

**QUANTITY:** \_\_\_\_\_ pcs

<b>REMARK:</b>		
Customer Approval Feedback		

西北臺慶科技股份有限公司  
**TAI-TECH Advanced Electronics Co., Ltd**

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# SMD Type Power Inductor

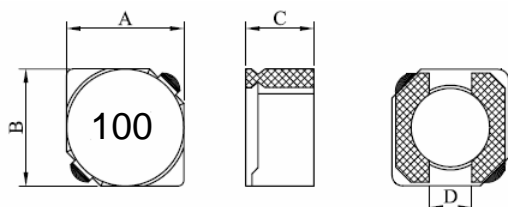
**SSL6D28SF-SERIES**

## 1. Features

- 1.Low profile very effective in space-conscious applications.
- 2.Low resistance and high energy storage.
- 3.100% Lead(Pb) & Halogen-Free and RoHS compliant.



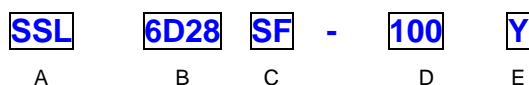
## 2. Dimension



Series	A(mm)	B(mm)	C(mm)	D(mm)
SSL6D28SF	7.1 max.	7.1 max.	3.0 max.	2.0 ref.

Units: mm

## 3. Part Numbering



A: Series (the tin clip)

B: Dimension

C: Lead free type

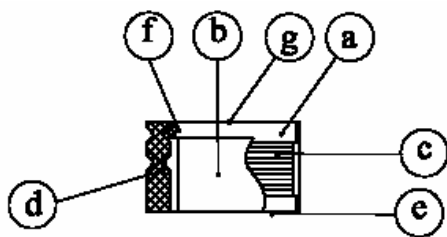
D: Inductance                      100=10.0uH , 3R0=3.0uH, 101=100uH

E: Inductance Tolerance            Y=±30%

## 4. Specification

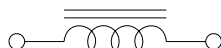
Customer Part Number	TAI-TECH Part Number	Inductance (uH)	Tolerance (%)	Test Frequency (Hz)	DCR (Ω) max.	IDC (A) max.
	SSL 6D28SF-3R0Y	3.0	± 30%	0.1V/10K	0.024	3.00
	SSL 6D28SF-3R9Y	3.9	± 30%	0.1V/10K	0.027	2.60
	SSL 6D28SF-5R0Y	5.0	± 30%	0.1V/10K	0.031	2.40
	SSL 6D28SF-6R0Y	6.0	± 30%	0.1V/10K	0.035	2.25
	SSL 6D28SF-7R3Y	7.3	± 30%	0.1V/10K	0.054	2.10
	SSL 6D28SF-8R6Y	8.6	± 30%	0.1V/10K	0.058	1.85
	SSL 6D28SF-100M	10	±20%	0.1V/10K	0.065	1.70
	SSL 6D28SF-120M	12	±20%	0.1V/10K	0.070	1.55
	SSL 6D28SF-150M	15	±20%	0.1V/10K	0.084	1.40
	SSL 6D28SF-180M	18	±20%	0.1V/10K	0.095	1.32
	SSL 6D28SF-220M	22	±20%	0.1V/10K	0.128	1.20
	SSL 6D28SF-270M	27	±20%	0.1V/10K	0.142	1.05
	SSL 6D28SF-330M	33	±20%	0.1V/10K	0.165	0.97
	SSL 6D28SF-390M	39	±20%	0.1V/10K	0.210	0.86
	SSL 6D28SF-470M	47	±20%	0.1V/10K	0.238	0.80
	SSL 6D28SF-560M	56	±20%	0.1V/10K	0.277	0.73
	SSL 6D28SF-680M	68	±20%	0.1V/10K	0.304	0.65
	SSL 6D28SF-820M	82	±20%	0.1V/10K	0.390	0.60
	SSL 6D28SF-101M	100	±20%	0.1V/10K	0.535	0.54

5. Material List



No.	Item	Materials
a.	Core	Ferrite Core (DR Type)
b.	Core	Ferrite Core (RI Type)
c.	Wire	Copper Wire
d.	Terminal	The Tin Plate
e.	Adhesive	Epoxy
f.	Adhesive	Epoxy
g.	Ink	White

6. Schematic Diagram



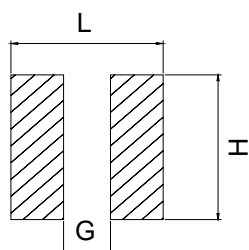
7. Reliability and Test Condition

Item	Performance	Test Condition															
Operating Temperature	-40~+85°C																
Storage temperature	-40~+85°C (For products in unopened tape package, less than 40°C)																
Rated Current	Base on temp. rise & $\Delta L/LOA \leq 35\%$																
Temperature Rise Test	40°C typ. ( $\Delta t$ )																
Solder heat Resistance	Appearance: No significant abnormality. Inductance change: Within $\pm 20\%$ .	<p>Preheat: 150°C, 60sec. Solder : Sn-Ag3.0-Cu0.5 Solder temperature: 260±5°C Flux: rosin Dip time: 10±0.5sec.</p>															
Solderability	More than 90% of the terminal electrode should be covered with solder.	<p>Preheat: 125±25°C, 60sec. Solder : Sn-Ag3.0-Cu0.5 Solder temperature: 245±5°C Flux: rosin Dip time: 4±1sec.</p>															
Thermal shock	Appearance: no damage. Inductance: within $\pm 10\%$ of initial value.	<table border="1"> <thead> <tr> <th>Phase</th> <th>Temperature(°C)</th> <th>Time(min)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-55±2°C</td> <td>30±3</td> </tr> <tr> <td>2</td> <td>Room Temp.</td> <td>5</td> </tr> <tr> <td>3</td> <td>+85±2°C</td> <td>30±3</td> </tr> <tr> <td>4</td> <td>Room Temp.</td> <td>5</td> </tr> </tbody> </table> <p>For SSL Condition for 1 cycle Step1: -55±2°C 30±3 min. Step2: Room temperature 5 min. Step3: +85±2°C 30±3 min. Step4: Room temperature 5 min. Number of cycles: 100 (MIL-STD-202G METHOD 107)</p>	Phase	Temperature(°C)	Time(min)	1	-55±2°C	30±3	2	Room Temp.	5	3	+85±2°C	30±3	4	Room Temp.	5
Phase	Temperature(°C)	Time(min)															
1	-55±2°C	30±3															
2	Room Temp.	5															
3	+85±2°C	30±3															
4	Room Temp.	5															

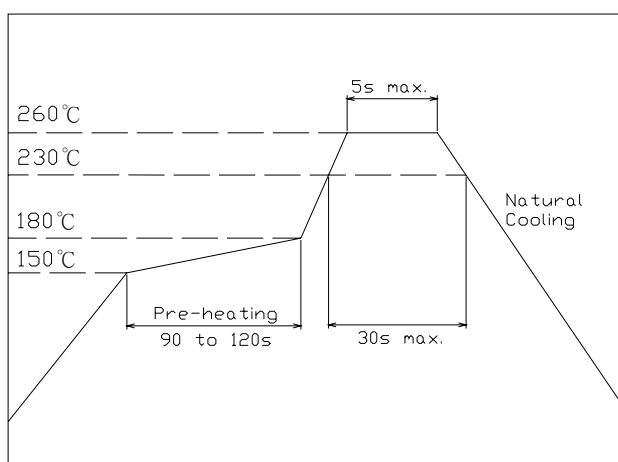
Measured: 100 times

Item	Performance	Test Condition
Humidity Resistance Test	Appearance: no damage. Inductance: within±10%of initial value.	Temperature:40±2°C. Applied current:rated current. Duration:500±8 hrs. Humidity:90-95% (MIL-STD-202G METHOD 103)
High Temperature Resistance Test	Appearance: no damage. Inductance: within±10%of initial value.	Temperature:85±2°C. Applied current:rated current. Duration:500±8 hrs. (MIL-STD-202G METHOD 108)
Random Vibration Test	Appearance: Cracking, shipping and any other defects harmful to the characteristics should not be allowed. Inductance: within±30%	Frequency: 10-55-10Hz for 1 min. Amplitude: 1.52mm Directions and times: X, Y, Z directions for 2 hours. A period of 2 hours in each of 3 mutually perpendicular directions (Total 6 hours).

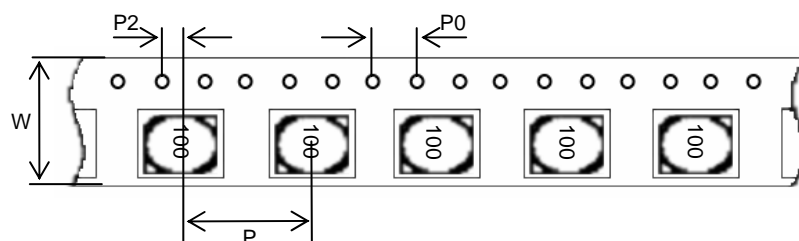
### 8. Recommended PC Board Pattern



L(mm)	G(mm)	H(mm)
7.3	2.0	7.3



## 9. Packaging Information



Style	W(mm)	P(mm)	P2(mm)	D(mm)	Po(mm)	Packaging Qty(pcs)
16mm	16±0.3	12±0.1	2±0.1	1.5±0.25	4±0.1	1,000

### **Application Notice**

#### • Storage Conditions

To maintain the solderability of terminal electrodes:

1. TAI-TECH products meet IPC/JEDEC J-STD-020D standard-MSL, level 1
2. Temperature and humidity conditions: Less than 40°C and 60% RH.
3. Recommended products should be used within 12 months form the time of delivery.
4. The packaging material should be kept where no chlorine or sulfur exists in the air.

#### • Transportation

1. Products should be handled with care to avoid damage or contamination from perspiration and skin oils.
2. The use of tweezers or vacuum pick up is strongly recommended for individual components.
3. Bulk handling should ensure that abrasion and mechanical shock are minimized.

# 測試報告 Test Report

號碼(No.) : CE/2014/23202 日期(Date) : 2014/02/24 頁數(Page) : 1 of 11

西北臺慶科技股份有限公司 / TAI-TECH ADVANCED ELECTRONICS CO., LTD.



(東莞臺慶精密電子有限公司 / TAI-TECH ADVANCED ELECTRONICS (DONGGUAN) CO. LTD.)

(臺慶精密電子(昆山)有限公司 / TAI-TECH ADVANCED ELECTRONICS (KUN-SHAN) CO. LTD.)

(耀鑽科技股份有限公司 / YOSONIC TECHNOLOGY CO., LTD.)

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(桃園縣中壢市中壢工業區長春六路15號 / NO. 15, CHANGCHUN 6TH RD., JHONGLI CITY, TAOYUAN COUNTY 320, TAIWAN)

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):

樣品名稱(Sample Description) : WIREWOUND POWER INDUCTOR  
樣品型號(Style/Item No.) : SSL, SPL, SSLM, SDSW, SDSL, SDSG SERIES  
收件日期(Sample Receiving Date) : 2014/02/17  
測試期間(Testing Period) : 2014/02/17 TO 2014/02/24

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

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 : 整體混測 (MIXED ALL PARTS)

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)
				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	2	n.d.
鉛 / Lead (Pb)	mg/kg	reference to IEC 62321-5: 2013 and performed by ICP-AES.	2	n.d.
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	2	n.d.
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.
六溴環十二烷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.

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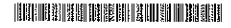


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測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測 極限值 (MDL)	結果 (Result)
				No. 1
鄰苯二甲酸二正丁基酯 / BBP (Benzyl butyl phthalate) (CAS No.: 85-68-1)	%	參考EN 14372, 以氣相層析/質譜儀檢測之。 / With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n.d.
鄰苯二甲酸二(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/質譜儀檢測之。 / With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n.d.
鄰苯二甲酸二異癸基酯 / DIDP (Di- isodecyl phthalate) (CAS No.: 26761-40-4; 68515-49-1)	%	參考EN 14372, 以氣相層析/質譜儀檢測之。 / With reference to EN 14372. Analysis was performed by GC/MS.	0.01	n.d.
鄰苯二甲酸二壬基酯 / DINP (Di- isononyl phthalate) (CAS No.: 28553-12-8; 6515-18-0)	%	參考EN 14372, 以氣相層析/質譜儀檢測之。 / With reference to EN 14372. Analysis was performed by GC/MS.	0.01	n.d.
鄰苯二甲酸二辛基酯 / DNOP (Di-n- octyl phthalate) (CAS No.: 117- 84-0)	%	參考EN 14372, 以氣相層析/質譜儀檢測之。 / With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n.d.
鄰苯二甲酸二丁基酯 / DBP (Dibutyl phthalate) (CAS No.: 84-74-2)	%	參考EN 14372, 以氣相層析/質譜儀檢測之。 / With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n.d.
鄰苯二甲酸二異丁基酯 / DIBP (Di- isobutyl phthalate) (CAS No.: 84- 69-5)	%	參考EN 14372, 以氣相層析/質譜儀檢測之。 / With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n.d.

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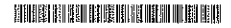


# 測試報告

## Test Report

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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)
				No.1
多溴聯苯 / Sum of PBBs	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 and performed by GC/MS.	-	n.d.
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.
多溴聯苯醚 / Sum of PBDEs	mg/kg		-	n.d.
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

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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)
				No.1
鹵素 / Halogens				
鹵素 (氟) Halogen-Fluorine (F) (CAS No.: 14702-94-8)	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 GC.	50	n.d.
鹵素 (氯) Halogen-Chlorine (Cl) (CAS No.: 7782-50-5)	mg/kg		50	n.d.
鹵素 (溴) Halogen-Bromine (Br) (CAS No.: 7747-32-2)	mg/kg		50	n.d.
鹵素 (碘) Halogen-Iodine (I) (CAS No.: 7553-51-8)	mg/kg		50	n.d.

### 備註(Notes)

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. 請注意：本報告是基於申請人要求混合測試，在其中的混合測試結果不代表其中個別單一材質的含量。(The samples were analysed on behalf of the applicant as mixing sample in one testing. The above results were only given as the information value.)

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## Test Report

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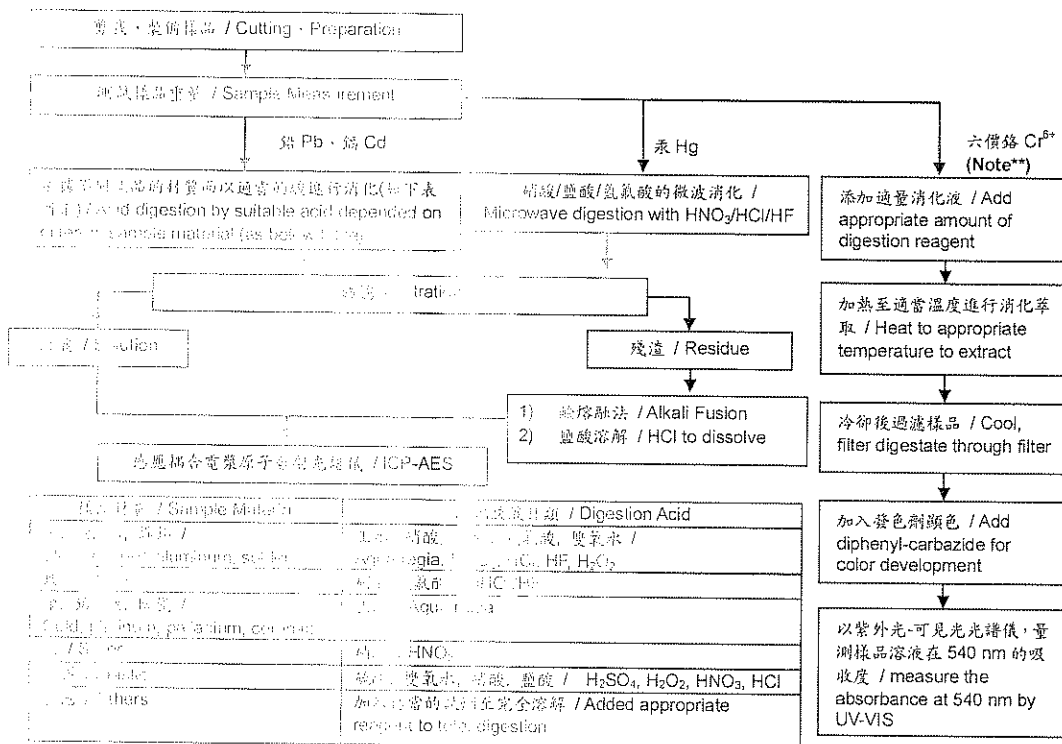
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- 1) 樣品係以預先預熱之條件，樣品已完全溶解。(六價鉻測試方法除外) / These samples were pre-heat to boil by pre-conditioning method according to below flow chart. (Cr<sup>6+</sup> test method excluded)
- 2) 委託測試人員：張育 / Name of the person who made measurement: Changyue Yang
- 3) 委託測試人員：張育 / Name of the person in charge of measurement: Troy Chang



- (1) 對非金屬性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) 對金屬性材料加入純水，加熱至沸騰萃取 / For metallic material, add pure water and heat to boiling.

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# 測試報告

## Test Report

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

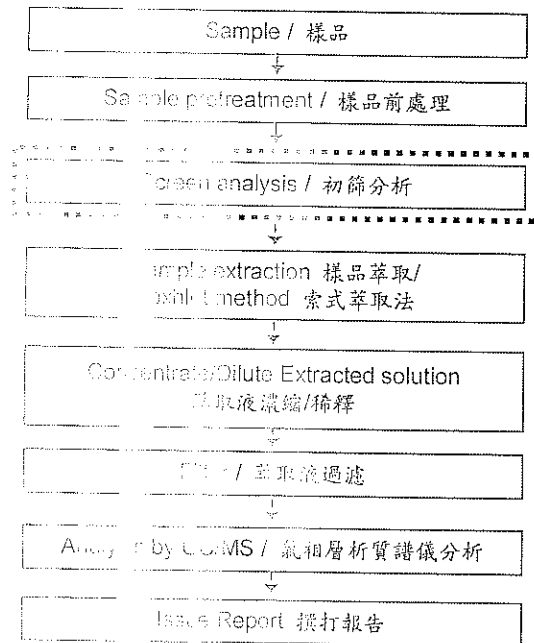
測試人員: 蕭賜博 / Name of the person who made measurement: Roman Wong

測試負責人: 張啓博 / Name of the person in charge of measurement: Troy Chang

初次測試程序 / First testing procedure: →

選擇性篩檢程序 / Optional screening procedure: .....→

確認程序 / Confirmation procedure: →



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# 測試報告

## Test Report

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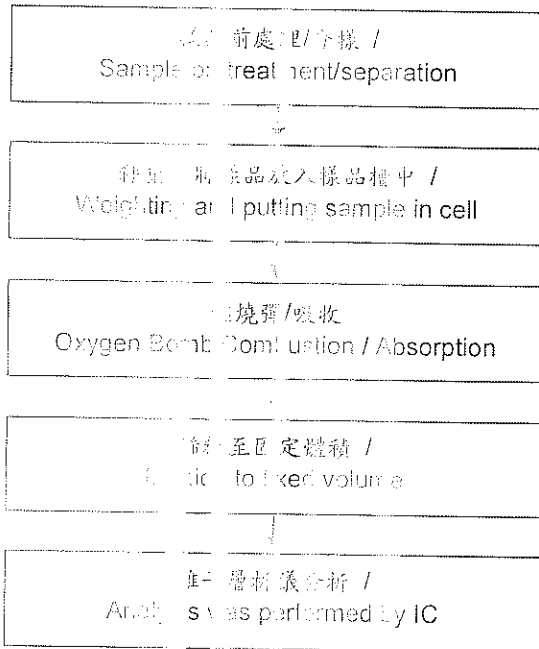
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### 鹟素分析流程图 / Analytical flow chart of halogen content

- 測試人員：陳恩球 / Name of the person who made measurement: Rita Chen
- 測試負責人：張啓興 / Name of the person in charge of measurement: Troy Chang



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# 測試報告

## Test Report

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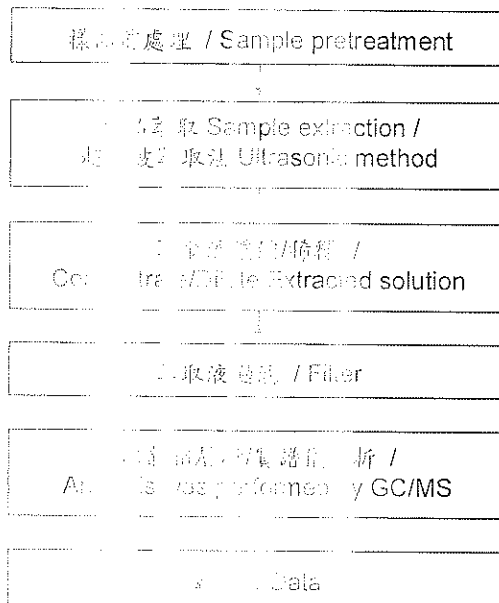
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### 六溴環十二烷中六溴聯苯類分析圖 / HECDE analytical flow chart

- 測試人員：翁鳴彬 / Name of the person who made measurement: Roman Wong
- 測試負責人：張啓興 / Name of the person in charge of measurement: Troy Chang



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# 測試報告

## Test Report

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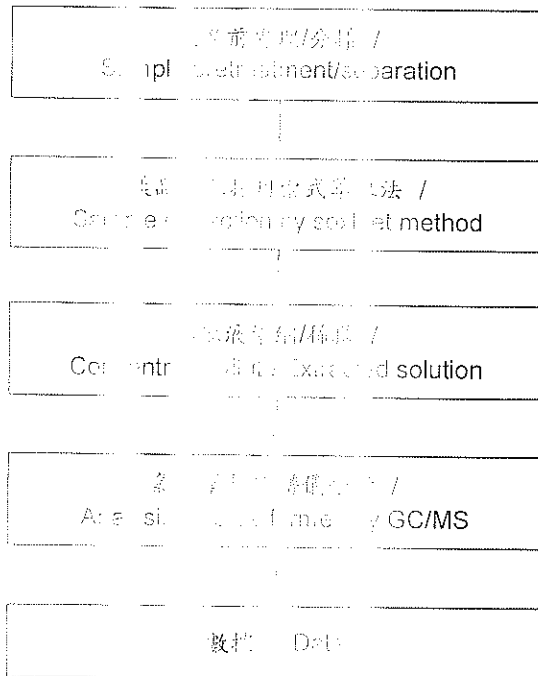
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### 可塑劑分析流程圖 Analytical flow chart of phthalate content

測試人員：翁賜彬 / Name of the person who made measurement: Roman Wong  
測試負責人：張啓興 / Name of the person in charge of measurement: Troy Chang



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# 測試報告

# Test Report

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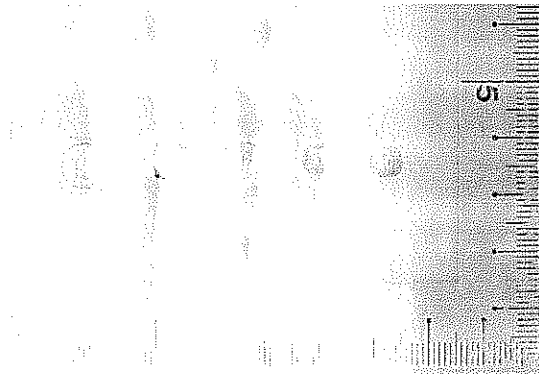
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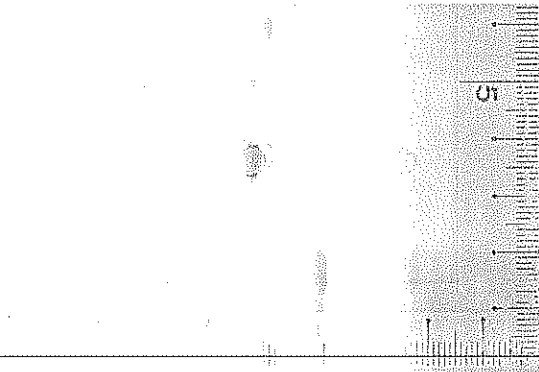
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(The tested sample / part is marked by an arrow if it's shown on the photo.)

2014/2/24



2014/2/24



2014/2/24

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