

# Wire Wound Type Common Mode Filter

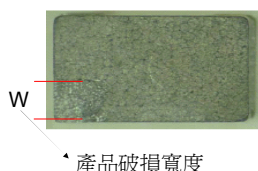
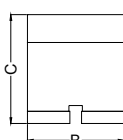
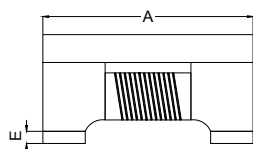
WCM2012F2SF-SERIES

## 1.Features

1. High common mode impedance at high frequency cause excellent noise suppression performance.
2. WCM2012F2SF series realizes small size and low profile. 2.0x1.2x1.2 mm.
3. 100% Lead(Pb) & Halogen-Free and RoHS compliant.

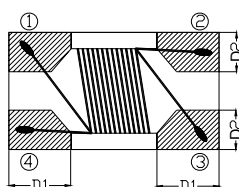


## 2.Dimension



當破損面積 &lt; 5%, 產品列入允收品範圍

產品破損寬度



| Series   | A(mm)   | B(mm)   | C(mm)   | D1(mm)   | D2(mm)   | E(mm)    |
|----------|---------|---------|---------|----------|----------|----------|
| 2012F2SF | 2.0±0.2 | 1.2±0.2 | 1.2±0.2 | 0.55±0.1 | 0.46±0.1 | 0.15±0.1 |

## 3.Part Numbering

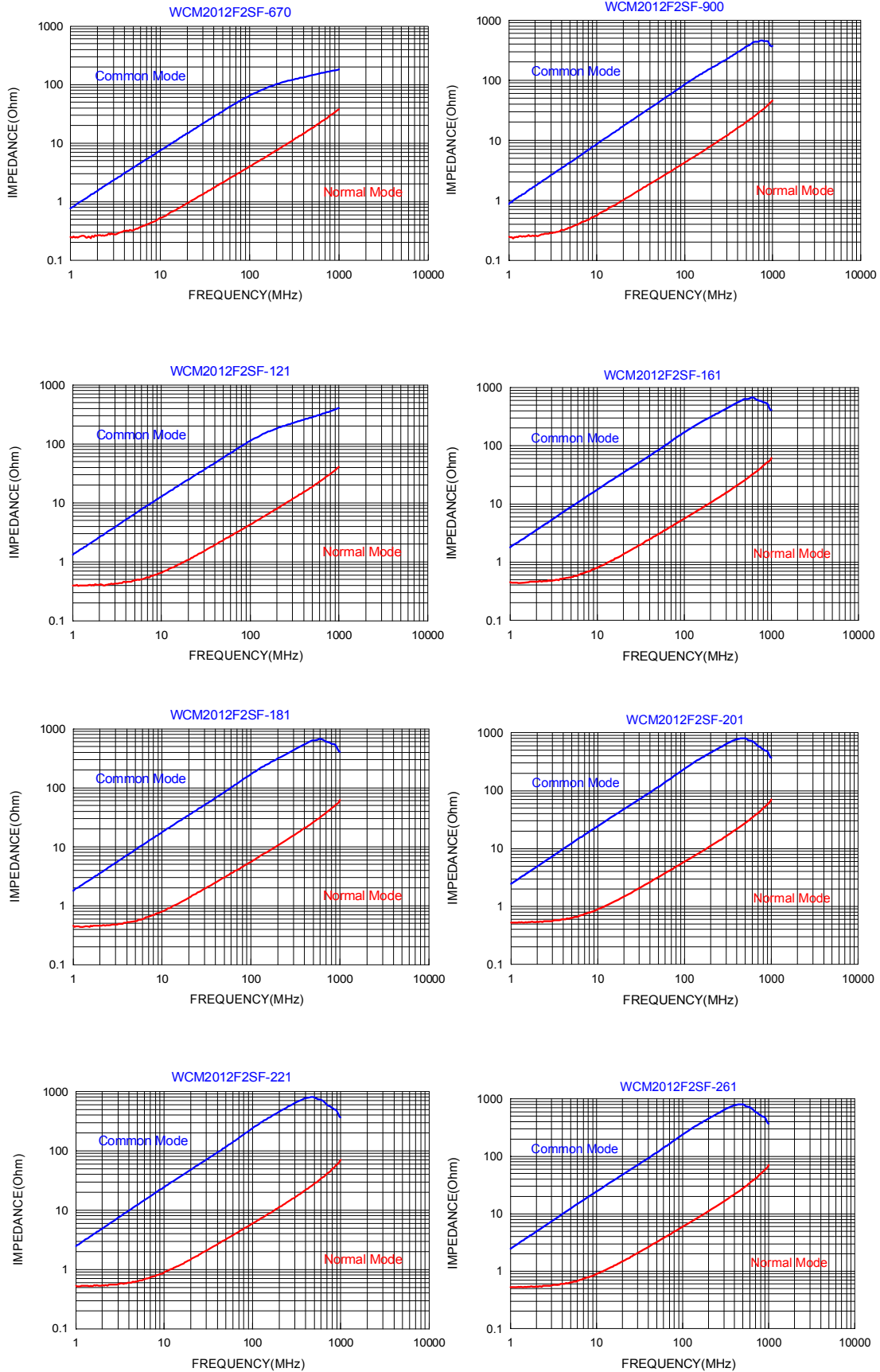


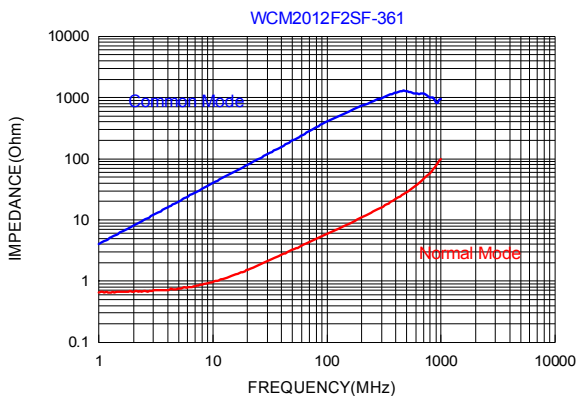
- A: Series  
 B: Dimension  
 C: Material Ferrite Core  
 D: Number of Lines 2=2 lines  
 E: Type S=Shielded, N=Unshielded  
 F: Lead free  
 G: Impedance 900=90Ω  
 H: Packaging T=Taping and Reel  
 I: Rated Current 04=400mA

## 4.Specification

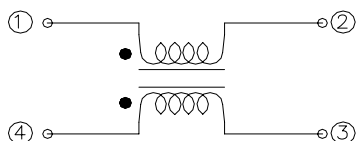
| TAI-TECH Part Number | Common mode Impedance (Ω) | Test Frequency (MHz) | DC Resistance (Ω) max. | Rated Current (mA)max. | Rated Volt. (Vdc)max. | Withstand Volt. (Vdc) max. | IR (Ω) min. |
|----------------------|---------------------------|----------------------|------------------------|------------------------|-----------------------|----------------------------|-------------|
| WCM2012F2SF-670T04   | 67±25%                    | 100                  | 0.25                   | 400                    | 50                    | 125                        | 10M         |
| WCM2012F2SF-900T04   | 90±25%                    | 100                  | 0.30                   | 400                    | 50                    | 125                        | 10M         |
| WCM2012F2SF-121T04   | 120±25%                   | 100                  | 0.30                   | 400                    | 50                    | 125                        | 10M         |
| WCM2012F2SF-161T03   | 160±25%                   | 100                  | 0.35                   | 350                    | 50                    | 125                        | 10M         |
| WCM2012F2SF-181T03   | 180±25%                   | 100                  | 0.35                   | 350                    | 50                    | 125                        | 10M         |
| WCM2012F2SF-201T03   | 200±25%                   | 100                  | 0.40                   | 300                    | 50                    | 125                        | 10M         |
| WCM2012F2SF-221T03   | 220±25%                   | 100                  | 0.40                   | 300                    | 50                    | 125                        | 10M         |
| WCM2012F2SF-261T03   | 260±25%                   | 100                  | 0.40                   | 300                    | 50                    | 125                        | 10M         |
| WCM2012F2SF-361T03   | 360±25%                   | 100                  | 0.50                   | 300                    | 50                    | 125                        | 10M         |

**Typical Impedance v.s. Frequency Curve**



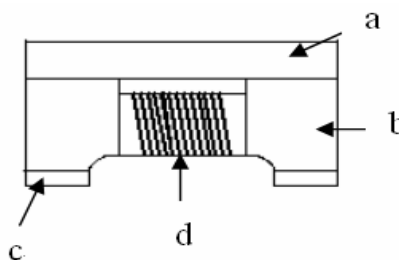


5.Schematic Diagram



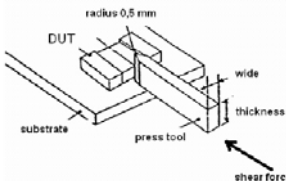
6. Materials

| No. | Description | Specification        |
|-----|-------------|----------------------|
| a.  | Upper Plate | Ferrite              |
| b.  | Core        | Ferrite Core         |
| c.  | Termination | Tin (Pb Free)        |
| d.  | Wire        | Enameled Copper Wire |



7.Reliability and Test Condition

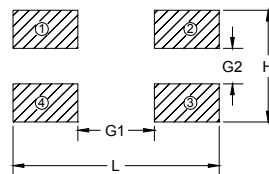
| Item                                   | Performance  | Test Condition   |
|--|--|--|
| <b>Electrical Characteristics Test</b> |  |  |
| Z(common mode)                         |  | Agilent-4291A+ Agilent -16197A   |
| DCR                                    | Refer to standard electrical characteristics list.                 | Agilent-4338B  |
| I.R.                                   |  | Agilent4339  |
| Operating Temperature                  | -40°C~+125°C   |  |
| Storage Temperature(on board)          |  |  |
| Temperature Rise Test                  | Rated Current < 1A ΔT 20°C Max<br>Rated Current ≥ 1A ΔT 40°C Max   | 1.Applied the allowed DC current.<br>2.Temperature measured by digital surface thermometer   |
| <b>Mechanical Performance Test</b>     |  |  |
| Solderability Test                     | More than 95% of terminal electrode should be covered with solder. | Preheat: 150°C,60sec. ◦<br>Solder: Sn99.5%-Cu0. 5% ◦<br>Temperature: 245±5°C ◦<br>Flux for lead free: Rosin. 9.5% ◦<br>Dip time: 4±1sec ◦<br>Depth: completely cover the termination |

| Item                     | Performance   | Test Condition   |                       |          |  |                       |                      |       |                |   |
|--------------------------|---|--|-----------------------|----------|--|-----------------------|----------------------|-------|----------------|---|
| Solder Heat Resistance   |   | <table border="1" data-bbox="1061 315 1423 416"> <thead> <tr> <th>Temperature (°C)</th> <th>Time (s)</th> <th>Temperature ramp/immersion and emersion rate</th> <th>Number of heat cycles</th> </tr> </thead> <tbody> <tr> <td>260 ±5 (solder temp)</td> <td>10 ±1</td> <td>25mm/s ±6 mm/s</td> <td>1</td> </tr> </tbody> </table> <p>Depth: completely cover the termination</p>  | Temperature (°C)      | Time (s) | Temperature ramp/immersion and emersion rate | Number of heat cycles | 260 ±5 (solder temp) | 10 ±1 | 25mm/s ±6 mm/s | 1 |
| Temperature (°C)         | Time (s)  | Temperature ramp/immersion and emersion rate   | Number of heat cycles |          |  |                       |                      |       |                |   |
| 260 ±5 (solder temp)     | 10 ±1   | 25mm/s ±6 mm/s   | 1                     |          |  |                       |                      |       |                |   |
| Terminal Strength        | Appearance : No damage.<br>Impedance : within±15% of initial value<br>RDC : within ±15% of initial value and shall not exceed the specification value | <p>Preconditioning:Run through IR reflow for 2 times.( IPC/JEDEC J-STD-020DClassification Reflow Profiles</p> <p>With the component mounted on a PCB with the device to be tested, apply a force (&gt;0805:1kg , &lt;=0805:0.5kg)to the side of a device being tested. This force shall be applied for 60 +1 seconds. Also the force shall be applied gradually as not to apply a shock to the component being tested.</p>  |                       |          |  |                       |                      |       |                |   |
| <b>Reliability Test</b>  |   |  |                       |          |  |                       |                      |       |                |   |
| Life Test                |   | <p>Preconditioning:Run through IR reflow for 2 times.( IPC/JEDEC J-STD-020DClassification Reflow Profiles</p> <p>Temperature : 85±2°C</p> <p>Applied current : rated current</p> <p>Duration : 1000±12hrs</p> <p>Measured at room temperature after placing for 24±2 hrs</p>   |                       |          |  |                       |                      |       |                |   |
| Thermal shock            | Appearance : No damage.<br>Impedance : within±15% of initial value<br>RDC : within ±15% of initial value and shall not exceed the specification value | <p>Preconditioning:Run through IR reflow for 2 times.( IPC/JEDEC J-STD-020DClassification Reflow Profiles</p> <p>Step1 : -40±2°C 30±5min</p> <p>Step2 : 25±2°C ≤0.5min</p> <p>Step3 : 105±2°C 30±5min</p> <p>Number of cycles : 500</p> <p>Measured at room temperature after placing for 24±2 hrs</p>   |                       |          |  |                       |                      |       |                |   |
| Humidity Resistance Test |   | <p>Preconditioning:Run through IR reflow for 2 times.( IPC/JEDEC J-STD-020DClassification Reflow Profiles</p> <p>Humidity : 85±2% R.H,</p> <p>Temperature : 85°C ±2°C</p> <p>Duration : 1000hrs Min. with 100% rated current</p> <p>Measured at room temperature after placing for 24±2 hrs</p>  |                       |          |  |                       |                      |       |                |   |
| Vibration Test           |   | <p>Preconditioning:Run through IR reflow for 2 times.( IPC/JEDEC J-STD-020DClassification Reflow Profiles</p> <p>Oscillation Frequency: 10~2K~10Hz for 20 minutes</p> <p>Equipment : Vibration checker</p> <p>Total Amplitude:1.52mm±10%</p> <p>Testing Time : 12 hours(20 minutes, 12 cycles each of 3 orientations) °</p>  |                       |          |  |                       |                      |       |                |   |

## 8.Soldering and Mounting

### 8-1. Recommended PC Board Pattern

|    | WCM2012F2S/F2N | WCM3216F2S/F2N |
|----|----------------|----------------|
| L  | 2.60           | 3.70           |
| H  | 1.25           | 1.60           |
| G1 | 1.10           | 1.90           |
| G2 | 0.45           | 0.40           |



PC board should be designed so that products can prevent damage from mechanical stress when warping the board.

Products shall be positioned in the sideways direction to against the mechanical stress to prevent failure.

### 8-2. Soldering

Mildly activated rosin fluxes are preferred. TAI-TECH terminations are suitable for all wave and re-flow soldering systems. If hand soldering cannot be avoided, the preferred technique is the utilization of hot air soldering tools.

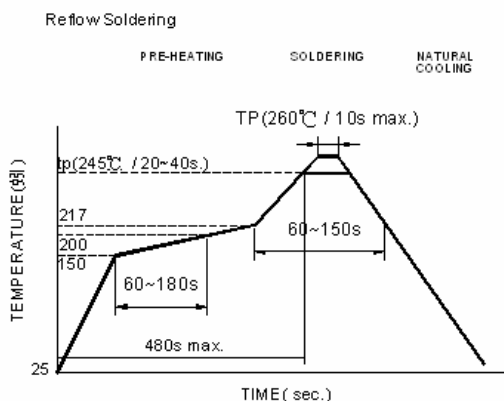
#### 8-2.1 Lead Free Solder re-flow:

Recommended temperature profiles for re-flow soldering in Figure 1.

#### 8-2.2 Soldering Iron(Figure 2):

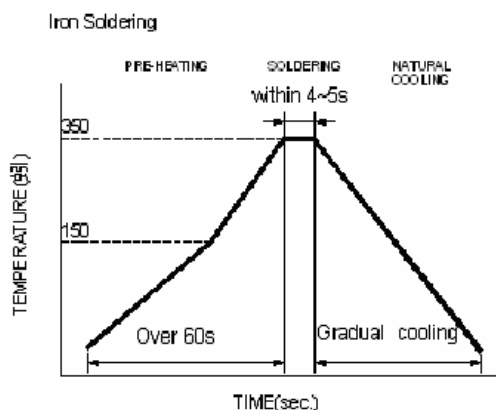
Products attachment with a soldering iron is discouraged due to the inherent process control limitations. In the event that a soldering iron must be employed the following precautions are recommended.

- Preheat circuit and products to 150°C
- Never contact the ceramic with the iron tip
- Use a 20 watt soldering iron with tip diameter of 1.0mm
- 355°C tip temperature (max)
- 1.0mm tip diameter (max)
- Limit soldering time to 4~5 sec.



Reflow times: 3 times max.

Fig.1

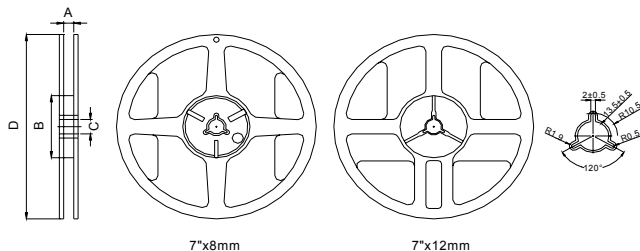


Iron Soldering times: 1 times max.

Fig.2

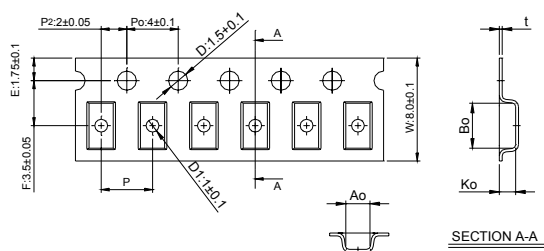
## 9. Packaging Information

### 9-1. Reel Dimension



| Type   | A(mm)   | B(mm) | C(mm)    | D(mm) |
|--------|---------|-------|----------|-------|
| 7"x8mm | 9.0±0.5 | 60±2  | 13.5±0.5 | 178±2 |

### 9-2. Tape Dimension / 8mm

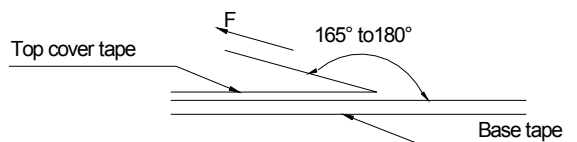


| Series     | size   | Bo(mm)   | Ao(mm)   | Ko(mm)   | P(mm)   | t(mm)     |
|------------|--------|----------|----------|----------|---------|-----------|
| WCM2012F2S | 201212 | 2.25±0.1 | 1.50±0.1 | 1.45±0.1 | 4.0±0.1 | 0.24±0.05 |
| WCM3216F2S | 321620 | 3.50±0.1 | 1.88±0.1 | 2.10±0.1 | 4.0±0.1 | 0.22±0.05 |
| WCM2012F2N | 201209 | 2.50±0.1 | 1.60±0.1 | 1.25±0.1 | 4.0±0.1 | 0.22±0.05 |
| WCM3216F2N | 321615 | 3.50±0.1 | 1.88±0.1 | 1.80±0.1 | 4.0±0.1 | 0.22±0.05 |

### 9-3. Packaging Quantity

| Chip size      | Chip/Reel | Inner Box | Middle Box | Carton |
|----------------|-----------|-----------|------------|--------|
| WCM2012F2S/F2N | 2000      | 10000     | 50000      | 100000 |
| WCM3216F2S/F2N | 2000      | 10000     | 50000      | 100000 |

### 9-4. Tearing Off Force



The force for tearing off cover tape is 15 to 80 grams in the arrow direction under the following conditions.

| Room Temp. (°C) | Room Humidity (%) | Room atm (hPa) | Tearing Speed mm/min |
|-----------------|-------------------|----------------|----------------------|
| 5~35            | 45~85             | 860~1060       | 300                  |

#### Application Notice

- Storage Conditions(component level)  
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

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日期(Date) : 2014/10/16

頁數(Page): 1 of 14

## Test Report

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

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

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桃園縣楊梅市幼獅工業區幼四路1號 / NO. 1, YOU 4TH ROAD, YOUTH INDUSTRIAL DISTRICT, YANG-MEI CITY, TAO-YUAN HSIEN. TAIWAN R. O. C.

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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)




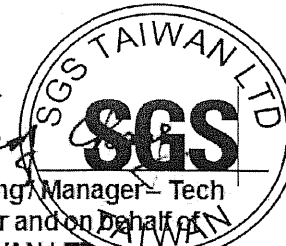
以下測試樣品係由申請廠商所提供及確認 (The following sample(s) was/were submitted and identified by/on behalf of the applicant as) :

樣品名稱(Sample Description) : WIREWOUND SERIES

樣品型號(Style/Item No.) : WCM, HSF, HDMI, DVI, YCM, BCM, PCM, TCM, LCM, LPF, TXF, ACM, DCM, WIH SERIES

收件日期(Sample Receiving Date) : 2014/10/09

測試期間(Testing Period) : 2014/10/09 TO 2014/10/16

=====  
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<br>(Test Items)   | 單位<br>(Unit) | 測試方法<br>(Method)  | 方法偵測<br>極限值<br>(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 reference to IEC 62321-5: 2013 and performed by ICP-AES.      | 2                    | n.d.        |
| 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                    | 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 reference to IEC 62321-4: 2013 and performed by ICP-AES.      | 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.        |
| 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.        |
| 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.        |

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| 測試項目<br>(Test Items)  | 單位<br>(Unit) | 測試方法<br>(Method)   | 方法偵測<br>極限值<br>(MDL) | 結果 (Result) |
|---|--------------|--|----------------------|-------------|
|   |              |  |                      | No.1        |
| 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.        |
| 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    |
| 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.        |
| 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.        |
| 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.        |
| 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.        |

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| 測試項目<br>(Test Items)  | 單位<br>(Unit) | 測試方法<br>(Method)  | 方法偵測<br>極限值<br>(MDL) | 結果 (Result) |
|---|--------------|---|----------------------|-------------|
|   |              |   |                      | No.1        |
| 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.        |
| 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.        |
| 多溴聯苯總和 / 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.        |
| 多溴聯苯醚總和 / 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

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| 測試項目<br>(Test Items)                                    | 單位<br>(Unit) | 測試方法<br>(Method)  | 方法偵測<br>極限值<br>(MDL) | 結果 (Result) |
|---|--------------|---|----------------------|-------------|
|   |              |   |                      | No.1        |
| 鹵素 / Halogen  |              |   |                      |             |
| 鹵素 (氟) / Halogen-Fluorine (F)<br>(CAS No.: 14762-94-8)  | mg/kg        | 參考BS EN 14582:2007, 以離子層析儀<br>分析. / With reference to BS EN<br>14582:2007. Analysis was performed<br>by IC. | 50                   | n.d.        |
| 鹵素 (氯) / Halogen-Chlorine (Cl)<br>(CAS No.: 22537-15-1) | mg/kg        |   | 50                   | n.d.        |
| 鹵素 (溴) / Halogen-Bromine (Br)<br>(CAS No.: 10097-32-2)  | mg/kg        |   | 50                   | n.d.        |
| 鹵素 (碘) / Halogen-Iodine (I) (CAS<br>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. 樣品的測試是基於申請人要求混合測試, 報告中的混合測試結果不代表其中個別單一材質的含量. (The samples was/were analyzed on behalf of the applicant as mixing sample in one testing. The above results was/were only given as the informality value.)

### 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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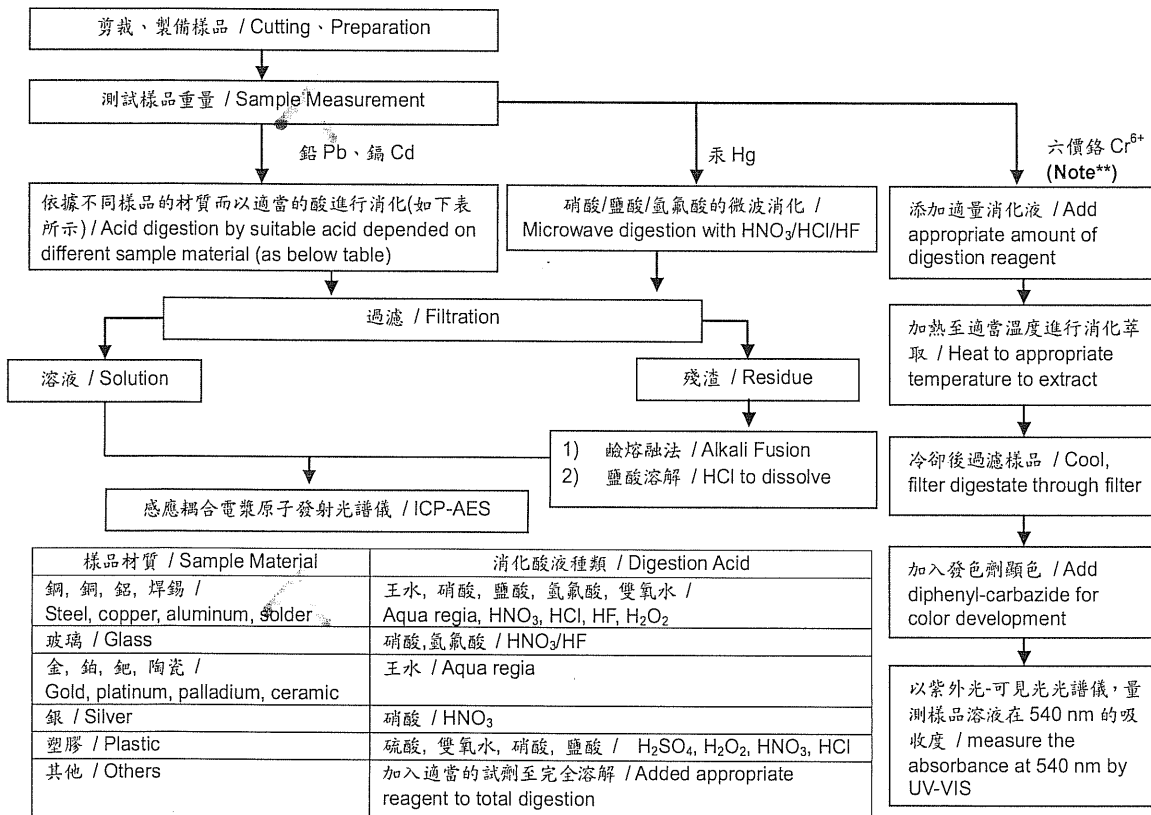
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- 1) 根據以下的流程圖之條件，樣品已完全溶解。(六價鉻測試方法除外) / These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr<sup>6+</sup> test method excluded)
- 2) 測試人員：楊登偉 / Name of the person who made measurement: Climbgreat Yang
- 3) 測試負責人：張啓興 / Name of the person in charge of measurement: 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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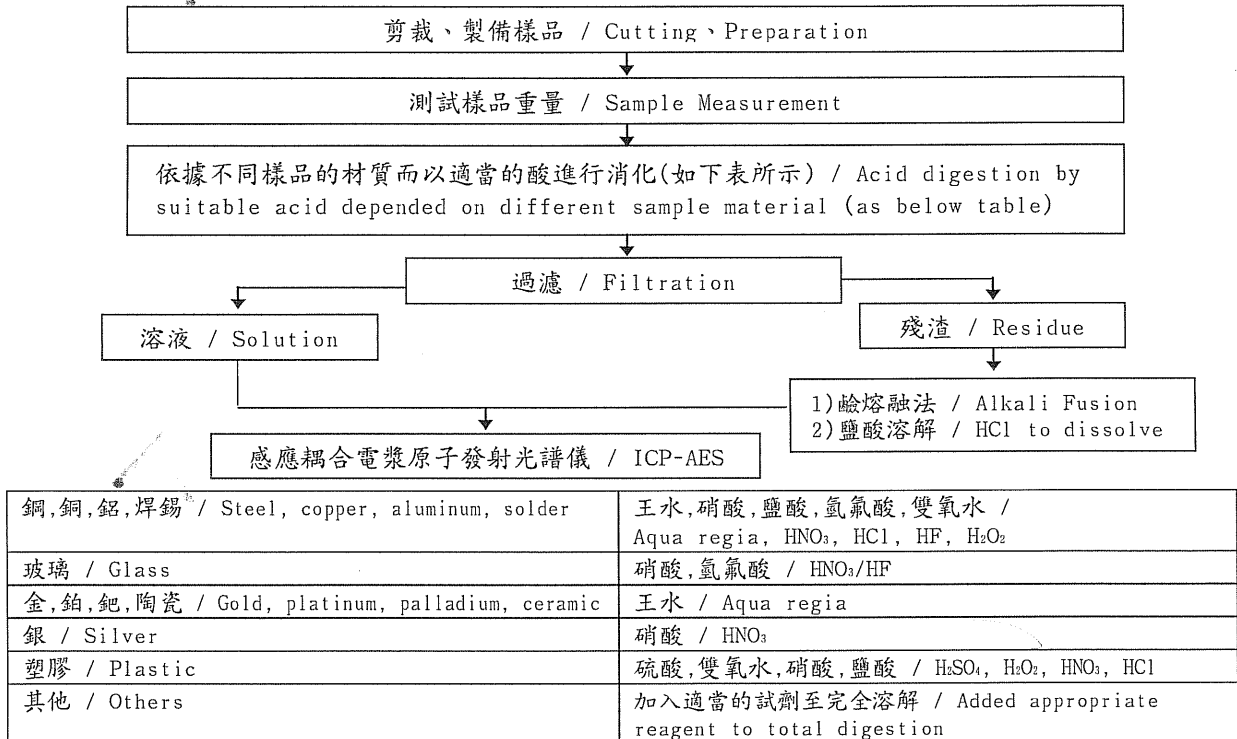
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- 1) 根據以下的流程圖之條件，樣品已完全溶解。 / These samples were dissolved totally by pre-conditioning method according to below flow chart.
- 2) 測試人員：楊登偉 / Name of the person who made measurement: Climbgreat Yang
- 3) 測試負責人：張啓興 / Name of the person in charge of measurement: 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)



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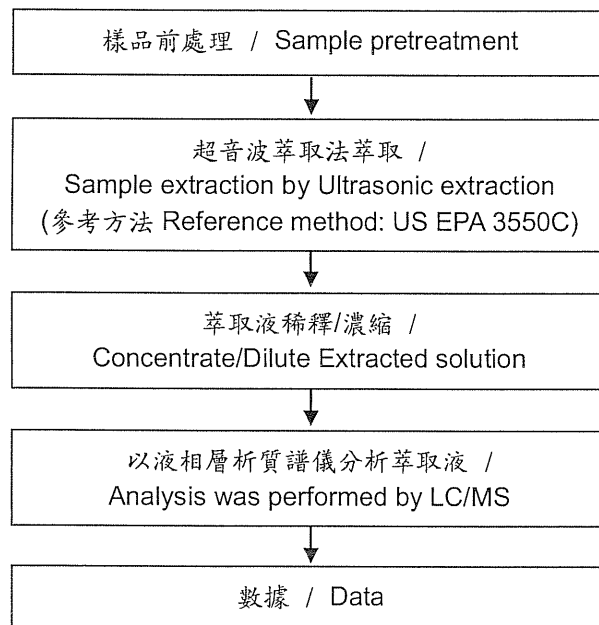
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### 全氟辛酸/全氟辛烷磺酸分析流程圖 / PFOA/PFOS analytical flow chart

- 測試人員：翁賜彬 / 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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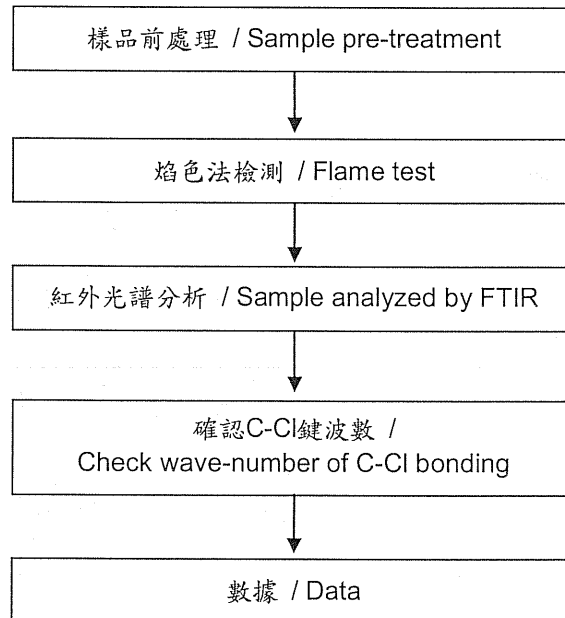
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### 聚氯乙稀物質判定分析流程圖 /

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

- 測試人員：林建宇 / Name of the person who made measurement: Roy Lin
- 測試負責人：張啓興 / Name of the person in charge of measurement: Troy Chang



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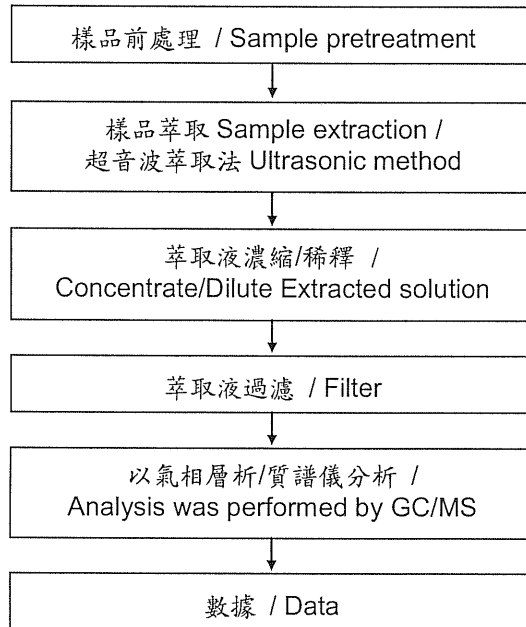
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### 六溴環十二烷分析流程圖 / HBCDD analytical flow chart

- 測試人員：翁賜彬 / 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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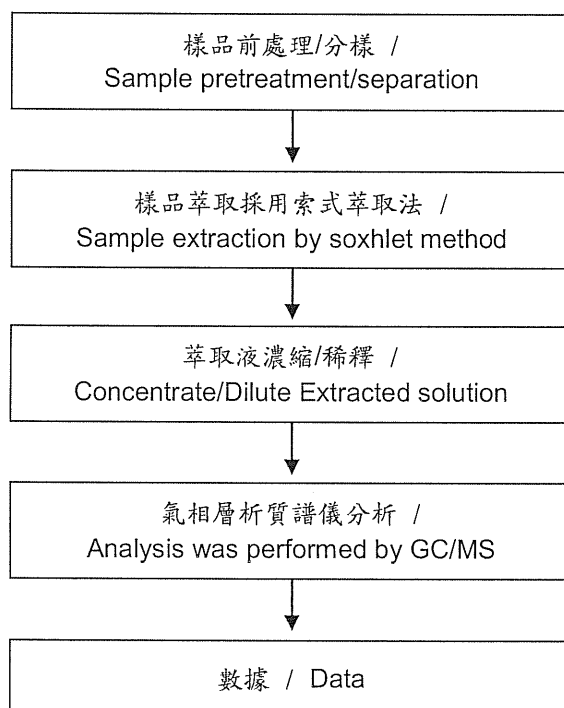
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### 可塑劑分析流程圖 / Analytical flow chart of phthalate content

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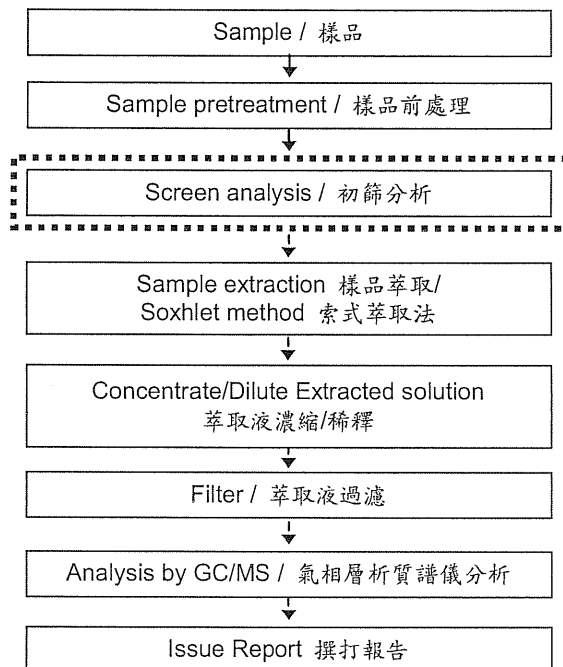
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### 多溴聯苯/多溴聯苯醚分析流程圖 / PBB/PBDE analytical FLOW CHART

- 測試人員：翁賜彬 / 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
- 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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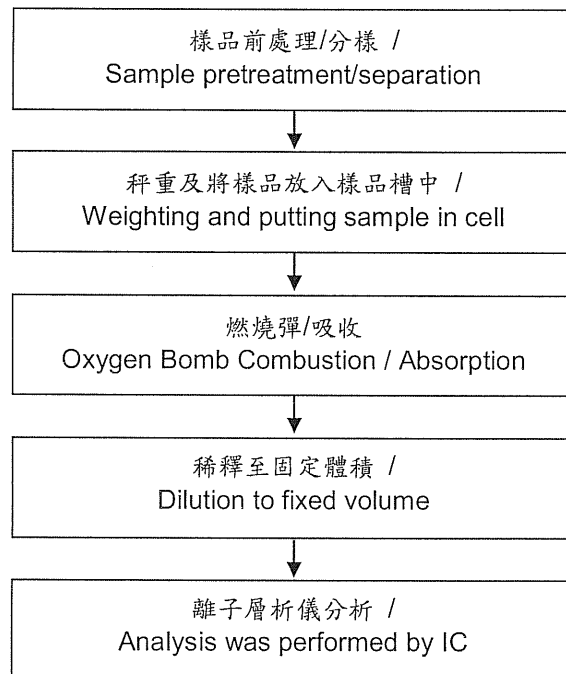
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### 鹵素分析流程圖 / Analytical flow chart of halogen content

- 測試人員：陳恩臻 / 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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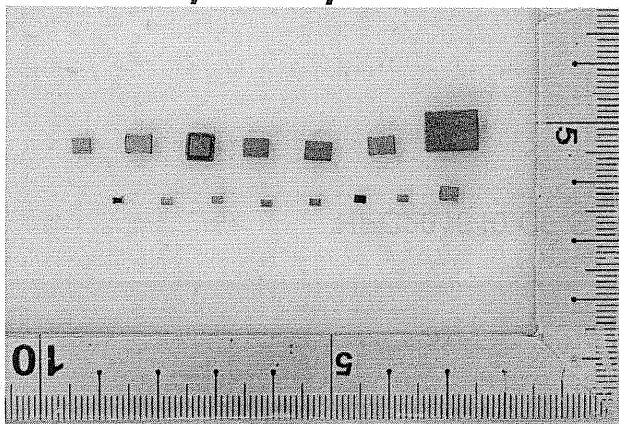
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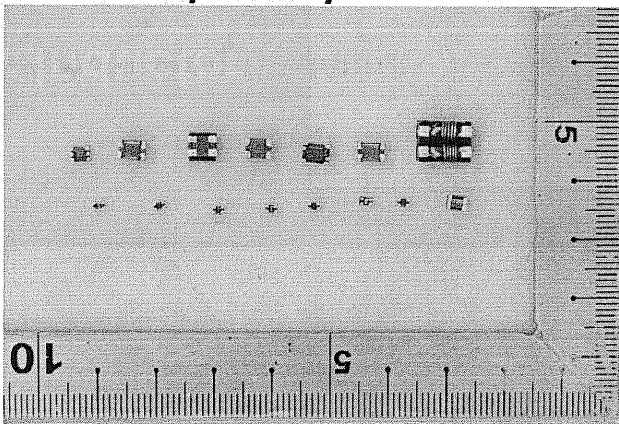
\* 照片中如有箭頭標示, 則表示為實際檢測之樣品/部位. \*

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

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