

# Specification for Approval

**Date:** 2023/06/06

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

**TAI-TECH P/N:** WCM7060FASF-400-LM-125V

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

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

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

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

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| APPROVED         | CHECKED            | DRAWN               |
|------------------|--------------------|---------------------|
| 楊祥忠<br>Mike Yang | 吳彥銳<br>Yan-Ruei Wu | 林靜婷<br>Michelle Lim |

**Wire Wound Power Common Mode Filter** WCM7060FASF-400-LM-125V

| ECN HISTORY LIST |          |             |          |         |       |
|------------------|----------|-------------|----------|---------|-------|
| REV              | DATE     | DESCRIPTION | APPROVED | CHECKED | DRAWN |
| 1.0              | 23/06/06 | 新發行         | 楊祥忠      | 吳彥銳     | 林靜婷   |
|                  |          |             |          |         |       |
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| 備<br>註           |          |             |          |         |       |

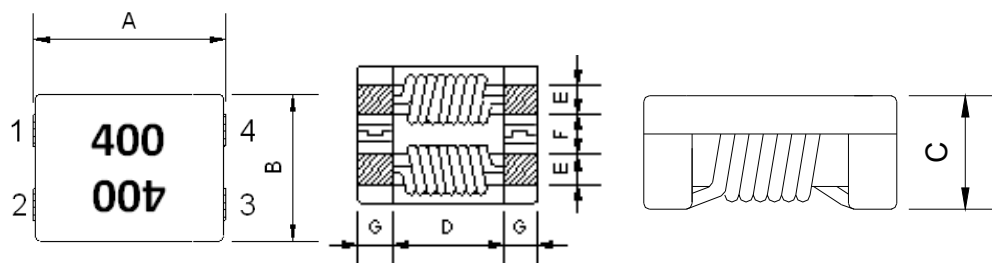
# Wire Wound Power Common Mode Filter WCM7060FASF-400-LM-125V

## 1. Features

1. Operating temperature -40~+125°C (Including self - temperature rise)



## 2. Dimension



| Series  | A(mm)   | B(mm)   | C(mm)    | D(mm)    | E(mm)   | F(mm)   | G(mm)   |
|---------|---------|---------|----------|----------|---------|---------|---------|
| WCM7060 | 7.0±0.5 | 6.0±0.5 | 3.8 max. | 3.5 typ. | 1.5±0.5 | 1.5±0.5 | 1.7±0.5 |

Unit:mm

## 3. Part Numbering

|     |      |   |   |   |   |   |     |   |    |   |      |
|-----|------|---|---|---|---|---|-----|---|----|---|------|
| WCM | 7060 | F | A | S | F | - | 400 | - | LM | - | 125V |
| A   | B    | C | D | E | F |   | G   |   | H  |   | I    |

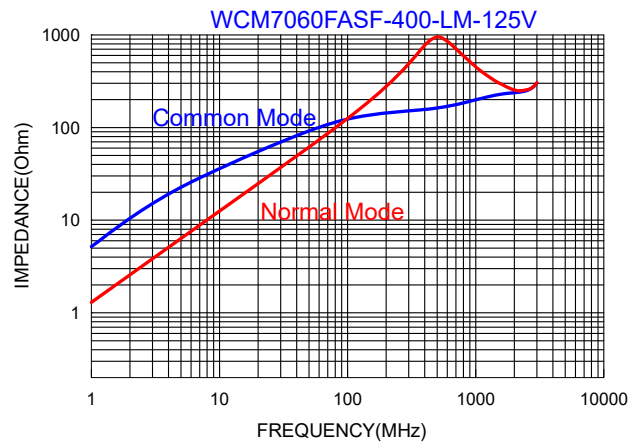
- A: Series  
 B: Dimension  
 C: Material                      Ferrite Core  
 D: Process                        Asembled  
 E: Type                            S=Shielded , N=Unshielded  
 F: Lead free  
 G: Impedance                    400=40Ω  
 H: Laser Marking  
 I: Rated Volt.                    125(Vdc) Max.

## 4. Specification

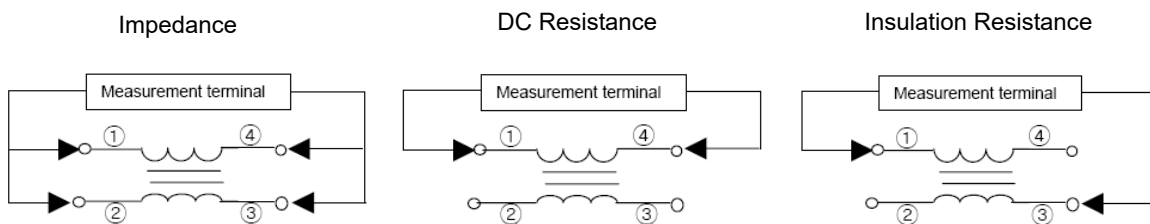
| TAI-TECH<br>Part Number | Impedance<br>(Ω) |      | Test Frequency<br>(MHz) | DC Resistance<br>(mΩ) max.<br>(1 line) | Rated Current<br>(A) max. | Rated Volt.<br>(Vdc) max. | Insulation<br>Resistance<br>(MΩ) min. |
|-------------------------|------------------|------|-------------------------|--|---------------------------|---------------------------|---------------------------------------|
|                         | min.             | typ. |                         |  |                           |                           |                                       |
| WCM7060FASF-400-LM-125V | 40               | 70   | 100                     | 5                                      | 15                        | 125                       | 10                                    |

Note:

- Measurement board data  
 Material : FR4  
 Board dimensions : 100 X 50 X 1.6t mm  
 Pattern dimensions: 45 X 30 mm (Double side board)  
 Pattern thickness : 50 μm

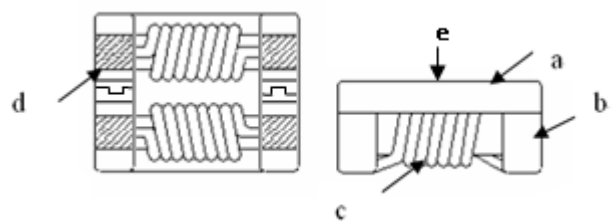


### 5. Schematic Diagram



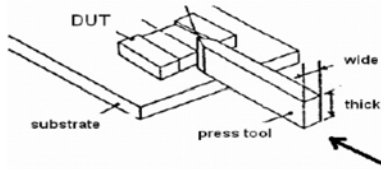
### 6. Materials

| No. | Description | Specification         |
|-----|-------------|-----------------------|
| a.  | Upper Plate | Ceramics Core (Black) |
| b.  | Core        | Ferrite Core          |
| c.  | Wire        | Enameled Copper       |
| d.  | Termination | Ag/Ni/Sn + Sn Solder  |
| e.  | Mark        | Laser Marking         |



## 7. Reliability and Test Condition

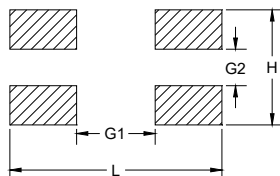
| Item                               | Performance   | Test Condition   |
|------------------------------------|---|--|
| Operating temperature              | -40~+125°C (Including self - temperature rise)  |  |
| Storage temperature                | -40~+125°C (on board)   |  |
| <b>Electrical Performance Test</b> |   |  |
| Z(common mode)                     | Refer to standard electrical characteristics list.  | Agilent E4991A + Keysight 16092A   |
| DCR                                |   | Agilent-34420A   |
| I.R.                               |   | Chroma 19073   |
| Temperature Rise Test              | Rated Current $\Delta T$ 40°C Max   | 1.Applied the allowed DC current.<br>2.Temperature measured by digital surface thermometer   |
| <b>Reliability Test</b>            |   |  |
| Life Test                          | Appearance : No damage.<br>Impedance : within±15% of initial value<br>RDC : within ±15% of initial value and shall not exceed the specification value | Preconditioning: Run through reflow for 3 times.( IPC/JEDEC J-STD-020E Classification Reflow Profiles)<br>Temperature : 125±2°C<br>Applied current : rated current<br>Duration : 1000±12hrs<br>Measured at room temperature after placing for 24 hrs.  |
| Load Humidity                      |   | Preconditioning: Run through reflow for 3 times.( IPC/JEDEC J-STD-020E Classification Reflow Profiles)<br>Humidity : 85±3% R.H,<br>Temperature : 85°C±2°C<br>Duration : 1000hrs Min. Bead : with 100% rated current ·<br>Inductance: with 10% rated current<br>Measured at room temperature after placing for 24 hrs.  |
| Moisture Resistance                |   | Preconditioning: Run through reflow for 3 times.( IPC/JEDEC J-STD-020E Classification Reflow Profiles<br>1. Baked at50°C for 25hrs, measured at room temperature after placing for 4 hrs.<br>2. Raise temperature to 65±2°C 90-100%RH in 2.5hrs, and keep 3 hours, cool down to 25°C in 2.5hrs.<br>3. Raise temperature to 65±2°C 90-100%RH in 2.5hrs, and keep 3 hours, cool down to 25°C in 2.5hrs,keep at 25°C for 2 hrs then keep at -10°C for 3 hrs<br>4. Keep at 25°C 80-100%RH for 15min and vibrate at the frequency of 10 to 55 Hz to 10 Hz, measure at room temperature after placing for 1~2 hrs. |
| Thermal shock                      |   | Preconditioning: Run through reflow for 3 times.( IPC/JEDEC J-STD-020E Classification Reflow Profiles<br>Condition for 1 cycle<br>Step1 : -40±2°C 30±5min<br>Step2 : 125±2°C ≤0.5min<br>Step3 : 125±2°C 30±5min<br>Number of cycles : 500<br>Measured at room temperature after placing for 24 hrs.  |
| Vibration                          |   | Oscillation Frequency: 10Hz~2KHz~10Hz for 20 minute<br>Equipment : Vibration checker<br>Total Amplitude:10g<br>Testing Time : 12 hours(20 minutes, 12 cycles each of 3 orientations)   |

| Item                         | Performance   | Test Condition  |                       |                            |  |                       |                            |       |                |    |           |      |      |    |    |           |      |
|------------------------------|---|---|-----------------------|----------------------------|--|-----------------------|----------------------------|-------|----------------|----|-----------|------|------|----|----|-----------|------|
| Bending                      | Appearance : No damage.<br>Impedance : within±15% of initial value<br>RDC : within ±15% of initial value and shall not exceed the specification value | Shall be mounted on a FR4 substrate of the following dimensions: >=0805 inch(2012mm):40x100x1.2mm <0805 inch(2012mm):40x100x0.8mm<br>Bending depth: >=0805 inch(2012mm):1.2mm <0805 inch(2012mm):0.8mm<br>duration of 10 sec.   |                       |                            |  |                       |                            |       |                |    |           |      |      |    |    |           |      |
| 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 | <table border="1" data-bbox="975 412 1410 546"> <thead> <tr> <th>Type</th> <th>Peak value (g's)</th> <th>Normal duration (D) (ms)</th> <th>Wave form</th> <th>Velocity change (Vi)ft/sec</th> </tr> </thead> <tbody> <tr> <td>SMD</td> <td>50</td> <td>11</td> <td>Half-sine</td> <td>11.3</td> </tr> <tr> <td>Lead</td> <td>50</td> <td>11</td> <td>Half-sine</td> <td>11.3</td> </tr> </tbody> </table> <p>3 shocks in each direction along 3 perpendicular axes. (18 shocks).</p>            | Type                  | Peak value (g's)           | Normal duration (D) (ms)                     | Wave form             | Velocity change (Vi)ft/sec | SMD   | 50             | 11 | Half-sine | 11.3 | Lead | 50 | 11 | Half-sine | 11.3 |
| Type                         | Peak value (g's)  | Normal duration (D) (ms)  | Wave form             | Velocity change (Vi)ft/sec |  |                       |                            |       |                |    |           |      |      |    |    |           |      |
| SMD                          | 50  | 11  | Half-sine             | 11.3                       |  |                       |                            |       |                |    |           |      |      |    |    |           |      |
| Lead                         | 50  | 11  | Half-sine             | 11.3                       |  |                       |                            |       |                |    |           |      |      |    |    |           |      |
| Solderability                | More than 95% of the terminal electrode should be covered with solder.  | a. Method B, 4 hrs @155°C dry heat @235°C±5°C<br>Testing Time :5 +0/-0.5 seconds<br>b. Method D category 3. (8hours ± 15 min)@ 260°C±5°C<br>Testing Time :30 +0/-0.5 seconds  |                       |                            |  |                       |                            |       |                |    |           |      |      |    |    |           |      |
| Resistance to Soldering Heat | Appearance : No damage.<br>Impedance : within±15% of initial value<br>RDC : within ±15% of initial value and shall not exceed the specification value | Depth: completely cover the termination<br><table border="1" data-bbox="986 719 1415 837"> <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>  | 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 | Preconditioning: Run through reflow for 3 times.( IPC/JEDEC J-STD-020E Classification Reflow Profiles<br>With the component mounted on a PCB with the device to be tested, apply a force(>0805:1kg , <=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.<br> |                       |                            |  |                       |                            |       |                |    |           |      |      |    |    |           |      |

## 8. Soldering and Mounting

### 8-1. Recommended PC Board Pattern

|        |                |
|--------|----------------|
|        | <b>WCM7060</b> |
| L(mm)  | 8.0            |
| H(mm)  | 4.5            |
| G1(mm) | 3.5            |
| G2(mm) | 1.5            |



### 8-2. Soldering

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

#### 8-2.1 Soldering Reflow:

Recommended temperature profiles for lead free re-flow soldering in Figure 1. Table 1.1&1.2 (J-STD-020E)

#### 8-2.2 Soldering Iron:

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. (Figure 2.)

- 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
- 350°C tip temperature (max)
- 1.0mm tip diameter (max)
- Limit soldering time to 4~5sec.

Fig.1 Soldering Reflow

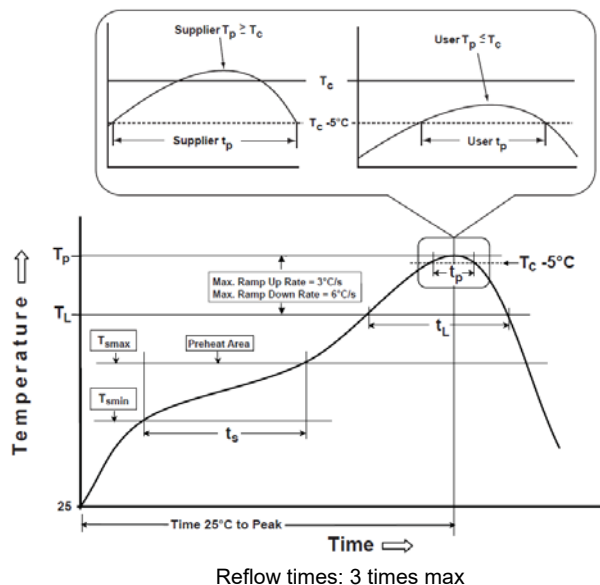
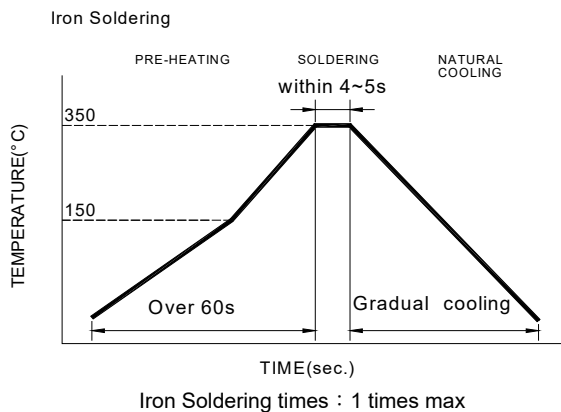


Fig.2 Iron soldering temperature profiles



**Table (1.1): Reflow Profiles**

| Profile Type:   | Pb-Free Assembly                |
|---|---------------------------------|
| Preheat<br>-Temperature Min( $T_{smin}$ )<br>-Temperature Max( $T_{smax}$ )<br>-Time( $t_s$ )from( $T_{smin}$ to $T_{smax}$ ) | 150°C<br>200°C<br>60-120seconds |
| Ramp-up rate( $T_L$ to $T_p$ )  | 3°C/second max.                 |
| Liquidus temperature( $T_L$ )<br>Time( $t_L$ )maintained above $T_L$  | 217°C<br>60-150 seconds         |
| Classification temperature( $T_c$ )   | See Table (1.2)                 |
| Time( $t_p$ ) at $T_c - 5^\circ\text{C}$ ( $T_p$ should be equal to or less than $T_c$ .)                                     | < 30 seconds                    |
| Ramp-down rate( $T_p$ to $T_L$ )  | 6°C /second max.                |
| Time 25°C to peak temperature   | 8 minutes max.                  |

**T<sub>p</sub>**: maximum peak package body temperature, **T<sub>c</sub>**: the classification temperature.

For user (customer) **T<sub>p</sub>** should be equal to or less than **T<sub>c</sub>**.

**Table (1.2) Package Thickness/Volume and Classification Temperature (T<sub>c</sub>)**

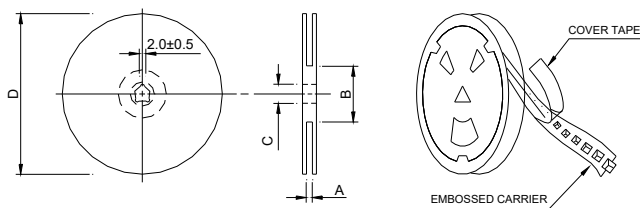
|                  | Package Thickness | Volume mm <sup>3</sup><br><350 | Volume mm <sup>3</sup><br>350-2000 | Volume mm <sup>3</sup><br>>2000 |
|------------------|-------------------|--------------------------------|------------------------------------|---------------------------------|
| PB-Free Assembly | <1.6mm            | 260°C                          | 260°C                              | 260°C                           |
|                  | 1.6-2.5mm         | 260°C                          | 250°C                              | 245°C                           |
|                  | ≥2.5mm            | 250°C                          | 245°C                              | 245°C                           |

Reflow is referred to standard IPC/JEDEC J-STD-020E ◦



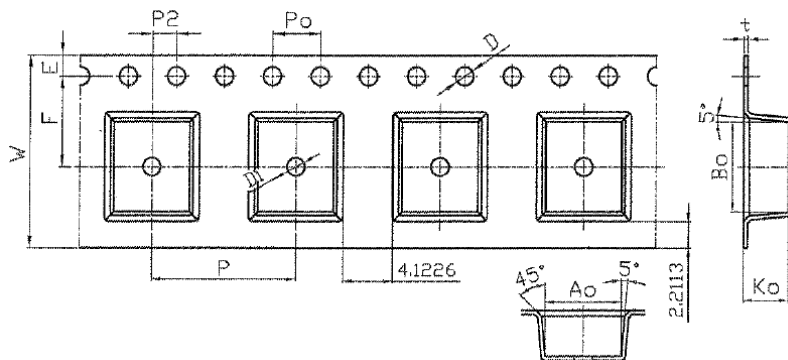
## 9. Packaging Information

### 9-1. Reel Dimension



| Type     | A(mm)    | B(mm)     | C(mm)    | D(mm) |
|----------|----------|-----------|----------|-------|
| 13"x16mm | 16.0±0.5 | 100.0±2.0 | 13.5±0.5 | 330   |

### 9-2. Tape Dimension

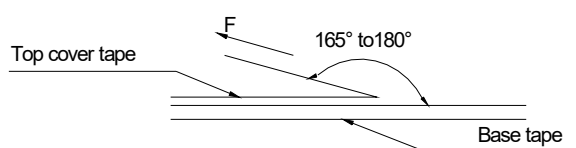


| Series  | W(mm)          | Bo(mm)   | Ao(mm)  | Ko(mm)  | D(mm)           | D1(mm)   | Ko(mm)  | P0(mm)  | P2(mm)  | F(mm)   | E(mm)    | P(mm)    | t(mm)     |
|---------|----------------|----------|---------|---------|-----------------|----------|---------|---------|---------|---------|----------|----------|-----------|
| WCM7060 | 16.00±0.3/-0.1 | 7.50±0.1 | 6.3±0.1 | 3.8±0.1 | 1.50±0.10/-0.00 | 1.50±0.1 | 3.8±0.1 | 4.0±0.1 | 2.0±0.1 | 7.5±0.1 | 1.75±0.1 | 12.0±0.1 | 0.35±0.05 |

### 9-3. Packaging Quantity

| Size    | Reel |
|---------|------|
| WCM7060 | 1500 |

### 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:
    - TAI-TECH products meet IPC/JEDEC J-STD-020E standard-MSL, level 1.
    - Temperature and humidity conditions: Less than 40°C and 60% RH.
    - Recommended products should be used within 12 months form the time of delivery.
    - The packaging material should be kept where no chlorine or sulfur exists in the air.
- Transportation
  - Products should be handled with care to avoid damage or contamination from perspiration and skin oils.
  - The use of tweezers or vacuum pick up is strongly recommended for individual components.
  - Bulk handling should ensure that abrasion and mechanical shock are minimized.



# 測試報告 Test Report

號碼(No.): ETR23302694

日期(Date): 17-Mar-2023

頁數(Page): 1 of 15

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.)  
慶邦電子元件(泗洪)有限公司 (TAIPAQ ELECTRONICS (SI-HONG) CO., LTD.)  
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江蘇省昆山市蓬朗昆嘉高科技工業區郭澤路 (GUO-ZE ROAD, KUNJIA HI-TECH INDUSTRIAL PARK, KUN-SHAN, JIANG-SU, CHINA)  
中國·江蘇省·宿遷市·泗洪縣·經濟開發區杭州路南側·建設北路東側 (THE SOUTH HANGZHOU ROAD AND THE EAST JIANSHE ROAD·ECONOMIC DEVELOPMENT ZONE·SIHONG COUNTY·SUQIANCITY·JIANGSU PROVINCE·P,R·CHINA)


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 the applicant as) :

樣品名稱(Sample Name) : WIREWOUND SERIES  
樣品型號(Style/Item No.) : WCM(YCW) · WCL · HSF · HDMI · DVI · BCM · PCM · TCM · LCM · LPF · TXF · ACM · DCM(YLW) · WIH · BPH · TNH · YCM · STF · APO · QLL · FGO · APOC · TLAN SERIES

=====  
收件日(Sample Receiving Date) : 10-Mar-2023  
測試期間(Testing Period) : 10-Mar-2023 to 17-Mar-2023

測試需求(Test Requested) : 依據客戶要求進行測試·測試項目請參閱測試結果表格。(Testing item(s) is/are specified by client. Please refer to result table for testing item(s).)

測試結果(Test Results) : 請參閱下一頁 (Please refer to following pages.)

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



PIN CODE: 6621A826

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# 測試報告

## Test Report

號碼(No.): ETR23302694

日期(Date): 17-Mar-2023

頁數(Page): 2 of 15

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.)

慶邦電子元器件(泗洪)有限公司 (TAIPAQ ELECTRONICS (SI-HONG) CO., LTD.)

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江蘇省昆山市蓬朗區嘉高科技工業區郭澤路 (GUO-ZE ROAD, KUNJIA HI-TECH INDUSTRIAL PARK, KUN-SHAN, JIANG-SU, CHINA)

中國 · 江蘇省 · 宿遷市 · 泗洪縣 · 經濟開發區杭州路南側 · 建設北路東側 (THE SOUTH HANGZHOU ROAD AND THE EAST JIANSHE ROAD · ECONOMIC DEVELOPMENT ZONE · SIHONG COUNTY · SUQIANCITY · JIANGSU PROVINCE · P.R. · CHINA)

### 測試部位敘述 (Test Part Description)

No.1 : 整體混測 (MIXED ALL PARTS)

### 測試結果 (Test Results)

| 測試項目<br>(Test Items)                    | 測試方法<br>(Method)   | 單位<br>(Unit) | MDL | 結果<br>(Result) |
|---|--|--------------|-----|----------------|
|   |  |              |     | No.1           |
| 鎘 (Cd) (Cadmium (Cd))                   | 參考IEC 62321-5: 2013 · 以感應耦合電漿發射光譜儀分析。(With reference to IEC 62321-5: 2013, analysis was performed by ICP-OES.)                         | mg/kg        | 2   | n.d.           |
| 鉛 (Pb) (Lead (Pb))                      | 參考IEC 62321-5: 2013 · 以感應耦合電漿發射光譜儀分析。(With reference to IEC 62321-5: 2013, analysis was performed by ICP-OES.)                         | mg/kg        | 2   | n.d.           |
| 汞 (Hg) (Mercury (Hg))                   | 參考IEC 62321-4: 2013+ AMD1: 2017 · 以感應耦合電漿發射光譜儀分析。(With reference to IEC 62321-4: 2013+ AMD1: 2017, analysis was performed by ICP-OES.) | mg/kg        | 2   | n.d.           |
| 六價鉻 Cr(VI) (Hexavalent Chromium Cr(VI)) | 參考IEC 62321-7-2: 2017 · 以紫外光-可見光分光光度計分析。(With reference to IEC 62321-7-2: 2017, analysis was performed by UV-VIS.)                     | mg/kg        | 8   | n.d.           |

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# 測試報告

## Test Report

號碼(No.): ETR23302694

日期(Date): 17-Mar-2023

頁數(Page): 3 of 15

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

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| 測試項目<br>(Test Items)             | 測試方法<br>(Method)   | 單位<br>(Unit) | MDL  | 結果<br>(Result) |
|----------------------------------|--|--------------|------|----------------|
|                                  |  |              |      | No.1           |
| 一溴聯苯 (Monobromobiphenyl)         | 參考IEC 62321-6: 2015 · 以氣相層析儀/質譜儀分析。(With reference to IEC 62321-6: 2015, analysis was performed by GC/MS.) | 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.           |
| 多溴聯苯總和 (Sum of PBBs)             |  | 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.           |
| 多溴聯苯醚總和 (Sum of PBDEs)           | mg/kg  | -            | n.d. |                |

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# 測試報告

## Test Report

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| 測試項目<br>(Test Items)   | 測試方法<br>(Method)  | 單位<br>(Unit) | MDL | 結果<br>(Result) |
|--|---|--------------|-----|----------------|
|  |   |              |     | No.1           |
| 鄰苯二甲酸丁苯甲酯 (BBP) (Butyl benzyl phthalate (BBP))                                   | 參考IEC 62321-8: 2017, 以氣相層析儀/質譜儀分析。(With reference to IEC 62321-8: 2017, analysis was performed by GC/MS.) | mg/kg        | 50  | n.d.           |
| 鄰苯二甲酸二丁酯 (DBP) (Dibutyl phthalate (DBP))   |   | mg/kg        | 50  | n.d.           |
| 鄰苯二甲酸二(2-乙基己基)酯 (DEHP) (Di-(2-ethylhexyl) phthalate (DEHP))                      |   | mg/kg        | 50  | n.d.           |
| 鄰苯二甲酸二異丁酯 (DIBP) (Diisobutyl phthalate (DIBP))                                   |   | mg/kg        | 50  | n.d.           |
| 鄰苯二甲酸二異癸酯 (DIDP) (Diisodecyl phthalate (DIDP)) (CAS No.: 26761-40-0, 68515-49-1) |   | mg/kg        | 50  | n.d.           |
| 鄰苯二甲酸二異壬酯 (DINP) (Diisononyl phthalate (DINP)) (CAS No.: 28553-12-0, 68515-48-0) |   | mg/kg        | 50  | n.d.           |
| 鄰苯二甲酸二正辛酯 (DNOP) (Di-n-octyl phthalate (DNOP)) (CAS No.: 117-84-0)               |   | mg/kg        | 50  | n.d.           |
| 鄰苯二甲酸二正戊酯 (DNPP) (Di-n-pentyl phthalate (DNPP)) (CAS No.: 131-18-0)              |   | mg/kg        | 50  | n.d.           |
| 鄰苯二甲酸二正己酯 (DNHP) (Di-n-hexyl phthalate (DNHP)) (CAS No.: 84-75-3)                |   | mg/kg        | 50  | n.d.           |

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# 測試報告

## Test Report

號碼(No.): ETR23302694

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| 測試項目<br>(Test Items)   | 測試方法<br>(Method)  | 單位<br>(Unit) | MDL  | 結果<br>(Result) |
|--|---|--------------|------|----------------|
|  |   |              |      | No.1           |
| 六溴環十二烷及所有主要被辨別出的異構物(HBCDD) ( $\alpha$ - HBCDD, $\beta$ - HBCDD, $\gamma$ - HBCDD) (Hexabromocyclododecane (HBCDD) and all major diastereoisomers identified ( $\alpha$ - HBCDD, $\beta$ - HBCDD, $\gamma$ - HBCDD)) (CAS No.: 25637-99-4, 3194-55-6 (134237-51-7, 134237-50-6, 134237-52-8)) | 參考IEC 62321-9: 2021 · 以氣相層析儀/質譜儀分析。(With reference to IEC 62321-9: 2021, analysis was performed by GC/MS.)      | mg/kg        | 20   | n.d.           |
| 氟 (F) (Fluorine (F)) (CAS No.: 14762-94-8)   | 參考BS EN 14582: 2016 · 以離子層析儀分析。(With reference to BS EN 14582: 2016, analysis was performed by IC.)             | mg/kg        | 50   | n.d.           |
| 氯 (Cl) (Chlorine (Cl)) (CAS No.: 22537-15-1)   |   | mg/kg        | 50   | n.d.           |
| 溴 (Br) (Bromine (Br)) (CAS No.: 10097-32-2)  |   | mg/kg        | 50   | n.d.           |
| 碘 (I) (Iodine (I)) (CAS No.: 14362-44-8)   |   | mg/kg        | 50   | n.d.           |
| 全氟辛烷磺酸及其鹽類 (PFOS and its salts) (CAS No.: 1763-23-1 and its salts)   | 參考CEN/TS 15968: 2010 · 以液相層析串聯質譜儀分析。(With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.) | mg/kg        | 0.01 | n.d.           |
| 全氟辛酸及其鹽類 (PFOA and its salts) (CAS No.: 335-67-1 and its salts)  |   | mg/kg        | 0.01 | n.d.           |
| 銻 (Sb) (Antimony (Sb)) (CAS No.: 7440-36-0)  | 參考US EPA 3052: 1996 · 以感應耦合電漿發射光譜儀分析。(With reference to US EPA 3052: 1996, analysis was performed by ICP-OES.)  | mg/kg        | 2    | 82.3           |
| 鈹 (Be) (Beryllium (Be)) (CAS No.: 7440-41-7)   |   | mg/kg        | 2    | n.d.           |

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# 測試報告

## Test Report

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| 測試項目<br>(Test Items)            | 測試方法<br>(Method)  | 單位<br>(Unit) | MDL | 結果<br>(Result) |
|---------------------------------|---|--------------|-----|----------------|
|                                 |   |              |     | No.1           |
| 聚氯乙烯 (Polyvinyl chloride) (PVC) | 參考ASTM E1252: 2021 · 以傅立葉轉換紅外線光譜儀及焰色法分析。(With reference to ASTM E1252: 2021, analysis was performed by FT-IR and Flame Test.) | **           | -   | Negative       |

### 備註(Note) :

1. mg/kg = ppm ; 0.1wt% = 0.1% = 1000ppm
2. MDL = Method Detection Limit (方法偵測極限值)
3. n.d. = Not Detected (未檢出) ; 小於MDL / Less than MDL
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. 全氟辛烷磺酸及其鹽類包含等物質 (PFOS and its salts including) :  
CAS No.: 1763-23-1, 2795-39-3, 29457-72-5, 29081-56-9, 70225-14-8, 56773-42-3, 251099-16-8, 307-35-7, 91036-71-4, 4021-47-0 and others.
8. 全氟辛酸及其鹽類包含等物質 (PFOA and its salts including) :  
CAS No.: 335-67-1, 335-95-5, 2395-00-8, 335-93-3, 335-66-0, 3825-26-1 and others.
9. 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 sample(s) was/were analyzed on behalf of the applicant as mixing sample in one testing. The above result(s) was/were only given as the informality value.

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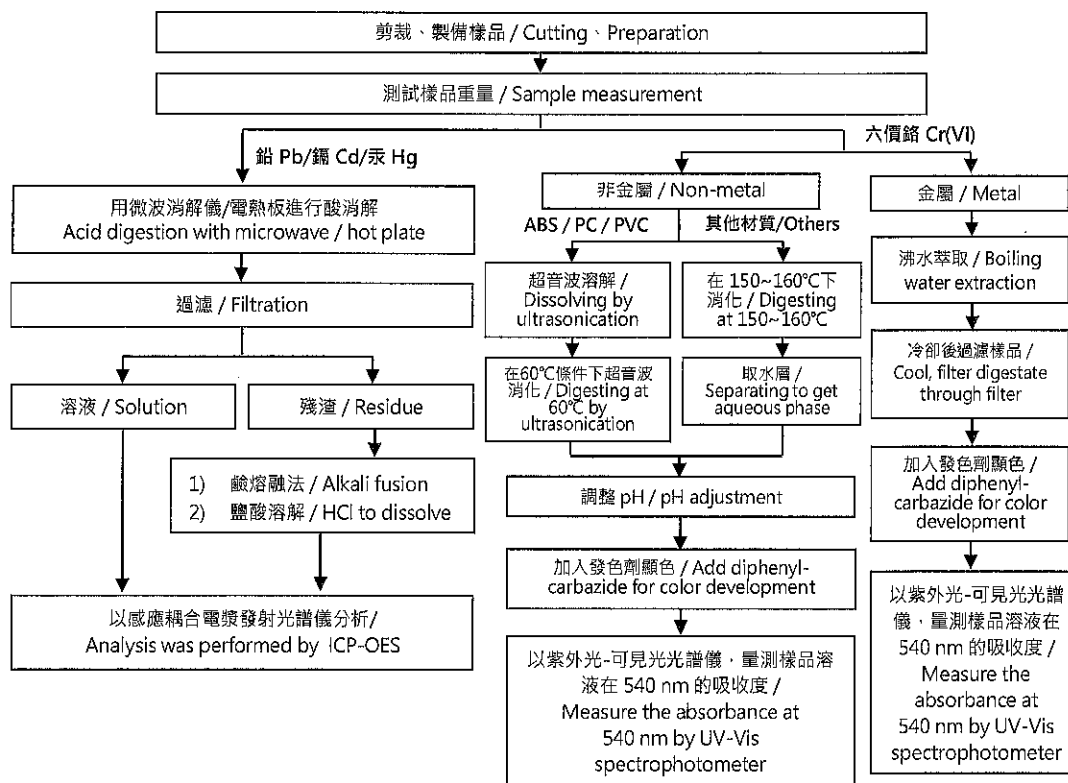
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### 重金屬流程圖 / Analytical flow chart of heavy metal

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)



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# 測試報告 Test Report

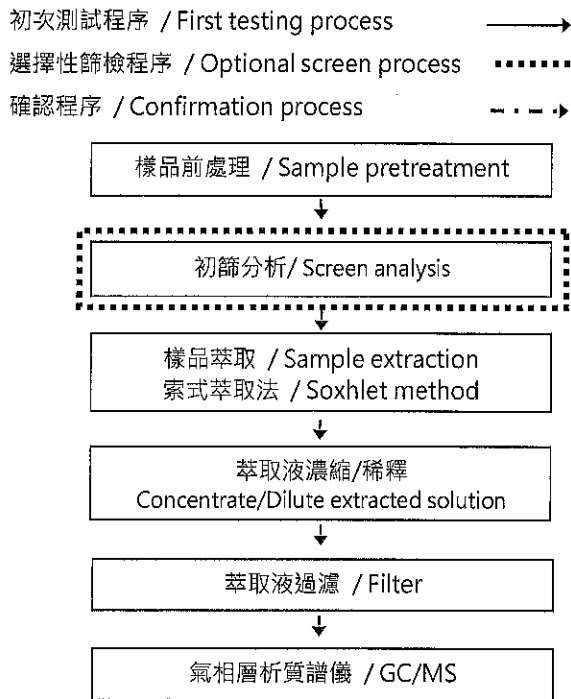
號碼(No.): ETR23302694

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## 多溴聯苯/多溴聯苯醌分析流程圖 / Analytical flow chart - PBBs/PBDEs



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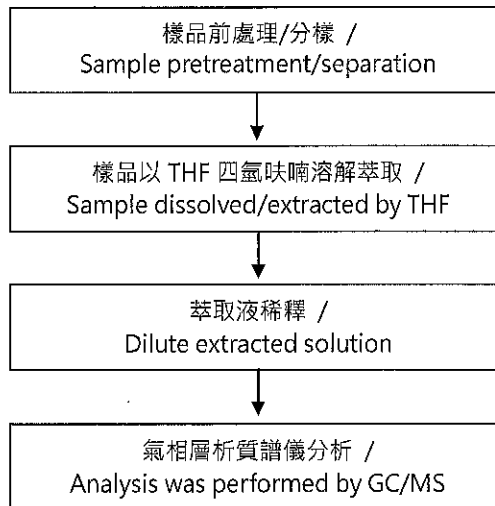
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## 可塑劑分析流程圖 / Analytical flow chart - Phthalate

【測試方法/Test method: IEC 62321-8】



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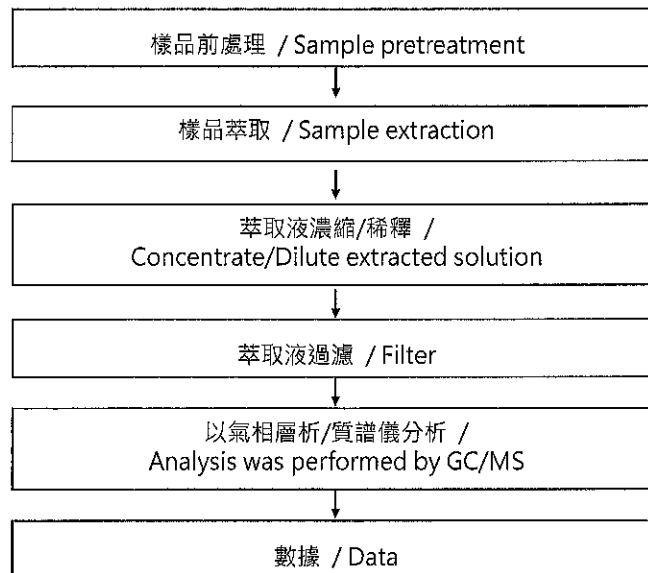
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### 六溴環十二烷分析流程圖 / Analytical flow chart - HBCDD



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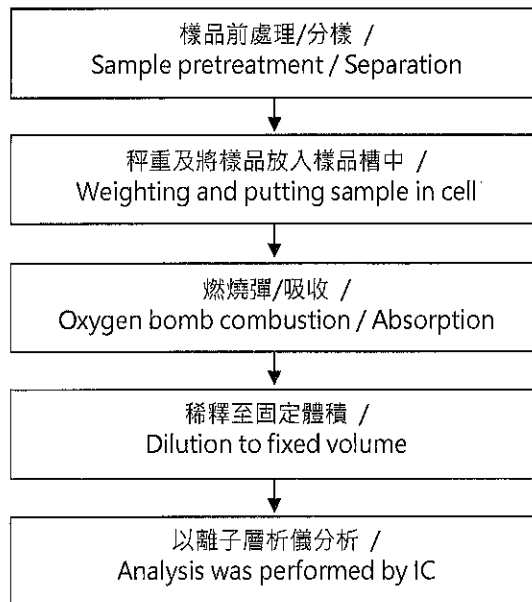
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### 鹵素分析流程圖 / Analytical flow chart - Halogen



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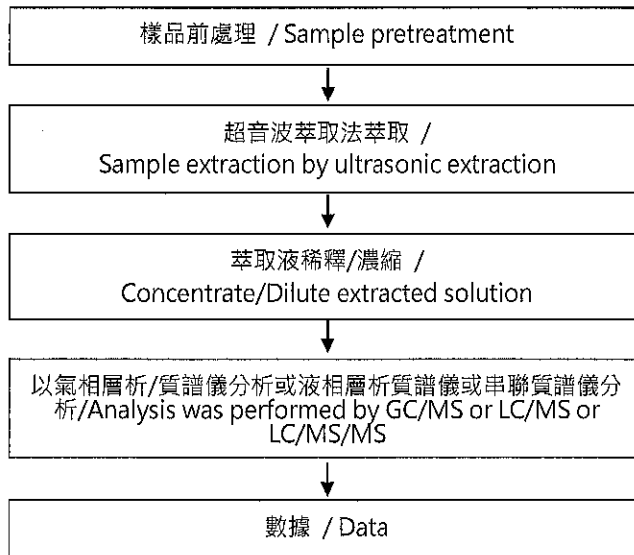
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### 全氟化合物(包含全氟辛酸/全氟辛烷磺酸/其相關化合物等等)分析流程圖 / Analytical flow chart – PFAS (including PFOA/PFOS/its related compound, etc.)



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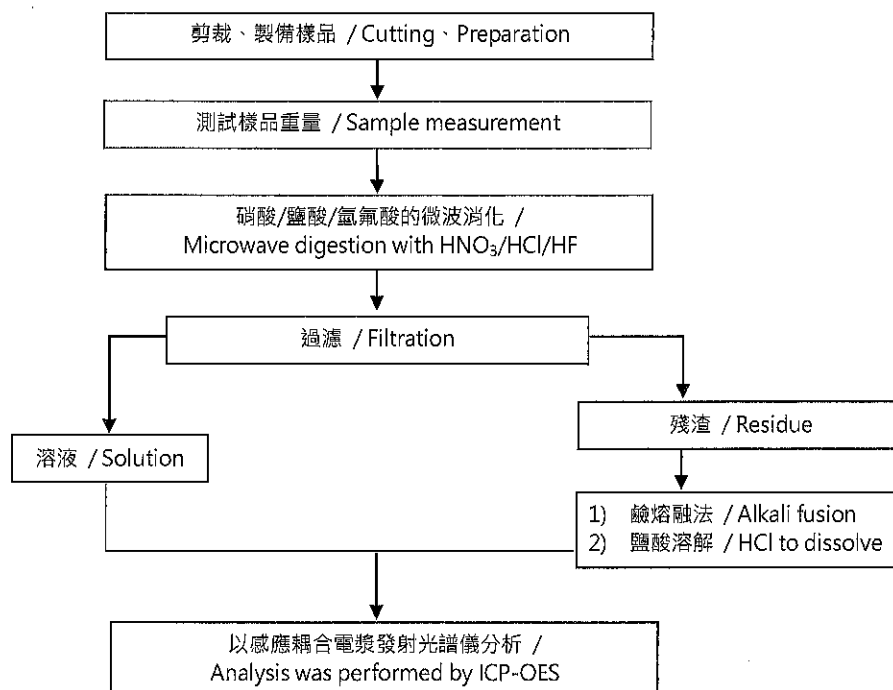
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## 元素(含重金屬)分析流程圖 / Analytical flow chart of elements (Heavy metal included)

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.

【參考方法/Reference method : US EPA 3051A · US EPA 3052】



\* US EPA 3051A 方法未添加氫氟酸 / US EPA 3051A method does not add HF.

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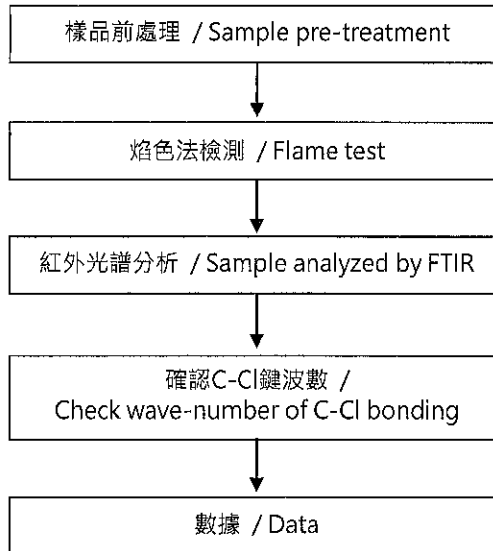
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## 聚氯乙炔物質判定分析流程圖 / Analysis flow chart - PVC



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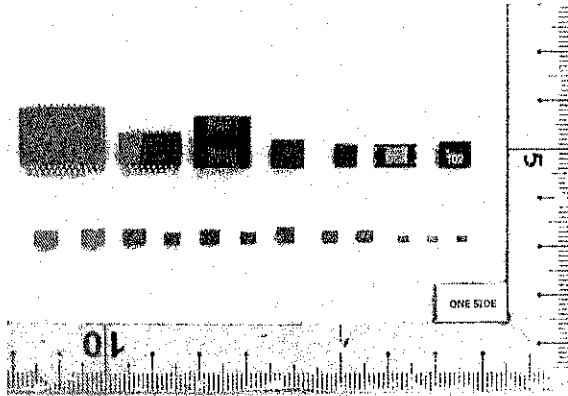
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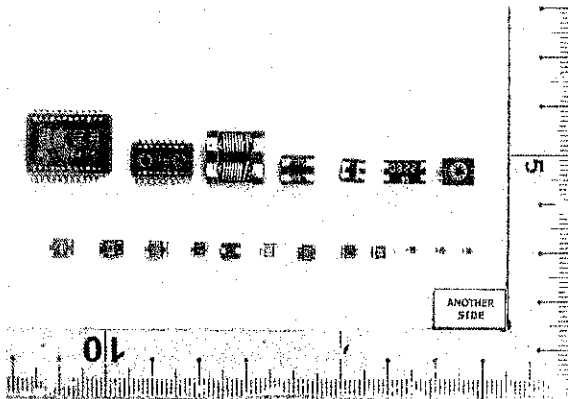
\* 照片中如有箭頭標示，則表示為實際檢測之樣品/部位。\*

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

## ETR23302694



## ETR23302694



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