

	Date	2023/6/21		Green Partne
	Customer :		Halogen-free	
	TAI-TECH P/N: FCM	1608KF-800T09		
	CUSTOMER P/N:			
	DESCRIPTION:			
	QUANTITY:	pcs		
RE	MARK:			
	Customor	Approval Feedback		
-				
		技股份有限公 ced Electronics Co., l		
□西北臺慶科技股份有限公司	<u>TAI-TECH Advar</u> इ			
TAI-TECH Advanced Elec <u>Headquarter:</u> NO.1 YOU 4TH ROAD, YOUTH IN	<u>TAI-TECH Advar</u> ] tronics Co., Ltd DUSTRIAL DISTRICT, YANG-MEI,			
TAI-TECH Advanced Elect <u>Headquarter:</u> NO.1 YOU 4TH ROAD, YOUTH IN TAO-YUAN HSIEN, TAIWAN, R.O. TEL: +886-3-4641148 FAX: +88 http://www.tai-tech.com.tw	피 Itronics Co., Ltd DUSTRIAL DISTRICT, YANG-MEI, C.	ced Electronics Co., I		
TAI-TECH Advanced Elect <u>Headquarter:</u> NO.1 YOU 4TH ROAD, YOUTH IN TAO-YUAN HSIEN, TAIWAN, R.O. TEL: +886-3-4641148 FAX: +88	TAI-TECH Advar         Image: constraint of the second struct         Image: constraint of the second struct         Constraint of the second struct	ced Electronics Co., I Sales Dep.	L <u>td</u>	
TAI-TECH Advanced Elect <u>Headquarter:</u> NO.1 YOU 4TH ROAD, YOUTH IN TAO-YUAN HSIEN, TAIWAN, R.O. TEL: +886-3-4641148 FAX: +88 http://www.tai-tech.com.tw E-mail: sales@tai-tech.com.tw Office: 深圳辦公室 11BC,Building B Fortune Plaza,N District Shenzhen TEL: +86-755-23972371 FAX: +1 ■臺慶精密電子(昆山)有限公 TAI-TECHADVANCED ELEC	<u>TAI-TECH Advar</u> ] tronics Co., Ltd DUSTRIAL DISTRICT, YANG-MEI, C. 6-3-4643565 0.7002, Shennan Avenue, Futian 86-755-23972340 ू च्] TRONICS(KUNSHAN) CO., LTD	<u>ced Electronics Co., I</u> Sales Dep. APPROVED 管哲頎	Ltd CHECKED	
TAI-TECH Advanced Elect <u>Headquarter:</u> NO.1 YOU 4TH ROAD, YOUTH IN TAO-YUAN HSIEN, TAIWAN, R.O. TEL: +886-3-4641148 FAX: +88 http://www.tai-tech.com.tw E-mail: sales@tai-tech.com.tw Office: 深圳辦公室 11BC,Building B Fortune Plaza,N District Shenzhen TEL: +86-755-23972371 FAX: +1 ■臺慶精密電子(昆山)有限公 TAI-TECHADVANCED ELEC	TAI-TECH Advar	ced Electronics Co., I Sales Dep. APPROVED 管哲頎 Eric Guan	Ltd CHECKED	DRAWN

### Ferrite Chip Bead(Lead Free)

FCM1608KF-800T09

REV	DATE	DESCRIPTION	APPROVED	CHECKED	DRAWN
1.0	13/06/06	變更可靠度條件	楊祥忠	羅培君	張嘉玲
2.0	14/01/24	變更電鍍錫層厚度 3.0um min.=>3.5um min.	楊祥忠	羅培君	張嘉玲
3.0	14/08/01	變更 Reflow 圖示	楊祥忠	羅培君	張嘉玲
3.1	14/08/01	修正包裝帶尺寸	楊祥忠	羅培君	張嘉玲
4.0	14/10/13	訂正 1608 包裝帶 Ao 尺寸	楊祥忠	羅培君	張嘉玲
5.0	16/01/26	增訂可靠度 Thermal shock: (Bead) Step3:125±2℃ 30±5min	楊祥忠	詹偉特	張嘉玲
6.0	17/02/16	修訂 Recommended PC Board Pattern	楊祥忠	詹偉特	張嘉玲
7.0	20/08/01	更新 Reflow 依 IPC EDEC J-STD-020E	鄧福興	浦冬生	王俞琴
8.0	22/12/05	更新可靠度及更正 Reflow 敘述	鄧福興	浦冬生	王俞琴
備					
註					

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RoHS

FCM1608KF-800T09

Certificate

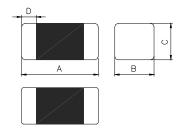
Green Partner

### Ferrite Chip Bead(Lead Free)

#### 1.Features

- 1. Monolithic inorganic material construction.
- 2. Closed magnetic circuit avoids crosstalk.
- 3. S.M.T. type.
- 4. Suitable for reflow soldering.
- 5. Shapes and dimensions follow E.I.A. spec.
- 6. Available in various sizes.
- 7. Excellent solder ability and heat resistance.
- 8. High reliability.
- 9. 100% Lead(Pb) & Halogen-Free and RoHS compliant.
- 10. Operating Temperature : -55~+125°C (Including self-temperature rise)

#### 2.Dimensions

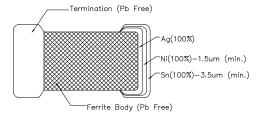


Chip Size			
Α	1.60±0.15		
В	0.80±0.15		
С	0.80±0.15		
D	0.30±0.20		
	•		

Units: mm

### 3.Part Numbering



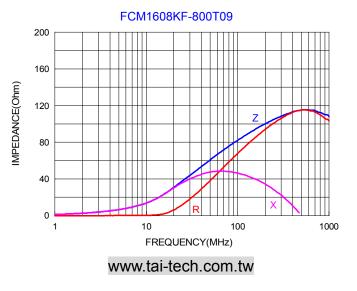


#### 4.Specification

Tai-Tech	Impedance ( $\Omega$ )	Test Frequency	DC Resistance	Rated Current
Part Number		(Hz)	(Ω) max.	(mA) max.
FCM1608KF-800T09	80±25%	60mV/100M	0.20	900

• Rated current: based on temperature rise test

• In compliance with EIA 595



Impedance-Frequency Characteristics

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### 5. Reliability and Test Condition

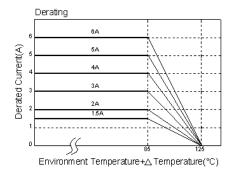
Item	Performance	Test Condition
Series No.	FCB FCM HCB GHB FCA	
Operating Temperature	-55~+125 $^\circ\mathbb{C}$ (Including self-temperature rise)	
Transportation Storage Temperature	-55~+125℃ (on board)	For long storage conditions, please see the Application Notice
Impedance (Z)		Agilent4291 Agilent E4991 Agilent4287 Agilent16192
DC Resistance	Refer to standard electrical characteristics list	Agilent 4338
Rated Current		DC Power Supply Over Rated Current requirements, there will be some risk
Temperature Rise Test	Rated Current < 1A ΔT 20℃Max Rated Current ≧ 1A ΔT 40℃Max	<ol> <li>Applied the allowed DC current.</li> <li>Temperature measured by digital surface thermometer.</li> </ol>
Life test	Appearance: no damage.	Preconditioning: Run through reflow for 3 times.( IPC/JEDEC J-STD-020E Classification Reflow Profiles) Temperature: 125±2°C Applied current: rated current. Duration: 1000±12hrs. Measured at room temperature after placing for 24±2 hrs.
Load Humidity	Impedance: within $\pm 15\%$ of initial value. RDC : within $\pm 15\%$ 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) Humidity: 85±2%R.H. Temperature: 85±2°C. Duration:1000hrsMin.Bead:with100%ratedcurr ent \ Inductance: with 10% rated current Measured at room temperature after placing for 24±2 hrs
Thermal shock	Appearance: no damage. Impedance: within±15%of initial value. RDC : within ±15% of initial value and shall not exceed the specification value	$\label{eq:preconditioning: Run through reflow for 3 times. ( IPC/JEDEC J-STD-020E Classification Reflow Profiles) Condition for 1 cycle Step1: -55\pm 2^{\circ} 30\pm 5 min. Step2: 125\pm 2^{\circ} 30\pm 5 min. Step3: 125\pm 2^{\circ} 30\pm 5 min. Number of cycles: 500 Measured at room temperature after placing for 24\pm 2 hrs.$
Vibration	Appearance : No damage. Impedance : within±15% of initial value RDC : within ±15% of initial value and shall not exceed the specification value	$eq:preconditioning: Run through reflow for 3 times.( IPC/JEDEC J-STD-020E Classification Reflow Profiles) Oscillation Frequency: 10Hz \sim 2KHz \sim 10Hz for 20 minutes Equipment : Vibration checker Total Amplitude:10g Testing Time : 12 hours(20 minutes, 12 cycles each of 3 orientations) \circ$
Bending	Appearance : No damage. Impedance : within±10% of initial value RDC : within ±15% of initial value and shall not exceed the specification value	Shall be mounted on a FR4 substrate of the following dimensions: >=0805inch(2012mm):40x100x1.2mm <0805inch(2012mm):40x100x0.8mm Bending depth: >=0805inch(2012mm):1.2mm <0805inch(2012mm):0.8mm Duration of 10 sec for a min.
Shock	Appearance ∶ No damage. Impedance ∶ within±10% of initial value	Test condition: Type Peak Normal duration (g's) (D) (ms) Value (Vi)ft/sec
	RDC : within ±15% of initial value and shall not exceed the specification value	SMD         50         11         Half-sine         11.3
		Lead 50 11 Half-sine 11.3 a.Method B, 4 hrs @155°C dry heat
Solderability	More than 95% of the terminal electrode should be covered with solder.	<ul> <li>@235°C±5°C Test time:5 +0/-0.5 seconds.</li> <li>b. Method D category 3. (steam aging 8hours ± 15 min)@ 260°C±5°C</li> <li>Test time: 30 +0/-0.5 seconds</li> </ul>

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Item	Performance	Test Condition		
		Number of heat cycles: 1		
Resistance to Soldering	Appearance : No damage.	Temperature (°C) Time (s) Temperature ramp/immersion and emersion rate		
Heat	Impedance : within±15% of initial value RDC : within ±15% of initial value and shall not exceed the specification value	260 ±5 (solder temp) 10 ±1 25mm/s ±6 mm/s		
		Depth: completely cover the termination		
Terminal strength	Appearance : No damage. Impedance : within±15% of initial value 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) Component mounted on a PCB apply a force >0805inch(2012mm):1kg <=0805inch(2012mm):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 shock the component being tested.		

#### \*\*Derating Curve

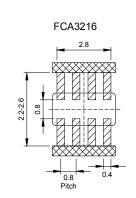
For the ferrite chip bead which withstanding current over 1.5A, as the operating temperature over 85°C, the derating current information is necessary to consider with. For the detail derating of current, please refer to the Derated Current vs. Operating Temperature curve.



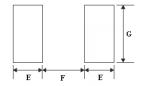
#### 6.Soldering and Mounting

#### 6-1. Recommended PC Board Pattern

	Chip Size						Pattern	
Series	Туре	A(mm)	B(mm)	C(mm)	D(mm)	E(mm)	F(mm)	G(mm)
FCB	1005	1.0±0.10	0.50±0.10	0.50±0.10	0.25±0.10	0.50	0.40	0.60
<mark>FСМ</mark>	<mark>1608</mark>	<mark>1.6±0.15</mark>	<mark>0.80±0.15</mark>	<mark>0.80±0.15</mark>	<mark>0.30±0.20</mark>	<mark>0.80</mark>	<mark>0.85</mark>	<mark>0.95</mark>
HCB	2012	2.0±0.20	1.25±0.20	0.85±0.20	0.50±0.30	1.05	1.00	1.45
GHB	2012	2.0±0.20	1.25±0.20	1.25±0.20	0.50±0.30	1.05		
FCI	3216	3.2±0.20	1.60±0.20	1.10±0.20	0.50±0.30	1.05	2.20	1.80
FHI	3225	3.2±0.20	2.50±0.20	1.30±0.20	0.50±0.30	1.05	2.20	2.70
FCH	4516	4.5±0.20	1.60±0.20	1.60±0.20	0.50±0.30	1.05	3.30	1.80
HCI	4532	4.5±0.20	3.20±0.20	1.50±0.20	0.50±0.30	1.05	3.30	3.40



ZZZ Land



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

#### 6-2. 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.

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#### TAI-TECH

#### 6-2.1 Soldering Reflow:

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

#### 6-2.2 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.)

Iron must be employed the following precautions are recommended. (Figure cut and products to  $150^{\circ}$ 

- Preheat circuit and products to 150°C

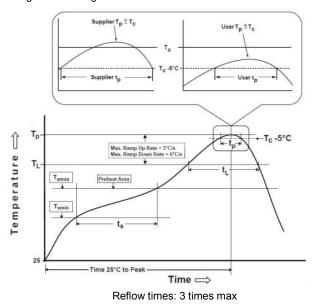
   250°C tip temperature (max)
- 350°C tip temperature (max)

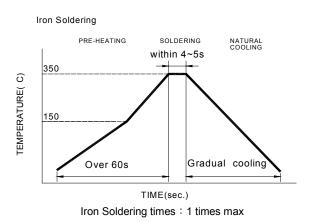
Never contact the ceramic with the iron tip
1.0mm tip diameter (max)

Use a 20 watt soldering iron with tip diameter of 1.0mm
Limit soldering time to 4~5sec.

Fig.2 Iron soldering temperature profiles

#### Fig.1 Soldering Reflow





#### Table (1.1): Reflow Profiles

Profile Type:	Pb-Free Assembly
Preheat -Temperature Min(T <sub>smin</sub> ) -Temperature Max(T <sub>smax</sub> ) -Time(t <sub>s</sub> )from(T <sub>smin</sub> to T <sub>smax</sub> )	150℃ 200℃ 60-120seconds
Ramp-up rate(T₋to T <sub>p</sub> )	3℃/second max.
Liquidus temperature(T <sub>L</sub> ) Time(t <sub>L</sub> )maintained above T <sub>L</sub>	217℃ 60-150 seconds
Classification temperature(T <sub>c</sub> )	See Table (1.2)
$Time(\mathfrak{l}_p)$ at Tc- 5 $^\circ\!\mathbb{C}$ (Tp should be equal to or less than Tc.)	< 30 seconds
Ramp-down rate( $T_p$ to $T_L$ )	6℃ /second max.
Time 25℃ to peak temperature	8 minutes max.

**Tp**: maximum peak package body temperature, **Tc**: the classification temperature. For user (customer) **Tp** should be equal to or less than **Tc**.

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

	Package Thickness	Volume mm <sup>3</sup> <350	Volume mm <sup>3</sup> 350-2000	Volume mm <sup>3</sup> >2000
	<1.6mm	260°C	260°C	260°C
PB-Free Assembly	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 .

#### 6-2.3 Solder Volume:

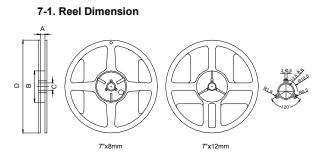
Accordingly increasing the solder volume, the mechanical stress to product is also increased. Exceeding solder volume may cause the failure of mechanical or electrical performance. Solder shall be used not to be exceed as shown in right side:

Minimum fillet height = soldering thickness + 25% product height



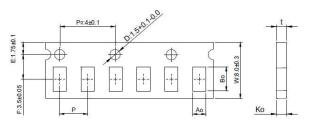


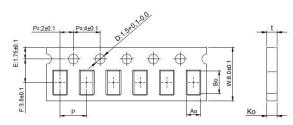
### 7.Packaging Information



#### 7-2.1 Tape Dimension / 8mm

■Material of taping is paper





Size Bo(mm) P(mm) t(mm) Ao(mm) Ko(mm) <mark>160808</mark> <mark>1.80±0.05</mark> <mark>0.96+0.05/-0.03</mark> <mark>0.95±0.05</mark> <mark>4.0±0.10</mark> <mark>0.95±0.05</mark> 201209 2.10±0.05 1.30±0.05 0.95±0.05 4.0±0.10 0.95±0.05

Ko(mm)

1.28±0.10

1.25±0.10

1.55±0.10

1.04±0.10

P(mm)

4.0±0.10

4.0±0.10

4.0±0.10

4.0±0.10

t(mm)

0.22±0.05

0.23±0.05

0.22±0.05

0.22±0.05

D1(mm)

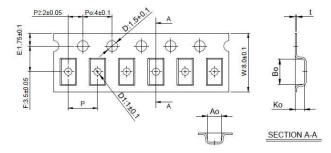
1.0±0.10

1.0±0.10

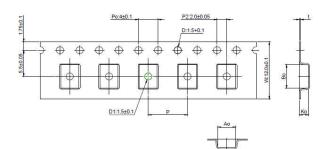
1.0±0.10

1.0±0.10

Material of taping is plastic



7-2.2 Tape Dimension / 12mm



Size	Bo(mm)	Ao(mm)	Ko(mm)	P(mm)	t(mm)	D1(mm)
451616	4.70±0.10	1.75±0.10	1.75±0.10	4.0±0.10	0.24±0.05	1.5±0.10
453215	4.70±0.10	3.45±0.10	1.60±0.10	8.0±0.10	0.24±0.05	1.5±0.10

### KBM01-230600586 P6.

Туре	A(mm)	B(mm)	C(mm)	D(mm)
7"x8mm	<mark>9.0±0.5</mark>	60±2	<mark>13.5±0.5</mark>	<mark>178±2</mark>
7"x12mm	13.5±0.5	60±2	13.5±0.5	178±2

Size	Bo(mm)	Ao(mm)	Ko(mm)	P(mm)	t(mm)
100505	1.12±0.03	0.62±0.03	0.60±0.03	2.0±0.05	0.60±0.03

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Size

201212

321611

322513

321609

Bo(mm)

2.10±0.10

3.35±0.10

3.42±0.10

3.40±0.10

Ao(mm)

1.28±0.10

1.75±0.10

2.77±0.10

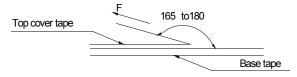
1.77±0.10

#### TAI-TECH

#### 7-3. Packaging Quantity

Chip Size	453215	451616	322513	321611	321609	201212	201209	<mark>160808</mark>	100505
Chip / Reel	1000	2000	2500	3000	3000	2000	4000	<mark>4000</mark>	10000
Inner box	4000	8000	12500	15000	15000	10000	20000	<mark>20000</mark>	50000
Middle box	20000	40000	62500	75000	75000	50000	100000	<mark>100000</mark>	250000
Carton	40000	80000	125000	150000	150000	100000	200000	<mark>200000</mark>	500000

#### 7-4. Tearing Off Force



The force for tearing off cover tape is 15 to 60 grams in the arrow direction under the following conditions.

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

#### Application Notice

Storage Conditions(component level)

- To maintain the solder ability of terminal electrodes:
- 1. TAI-TECH products meet IPC/JEDEC J-STD-020E standard-MSL, level 1.
- 2. Temperature and humidity conditions: Less than 40  $^\circ\!\mathrm{C}$  and 60% RH.
- 3. Recommended products should be used within 12 months from 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.  $\label{eq:barden}$

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## 測試報告 Test Report

#### 號碼(No.): ETR22B04558 日期(Date): 06-Dec-2022

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.)

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

桃園市楊梅區幼獅工業區幼四路1號 (NO. 1, YOU 4TH ROAD, YOUTH INDUSTRIAL DISTRICT, YANG-MEI, TAO-YUAN CITY, TAIWAN R. O. C.)

江蘇省昆山市篷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) 樣品型號(Style/Item No.)	:	FERRITE CHIP BEAD · FERRITE CHIP INDUCTOR · ARRAY · MCF · MCM · YMV SERIES FERRITE CHIP BEAD · FERRITE CHIP INDUCTOR · ARRAY · MCF · MCM · YMV SERIES
=====================================	=== : :	======================================
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 Ma Signed for and on behalf SGS TAIWAN LTD. Chemical Laboratory - Taipei



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SGS Taiwan Ltd. 台灣檢驗科技股份有限公司



# **Test Report**

號碼(No.): ETR22B04558 日期(Da

日期(Date): 06-Dec-2022

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.)

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#### 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 (Test Items)	測試方法 (Method)	單位 (Unit)	MDL	結果 (Result) No.1
鎘 (Cd) (Cadmium (Cd)) (CAS No.: 7440- 43-9)	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)) (CAS No.: 7439-92-1)	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)) (CAS No.: 7439- 97-6)	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)) (CAS No.: 18540-29-9)	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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## **Test Report**

號碼(No.): ETR22B04558 日

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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 (Test Items)	測試方法 (Method)	單位 (Unit)	MDL	結果 (Result)
				No.1
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)	会考ⅠFC (2221 () 2015 \\\\\/>///////////////////////////////	mg/kg	5	n.d.
多溴聯苯總和 (Sum of PBBs)	參考IEC 62321-6: 2015,以氣相層析儀/質譜儀分 析。(With reference to IEC 62321-6: 2015,	mg/kg	-	n.d.
一溴聯苯醚 (Monobromodiphenyl ether)	analysis was performed by GC/MS.)	mg/kg	5	n.d.
二溴聯苯醚 (Dibromodiphenyl ether)	analysis was performed by GC/WS.)	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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## **Test Report**

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測試項目 (Test Items)	測試方法 (Method)	單位 (Unit)	MDL	結果 (Result) No.1
鄰苯二甲酸丁苯甲酯 (BBP) (Butyl benzyl phthalate (BBP)) (CAS No.: 85-68-7)		mg/kg	50	n.d.
		mg/kg	50	n.d.
鄰苯二甲酸二(2-乙基己基)酯 (DEHP) (Di- (2-ethylhexyl) phthalate (DEHP)) (CAS No.: 117-81-7)		mg/kg	50	n.d.
鄰苯二甲酸二異丁酯 (DIBP) (Diisobutyl phthalate (DIBP)) (CAS No.: 84-69-5)		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)	參考IEC 62321-8: 2017 · 以氣相層析儀/質譜儀分析。(With reference to IEC 62321-8: 2017,	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)	analysis was performed by GC/MS.)	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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# **Test Report**

號碼(No.): ETR22B04558 日其

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測試項目 (Test Items)	測試方法 (Method)	單位 (Unit)	MDL	結果 (Result) No.1
<ul> <li>六溴環十二烷及所有主要被辨別出的異構物(HBCDD) (α- HBCDD, β- HBCDD, γ- HBCDD) (Hexabromocyclododecane (HBCDD) and all major</li> <li>diastereoisomers identified (α- HBCDD, β- HBCDD, γ- HBCDD)) (CAS No.:</li> <li>25637-99-4, 3194-55-6 (134237-51-7, 134237-50-6, 134237-52-8))</li> </ul>	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)		mg/kg	50	n.d.
氯 (Cl) (Chlorine (Cl)) (CAS No.: 22537- 15-1)	参考BS EN 14582: 2016,以離子層析儀分析。		50	n.d.
溴 (Br) (Bromine (Br)) (CAS No.: 10097- 32-2)	(With reference to BS EN 14582: 2016, analysis was performed by IC.)	mg/kg	50	n.d.
碘 (I) (lodine (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	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)	儀分析。(With reference to CEN/TS 15968: 2010, analysis was performed by LC/MS/MS.)	mg/kg	0.01	n.d.
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

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測試項目 (Test Items)	測試方法 (Method)	單位 (Unit)	MDL	結果 (Result)
(Test iteriis)	(Method)	(Onit)		No.1
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	mg/kg	2	n.d.
砷 (As) (Arsenic (As)) (CAS No.: 7440- 38-2)	参考US EPA 3052. 1996,以愿應稱口龟浆發射元 譜儀分析。(With reference to US EPA 3052: 1996, analysis was performed by ICP-OES.)	mg/kg	2	n.d.
鈹 (Be) (Beryllium (Be)) (CAS No.: 7440- 41-7)	1990, analysis was performed by ICP-OES.)	mg/kg	2	n.d.

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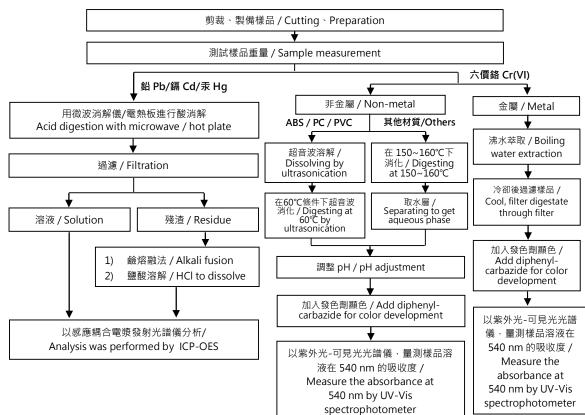
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#### 重金屬流程圖 / Analytical flow chart of heavy metal

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.

 $(Cr^{6+} test method excluded)$ 



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# **Test Report**

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日期(Date): 06-Dec-2022

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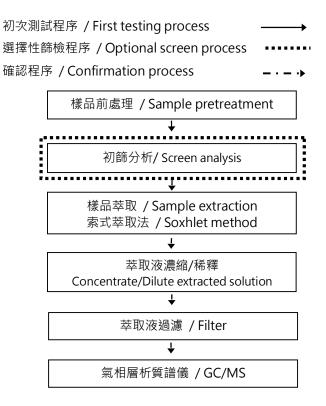
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#### 多溴聯苯/多溴聯苯醚分析流程圖 / Analytical flow chart - PBBs/PBDEs



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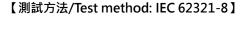
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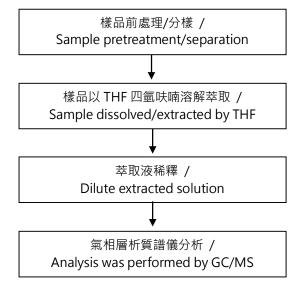
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#### 可塑劑分析流程圖 / Analytical flow chart - Phthalate





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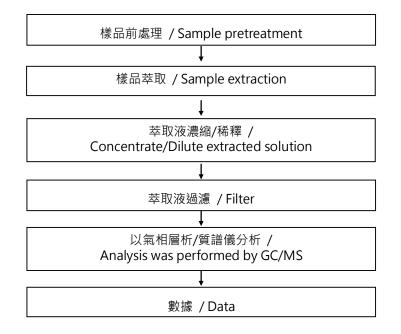
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#### 六溴環十二烷分析流程圖 / Analytical flow chart - HBCDD

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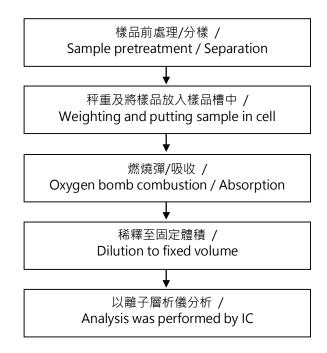
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鹵素分析流程圖 / Analytical flow chart - Halogen

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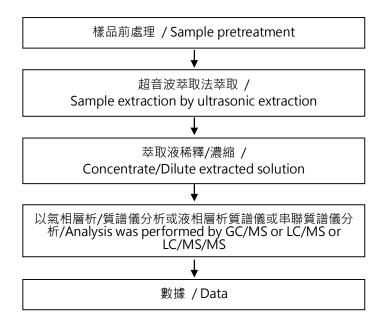
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# 全氟化合物(包含全氟辛酸/全氟辛烷磺酸/其相關化合物等等)分析流程圖 / Analytical flow chart – PFAS (including PFOA/PFOS/its related compound, etc.)



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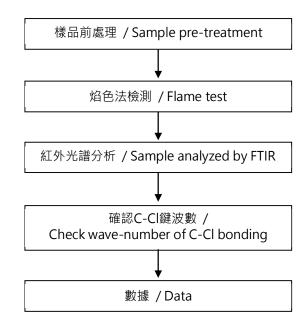
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#### 聚氯乙烯物質判定分析流程圖 / Analysis flow chart - PVC

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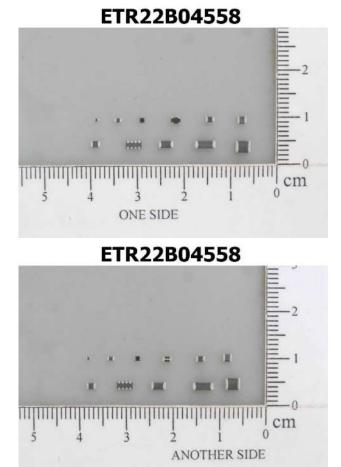
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#### \*照片中如有箭頭標示,則表示為實際檢測之樣品/部位.\* (The tested sample / part is marked by an arrow if it's shown on the photo.)



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