

# 不使用限用物質聲明書

## Non-use of restricted substances statement

### 請填寫相關資訊

Please fill in the relevant information :

公司名稱 Company name : 兌軒企業有限公司

公司負責人 Company Responsible Person : 陳黃金鶴

立書人 Declarant : 陳香梅

立書人職稱 Declarant's Title : 業務部經理

本聲明書生效日期 Effective Date of this Declaration : 2019/04/19



### 請勾選本聲明書適用範圍

Please Select the Scope of this Declaration :

☒ 提供給研揚的全部產品 All Products provided to AAEON

☐ 研揚料號 AAEON Part Number :

☐ 原廠料號 Manufacturer Part Number :



兌軒企業有限公司

(填寫公司名稱) 響應全球綠色環保法規或其他法律，保證如下事項：

兌軒企業有限公司 (Fill in Company name) Response to global green environmental protection regulations or other laws, guarantee the following matters:

一、產品符合歐盟 RoHS (2011/65/EU)\* 規範。

The product complies with EU RoHS (2011/65/EU) norms.

- i. 歐盟於 2015 年 6 月 4 日公布指令 (EU) 2015/863，將四項可塑劑 DEHP, BBP, DBP and DIBP 增加至 Annex II 清單中，限值仍為 1000ppm，從 2019 年 7 月 22 日起需符合此要求，作為供應商，如果有包含上述物質，務必主動通知研揚。

EU announce with (EU)2015/863 that DEHP, BBP, DBP and DIBP are primarily used to soften plastics, that will be restricted from **22 July 2019** for all electrical and electronic equipment. As suppliers, if your components content with above substances, please inform to AAEON related people.

**5F, No. 135, Lane 235, PaoChiao Rd., Hsin-Tien  
Dist. New Taipei City, 231, Taiwan, R.O.C.**

# 承認書

## SPECIFICATION FOR APPROVAL

1. 客戶名稱  
Customer : 研揚科技股份有限公司
2. 客戶料號  
Part No : 175920001F
3. 供應商料號  
Model No : SE-F5025A-01 REV1
4. 申請日期  
Apply Date: 2019/7/5

Project Engineer	CHIEF ENGINEER	R&D MANAGER	SALES
Stephen Lee	C.J. Chen		Cathy Chen

CUSTOMER APPROVAL SIGNATURE

CUSTOMER APPROVED STAMP

兗軒企業有限公司

SPRING SPREAD ENTERPRISE CO., LTD.

TEL: 02-29992789

FAX:02-29992585






# 正新鋁業股份有限公司

## 鋁料材質證明書

正 新 鋁 門 窗

日期：107 年 02 月 12 日

客戶名稱		協耀宏科技有限公司		工程名稱						
合金規格		6063-T5								
化學成份		矽	鐵	銅	錳	鉻	鎂	鋅	鈦	
%	規 範	0.2-0.6	0.35 以下	0.10 以下	0.10 以下	0.10 以下	0.45-0.9	0.10 以下	0.10 以下	
餘額=鋁	實 測	0.47	0.19	0.00	0.01	0.00	0.67	0.02	0.028	
分析判定		合格								
備註		化學成份依據 CNS 2068 H3021								
廠長				品管主管				分析員		
工廠地址：中壢工業區北園二路 6 號					TEL:03-4526911			FAX：03-4520071		

# Safety Data Sheet (SDS)

## 安全資料表

### 一、化學產品與公司資料(Chemical Product and Company Identification)

物品名稱(Material Name)：鋁 (Aluminum)

化學公式(Chemical Formula)：混合物(Mixture)

製造商名稱(Company)：展維鋁業股份有限公司 (TZAN WEI ALUMINUM CO.,LTD.)

地址(ADDRESS)：台南市仁德區仁義里義林路 148 巷 45 號 (No.45, Lane 148, Yih-Lin Road, Jen-The District, Tainan City 71752, Taiwan)

電話(TEL)： 886-6-2701136

傳真(FAX)： 886-6-2700238

### 二、成分辨識資料(Composition and Information on Ingredients)

6063 合金組成(Composition)：

化學性質：		
物質成分之中英文名稱	濃度或濃度範圍(成分百分比)	CAS #編號
鋁(Al)	Bal.	7429-90-5
矽(Si)	0.2~0.6%	7440-21-3
鐵(Fe)	< 0.35%	7439-89-6
銅(Cu)	< 0.1%	7440-50-8
錳(Mn)	< 0.1%	7439-96-5
鎂(Mg)	0.45~0.9%	7439-95-4
鉻(Cr)	< 0.1%	7440-47-3
鋅(Zn)	< 0.1%	7440-66-6
鈦(Ti)	< 0.1%	7440-32-6
Other-each	< 0.05%	
Other-total	< 0.15%	

### 三、危害辨識資料(Hazards Identification)

潛在影響(Potential Acute Health Effects)：

接觸皮膚略有危害(刺激性)。對眼睛無刺激性。食入無危害性。

(Slightly hazardous in case of skin contact (irritant). Non-irritating to the eyes. Non-hazardous in case of ingestion.)

潛在慢性影響(Potential Chronic Health Effects)：

最 重 要 危 害 效 應	健康危害效應： NA(CARCINOGENIC EFFECTS: Not available.)
	環境影響： NA(MUTAGENIC EFFECTS: Not available.)
	物理性及化學性危害： NA。(TERATOGENIC EFFECTS: Not available.)
	特殊危害： NA(DEVELOPMENTAL TOXICITY: Not available.)

物質對肺有毒性。反覆或長期暴露於此物質中將造成器官損害。反覆暴露於高毒性物質中，毒性將會累積於一個或多個器官中。

(The substance is toxic to lungs. Repeated or prolonged exposure to the substance can produce target organs damage. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.)

#### 四、急救措施(First Aid Measures)

不同暴露途徑之急救方法：

- 吸入：本產品型態吸入之可能性相當低。如吸入則速呼吸新鮮空氣；如無呼吸則施以人工呼吸；如呼吸困難則給予氧氣；並迅速接受醫療治療。(Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.)
- 皮膚接觸：無危害性。可用肥皂水清洗；使用潤膚物質覆蓋受刺激皮膚；如刺激情形加劇則接受醫療治療。(Skin Contact: Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops.)
- 眼睛接觸：本產品型態接觸眼睛之可能性相當低；如接觸則立即以大量清水沖洗至少15分鐘以上；如發生刺激性情形則接受醫療治療。(Eye Contact: Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation occurs.)
- 食入：本產品型態食入之可能性相當低。如食入，無醫護人員指示則不可進行催吐；如食入者無意識則不可給予任何物質於口中；如已大量吞入此物質則請求醫師協助；鬆脫較緊繃之衣物如：領帶、皮帶等。(Ingestion: Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.)

Special Remarks on Fire Hazards: Not available.

Special Remarks on Explosion Hazards: Not available.

## 五、滅火措施(Fire and Explosion Data)

易燃物(Products of Combustion)：金屬氧化物(Some metallic oxides.)

滅火指示(Fire Fighting Media and Instructions)：小火使用乾性滅火器；大火則灑水或泡沫；不可使用噴水器(SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.)

## 六、洩漏處理方法(Accidental Release Measures)

小規模洩漏(Small Spill)：使用適當工具將洩漏固體放至容器中；使用清水清洗髒污表面並依照當地主管機關指示做處理。

(Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.)

大規模洩漏(Large Spill)：使用鏟子將洩漏固體放至容器中；使用清水清洗髒污表面並遵照衛生系統撤離人員。

(Use a shovel to put the material into a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system.)

## 七、安全處置與儲存方法(Handling and Storage)

處置(Precautions)：

勿食入。穿著防護衣。如食入則立即依照包裝盒或標籤上成分尋求醫療建議。遠離氧化酸、氧化鹼。

(Do not ingest. Wear suitable protective clothing. If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents, acids, alkalis.)

儲存(Storage)：

包裝緊閉。置於涼爽通風處。對濕氣敏感。

(Keep container tightly closed. Keep container in a cool, well-ventilated area.

Moisture sensitive.)

## 八、暴露預防措施(Exposure Controls/Personal Protection)

工程控制(Engineering Controls)：加工的場所必需有通風裝置。塵、煙、霧皆需控制在暴露標準之下。

(Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.)



個人防護設備(Personal Protection)：

- 呼吸防護(Inhalation Protection)：口罩(Mask)
- 手部防護(Hands Protection)：手套(Gloves)
- 眼睛防護(Eyes Protection)：安全護目鏡(Safety glasses)
- 皮膚防護(Skin Protection)：工作鞋(Work shoes)

#### 九、物理及化學性質(Physical and Chemical Properties)

物質狀態(Physical state and appearance)： 固體(Solid)	形狀： 圓棒狀
顏色(Color)： 金屬性灰(Silver-white)	氣味(Odor)： 無味(Odorless)
pH 值(pH (1% soln/water))： 不適用(Not applicable.)	熔點/熔點範圍(Melting Point)： 約 580 ~660
溶解度(Solubility)：不溶於水。可溶於鹼、硫酸、鹽酸。 (Insoluble in cold water, hot water. Soluble in alkalies, Sulfuric acid, Hydrochloric acid. Insoluble in concentrated Nitric Acid, hot Acetic acid.)	

#### 十、安定性及反應性(Stability and Reactivity Data)

安定性(Stability)：正常狀況下安定(The product is stable)
應避免之狀況(Conditions of Instability)：漏氣及腐蝕性物質會氧化本物質(Incompatible materials, exposure to moist air or water)
應避免之物質(Incompatibility with various substances)：強性氧化物、腐蝕劑(Reactive with oxidizing agents, acids, alkalis)
特殊腐蝕註明(Special Remarks on Corrosivity)：鋁合金接觸其他金屬時會快速腐(Aluminum is strongly electropositive so that it corrodes rapidly in contact with other metals)

#### 十一、毒性資料(Toxicological Information)

其他毒性對人體影響(Other Toxic Effects on Humans)：
皮膚：/刺激性(Slightly hazardous in case of skin contact (irritant))
眼睛：/接觸定量粉塵有危害(Slightly hazardous in case of eyes contact (irritant))
食入：/不會有急性毒反應(Non-hazardous in case of ingestion)
吸入：/吸入定量粉塵對呼吸有危害(Non-hazardous in case of inhalation)

#### 十二、生態資料(Ecological Information)

生物降解(Products of Biodegradation)：短期危害不會造成生物降解，但長期下來可能發生。

(Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.)

### 十三、廢棄處置方法(Disposal Considerations)

廢棄處置方法(Waste Disposal)：1.參考現行法規。2.依儲存條件來儲存廢棄物。(Waste must be disposed of in accordance with local environmental control regulations.)
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### 十四、運送資料(Transport Information)

運送規定(Transport regulations)：道路交通安全規則(local regulations)
特殊運送方法及注意事項(Special Provisions for Transport)：無特殊運送方法(Not applicable)

Organization Law of Occupation Safety and Health Administration Ministry of Labor-Ministry of Labor

### 十五、法規資料(Other Regulatory Information)

適用法規(Regulatory Information)： 勞工安全衛生設施規則(Organization Law of Occupation Safety and Health Administration Ministry of Labor-Ministry of Labor) 危險物及有害物通識規則(Hazard Communication- Ministry of Labor) 勞工作業環境空氣中有害物容許濃度標準(Hazard Communication- Ministry of Labor) 事業廢棄物貯存清除處理方法及設施標準(Environment Policy- Environment Protection Administration Executive Yuan R.O.C.) 道路交通安全規則(The Road Traffic Security Rules-Ministry of Transportation and Communications R.O.C)
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### 十六、其他資料(Other Information)

製表單位 (Tabulation)	展維鋁業(股)有限公司(TZAN WEI ALUMINUM CO.,LTD.)
	地址/電話：台南市仁德區仁義里義林路 148 巷 45 號 TEL:886-6-2701136(No.45, Lane 148, Yih-Lin Road, Jen-The District, Tainan City 71752, Taiwan)

本公司對上述資料已力求正確，各項數據與資料僅供參考，使用者請依應用需求，自行負責判斷其可用性。

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## 試驗報告

## Test Report

號碼(No.) : KA/2018/C2027 日期(Date) : 2019/01/02

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裕瑋鋁業股份有限公司

YU-WEI ALUMINUM CO., LTD.

屏東縣九如鄉東寧村東寧路15-2號

NO. 15-2, TUNG NING RD., TUNG NING VILLAGE, CHIU JU TOWNSHIP, PINGTUNG COUNTY 904, 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) : 鋁圓棒 (ALUMINIUM BILLETS)  
樣品型號(Style/Item No.) : 6063  
收件日期(Sample Receiving Date) : 2018/12/22  
測試期間(Testing Period) : 2018/12/22 to 2019/01/02  
送樣廠商(Sample Submitted By) : 裕瑋鋁業股份有限公司 (YU-WEI ALUMINUM CO., LTD.)

### 測試需求(Test Requested) :

(1) 依據客戶指定, 參考RoHS 2011/65/EU Annex II及其修訂指令(EU) 2015/863測試鎘、鉛、汞、六價鉻、多溴聯苯、多溴聯苯醚, DBP, BBP, DEHP, DIBP. (As specified by client, with reference to RoHS 2011/65/EU Annex II and amending Directive (EU) 2015/863 to determine Cadmium, Lead, Mercury, Cr(VI), PBBs, PBDEs, DBP, BBP, DEHP, DIBP contents in the submitted sample(s).)

(2) 其他測試項目請見下一頁. (Please refer to next pages for the other item(s).)

測試方法(Test Method) : 請參閱下一頁 (Please refer to following pages).

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

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

  
報告簽署人/Ray Chang, Ph.D./Manager - Tech  
Signed for and on behalf of  
SGS Taiwan Limited



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Member of the SGS Group

## 試驗報告

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# Test Report

裕瑋鋁業股份有限公司

YU-WEI ALUMINUM CO., LTD.

屏東縣九如鄉東寧村東寧路15-2號

NO. 15-2, TUNG NING RD., TUNG NING VILLAGE, CHIU JU TOWNSHIP, PINGTUNG COUNTY 904, TAIWAN

### 測試結果(Test Results)

測試部位(PART NAME)No. 1 : 銀色金屬 (SILVER COLORED METAL)

測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測 極限值 (MDL)	結果 (Result) No. 1	限值 (Limit)
鎘 / Cadmium (Cd)	mg/kg	參考 IEC 62321-5: 2013 方法, 以感應耦合電漿原子發射光譜儀檢測. / With reference to IEC 62321-5: 2013 and performed by ICP-AES.	2	n. d.	100
鉛 / Lead (Pb)	mg/kg	參考 IEC 62321-5: 2013 方法, 以感應耦合電漿原子發射光譜儀檢測. / With reference to IEC 62321-5: 2013 and performed by ICP-AES.	2	10.5	1000
汞 / Mercury (Hg)	mg/kg	參考 IEC 62321-4: 2013 方法, 以感應耦合電漿原子發射光譜儀檢測. / With reference to IEC 62321-4: 2013 and performed by ICP-AES.	2	n. d.	1000
六價鉻 / Hexavalent Chromium Cr(VI)(#2)	µg/cm <sup>2</sup>	參考 IEC 62321-7-1:2015, 以 UV-VIS 檢測. / With reference to IEC 62321-7-1:2015 and performed by UV-VIS.	0.10	n. d.	-
多溴聯苯總和 / Sum of PBBs	mg/kg	參考 IEC 62321-6: 2015 方法, 以氣相層析/質譜儀檢測. / With reference to IEC 62321-6: 2015 and performed by GC/MS.	-	n. d.	1000
一溴聯苯 / Monobromobiphenyl			5	n. d.	-
二溴聯苯 / Dibromobiphenyl			5	n. d.	-
三溴聯苯 / Tribromobiphenyl			5	n. d.	-
四溴聯苯 / Tetrabromobiphenyl			5	n. d.	-
五溴聯苯 / Pentabromobiphenyl			5	n. d.	-
六溴聯苯 / Hexabromobiphenyl			5	n. d.	-
七溴聯苯 / Heptabromobiphenyl			5	n. d.	-
八溴聯苯 / Octabromobiphenyl			5	n. d.	-
九溴聯苯 / Nonabromobiphenyl			5	n. d.	-
十溴聯苯 / Decabromobiphenyl			5	n. d.	-

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化學實驗室-高雄 Chemical Laboratory - Kao., SGS Taiwan Ltd.

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屏東縣九如鄉東寧村東寧路15-2號  
NO. 15-2, TUNG NING RD., TUNG NING VILLAGE, CHIU JU TOWNSHIP, PINGTUNG COUNTY 904, TAIWAN

測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測 極限值 (MDL)	結果 (Result)	限值 (Limit)
				No. 1	
多溴聯苯醚總和 / Sum of PBDEs	mg/kg	參考 IEC 62321-6: 2015 方法, 以氣相層析/質譜儀檢測. / With reference to IEC 62321-6: 2015 and performed by GC/MS.	-	n. d.	1000
一溴聯苯醚 / Monobromodiphenyl ether			5	n. d.	-
二溴聯苯醚 / Dibromodiphenyl ether			5	n. d.	-
三溴聯苯醚 / Tribromodiphenyl ether			5	n. d.	-
四溴聯苯醚 / Tetrabromodiphenyl ether			5	n. d.	-
五溴聯苯醚 / Pentabromodiphenyl ether			5	n. d.	-
六溴聯苯醚 / Hexabromodiphenyl ether			5	n. d.	-
七溴聯苯醚 / Heptabromodiphenyl ether			5	n. d.	-
八溴聯苯醚 / Octabromodiphenyl ether			5	n. d.	-
九溴聯苯醚 / Nonabromodiphenyl ether			5	n. d.	-
十溴聯苯醚 / Decabromodiphenyl ether			5	n. d.	-
鄰苯二甲酸二異丁酯 / DIBP (Di-isobutyl phthalate) (CAS No.: 84-69-5)	mg/kg	參考 IEC 62321-8:2017, 以氣相層析儀/質譜儀檢測. / With reference to IEC 62321-8:2017. Analysis was performed by GC/MS.	50	n. d.	1000
鄰苯二甲酸二丁酯 / DBP (Dibutyl phthalate) (CAS No.: 84-74-2)	mg/kg	參考 IEC 62321-8:2017, 以氣相層析儀/質譜儀檢測. / With reference to IEC 62321-8:2017. Analysis was performed by GC/MS.	50	n. d.	1000
鄰苯二甲酸丁苯甲酯 / BBP (Butyl Benzyl phthalate) (CAS No.: 85-68-7)	mg/kg	參考 IEC 62321-8:2017, 以氣相層析儀/質譜儀檢測. / With reference to IEC 62321-8:2017. Analysis was performed by GC/MS.	50	n. d.	1000
鄰苯二甲酸二(2-乙基己基)酯 / DEHP (Di- (2-ethylhexyl) phthalate) (CAS No.: 117-81-7)	mg/kg	參考 IEC 62321-8:2017, 以氣相層析儀/質譜儀檢測. / With reference to IEC 62321-8:2017. Analysis was performed by GC/MS.	50	n. d.	1000

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裕瑋鋁業股份有限公司

YU-WEI ALUMINUM CO., LTD.

屏東縣九如鄉東寧村東寧路15-2號

NO. 15-2, TUNG NING RD., TUNG NING VILLAGE, CHIU JU TOWNSHIP, PINGTUNG COUNTY 904, TAIWAN

測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測 極限值 (MDL)	結果 (Result)	限值 (Limit)
				No. 1	
鹵素 / Halogen					
鹵素 (氟) / Halogen-Fluorine (F) (CAS No. : 14762-94-8)	mg/kg	參考BS EN 14582:2016, 以離子層析儀檢測. / With reference to BS EN 14582:2016. Analysis was performed by IC.	50	n. d.	-
鹵素 (氯) / Halogen-Chlorine (Cl) (CAS No. : 22537-15-1)	mg/kg	參考BS EN 14582:2016, 以離子層析儀檢測. / With reference to BS EN 14582:2016. Analysis was performed by IC.	50	n. d.	-
鹵素 (溴) / Halogen-Bromine (Br) (CAS No. : 10097-32-2)	mg/kg	參考BS EN 14582:2016, 以離子層析儀檢測. / With reference to BS EN 14582:2016. Analysis was performed by IC.	50	n. d.	-
鹵素 (碘) / Halogen-Iodine (I) (CAS No. : 14362-44-8)	mg/kg	參考BS EN 14582:2016, 以離子層析儀檢測. / With reference to BS EN 14582:2016. Analysis was performed by IC.	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. (#2) =
  - a. 當六價鉻結果大於0.13  $\mu\text{g}/\text{cm}^2$ , 表示樣品表層含有六價鉻. / The sample is positive for Cr(VI) if the Cr(VI) concentration is greater than 0.13  $\mu\text{g}/\text{cm}^2$ . The sample coating is considered to contain Cr(VI).
  - b. 當六價鉻結果為n. d. (濃度小於0.10  $\mu\text{g}/\text{cm}^2$ ), 表示表層不含六價鉻. / The sample is negative for Cr(VI) if Cr(VI) is n. d. (concentration less than 0.10  $\mu\text{g}/\text{cm}^2$ ). The coating is considered a non-Cr(VI) based coating.
  - c. 當六價鉻結果介於 0.10 及 0.13  $\mu\text{g}/\text{cm}^2$  時, 無法確定塗層是否含有六價鉻. / The result between 0.10  $\mu\text{g}/\text{cm}^2$  and 0.13  $\mu\text{g}/\text{cm}^2$  is considered to be inconclusive - unavoidable coating variations may influence the determination

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台灣檢驗科技股份有限公司

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YU-WEI ALUMINUM CO., LTD.

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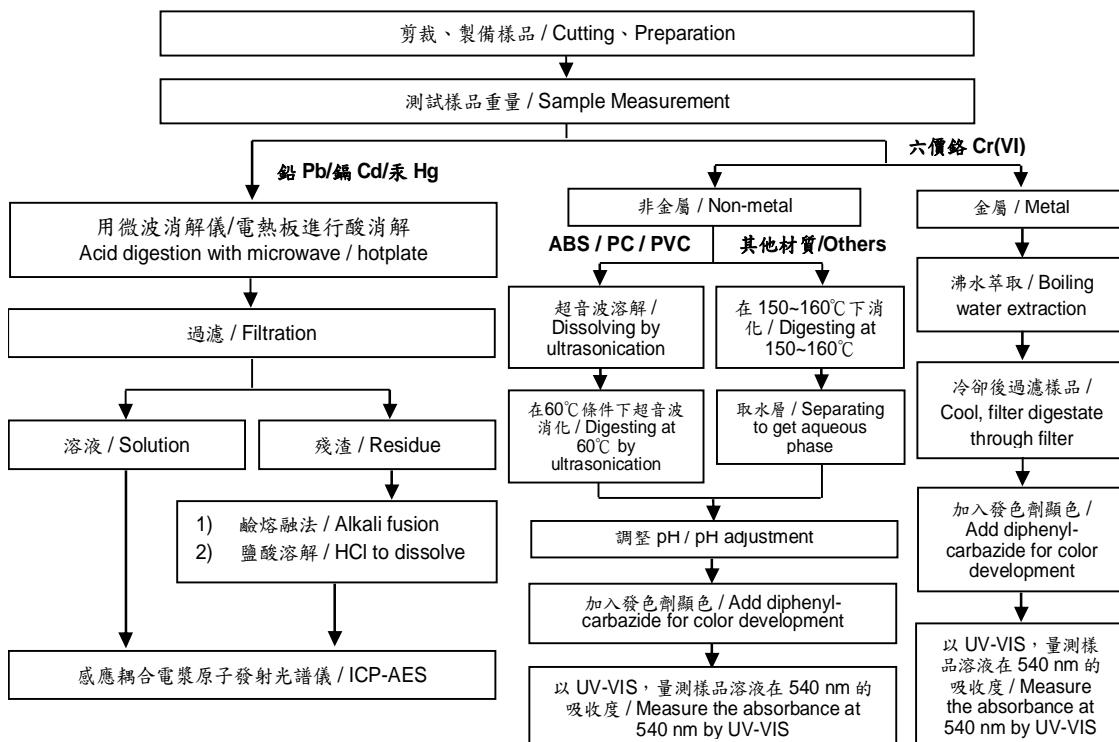
NO. 15-2, TUNG NING RD., TUNG NING VILLAGE, CHIU JU TOWNSHIP, PINGTUNG COUNTY 904, TAIWAN

### 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)

- 測試人員：劉俊宏 / Technician : Jony Liu
- 測試負責人：張伯睿 / Supervisor: Ray Chang



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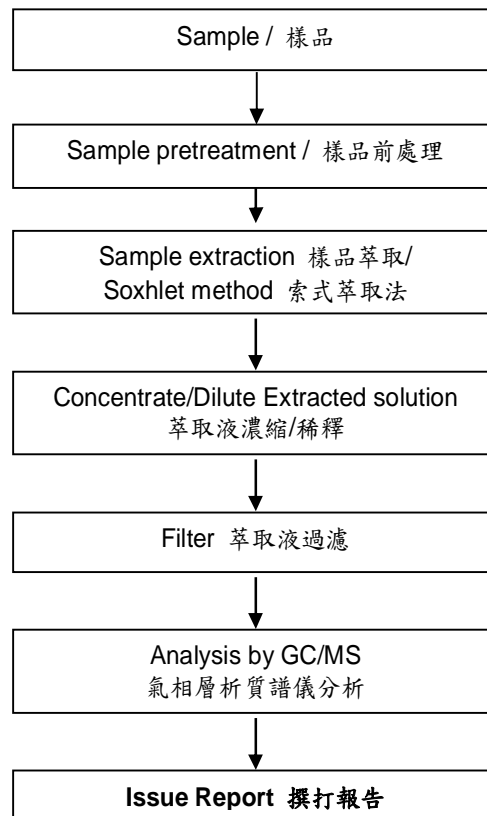
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### 多溴聯苯/多溴聯苯醚 分析流程圖 / PBB/PBDE analytical FLOW CHART

- 測試人員：陳威錚 / Technician : Dorothy Chen
- 測試負責人：張伯睿 / Supervisor: Ray Chang



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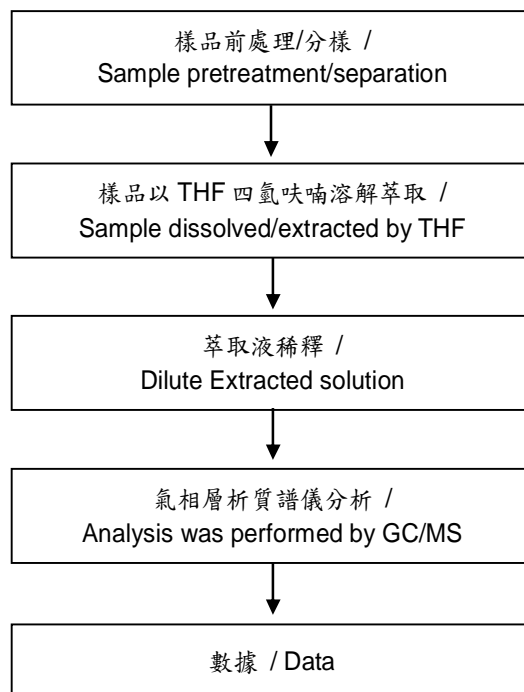
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### 可塑劑分析流程圖 / Analytical flow chart of phthalate content

- 測試人員：陳威錚 / Technician : Dorothy Chen
- 測試負責人：張伯睿 / Supervisor: Ray Chang

#### 【測試方法/Test method: IEC 62321-8】



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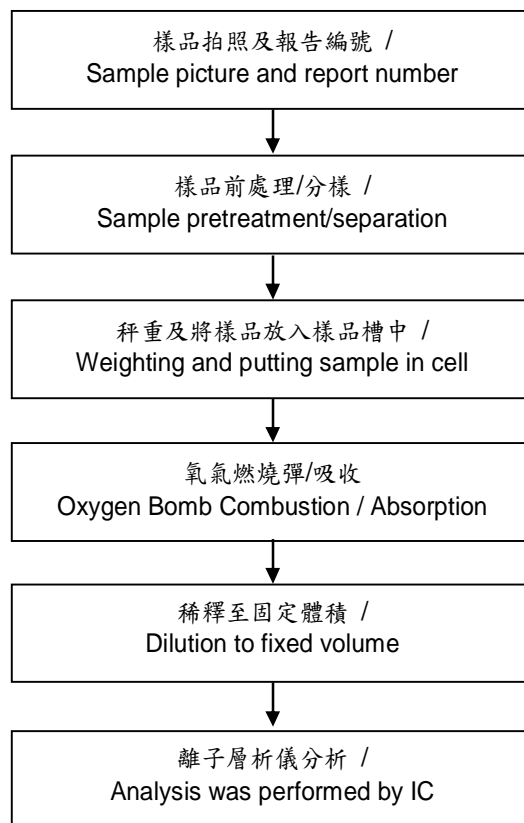
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### 鹵素分析流程圖 / Analytical flow chart of halogen content

- 測試人員：洪秀真 / Technician : Jean Hung
- 測試負責人：張伯睿 / Supervisor: Ray Chang



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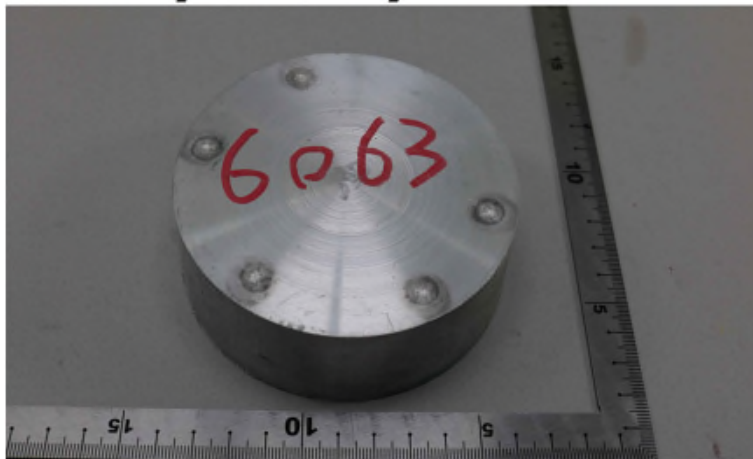
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\* 照片中如有箭頭標示，則表示為實際檢測之樣品/部位。\*  
(The tested sample / part is marked by an arrow if it's shown on the photo.)

### KA/2018/C2027



\*\* 報告結尾 (End of Report) \*\*

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# 物質安全資料表

## 一、物品與廠商資料

物品名稱：硫酸(SULFURIC ACID)
製造商：
名稱：DONGWOO FINE-CHEM CO., LTD.
地址：740-30,SHINHUNG-DONG IKSAN,CHUNBUK KOREA
電話：82-63-830-2888
傳真：82-63-833-0065
供應商：
名稱：合皓股份有限公司
地址：新竹市高翠路 73 巷 2 弄 26 號
電話：03-563-2038

## 二、成分辨識資料

純物質：

中英文名稱：硫酸(SULFURIC ACID)
同義名稱：BATTERY ACID、HYDROGEN SULFATE、DIHYDROGEN SULFATE、ELECTROLYTE ACID、SPIRIT OF SULFUR、SULPHURIC ACID、OIL OF VITRIOL、MATTILING ACID
化學文摘社登記號碼(CAS No.)：7664-93-9
危害物質成分(成分百分比)：—

## 三、危害辨識資料

最重要危害與效應	健康危害效應：吸入或食入可能致死，會腐蝕眼睛、皮膚、呼吸道，可能造成失明、肺水腫（症狀可能延遲發生），含硫酸的無機酸霧滴具致癌性。
	環境影響：—
	物理性及化學性危害：本身不會燃燒，但高溫會分解產生毒氣如硫氧化物。與很多無機或有機化學品接觸，可能導致火災或爆炸，與金屬接觸會釋放出易燃氫氣，與水會劇烈反應。
	特殊危害：—
主要症狀：咳嗽、呼吸困難、嘔吐、牙齒糜爛及變色。	
物品危害分類：8	

## 四、急救措施

不同暴露途徑之急救方法：
<ul style="list-style-type: none"><li>• 吸入：1.移走污染源或將患者移至新鮮空氣處。2.若呼吸困難由受過訓練之人員來施予氧氣。3.避免患者不必要的移動。4.肺水腫的症狀可能延遲 48 小時。</li><li>• 皮膚接觸：1.必要時戴防滲手套以避免觸及該化學品。2.以溫水緩和沖洗受污染的部位不少於 20-30 分鐘。3.如果刺激感持續，反覆沖洗，沖洗請不要中斷。4.沖水中脫掉受污染的衣服、鞋子或皮飾品。5.立即就醫。6.需將污染的衣物、鞋子以及皮飾品完全除污後再使用或丟棄</li><li>• 眼睛接觸：1.必要時戴防滲手套以避免觸及該化學品。2.立即將眼皮撐開，用緩和流動的溫水沖洗污染的眼睛 20 分鐘。3.可能情況下可使用生理食鹽水沖洗，且沖洗時間不要間斷。4.避免清洗水進入未受影響的眼睛。5.如果刺激感持續，反覆沖洗。6.立刻就醫。</li><li>• 食入：1.若患者即將喪失意識、已失去意識或痙攣，不可經口餵食任何東西。2.若患者</li></ul>

意識清楚，讓其用水徹底漱口。3.不可催吐。4.給患者喝下 240~300 毫升的水，以稀釋胃中的物質；若有牛奶，於喝水後再給予牛奶喝下。5.若患者自發性嘔吐，讓其身體向前傾以減低吸入危險，並讓其漱口及反覆給水。6.立刻就醫。
最重要症狀及危害效應：腐蝕造成灼傷、失明、肺水腫
對急救人員之防護：應穿著 C 級防護裝備在安全區實施急救。
對醫師之提示：1.患者吸入時，考慮給予以氧氣。2.避免洗胃或引發嘔吐。

## 五、滅火措施

適用滅火劑：對於週遭之火災，使用合適之滅火劑來滅火。
滅火時可能遭遇之特殊危害：1.硫酸不燃，但濃硫酸與易燃物接觸，可升熱而起火。2.與大部分金屬都可反應生成易燃性氫氣，若引燃可能爆炸。
特殊滅火程序：1.火災中，可能放出硫氧化物，極具刺激性及毒性，避免吸入。2.儘可能在遠距離且上風處滅火。3.在安全情況下，將容器及未波及之物質移離火場。4.容器可能受熱而爆炸，可噴大量水霧以冷卻容器外側，但切勿讓水與硫酸接觸，因與水會劇烈反應放熱。5.未著特殊防護設備的人員不可進入。
消防人員之特殊防護設備：消防人員必須佩戴全身式化學防護衣及空氣呼吸器。

## 六、洩漏處理方法

個人應注意事項：1.限制人員進入，直至外溢區完全清乾淨為止。2.確定是由受過訓練之人員負責清理工作。3.穿戴適當的個人防護設備。
環境注意事項：1.對洩漏區通風換氣。2.移開所有引燃源。3.通知政府職業安全衛生與環保相關單位。
清理方法：1.勿觸碰洩漏物，避免讓其流入下水道或狹隘之處。2.在安全狀況許可的情況下，設法阻止或減少溢漏。3.小量洩漏時，以沙、土或惰性吸收劑圍堵外洩物至於加蓋標示的適當容器內，再用水清洗洩漏區。4.大量洩漏時聯絡消防、緊急處理單位及供應商以尋求協助。

## 七、安全處置與儲存方法

處置：1.此物質是腐蝕性和毒性液體，需要工程控制及防護設備，工作人員應適當受訓，並告知物質之危險性和安全使用方法。2.未著防護設備的人避免接觸此化學品包括受污染的設備。3.溢漏或通風不足應立即向上呈報。4.避免產生霧滴並防止霧滴進入作業區的空氣中。5.儘可能小量操作並遠離貯存區。6.大量操作考慮使用密閉系統。7.預防與水接觸。8.不要與不相容物一起使用。9.不要將受污染的物質倒回原貯存區。10.與水混合時是將腐蝕液體加入水中，而非將水加入腐蝕液體中，加料時應在攪拌下緩慢加入，使用冷水以避免過剩的熱產生。11.操作前檢查容器是否溢漏。12.搬運此物質時必須要有第二層容器保護。13.容器要標示，避免受損，不使用時保持密閉。14.使用抗腐蝕的輸送設備分裝，小量分裝進行儘可能使用自行密閉且輕便的容器。15.不要以空氣或惰性氣體將液體自容器中加壓而輸送出來。16.空的容器可能仍具有危害性的殘留物。17.圓桶的排氣應遵守化學品製造商/供應商的建議，如果貯存的圓桶出現腫脹，立刻與製造商/供應商聯繫，以取得處理的操作程序。18.操作區附近應有立即可得的火災、溢漏等緊急處理設備。
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

#### 儲存：

1.貯存於乾燥、陰涼、通風良好以及陽光無法直接照射的地方和遠離熱源、引燃源和不相容物。2.儘可能小量貯存，避免大量貯存於室內。3.檢查所有新進容器，確定標示清楚和無破損。4.貯存於原始標示的容器或製造商/供應商所建議的貯存容器。5.標示應避免受損並至於可見處，不使用時保持容器密閉。6.容器至於適當高度以便於操作。7.依化學品製造商/供應商建議的溫度貯存。8.空桶應與貯存區分開。9.空的容器可能仍具有危害的殘留物，保持密閉。10.定期檢查貯存區是否腐蝕或溢漏。11.貯存區應標示清楚，無障礙物並只允許委任或受過訓的人進入。12.貯存區與工作區分開。13.於適當處張貼警告標示。14.以相容物製造成的盤子貯存含有溢漏的物質。15.有立即可得的溢漏吸收劑。16.門口應製門檻、斜坡或築溝渠，以圍堵或流到安全的地方。17.地板應防滲處理以防自地板吸收。18.圓桶的排氣應遵循化學品製造商的建議，如果貯存的圓桶出現腫脹立即與製造商/供應商聯繫，以取得處理的操作程序。19.貯存區的牆壁、地板、棚架和配件、應使用抗硫酸腐蝕的材料。20.使用耐燃物質製備的貯存設施。21.貯存區有立即之滅火和溢漏清理設備。22.貯槽需在地面上，底部整個區域應封住以防滲漏，周圍需有防溢堤能圍堵整個容量。

#### 八、暴露預防措施

工程控制：1.使用整體換氣或局部排氣裝置以及密閉製程。2.用抗腐蝕通風系統並與其他排氣通風系統分開。3.排氣口直接通到室外。4.供給充分新鮮空氣以補充排氣系統抽出的空氣。5.受污染的廢氣排至戶外時，應先適當除污。

##### 控制參數：

八小時日時量平均 容許濃度 TWA	短時間時量平均容許 濃度 STEL	最高容許 濃度 CEILING	生物指標 BEI
1 mg/m <sup>3</sup>	2 mg/m <sup>3</sup>	—	—

#### 個人防護設備：

- 呼吸防護：15mg/m<sup>3</sup> 以下：定流量式供氣型呼吸防護具；或含抗酸氣濾罐及高效粒子過濾器的動力型空氣淨化式。含抗酸氣濾罐及高效粒子過濾器之全面型化學濾罐式防毒面罩或呼吸防護具；或全面型空氣呼吸器（自攜式）或全面型供氣式呼吸防護具。  
未知濃度：正壓自攜式呼吸防護具、正壓全面型供氣式呼吸防護具輔以正壓自攜式防護具。  
逃生：含防硫酸氣濾罐及高效率濾材的空氣清淨式呼吸防護具、逃生型自攜式呼吸防護具。
- 手部防護：防滲手套，材質以丁基橡膠、天然橡膠、氰橡膠類、聚乙烯、聚氯乙烯、Teflon、Barricade、4H、CPE3、Viton、Tellchem HPS、Tychem 10000、Saranex、Responder 等為佳。
- 眼睛防護：化學安全護目鏡、護面罩
- 皮膚及身體防護：上述橡膠材質連紳士防護衣、工作靴。

衛生措施：1.工作後儘速脫掉污染之衣物，洗淨後才可再穿戴或丟棄，且須告知洗衣人員污染物之危害性。2.工作場所嚴禁抽煙或飲食。3.處理此物後，需徹底洗手。4.維持作業場所清潔。

#### 九、物理及化學性質

物質狀態：液體	形狀：油性、吸溼性
顏色：無色至暗褐色	氣味：無味，加熱有窒息味
pH 值：0.3(1N 溶液)	沸點/沸點範圍：274℃

分解溫度：340℃	閃火點： / 測試方法：( )開杯 ( )閉杯
自燃溫度：—	爆炸界限：/
蒸氣壓：<0.3 mmHg @25℃	蒸氣密度：3.4
密度：1.839 (水=1)	溶解度：全溶 (水)

#### 十、安定性及反應性

安定性：正常狀況下安定

特殊狀況下可能之危害反應：

1.水、丙稀氰、鹼性溶液、電石、氰酸鹽、雷酸鹽、硝酸鹽、過氯酸鹽、過錳酸鹽、苦味酸鹽、活性金屬、金屬電石、表氯烷、苯氨、乙二胺、醇、過氧化氫、氯磺酸、環戊烯、氰氟酸、硝基甲烷、4-硝基甲苯、氧化磷、鉀、鈉、乙二醇、異戊二烯、苯乙烯：會引起激烈或爆炸性反應。

2.乙醛、氯丙稀：硫酸存在下會引起聚合反應。

3.對大部分金屬（包含不鏽鋼、鋁、鎳、及合金）具強烈腐蝕性。期腐蝕性與濃度、溫度、純度有關。

應避免之狀況：水

應避免之物質：水、丙烯腈、鹼性溶液、電石、氰酸鹽、雷酸鹽、過氯酸鹽、過錳酸鹽、苦味酸鹽、活性金屬、金屬炔化物、金屬電石、表氯烷、苯胺、二乙胺、醇、過氧化氫、氯磺酸、環戊烯、氰氟酸、硝基甲烷、4-硝基甲苯、氧化磷、鉀、鈉、乙二醇、異戊二烯、苯乙烯、乙醛、氯丙稀。

危害分解物：超過 340℃ 分解成三氧化硫及水。

#### 十一、毒性資料

急毒性：吸入：1.期蒸氣及霧滴具腐蝕性會嚴重的刺激或損害鼻、口、咽及肺，傷害程度依粒子大、小停留在身體的部位及濃度而異。2.可嚴重傷害肺，引起致命的肺水腫，症狀是咳嗽及呼吸困難。

皮膚：1.濃硫酸據高度腐蝕性會造成嚴重刺激和灼傷，可能會留下永久的疤，嚴重灼傷可能致死。2.稀硫酸可能造成輕度至中度的刺激。3.長期接觸霧滴會引起皮膚紅，刺激性和灼傷。

眼睛：1.小量濃硫酸接觸會嚴重損傷眼睛且可能失明。2.稀硫酸可引起暫時性傷害，且可能失明。3.霧滴也會引起刺激性。

食入：1.濃硫酸嚴重灼傷口、食道及胃，並會造成噁心、嘔吐、吞嚥困難、喉乾、腹瀉，重則甚至死亡。2.小量酸吸入肺部可嚴重損害肺並可能致死。

局部效應：250ug（兔子，眼睛）造成嚴重刺激

致敏感性：可能刺激呼吸道反應過敏。

慢毒性或長期毒性：1.可使皮膚紅、癢及乾燥。2.長期暴露於其蒸氣及霧滴會造成牙齒糜爛及變色。3.IARC 將含硫酸的無機酸霧滴列為可能導致呼吸道癌症物質（此分類不適用於硫酸或硫酸水溶液）。

特殊效應：20mg/m<sup>3</sup>/7H（懷孕 6-18 天的雌鼠）造成胚胎發育不正常。

#### 十二、生態資料

可能之環境影響/環境流佈：

1. 因硫酸在體內易被排泄出，故不具蓄積性。
2. 因硫酸溶於水，所以當硫酸溢出時，及下雨均可影響溢出硫酸之流佈。
3. 一經稀釋後其黏稠度減少，所以在土壤中之流動速度加快。
4. 當進入地下水後，它會繼續隨水之方向流動直至其密度大於水。
5. 水中之硫酸最後會與 Ca 及 Mg 形成鹽類。

### 十三、廢棄處置方法

廢棄處置方法：
1. 依現行法規處理。
2. 依倉儲條件貯存待處理的廢棄物。
3. 小心地加至蘇打水灰及硝石灰溶液中，再用大量水排至地下水溝。

### 十四、運送資料

國際運送規定：1.DOT 49CFR 將之列為第 8 類腐蝕性物質，包裝等級 II。(美國交通部) 2.IATA/ICAO 分級：8。(國際航運組織) 3.IMDG 分級：8。(國際海運組織)
聯合國編號：1830
國內運送規定：1.道路交通安全規則第 84 條 2.船舶危險品裝載規則 3.台灣鐵路局危險品裝卸運輸實施細則
特殊運送方法及注意事項：—

### 十五、法規資料

適用法規：	
勞工安全衛生設施規則	危險物及有害物通識規則
特定化學物質危害預防標準	勞工作業環境空氣中有害物容許濃度標準
事業廢棄物貯存清除處理方法及設施標準	道路交通安全規則
公共危險物品及可燃性高壓氣體設置暨安全管理辦法	

### 十六、其他資料

參考文獻	工研院環安中心-MSDS 序號：112	
製表單位	名稱：合皓股份有限公司	
	地址/電話：新竹市高翠路 73 巷 2 弄 26 號 03-5632038	
製表人	職稱：經理	姓名(簽章)：林健輝
製表日期	2002 年 6 月 10 日	

上述資料由提供，本公司對上述資料已力求正確，但錯誤恐仍難免，各項數據與資料僅供參考，使用者請依應用需求，自行負責判斷



## 測試報告 Test Report

號碼(No.) : CE/2018/A5137 日期(Date) : 2018/11/01 頁數 (Page) : 1 of 6

昌鴻展業有限公司  
新北市新莊區新樹路449巷20號



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

送樣廠商(Sample Submitted By) : 昌鴻展業有限公司  
樣品名稱(Sample Description) : 鋁製品陽極原鋁色  
收件日期(Sample Receiving Date) : 2018/10/26  
測試期間(Testing Period) : 2018/10/26 TO 2018/11/01

=====

測試需求(Test Requested) : 依據客戶指定, 參考RoHS指令2011/65/EU Annex II測試鎘、鉛、汞、六價鉻、多溴聯苯、多溴聯苯醚. (As specified by client, with reference to RoHS Directive 2011/65/EU Annex II to determine Cadmium, Lead, Mercury, Cr(VI), PBBs, PBDEs contents in the submitted sample(s).)

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

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

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# 測試報告

## Test Report

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### 測試結果(Test Results)

測試部位(PART NAME)No. 1 : 銀色金屬 (SILVER COLORED METAL)

測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測 極限值 (MDL)	結果 (Result)
				No. 1
鎘 / Cadmium (Cd)	mg/kg	參考IEC 62321-5 (2013), 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		2	8.90
汞 / Mercury (Hg)	mg/kg	參考IEC 62321-4 (2013), 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)(#2)	µg/cm <sup>2</sup>	參考IEC 62321-7-1 (2015), 以UV-VIS檢測. / With reference to IEC 62321-7-1 (2015) and performed by UV-VIS.	0.10	n. d.
多溴聯苯總和 / Sum of PBBs	mg/kg	參考IEC 62321-6 (2015), 以氣相層析儀 / 質譜儀檢測. / With reference to IEC 62321-6 (2015) 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.

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# 測試報告

## Test Report

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測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測 極限值 (MDL)	結果 (Result)
				No. 1
多溴聯苯醚總和 / Sum of PBDEs	mg/kg	參考IEC 62321-6 (2015), 以氣相層析儀 / 質譜儀檢測. / With reference to IEC 62321-6 (2015) and performed by GC/MS.	-	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.

### 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. (#2) =
  - a. 當六價鉻結果大於0.13  $\mu\text{g}/\text{cm}^2$  , 表示樣品表層含有六價鉻. / The sample is positive for Cr(VI) if the Cr(VI) concentration is greater than 0.13  $\mu\text{g}/\text{cm}^2$ . The sample coating is considered to contain Cr(VI).
  - b. 當六價鉻結果為n. d. (濃度小於0.10  $\mu\text{g}/\text{cm}^2$ ) , 表示表層不含六價鉻. / The sample is negative for Cr(VI) if Cr(VI) is n. d. (concentration less than 0.10  $\mu\text{g}/\text{cm}^2$ ). The coating is considered a non-Cr(VI) based coating
  - c. 當六價鉻結果介於 0.10 及 0.13  $\mu\text{g}/\text{cm}^2$  時, 無法確定塗層是否含有六價鉻. / The result between 0.10  $\mu\text{g}/\text{cm}^2$  and 0.13  $\mu\text{g}/\text{cm}^2$  is considered to be inconclusive - unavoidable coating variations may influence the determination.

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# 測試報告

## Test Report

昌鴻展業有限公司

新北市新莊區新樹路449巷20號

號碼(No.) : CE/2018/A5137 日期(Date) : 2018/11/01

頁數 (Page) : 4 of 6

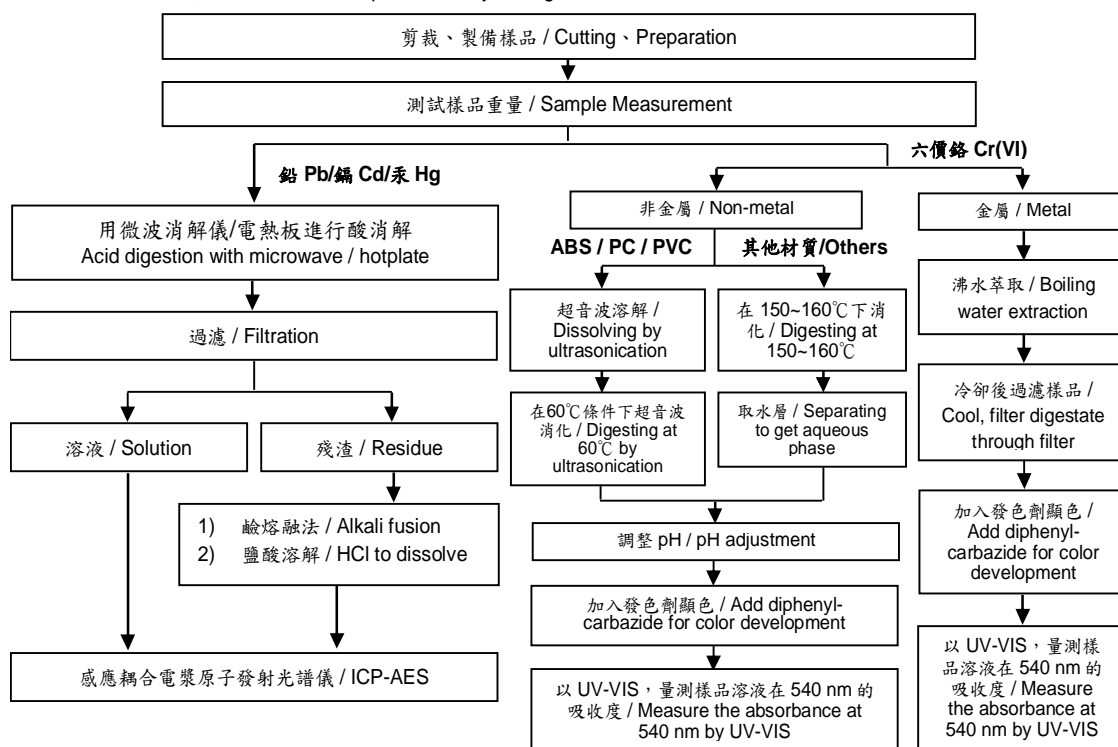


### 重金屬流程圖 / Analytical flow chart of Heavy Metal

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)

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



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## 測試報告 Test Report

昌鴻展業有限公司

新北市新莊區新樹路449巷20號

號碼(No.) : CE/2018/A5137 日期(Date) : 2018/11/01

頁數 (Page) : 5 of 6



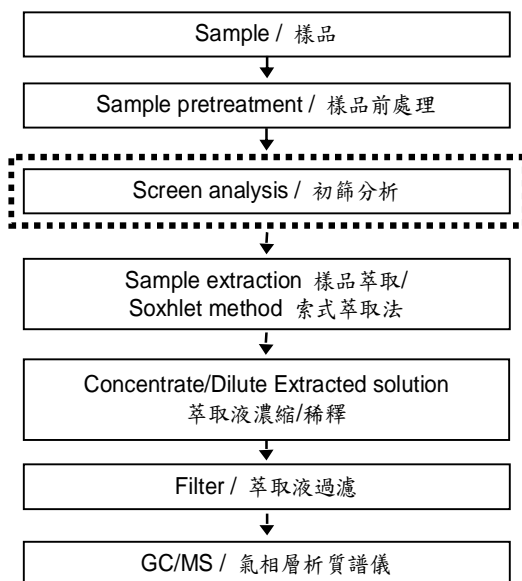
### 多溴聯苯/多溴聯苯醚分析流程圖 / Analytical flow chart - PBB/PBDE

- 測試人員：涂雅苓 / Technician: Yaling Tu
- 測試負責人：張啟興 / Supervisor: Troy Chang

初次測試程序 / First testing process —————>

選擇性篩檢程序 / Optional screen process .....>

確認程序 / Confirmation process - - ->



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## 測試報告 Test Report

昌鴻展業有限公司

新北市新莊區新樹路449巷20號

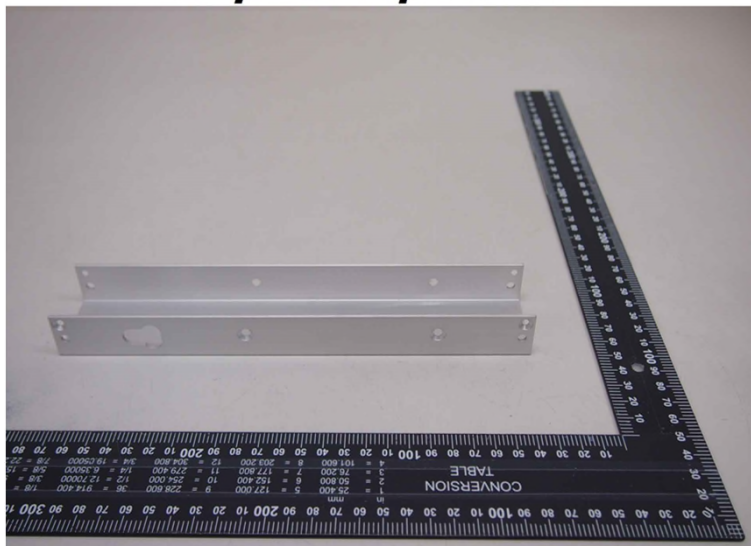
號碼(No.) : CE/2018/A5137 日期(Date) : 2018/11/01

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

### CE/2018/A5137



\*\* 報告結尾 (End of Report) \*\*

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中國鋼鐵  
CHINA STEEL

品質證明書  
TEST CERTIFICATE

中國鋼鐵股份有限公司  
CHINA STEEL CORPORATION  
中華民國高雄市小港區中鋼路1號  
1 CHUNG KANG ROAD HSIAO KANG, KAOHSIUNG 81223  
TAIWAN, REPUBLIC OF CHINA  
TEL: (07)802-1111 FAX: (07)802-2511, (07)801-9427  
E-mail: c211mae@mail.csc.com.tw

BO130-01 COMPANY REGISTRATION NUMBER: 30414175 0411

客戶名稱 CUSTOMER	大中國鋼鐵股份有限公司 TAH CHUNG STEEL CORP.		產品名稱 PRODUCT	ROD-CARBON STEEL			
規格名稱 SPEC	JIS G3507-1 SWRCH18A (GCWQ2)		發票號碼 INVOICE NO.	FC25410260	證明書編號 CERTIFICATE NO.	050123B0130	
			客戶編號 CUSTOMER NO.	57001161	中鋼訂單編號 CSC ORDER NO.	LW7050G	
檢驗 DISP	CSC MILL INSPECTION	T/C	01	交運日期 SHIPPING DATE	JAN 22, 2016	證明書日期 T/C ISSUE DATE	JAN 23, 2016
				客戶訂單編號 CUST ORDER NO.			

項目 ITEM NO.	產品序號 SEQ. NO.	尺寸 DIMENSIONS			數量 QTY	質量 MASS kg	爐號 HEAT NO.	化學成分 CHEMICAL COMPOSITION %														備註 REMARKS
		直徑/厚度 DIA/THICK mm	寬度 WIDTH mm	長度 LENGTH mm				C	Mn	P	S	Si	Cr	Ni	Mo	Al	N					
003	V5763 01	5.50		COIL	13	29,680	1GZ76	16	75	18	11	5	1	1	2	39	5					
			TOTAL:		13	29,680																

註釋  
NOTES

SURVEYED BY

茲證明本表所列產品，均依材料規格製造及試驗，並符合規格之要求。  
WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HEREIN HAS BEEN MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIREMENT OF THE ABOVE MATERIAL SPECIFICATION.

Chung Chia-kuang  
冶金技術處處長  
GENERAL MANAGER, METALLURGICAL DEPARTMENT



## 物質安全資料表(MSDS)

## 一、物品與廠商資料

物品名稱：線材、棒鋼、鋼板、熱軋鋼捲片(Wire Rods, Steel Bars, Steel Plates, Hot-Rolled Steel Coils & Sheets)

物品編號：

製造商或供應商名稱、地址及電話：中國鋼鐵股份有限公司 812 高雄市小港區中鋼路1號

緊急聯絡電話：(07)802-1111

傳真電話：(07)8039553

## 二、成分辨識資料

純物質：

物品中(英)文名稱：鋼(STEEL)

同義名稱：

化學文摘社登記號碼(CAS. NO.)：鐵：07439-89-6

危害物質成分(成分百分比)：鐵>99%

危害物質成分之中(英)文名稱	濃度或濃度範圍(成分百分比)	危害物質分類及圖式
鐵(Fe)	>99%	

## 三、危害辨識資料

重要物理性及化學性危害與效應	1. 與強酸接觸會起反應產生可燃性氫氣。 2. 焊接或加熱會產生氧化鐵蒸煙。
----------------	-------------------------------------------

## 四、急救措施

不同暴露途徑之急救方法：

- 吸入：本產品形態食入之可能性相當低。
- 眼睛接觸：立即將眼皮撐開，用大量水沖洗15分鐘。本產品形態進入眼時之可能性相當低。
- 皮膚接觸：立即用肥皂和水清洗，本產品形態造成刺激皮膚之可能性相當低。

## 五、滅火措施

適用滅火劑：使用適合週遭火災之滅火器。

滅火時可能遭遇之特殊危害：1. 此物若以大塊型式存在時，不可燃。

2. 若以微細粉末存在時，遇火源有引起爆炸的危險。

3. 本產品若氧化或燃燒，則會產生毒性或刺激性蒸汽，請使用個人呼吸防護器具。

## 六、洩漏處理方法

本產品為固體狀不適用。

## 七、安全處置與儲存方法

一般使用：本產品邊緣為尖銳薄片或捲片，進行各項作業必須使用個人防護器具，所有員工必須接受訓練以安全地進行各項作業。

儲存建議：建議儲存於可防止實體破壞、漏氣、直接日曬之場所。

## 八、暴露預防措施

重要成份	化學文摘社登記號碼 CAS NO.	重量比例 (%)	暴露限制	
			OSHA PEL	ACGIH TLV
鐵 Iron	7439-89-6	99	未建立	未建立

工程控制：

1. 在進行燃燒、鉅、鋼鑄、切割、研磨、打光、焊接或其他機械加工時，應使用機械通裝置。
2. 若在進行機械加工時，有產生粉塵或微粒狀物質，建議採用局部及一般通風裝置以預防過多的危害物質暴露。

個人防護設備：

眼睛防護：在進行本產品作業時請穿戴化學安全護目鏡。

呼吸防護：如需符合暴露標準，在進行切割、研磨、打光或焊接等機械加工作業時，應使用自攜式呼



# 物質安全資料表(MSDS)

## 吸防護具。

皮膚防護：1.使用皮革或防割傷手套以免被尖銳薄片或薄片割傷。  
2.使用防滲透手套以免被皮膚接觸表面油污。

身體防護：1.連身式防護衣。

2.工作鞋。

3.工作區要有淋浴/沖眼設備。

衛生措施：1.工作場所嚴禁飲用、抽煙或飲食。

2.處理此物後，須徹底洗手。

## 九、物理及化學性質

物質狀態：固體	形狀：薄片或薄片
顏色：金屬性灰色	氣味：無味
pH 值：不適用	閃火點：不適用
熔解溫度：1535°C	
自燃溫度：不適用	爆炸界限：不適用
密度：7.8 (水=1)	溶解度：不溶於水

## 十、安定性及反應性

安定性：正常狀況下安定

應避免之狀況：濕氣及腐蝕性物質會氧化本物質

應避免之物質：酸類、A 類及 B 類爆炸物、強性氧化物、腐蝕劑

危害分解物：引燃或溶解可能會產生有毒性或刺激性蒸汽

## 十一、毒性資料

急性(Acute Effects)：

鐵(Iron) LD50(測試動物暴露途徑)：30 g/kg(大鼠，吞食)

過度暴露效應(Symptoms of Overexposure)：

鐵(Iron Oxide)：過度暴露或重複暴露於高濃度狀況下，可能造成塵肺病 pneumoconiosis，吸入氧化鐵可能會刺激眼睛、鼻子及喉嚨。

矽(Silicon)：主要為厭惡性粉塵(Nuisance Dust)，可能會刺激眼睛及黏液薄膜(Mucous Membranes)。

## 十二、生態資料

現有資料無影響生態之考量

## 十三、廢棄處置方法

廢棄處置方法：1.參閱相關法規處理。

2.相關法規可能會限制金屬性廢棄物之處置。

3.建議採取回收金屬性廢棄物。

## 十四、運送資料

無特殊運送方法

## 十五、法規資料

適用法規：

勞工安全衛生設施規則

危險物及有害物通識規則

勞工作業環境空氣中有毒物容許濃度標準

事業廢棄物貯存清除處理方法及設施標準

## 十六、其他資料



## 物質安全資料表(MSDS)

參考文獻	
製表者單位	名稱：中國鋼鐵股份有限公司；工安環保處
	地址/電話：812 高雄市小港區中鋼路1號，Tel：(07)8021111
製表人	職稱：工程師 姓名(簽章)：陳坤雄
製表日期	2008/8/29
備註	<ol style="list-style-type: none"><li>1. 本物質安全資料表僅供參考，中國鋼鐵股份有限公司對使用本資料不承擔任何法律責任或提供任何保證。</li><li>2. 本物質安全資料表之提供是基於對本產品的安全及健康危害相關資訊之最佳瞭解，以安全地進行本產品之各項作業及處理。</li><li>3. 每位進行本產品之各項作業及處理之人員應先閱讀本物質安全資料表，瞭解如何進行本產品之各項作業及處理；也應考量本產品與其他製造廠商產品可能之應用。</li></ol>

## 測試報告

## Test Report

號碼(No.) : CE/2018/71731

日期(Date) : 2018/07/17

頁數(Page): 1 of 11

中鈺鋼鐵股份有限公司



CHUNG CHENG STEEL CO., LTD.

新北市三重區光復路二段80號5樓

5FL., NO. 80, SEC. 2, GUANGFU RD., SANCHONG DIST., NEW TAIPEI CITY, TAIWAN, R. O. C.

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

送樣廠商(Sample Submitted By) : 中鈺鋼鐵股份有限公司 (CHUNG CHENG STEEL CO., LTD.)  
 樣品名稱(Sample Description) : STEEL COIL/BAR(鋼鐵)  
 樣品型號(Style/Item No.) : SWRCH18A/SAE1018AK  
 收件日期(Sample Receiving Date) : 2018/07/10  
 測試期間(Testing Period) : 2018/07/10 TO 2018/07/17

### 測試需求(Test Requested):

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

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

結論(Conclusion) : (1) 根據客戶所提供的樣品，其鎘、鉛、汞、六價鉻、多溴聯苯、多溴聯苯醚，DBP, BBP, DEHP, DIBP的測試結果符合RoHS 2011/65/EU Annex II暨其修訂指令(EU) 2015/863之限值要求。(Based on the performed tests on submitted sample(s), the test results of Cadmium, Lead, Mercury, Cr(VI), PBBs, PBDEs, DBP, BBP, DEHP, DIBP comply with the limits as set by RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU.)

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



## 測試報告

## Test Report

號碼(No.) : CE/2018/71731

日期(Date) : 2018/07/17

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中鈺鋼鐵股份有限公司



CHUNG CHENG STEEL CO., LTD.

新北市三重區光復路二段80號5樓

5FL., NO. 80, SEC. 2, GUANGFU RD., SANCHONG DIST., NEW TAIPEI CITY, TAIWAN, R. O. C.

## 測試結果(Test Results)

測試部位(PART NAME)No. 1 : 銀色金屬線 (SILVER COLORED METAL WIRE)

測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測 極限值 (MDL)	結果 (Result)	限值 (Limit)
				No. 1	
鎘 / Cadmium (Cd)	mg/kg	參考IEC 62321-5 (2013)，以感應耦合電漿原子發射光譜儀檢測。 / With reference to IEC 62321-5 (2013) and performed by ICP-AES.	2	n. d.	100
鉛 / Lead (Pb)	mg/kg		2	n. d.	1000
汞 / Mercury (Hg)	mg/kg		2	n. d.	1000
六價鉻 / Hexavalent Chromium Cr(VI)(#2)	µg/cm <sup>2</sup>	參考IEC 62321-7-1 (2015)，以UV-VIS 檢測。 / With reference to IEC 62321-7-1 (2015) and performed by UV-VIS.	0.10	n. d.	-
多溴聯苯總和 / Sum of PBBs	mg/kg	參考IEC 62321-6 (2015)，以氣相層析儀/質譜儀檢測。 / With reference to IEC 62321-6 (2015) and performed by GC/MS.	-	n. d.	1000
一溴聯苯 / Monobromobiphenyl	mg/kg		5	n. d.	-
二溴聯苯 / Dibromobiphenyl	mg/kg		5	n. d.	-
三溴聯苯 / Tribromobiphenyl	mg/kg		5	n. d.	-
四溴聯苯 / Tetrabromobiphenyl	mg/kg		5	n. d.	-
五溴聯苯 / Pentabromobiphenyl	mg/kg		5	n. d.	-
六溴聯苯 / Hexabromobiphenyl	mg/kg		5	n. d.	-
七溴聯苯 / Heptabromobiphenyl	mg/kg		5	n. d.	-
八溴聯苯 / Octabromobiphenyl	mg/kg		5	n. d.	-
九溴聯苯 / Nonabromobiphenyl	mg/kg		5	n. d.	-
十溴聯苯 / Decabromobiphenyl	mg/kg	5	n. d.	-	

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## 測試報告

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中鈺鋼鐵股份有限公司

CHUNG CHENG STEEL CO., LTD.

新北市三重區光復路二段80號5樓

5FL., NO. 80, SEC. 2, GUANGFU RD., SANCHONG DIST., NEW TAIPEI CITY, TAIWAN, R. O. C.



測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測 極限值 (MDL)	結果 (Result)	限值 (Limit)
				No. 1	
多溴聯苯醚總和 / Sum of PBDEs	mg/kg	參考IEC 62321-6 (2015), 以氣相層析儀/質譜儀檢測. / With reference to IEC 62321-6 (2015) and performed by GC/MS.	-	n. d.	1000
一溴聯苯醚 / Monobromodiphenyl ether	mg/kg		5	n. d.	-
二溴聯苯醚 / Dibromodiphenyl ether	mg/kg		5	n. d.	-
三溴聯苯醚 / Tribromodiphenyl ether	mg/kg		5	n. d.	-
四溴聯苯醚 / Tetrabromodiphenyl ether	mg/kg		5	n. d.	-
五溴聯苯醚 / Pentabromodiphenyl ether	mg/kg		5	n. d.	-
六溴聯苯醚 / Hexabromodiphenyl ether	mg/kg		5	n. d.	-
七溴聯苯醚 / Heptabromodiphenyl ether	mg/kg		5	n. d.	-
八溴聯苯醚 / Octabromodiphenyl ether	mg/kg		5	n. d.	-
九溴聯苯醚 / Nonabromodiphenyl ether	mg/kg		5	n. d.	-
十溴聯苯醚 / Decabromodiphenyl ether	mg/kg		5	n. d.	-
鄰苯二甲酸二(2-乙基己基)酯 / DEHP (Di-(2-ethylhexyl) phthalate) (CAS No.: 117-81-7)	mg/kg	參考IEC 62321-8 (2017), 以氣相層析儀/質譜儀檢測. / With reference to IEC 62321-8 (2017). Analysis was performed by GC/MS.	50	n. d.	1000
鄰苯二甲酸丁苯甲酯 / BBP (Butyl Benzyl phthalate) (CAS No.: 85-68-7)	mg/kg		50	n. d.	1000
鄰苯二甲酸二丁酯 / DBP (Dibutyl phthalate) (CAS No.: 84-74-2)	mg/kg		50	n. d.	1000
鄰苯二甲酸二異丁酯 / DIBP (Di-isobutyl phthalate) (CAS No.: 84-69-5)	mg/kg		50	n. d.	1000
鹵素 / Halogen					
鹵素(氟) / Halogen-Fluorine (F) (CAS No.: 14762-94-8)	mg/kg	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.	50	n. d.	-
鹵素(氯) / Halogen-Chlorine (Cl) (CAS No.: 22537-15-1)	mg/kg		50	n. d.	-
鹵素(溴) / Halogen-Bromine (Br) (CAS No.: 10097-32-2)	mg/kg		50	n. d.	-
鹵素(碘) / Halogen-Iodine (I) (CAS No.: 14362-44-8)	mg/kg		50	n. d.	-

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5FL., NO. 80, SEC. 2, GUANGFU RD., SANCHONG DIST., NEW TAIPEI CITY, TAIWAN, R. O. C.



測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測 極限值 (MDL)	結果 (Result)	限值 (Limit)
				No. 1	
全氟辛烷磺酸 / Perfluorooctane sulfonates (PFOS-Acid, Metal Salt, Amide)	mg/kg	參考US EPA 3550C (2007), 以液相層析儀/質譜儀檢測. / With reference to US EPA 3550C (2007). Analysis was performed by LC/MS.	10	n. d.	-
全氟辛酸 / PFOA (CAS No.: 335-67-1)	mg/kg		10	n. d.	-
鈹 / Beryllium (Be)	mg/kg	參考US EPA 3050B (1996), 以感應耦合電漿原子發射光譜儀檢測. / With reference to US EPA 3050B (1996). Analysis was performed by ICP-AES.	2	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. (#2) =
  - a. 當六價鉻結果大於0.13  $\mu\text{g}/\text{cm}^2$ , 表示樣品表層含有六價鉻. / The sample is positive for Cr(VI) if the Cr(VI) concentration is greater than 0.13  $\mu\text{g}/\text{cm}^2$ . The sample coating is considered to contain Cr(VI).
  - b. 當六價鉻結果為n. d. (濃度小於0.10  $\mu\text{g}/\text{cm}^2$ ), 表示表層不含六價鉻. / The sample is negative for Cr(VI) if Cr(VI) is n. d. (concentration less than 0.10  $\mu\text{g}/\text{cm}^2$ ). The coating is considered a non-Cr(VI) based coating
  - c. 當六價鉻結果介於 0.10 及 0.13  $\mu\text{g}/\text{cm}^2$  時, 無法確定塗層是否含有六價鉻. / The result between 0.10  $\mu\text{g}/\text{cm}^2$  and 0.13  $\mu\text{g}/\text{cm}^2$  is considered to be inconclusive - unavoidable coating variations may influence the determination.

### 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1 $\mu\text{g}/\text{m}^2$ 。

(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 1 $\mu\text{g}/\text{m}^2$ .)

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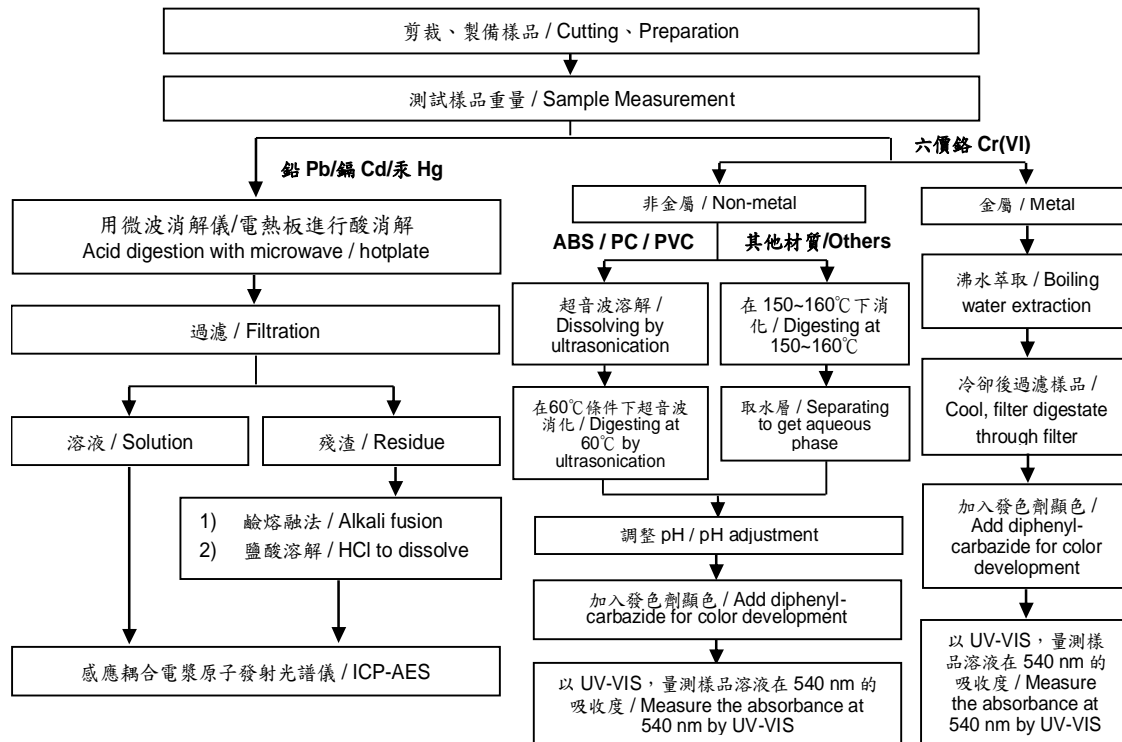


### 重金屬流程圖 / Analytical flow chart of Heavy Metal

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)

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



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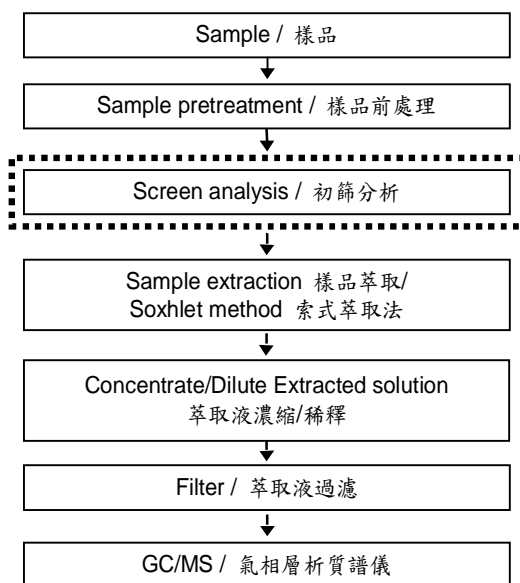
### 多溴聯苯/多溴聯苯醚分析流程圖 / Analytical flow chart - PBB/PBDE

- 測試人員：涂雅苓 / Technician: Yaling Tu
- 測試負責人：張啟興 / Supervisor: Troy Chang

初次測試程序 / First testing process —————>

選擇性篩檢程序 / Optional screen process .....>

確認程序 / Confirmation process - - ->



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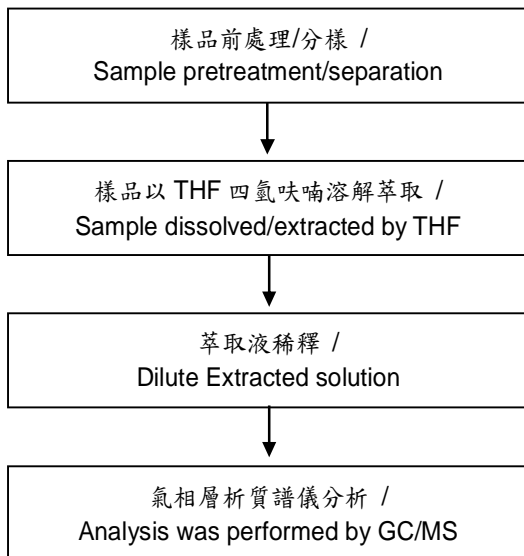
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### 可塑劑分析流程圖 / Analytical flow chart - Phthalate

- 測試人員：涂雅苓 / Technician: Yaling Tu
- 測試負責人：張啟興 / Supervisor : Troy Chang

#### 【測試方法/Test method: IEC 62321-8】



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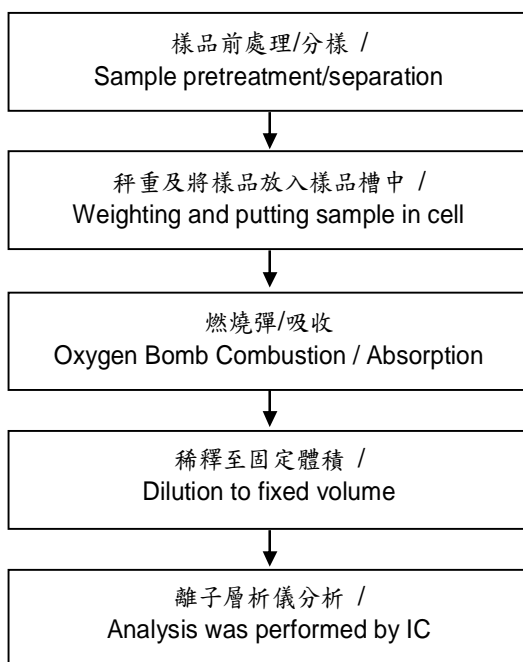
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### 鹵素分析流程圖 / Analytical flow chart - Halogen

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



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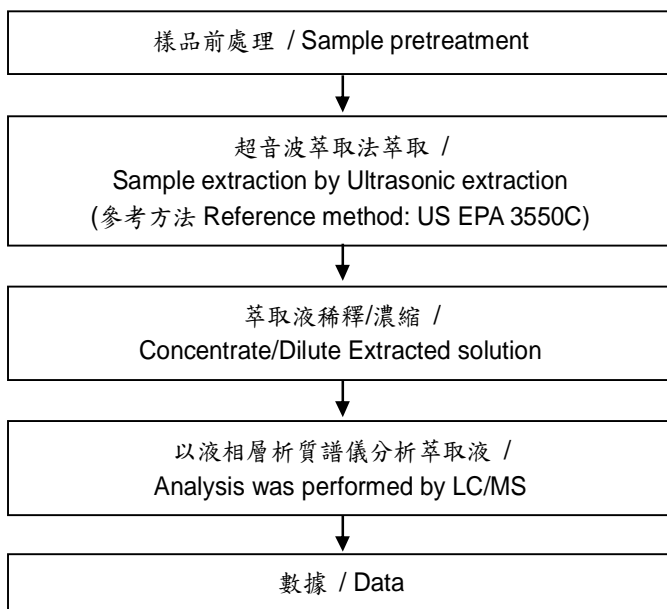
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### 全氟辛酸/全氟辛烷磺酸分析流程圖 / Analytical flow chart - PFOA/PFOS

- 測試人員：涂雅苓 / Technician: Yaling Tu
- 測試負責人：張啟興 / Supervisor: Troy Chang



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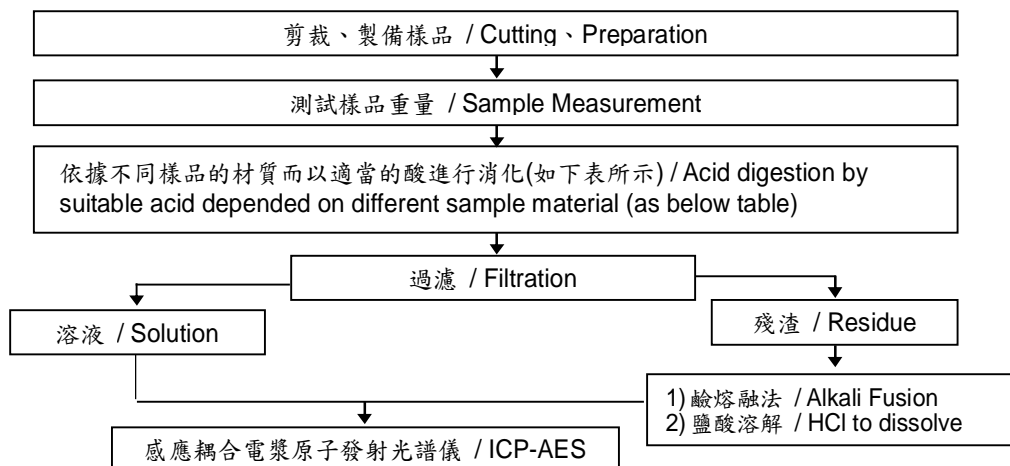
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根據以下的流程圖之條件，樣品已完全溶解。 / These samples were dissolved totally by pre-conditioning method according to below flow chart.

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

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



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

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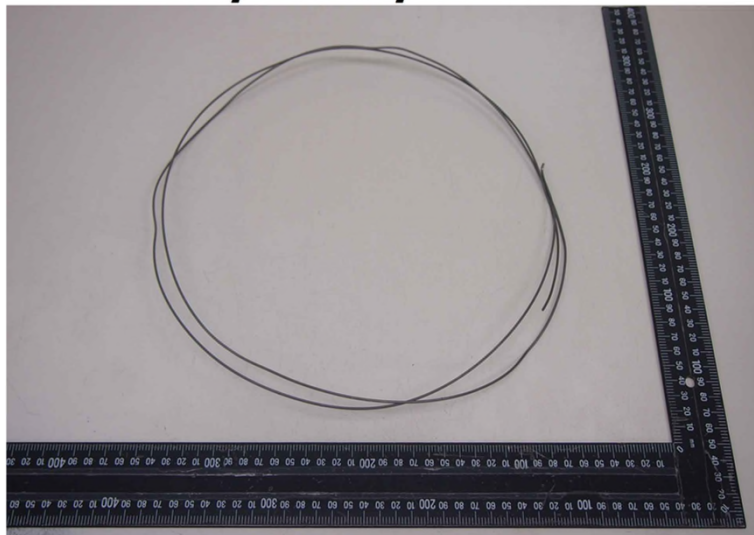
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\* 照片中如有箭頭標示，則表示為實際檢測之樣品/部位。 \*  
(The tested sample / part is marked by an arrow if it's shown on the photo.)

### CE/2018/71731



\*\* 報告結尾 (End of Report) \*\*

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# EVERFLOW

## SPECIFICATION FOR APPROVAL

**CUSTOMER:** 尚太

**DESCRIPTION:** DC Fan

**EVERFLOW No:** R125010BHAI3Q7aR

**CUSTOMER No:**

**SAMPLE NO:** N/A

**SERIAL NUMBER:** 100042

**DATE:** 2015-10-8

**RD REV:** C

**STANDARD REV:** C(Modify the label)

CUSTOMER APPROVED BY

APPROVED BY	CHECKED BY	DRAWING BY
		<i>xiaoqing Wang</i>

EVERFLOW PRECISION ELECTRONIC(DONGGUAN) CO., LTD.  
GEKENG YANJIANG INDUSTRIAL ZONE, HENG LI TOWN, DONG  
GUAN CITY, GUANG DONG.

TEL: 86-0769-83796589 83796590

FAX:86-0769-83797588 83727163

<http://www.everflowtech.com>



## SPECIFICATION FOR APPROVAL

### ★ 1. SCOPE:

**THIS SPECIFICATION DEFINES THE ELECTRICAL AND MECHANICAL CHARACTERISTICS OF THE DC BRUSHLESS AXIAL FLOW AND BLOWER FAN.**

### ★ 2. CHARACTERS:

<u>NO</u>	<u>ITEM</u>	<u>SPECIFICATION</u>
2--1	Rated Voltage	<input type="checkbox"/> 5V <input checked="" type="checkbox"/> 12V <input type="checkbox"/> 24V <input type="checkbox"/> 48V
2--2	Starting Voltage	6V(25deg.C Power ON/OFF)
2--3	Operating Voltage Range	6V~13.2V
2--4	Rated Current	0.25Amp (MAX0.25Amp)
2--5	Rated Power	3.00W (MAX.3.00W)
2--6	Rated Speed	5400RPM±10% (Testing Speed After Continuous 3Minute Operation At Ambient Temperature Of 25℃)
2--7	Air Flow	9.82CFM 0.28m3/min
2--8	Static Pressure	2.40mmH2O
2--9	Sound Level	MAX.33 dB(A)
2--10	Product Type	<input checked="" type="checkbox"/> Rohs <input type="checkbox"/> HF <input type="checkbox"/> GP
2--11	Life Expectancy	<input type="checkbox"/> 40,000hours at 40℃ <input checked="" type="checkbox"/> 50,000hours at 40℃
2--12	Bearing Type	<input checked="" type="checkbox"/> Two Ball <input type="checkbox"/> Ball And Sleeve <input type="checkbox"/> EBR <input type="checkbox"/> One Ball
2--13	Protection	<input checked="" type="checkbox"/> Impedance Protection <input type="checkbox"/> Auto-Restart <input type="checkbox"/> Current-Limit
2--14	Pole	<input type="checkbox"/> 2 Pole <input checked="" type="checkbox"/> 4Pole <input type="checkbox"/> 8Pole <input type="checkbox"/> Three Phase
2--15	IP Grade	N/A
2--16	Safety Approval	<input checked="" type="checkbox"/> TUV <input checked="" type="checkbox"/> UL <input checked="" type="checkbox"/> CE

## SPECIFICATION FOR APPROVAL

### ★ 3. MECHANICAL:

3--1	DIMENSIONS	SEE DIMENSIONS DRAWING
3--2	FRAME	<input checked="" type="checkbox"/> PBT(BLACK) PLASTIC {UL 94V-0} <input type="checkbox"/> PC PLASTIC {UL 94V-2}
3--3	IMPELLER	<input checked="" type="checkbox"/> PBT(BLACK) PLASTIC {UL 94V-0} <input type="checkbox"/> PC PLASTIC {UL 94V-2}
3--4	WEIGHT	18 GRAMS (REF)
3--5	INSULATION TYPE	UL:CLASS A

### ★ 4. ENVIRONMENTAL:

4--1. OPERATING TEMPERATURE----- -10°C~70°C

4--2. STORAGE TEMPERATURE----- -20°C~75°C

4-3. OPERATING HUMIDITY----- 5 TO 90% RH

4-4. STORAGE HUMIDITY ----- 5 TO 95% RH

4-5. DIRECTION OF ROTATION-----  
☒ CLOCKWISE  
☐ COUNTER-CLOCKWISE  
 (VIEWED FROM LABEL SIDE)

4-6. DIELECTRIC STRENGTH ----- APPLIED AC 500V FOR ONE MINUTE OR  
 AC 600V FOR SECONDS BETWEEN HOUSING  
 AND LEAD WIRE(+)

4-7. INSULATION STRENGTH-----MORE THAN 500 M OHM INTERNAL STATOR  
 AND LEAD WIRE(+) MEASURED AT DC 500V

4- 8. DROP TEST-----IN MINIMUM PACKAGING CONDITION, FAN WITHSTANDS  
 EACH ONE DROP OF THREE FACES FROM 60cm DISTANCE  
 HEIGHT ON TO 2cm THICKNESS OF SOLEPLATE.



## SPECIFICATION FOR APPROVAL

- 4--9. VIBRATION TEST-----**
- 1. ORIENTATION : X , Y, Z ( 3 AXES )**
  - 2. OVERALL RMS = 3.2 G**
  - 3. FREQUENCY ( Hz )                      PSD ( G<sup>2</sup>/HZ )**

<b>10</b>	<b>0.04</b>
<b>20</b>	<b>0.1</b>
<b>40</b>	<b>0.1</b>
<b>800</b>	<b>0.002</b>
<b>1000</b>	<b>0.002</b>
  - 4. DURATION : 2 HOURS ON EACH ORIENTATION**
  - 5. SAMPLE CONDITION : NON-PACKING , NON-OPERATION**

- 4--10. SHOCK TEST-----**
- TEMPERATURE : +25°C.**
  - ORIENTATION : X , Y , Z .**
  - POWER : NON-OPERATING .**
  - ACCELERATION: 50G MAX.**
  - PULSE: 11 MS HALF-SINE WAVE.**
  - NUMBER OF SHOCKS:**
  - 5 SHOCKS FOR EACH DIRECTION.**

- 4--11. NOISE TEST -----**
- MEASURED IN A SEMI-ANECHOIC CHAMBER**
  - WITH BACKGROUND NOISE LEVEL BELOW**
  - 19DB(A). THE FAN IS RUNING IN FREE AIR**
  - WITH THE MICROPHONE AT A DISTANCE OF**
  - ONE METER FRAM THE FAN INTAKE**

- 4--12. AIR PERFORMANCE -----**
- MEASURED BY A DOUBLE CHAMBER.THE**
  - VALUES ARE RECORDED WHEN THE FAN SPEED**
  - HAS STABILIZED AT RATED VOLTAGE.**

### ★ 5. NOTES:

- 5--1. THE ABOVE STANDARD SHOULD BE THE SPECIFIED VALUE AT NORMAL TEMPERATURE (25°C) AND NORMAL HUMIDITY (60~65%) UNLESS OTHERWISE NOTICED.**
- 5--2. SPECIFICATION CHANGE:**
  - ANY CHANGES TO THE PARAMETERS SPECIFIED IN THIS DOCUMENT WILL BE DETERMINED BY MUTUAL AGREEMENT ON BOTH PARTIES.**
- 5--3. IT IS VERY IMPORTANT TO CHECK THE POLARITY CORRECTLY BEFORE CONNECTING THE ANSTO THE POWER SOURCE. POSITIVE (+) AND NEGATIVE (-). DAMGE MAY BECAUSED TO THE FANS IF CONNECTION IS WITH REVERSE POLARITY, IF THERE IS NO FOOLPROOF METHOD TO PROTECT AGAINST SUCH ERROR SPECIFICALLY MENTIONED IN THIS SPEC.**



## SPECIFICATION FOR APPROVAL

5--4. PLEASE BE CAUTIOUS WHEN MOUNTING THE FAN . INCORRECT MOUNTING OF FANS MAY CAUSE EXCESS RESONANCE, VIBRATION AND SUBSEQUENT NOISE, EVEN SCREW HOLE BROKEN.

5--5. PLEASE EXERCISE CAUTION WHEN HANDLING FANS. DAMAGE MAY BE CAUSED BY OUTSIDE ABNORMAL PRESSURE OR ENVIRONMENT STRESS DURING MOVING.

5--6. ALL THE FANS SHALL MEET THE QUALITY INSPECTION UNDER SAMPLING PLAN MIL-STD-105E AS FOLLOW, EXCEPT AS PERTAINS TO SOME SPECIAL,DESIGNS , THERE IS NO GUARANTEE THAT THE PRODUCTS WILL BE FREE FROM ANY SUCH SAFETY PROBLEMS OR FAILURES AS CASSED BY THE INVADING OF POWDER, DROP LOTS OF WATER OR ENCROACHMENT OF INSECT INTO THE HUB.

CRITICAL	0.25%
MAJOR	1.00%
MINOR	2.50%

5--7. CUSTOMER SHALL CONFIRM THE MATCHING AND RELIABILITY OF FAN ON ACTUAL SET OR UNIT APPLICATION.THIS INCLUDE CONFIRMATION ON SET OR UNIT LIFE, ELECTRICAL NOISE, MECHANICAL NOISE, VIBRATION, STATIC ELECTRICITY, ELECTRIC POWER NOISE, DRIFT,ELECTRIC RESONANCE BETWEEN MOTOR AND CONTROL CIRCUIT, MECHANICAL RESONANCE BETWEEN MOTOR AND CHASSIS, IRREGULAR MOVEMENT OF SET DUE TO MOTOR NOISE, IRREGULAR MOVEMENT OF SET INSTRONG ELECTROMAGNETIC FIELD, DAMAGED BY LIGHTNING SURGE EARTHING METHOD ETC.

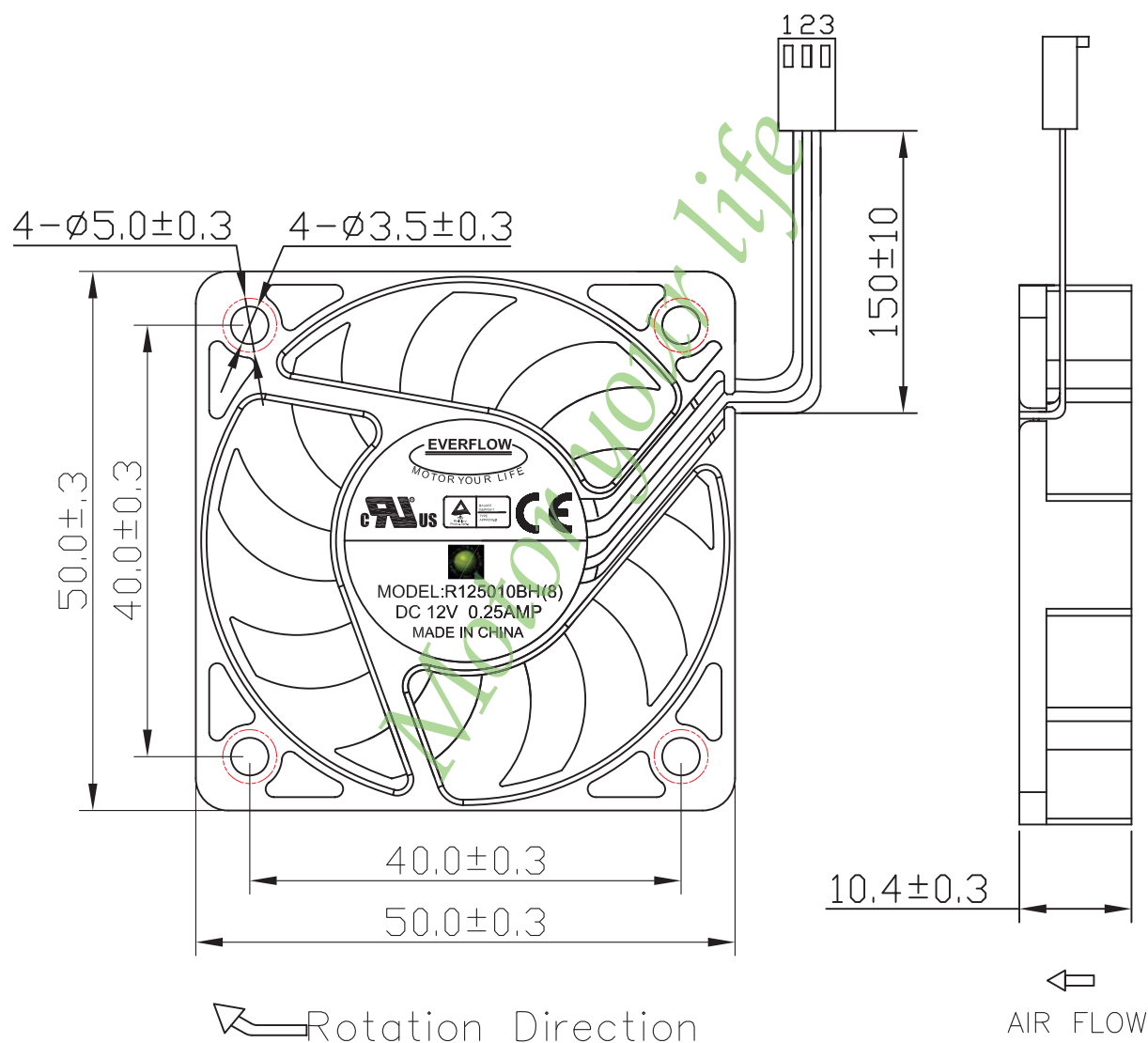
5--7. ANY REVISIONS ON THE SPECIFICATION SHALL BE DONE BASED ON MUTUAL DISCUSSION AND AGREEMENT.

5--8. IN ORDER TO IMPROVE THE PERFORMANCE WITHIN THE SCOPE OF SPECIFICATION, PARTS OR MATERIAL CHANGES ARE SUBJECT TO PRIOR NOTICE TO CUSTOMER.

5--9. ANY ITEM WHICH IS NEEDED TO ADD INTO SPECIFICATION SHALL BE DETERMINED ON CUSTOMER'S PRIOR WRITTEN REQUEST. IF NO INFORMATION GIVEN, FAN WILL BE DELIVERED BASED ON OUR STANDARD JUDGMENT.

5--10. WHEN ANY TROUBLE OCCURS, BOTH PARTIES SHALL DISCUSS ON THIS SPECIFICATION TO SOLVE THE MATTERS. IN THIS CASE, OUR GUARANTEE IS ONLY LIMITED TO FANS.

★ 6. DIMENSION DRAWING. UNIT: mm

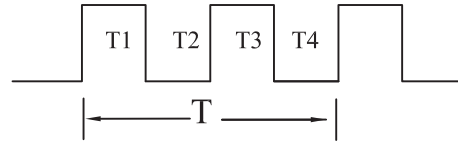


NOTES:

1. LEAD WIRE UL 1007 AWG#28  
PIN 1: BLACK WIRE---(-)  
PIN 2: RED WIRE---(+)  
PIN 3: YELLOW WIRE---(SIGNAL)
2. HOUSING: TKG: TA2510H-3P、ECI 2510

## ★ 7. CHARACTERISTICS & DEFINITION

- 4 Pole Motor: Fan with 4 pole motor.



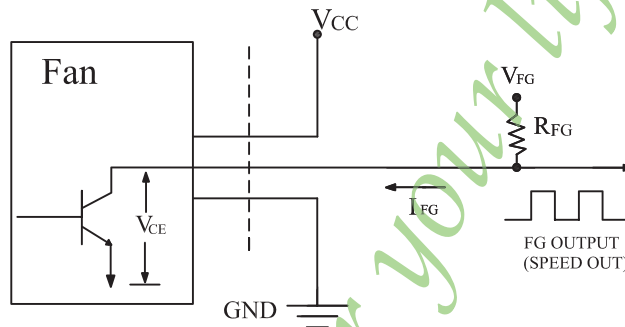
1 Rotation=T

$T = T_1 + T_2 + T_3 + T_4 = 1 \text{ Rotation}$

$T_1 = T_2 = T_3 = T_4 = \frac{60}{4 \times \text{r.p.m}} \text{ Sec}$

- FG(Frequency Generator)Signal External Circuit:

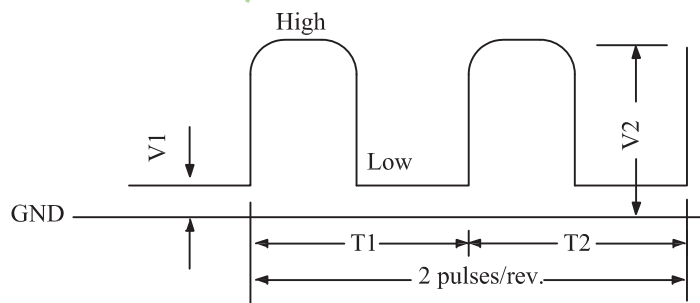
Open-collector output for rotation frequency detection



Note: Max.  $V_{FG} = 13.2 \text{ VDC}$ , Max.  $I_{FG} = 5 \text{ mA}$ ,  $\Rightarrow R_{FG} \geq V_{FG} / I_{FG}$   
We Recommend  $R_{FG} = 10 \text{ K}\Omega$

- FG(Frequency Generator)Type Output Waveform:

1.Motor Rotating Condition(at  $25^\circ \text{C}$ ,  $V = 5 \text{ VDC}$ )



V1: within 0.7V when  $I_{FG}$  less Than 3mA

V2:  $V_{FG}$ , FG signal output voltage, maximum rating: 13.2VDC

Duty =  $T_1 / (T_1 + T_2) \times 100 = 50 \pm 20\%$  (measured between  $0.3 \times V_2 \sim 0.7 \times V_2$ )

V1\_ V2 rise time: less than 1.0ms

V2\_ V1 fall time: less than 1.0ms

Rotation Speed (RPM) =  $(60/2) \times f_{FG} = 30 \times f_{FG}$

$f_{FG}$ : frequency of FG output waveform(Hz)

2.Motor locked condition(at  $V_{cc} = 12 \text{ VDC}$ )

Output is fixed at low or high when motor is locked.

# Zertifikat

# Certificate



Zertifikat Nr. Certificate No.  
R 50035343

Blatt Page  
0006

Ihr Zeichen Client Reference  
8143502895/LJC030812

Unser Zeichen Our Reference  
ZTW1-LinPa- 10008452 006 07.08.2012

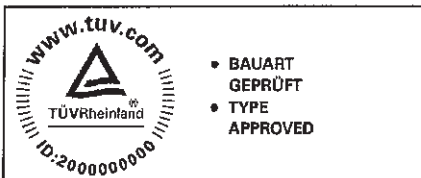
Ausstellungsdatum  
Date of Issue  
(day/mo/yr)

**Genehmigungsinhaber License Holder**  
Everflow Precision Electronic  
(Dong Guan) Co., Ltd.  
GeKeng Industrial Zone  
Heng Li Town  
Dongguan City, Guangdong 523460  
P.R. China

**Fertigungsstätte Manufacturing Plant**  
Everflow Precision Electronic  
(Dong Guan) Co., Ltd.  
GeKeng Industrial Zone  
Heng Li Town  
Dongguan City, Guangdong 523460  
P.R. China

## Prüfzeichen Test Mark

Geprüft nach Tested acc. to  
EN 60950-1:2006+A11+A1+A12



**Zertifiziertes Produkt (Geräteidentifikation)**  
**Certified Product (Product Identification)**

**Lizenzentgelte - Einheit**  
**License Fee - Unit**

Ventilator (DC Fan)

wie Blatt (as page) 01

Änderung  
(Change)

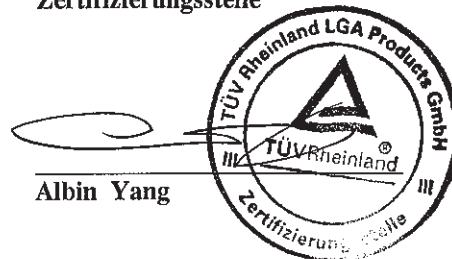
Prüfgrundlage : siehe oben  
(Test Requirement) (see above)

## ANLAGE (Appendix): 1

Dem Zertifikat liegt unsere Prüf- und Zertifizierungsordnung zugrunde und es bestätigt die Konformität des Produktes mit den oben genannten Standards und Prüfgrundlagen. Zusätzliche Anforderungen in Ländern, in denen das Produkt in Verkehr gebracht werden soll, müssen zusätzlich betrachtet werden. Die Herstellung des zertifizierten Produktes wird überwacht.  
This certificate is based on our Testing and Certification Regulation and states the conformity of the product with the standards and testing requirements as indicated above. Any additional requirements in countries where the product is going to be marketed have to be considered additionally. The manufacturing of the certified product is subject to surveillance.

**TÜV Rheinland LGA Products GmbH - Tillystraße 2 - 90431 Nürnberg**  
Tel.: (+49/221)8 06 - 13 71 e-mail: cert-validity@de.tuv.com  
Fax: (+49/221)8 06 - 39 35 http://www.tuv.com/safety

**Zertifizierungsstelle**



Everflow Precision Electronic (Dong  
Guan) Co., Ltd.  
Mr. Liu-Chun Xiang, Manager  
Engineering Dept.  
GeKeng Industrial Zone  
Heng Li Town  
Dongguan City, Guangdong 523460  
P.R. China

Date : 07.08.2012  
Our ref. : LinPa ZTW1  
Your ref.: 8143502895/LJC030812

**Ref : R TÜV-Mark Approval**

Type of Equipment : DC Fan  
Model Designation : See Certificate  
Certificate No. : R 50035343 0006  
Report No. : 10008452 006

Dear Mr. Liu-Chun Xiang,

The above specified equipment has been tested and found to be in  
accordance with the relevant requirements.

Please find enclosed your certificate as specified above.

If cancellation of the certificate is submitted by 15 November in a  
given year, no fee will be charged for the following year.

The certificate is issued with the reservation that the license holder  
applies all information required in § 6 of the ProdSG related to name  
and address of the manufacturer or his authorized representative /  
importer, including their respective contact addresses on the product  
prior to marketing of the product in the European Economic Area.

With kind regards,

Certification Body



Albin Yang

Enclosure

**TÜV RHEINLAND TAIWAN LTD.**

11F., No. 758, Sec. 4, Bade Rd.,  
Songshan Dist., Taipei City 105,  
Taiwan R. O. C.  
Tel. (02) 2172-7000  
Fax (02) 2528-0018  
<http://www.tuv.com>

TAICHUNG BRANCH:  
No. 9, Lane 36, Sec. 3, Minsheng Rd.,  
Daya Dist., Taichung City 428  
Taiwan, R. O. C.  
Tel. (04) 2560-2998  
Fax (04) 2566-3598



Appendix to TÜV type approved Certificate No.: R 50035343

Kind of equipment : DC Fan

Report number : 10008452 002

Model Name : X1X2X3X4X5X6X7 ( X1 may be R, F, T, S, B, K, X; X2 may be 05, 12, 24; X3 may be 35, 40, 50, 60, 70, 75, 80, 90, 12; X4 may be 10, 11, 15, 20, 25, 28, 30, 32; X5 may be S, B or D; X6 may be L, M, H, U; X7 may be (4), (8), (22), (48), (55) or blank)

T(F/R/S/K/X)125010X5L(8)	12	0.13	R(F/S/X/T/K)248025X5U	24	0.21
T(F/R/S/K/X)125010X5M(8)	12	0.15	R(F/S/X/T/K)128025X5U(48)	12	0.40
T(F/R/S/K/X)125010X5H(8)	12	0.25	R(F/S/X/T/K)129025X5U	12	0.38
T(F/R/S/K/X)125010X5U(8)	12	0.32	R(F/S/X/T/K)129032X5U	12	1.00
R(F/S/X/T/K)246015X5L	24	0.14	B(R/F/S/T/K/X)055011X5H	5	0.40
R(F/S/X/T/K)246015X5M	24	0.18	B(R/F/S/T/K/X)125011X5H	12	0.35
R(F/S/X/T/K)246015X5H	24	0.20	B127530X5H(22)	12	0.22

Date: Dec. 15, 2003

Certification Body



Dipl.-Ing. Andreas Klinker



NOTICE OF COMPLETION  
AND  
AUTHORIZATION TO APPLY THE UL MARK



2013-08-22

Everflow Precision Electronic (dong Guan) Co Ltd  
Mr. Bin Tao  
Ge Keng Industrial Zone  
Heng Li Town  
Dongguan Guangdong 523460, Cn

Our Reference: File E236658, Vol. 1 Project Number 13CA39187  
Your Reference: TAO, BIN MR. 1-july-2013  
Project Scope: GPWV2/8 4 SERIES COMPONENT FAN 4028/8015/8038/9025 E236658

Dear Mr. Bin Tao:

Congratulations! UL's investigation of your product(s) has been completed under the above Reference Number and the product was determined to comply with the applicable requirements. This letter temporarily supplements the UL Follow-Up Services Procedure and serves as authorization to apply the UL Mark at authorized factories under UL's Follow-Up Service Program. To provide your manufacturer(s) with the intended authorization to use the UL Mark, you must send a copy of this notice to each manufacturing location currently authorized under File E236658, Vol. 1.

Records in the Follow-Up Services Procedure covering the product are now being prepared and will be sent in the near future. Until then, this letter authorizes application of the UL Mark for 90 days from the date indicated above.

Additional requirements related to your responsibilities as the Applicant can be found in the document "Applicant responsibilities related to Early Authorizations" that can be found at the following web-site:  
<http://www.ul.com/EAResponsibilities>

Any information and documentation provided to you involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL.

We are excited you are now able to apply the UL Mark to your products and appreciate your business. Feel free to contact me or any of our Customer Service representatives if you have any questions.

Very truly yours,

Max Mai  
+86 20 3213 1311  
Engineer Project Associate  
Max.Mai@ul.com

Reviewed by:

William R. Carney  
847/664-1088  
Chief Engineer Director I  
William.R.Carney@ul.com

CC: DONGGUAN UTL CO LTD, MS. DANA TIAN

GUZ83EF-256549

## INDEX

Model/Product Number(s)	Section	Requirements Evaluated to (US and/or CN)
(A)124010(XX), (A)124010(XX)(2), (A)124020(XX), (A)125010(YY), where (A) may be R, F, S, X, T or K; (XX) may be BL, BM, BH, BU, SL, SM, SH, SU, DL, DM, DH or DU; (YY) may be BL, BM, BH, DL, DM, DH, SL, SM or SH	1	USR/CNR
(A)056010(YY), (A)126010(XX), (A)126015(YY), (A)126015(XX)(8), (A)126020(XX), (A)126025(XX), where (A) may be R, F, S, X, T or K; (XX) may be BL, BM, BH, BU, SL, SM, SH, SU, DL, DM, DH or DU; (YY) may be BL, BM, BH, DL, DM, DH, SL, SM or SH	2	USR/CNR
(A)127010(XX), (A)127015(XX), (A)127015(XX)(2), (A)127015(XX)(4), (A)127015(XX)(8), (A)127025(YY), B127530(ZZ), where (A) may be R, F, S, X, T or K; (XX) may be SL, SM, SH, SU, BL, BM, BH, BU, DL, DH, DM or DU; (YY) may be SL, SM, SH, BL, BM, BH, DL, DH or DM; (ZZ) may be BL, BM, BH, BU, SL, SM, SH or SU	3	USR/CNR
(A)128015(XX), (A)128025(XX), (A)248025(YY), (A)129025(YY), (A)129032(YY), where (A) may be R, F, S, X, T or K; (XX) may be BL, BM, BH, BU, SL, SM, SH, SU, DL, DM, DH or DU; (YY) may be BL, BM, BH, DL, DM, DH, SL, SM or SH	4	USR/CNR
(A)123510(W)(X), (A)124020(W)(Y)(4), (A)124028(W)(Y), (A)125010(W)(Y)(8), (A)246015(W)(Y), (A)127020(W)(Y), (A)128032(W)(Y), (A)121225(W)(Y), (A)127015(W)U(55), (A)127025(W)U, (A)248025(W)U, (A)128025(W)U(48), (A)129025(W)U, (A)129032(W)U, (B)055011(W)H, (B)125011(W)H, B127530(W)H(22) Where (A) may be R, F, S, X, T or K; (B) may be B, R, F, S, X, T or K; (W) may be S, D or B; (X) may be L, M or H; (Y) may be L, M, H or U.	5	USR/CNR
R054010(X)(Y), B124040(X)(Y), B126015(X)(Y), R128018(X)(Y), B128080B(Z) where (X) may be S, D or B; (Y) may be L, M, H or U; (Z) may be M, H or U	6	USR/CNR



# Certificate of Conformity

EMC Directive 2004/108/EC

**Holder of Certificate:** EVERFLOW PRECISION ELECTRONIC(DONG GUAN)  
CO., LTD.  
Gekeng Industrial Zone, Heng Li Twon, Dong Guan City,  
Guang Dong Province, China

**Report No.:** LCZE12100010

**Product:** DC FAN & DC MOTOR

**Model No.:** See Appendix

**Parameters:** See Appendix  
Protection class:III

**Tested according To:** EN 55022:2010  
EN 55024:2010

## Conclusion:

This Certificate of conformity is based on evaluation of a sample of the above mentioned product. Technical Report and documentation are at the License Holder's disposal. This is to certify that the Tested sample is in conformity with all revision of Annex I of Council Directive 2004/108/EC, in its latest amended version, referred to as the EMC Directive. This certificate does not imply assessment of the series-production of the product and does not permit the use of LC mark of conformity. The holder of the certificate is authorized to use this certificate in connection with the EC declaration of conformity.



Senior Manager, John Su

LCTECH (Zhongshan) Testing Service Co.,Ltd

Date of Issue: October 29,2012

The CE Mark as shown on the left side can be used, under the responsibility of the manufacturer, after completion of an EC declaration of conformity and compliance with all relevant EU Directives.

LCTECH (Zhongshan) Testing Service Co.,Ltd

2/F, Technology and Enterprise Development Center, Guangyuan Road,  
Xiaolan, Zhongshan, Guangdong, China. Postcode: 528415

Tel: +86-760-2283 3366 Fax: +86-760-2283 3399 E-mail: [service@lccert.com](mailto:service@lccert.com)

# Certificate of Conformity

EC Council Directive 2004/108/EC

Electromagnetic Compatibility

Original Registration (Report) No.: LCZE12100010

## Appendix 1 (model list)

No.	Series	Model No.	Voltage	Current	Speed
			(V)	(AMP)	(RPM)
1	3510 series	R(F/S/X/T/K)123510X5L	12	0.16	6000
		R(F/S/X/T/K)123510X5M		0.18	7500
		R(F/S/X/T/K)123510X5H		0.25	9000
2	4020 series	R(F/S/X/T/K)124020X5L(4)	12	0.13	5000
		R(F/S/X/T/K)124020X5M(4)		0.16	8000
		R(F/S/X/T/K)124020X5H(4)		0.23	11000
		R(F/S/X/T/K)124020X5U(4)		0.45	14000
3	4028 series	R(F/S/X/T/K)124028X5L	12	0.15	6000
		R(F/S/X/T/K)124028X5M		0.18	8000
		R(F/S/X/T/K)124028X5H		0.28	10000
		R(F/S/X/T/K)124028X5U		0.40	12000
4	5010 (big air volume) Series	T(F/R/S/K/X)125010X5L(8)	12	0.13	3500
		T(F/R/S/K/X)125010X5M(8)		0.15	4500
		T(F/R/S/K/X)125010X5H(8)		0.25	5500
		T(F/R/S/K/X)125010X5U(8)		0.32	6500
5	6015 series	R(F/S/X/T/K)246015X5L	24	0.14	3600
		R(F/S/X/T/K)246015X5M		0.18	4200
		R(F/S/X/T/K)246015X5H		0.20	4800
		R(F/S/X/T/K)246015X5U		0.27	5400
6	7020 series	R(F/S/X/T/K)127020X5L	12	0.20	3600
		R(F/S/X/T/K)127020X5M		0.26	4200
		R(F/S/X/T/K)127020X5H		0.30	4800



		R(F/S/X/T/K)127020X5U		0.40	5400
7	8032 series	R(F/S/X/T/K)128032X5L	12	0.22	3000
		R(F/S/X/T/K)128032X5M		0.30	3600
		R(F/S/X/T/K)128032X5H		0.38	4200
		R(F/S/X/T/K)128032X5U		0.45	4800
8	12025 series	R(F/S/X/T/K)121225X5L	12	0.20	2000
		R(F/S/X/T/K)121225X5M		0.25	2300
		R(F/S/X/T/K)121225X5H		0.32	2600
		R(F/S/X/T/K)121225X5U		0.40	2900
9	7015 series	R(F/S/X/T/K)127015X5U(55)	12	0.40	5500
10	7025 series	R(F/S/X/T/K)127025X5U	12	0.40	5400
11	8025 series	R(F/S/X/T/K)248025X5U	24	0.21	3400
12	8025 series	R(F/S/X/T/K)128025X5U(48)	12	0.40	4800
13	9025 series	R(F/S/T/K)129025X5U	12	0.38	3450
14	9032 series	R(F/S/X/T/K)129032X5U	12	1.00	3600
15	5011 series	B(R/F/S/T/K/X)055011X5H	5	0.40	3500
		B(R/F/S/T/K/X)125011X5H	12	0.35	3500
16	7530 series	B127530X5H(22)	12	0.22	2900

Note: X5=S, B or D

----End of the appendix----