

## 安全資料表 SAFETY DATA SHEET

### 一、物品與廠商資料

#### Section 1 - Chemical Product and Company Identification

物品名稱：陶瓷晶片電阻 Product Name : Chip-Resistor
其他名稱：----- Other name : -----
建議用途及限制使用：電器產品之內部組件 Recommended use and restrictions on use : Electronic and electric products.
製造商或供應商名稱：華新科技股份有限公司 Manufacture or vender name : Walsin Technology Corporation
製造商或供應商地址：台灣桃園市楊梅區高獅路 566-1 號 Manufacture or vender address : 566-1, Kao-Shi Road, Yang, Tao Yuan, Taiwan
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### 二、危害辨識資料

#### Section 2 - Hazards Identification

物品危害分類：不適用 Product hazard class : Not Available.
標示內容：無 Label content: Not Available.
其他危害：無 Other hazards : Not Available.

### 三、成分辨識資料

#### Section 3 - Composition/information on ingredients Pure material/Mixtures

WR20xxxxxxL		重量 Weight(mg)	24.57	
物質 Substance	化學文摘社號碼 CAS No.	化學式 Formula	主要用途 Main purpose	典型% Typical %
三氧化二鋁 Aluminum oxide	1344-28-1	Al <sub>2</sub> O <sub>3</sub>	Substrate	89.5964
二氧化矽 Silicon dioxide	7631-86-9	SiO <sub>2</sub>	Substrate	1.9133
氧化鎂 Magnesia	1309-48-4	MgO	Substrate	1.5399
過氧化鈣 Calcium oxide	1305-78-8	CaO	Substrate	0.2800
銀 Silver	7440-22-4	Ag	Backside layer	0.2655
氧化鉍 Bismuth oxide	1304-76-3	Bi <sub>2</sub> O <sub>3</sub>	Backside layer	0.0675
過氧化鈣 Calcium oxide	1305-78-8	CaO	Backside layer	0.0270
氧化矽 Silicon oxide	11126-22-0	SiO	Backside layer	0.0180
三氧化二鋁 Aluminum oxide	1344-28-1	Al <sub>2</sub> O <sub>3</sub>	Backside layer	0.0180
樹脂 Resin	9004-57-3	[C <sub>6</sub> H <sub>7</sub> O <sub>2</sub> (OH) <sub>3</sub> -n(OC <sub>2</sub> H <sub>5</sub> ) <sub>n</sub> ] <sub>x</sub>	Backside layer	0.0540
銀 Silver	7440-22-4	Ag	Topside layer	0.8114
鈀 Palladium	7440-05-3	Pd	Topside layer	0.0059
樹脂 Resin	9004-57-3	[C <sub>6</sub> H <sub>7</sub> O <sub>2</sub> (OH) <sub>3</sub> -n(OC <sub>2</sub> H <sub>5</sub> ) <sub>n</sub> ] <sub>x</sub>	Topside layer	0.1127
無鉛玻璃膏 Lead Free Glass	65997-18-4	Lead Free Glass Frit	Topside layer	0.0500
銀 Silver	7440-22-4	Ag	Resistive layer	0.4366
鈀 Palladium	7440-05-3	Pd	Resistive layer	0.1746
氧化鈳 Ruthenium Dioxide	12036-10-1	RuO <sub>2</sub>	Resistive layer	0.0655

氧化鉛 Lead oxide	1317-36-8	PbO	Resistive layer	0.2184
氧化矽 Silicon oxide	7631-86-9	SiO <sub>2</sub>	Resistive layer	0.3275
無鉛玻璃膏 Lead Free Glass	65997-18-4	Lead Free Glass Frit	Resistive layer	0.0874
無鉛玻璃膏 Lead Free Glass	65997-18-4	Lead Free Glass Frit	Primary coating	1.4724
色料(三氧化二鉻) Pigment(Chromium(III) Oxide)	1308-38-9	CR <sub>2</sub> O <sub>3</sub>	Primary coating	0.0109
樹脂 Resin	9004-57-3	[C <sub>6</sub> H <sub>7</sub> O <sub>2</sub> (OH) <sub>3-n</sub> (OC <sub>2</sub> H <sub>5</sub> ) <sub>n</sub> ] <sub>x</sub>	Primary coating	0.0667
環氧樹脂 Epoxy Resin	25068-38-6	(C <sub>15</sub> -H <sub>16</sub> -O <sub>2</sub> · C <sub>3</sub> -H <sub>5</sub> -C <sub>1</sub> -O) <sub>x</sub>	Protective coating	0.3660
聚合物 Polymer	29661-89-0	(C <sub>8</sub> H <sub>10</sub> · C <sub>6</sub> H <sub>6</sub> O · CH <sub>2</sub> O) <sub>x</sub>	Protective coating	0.4026
銅銹黑 Color pigments	68186-91-4	Color pigments	Protective coating	0.2196
二氧化矽 Silicon dioxide	60676-86-0	SiO <sub>2</sub>	Protective coating	0.5307
滑石粉 Talc	14807-96-6	3MgO-4SiO <sub>2</sub> -H <sub>2</sub> O	Protective coating	0.0915
添加物 Additives	2530-83-8	C <sub>9</sub> H <sub>20</sub> O <sub>5</sub> Si	Protective coating	0.2196
環氧樹脂 Epoxy Resin	29690-82-2	Epoxy Resin	Marking	0.0110
二氧化矽 Silicon dioxide	112945-52-5	SiO <sub>2</sub> · nH <sub>2</sub> O	Marking	0.0010
滑石粉 Talc	14807-96-6	3MgO-4SiO <sub>2</sub> -H <sub>2</sub> O	Marking	0.0010
氧化鈦 Titanium dioxide	1317-80-2	TiO <sub>2</sub>	Marking	0.0147
雙氰胺 Dicyandiamide	461-58-5	C <sub>2</sub> H <sub>4</sub> N <sub>4</sub>	Marking	0.0015
石油腦 Solvent naphtha	64742-94-5	Solvent naphtha	Marking	0.0008
鎳 Nickel	7440-02-0	Ni	Side termination	0.0002
鉻 Chromium	7440-47-3	Cr	Side termination	0.0002
鎳 Nickel	7440-02-0	Ni	Plating Ni	0.2900
錫 Tin	7440-31-5	Sn	Plating Sn	0.2300

#### 四、急救措施

##### Section 4 - First Aid Measures

不同暴露途徑之急救方法：

The first aid measures for different exposure routes:

- 吸入：非蒸發性物質
- Inhalation : Not Available.
- 皮膚接觸：無過敏反應
- Skin contact : Not Available.
- 眼睛接觸：不會接觸眼睛
- Eye contact : Not Available.
- 食入：不會食入
- Ingestion : Not Available.

最重要症狀及危害效應：無

The most important symptoms and hazardous effects : None.

對急救人員之防護：無

The protection of first-aiders : None.

對醫師之提示：不適用

Notes to Physician : None.

#### 五、滅火措施

##### Section 5 - Fire-fighting measures

適用滅火劑：不燃物質

Suitable fire extinguishing media : This product is incombustible.

滅火時可能遭遇之特殊危害：無

Specific hazards may be encountered during fire-fighting : None.

特殊滅火程序：無

Specific fire-fighting methods : No.

消防人員之特殊防護設備：無

Special equipment for the protection of firefighters : No.

**六、洩漏處理方法**

**Section 6 - Accidental release measures**

個人應注意事項：無

Personal precautions : No.

環境注意事項：無

Environmental precautions : No.

清理方法：無

Methods for cleaning up : No.

**七、安全處置與儲存方法**

**Section 7 - Handling and storage**

處置：一般處置

Handling : No special advice.

儲存：依濕敏感係數等級一之方法貯存。

Storage : Following the method defined in MSL level 1.

**八、暴露預防措施**

**Section 8 - Exposure controls/personal protection**

工程控制：無

Engineering control: No

控制參數：

Control parameters :

· 八小時日時量平均容許濃度/短時間時量平均容許濃度/最高容許濃度：無

· 8 hours time weighted average exposure limits/Short-term exposure limits/maximum exposure limits : No.

· 生物指標：無

· Biological standards : No.

個人防護設備：

Personal protective equipment :

· 呼吸防護：無

· Respiratory protection : No.

· 手部防護：無

· Hand protection : No.

· 眼睛防護：無

· Eye protection : No.

· 皮膚及身體防護：無

· Skin and body protection : No.

衛生措施：無特殊要求

Hygiene measures: No special requirement.

**九、物理及化學性質**

**Section 9 - Physical and chemical properties:**

外觀(物質狀態、顏色等)：四方陶瓷體	氣味：無
Appearance (physical state, color, etc.) : Cuboid ceramic.	Odor : No.
嗅覺閾值：無	熔點：1500 °C
Odor threshold : No defined.	Melting point: 1500 °C
pH值：不適用	沸點/沸點範圍：未測試
pH value : Not available.	Boiling point/boiling point range: Not be tested.
易燃性(固體、氣體)：不燃	閃火點：°F °C：未測試
Flammability (solid, gas) : incombustible.	Flash point: °F °C : Not be tested.
分解溫度：未測試	測試方法：開杯閉杯
Decomposition temperature : Not be tested.	Test method : Open cup Closed cup.
自燃溫度：不燃	爆炸界限：不會爆炸
Auto-ignition temperature: incombustible.	Explosion limits : Not Available.
蒸氣壓：---	蒸氣密度：不適用
Vapor pressure: Not Available.	Vapor density : Not Available.
密度：≒ 4	溶解度：不適用
Density: ≒ 4	Solubility : Not Available.
辛醇/水分配係數(log Kow) ---	揮發速率：不適用
Partition coefficient (n-octanol/water, log Kow) : ---	Evaporation rate : Not Available.

**十、安定性及反應性**

**Section 10 - Stability and reactivity**

安定性：安定

Stability : Stable.
特殊狀況下可能之危害反應：無 Possible hazardous reactions under specific conditions : No.
應避免之狀況：無 Conditions to avoid : No.
應避免之物質：無 Materials to avoid : No.
危害分解物：無 Hazardous decomposition products : No.

### 十一、毒性資料

#### Section 11 - Toxicological information

暴露途徑：不適用 Routes of exposure: Not available.
症狀：無 Symptoms: No.
急性毒性：無 Acute toxicity: No.
慢性或長期毒性：無 Chronic toxicity or long term toxicity: No.

### 十二、生態資料

#### Section 12 - Ecological information:

生態毒性：無 Ecotoxicity : No.
持久性及降解性：--- Persistence and degradability : ---
生物蓄積性：--- Bioaccumulative potential : ---
土壤中之流動性：--- Mobility in soil : ---
其他不良效應：無 Other adverse effects : No.

### 十三、廢棄處置方法

#### Section 13 - Disposal considerations

廢棄處置方法：依當地環保法規之規定處理 Methods of waste disposal : Follow the local regulation.
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### 十四、運送資料

#### Section 14 - Transport information

聯合國編號：不適用 United Nations number ( UN No ) : Not available.
聯合國運輸名稱：不適用 UN Proper shipping name : Not available.
運輸危害分類：不適用 Transport hazard class ( es ) : Not available.
包裝類別：不適用 Packing group: Not available.
海洋污染物 (是/否)：否 Marine pollutant ( Yes/No ) : No.
特殊運送方法及注意事項：無 Specific transport measures and precautionary conditions : No.

### 十五、法規資料

#### Section 15 - Regulatory information

適用法規：2011/65/EU, EC-1907-2006 Applicable regulations: 2011/65/EU, EC-1907-2006
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### 十六、其他資料

#### Section 16 - Other information

參考文獻 Literature references	
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製表日期 Date that the MSDS was prepared:	2017/3/31