



## MATERIAL SAFETY DATA SHEET 物質安全資料表

### 1. Chemical Product and Company Identification 物品與廠商資料

• **PRODUCT NAME/TYPE** 物品名稱/物品編號

Copper clad laminate 銅箔基板 TU-742

• **OTHER/GENERIC NAMES** 同義名稱

C Stage Cured Epoxy Laminate C stage 反應完全環氧樹脂基板

Laminates made from glass fabric cloth and cured epoxy resin clad with copper foil.

基板由玻纖布,反應完全環氧樹脂,及覆蓋銅箔而成.

• **PRODUCT USE** 產品應用

Substrate for printed circuitry 印刷電路板基材

• **MANUFACTURER** 製造商或供應商名稱/地址

Taiwan Union Technology Corp. 台耀科技股份有限公司

803, Po Ai St., Chupei City, Hsinchu Hsien, Taiwan 新竹縣竹北市博愛街803號

**FOR MORE INFORMATION CALL:** 886-3-5551103 (Monday - Friday, 8:00 AM to 5:00 PM)

**IN CASE OF EMERGENCY CALL:** 886-3-5551103 (24 hours/day, 7 days/week)

### 2. Composition/ Information on Ingredients 成分辨識資料

INGREDIENT NAME 混合物	CAS # 化學文摘社登記號碼	WEIGHT %
Continuous Filament Fiber Glass 玻璃布	65997-17-3	20-60
Benzoxazine resin 樹脂	Proprietary	40~70
Copper 銅	7440-50-8	0-90
Curing Agent (架橋劑)	Proprietary	40~70

### 3. Hazards Identification 危害辨識資料

• **EMERGENCY OVERVIEW** 最重要危害與效應

This is a nonflammable, sheet material. Dust when machined or punched may cause skin or eye irritation. Fumes if decomposed may irritate eyes, nose and throat. 這是一個不可燃切張材料,由機械或沖床作用所產生的粉塵可能對皮膚及眼睛造成刺激感,經分解後所產生的毒氣可能刺激眼睛,鼻子,喉嚨

• **POTENTIAL HEALTH HAZARDS** 健康危害效應

No hazards under normal storage, Sheeting of products will release resin and fiberglass dust. 無在一般存放條件下,不具危害性,產品在切張時會釋放樹脂及玻纖粉塵.

• **SKIN** 皮膚

Dust may cause moderate superficial and transient skin irritation.



裁切時所產生的粉塵會導致溫和表面及短暫皮膚刺激。

• **EYES 眼睛**

Dust may cause moderate transient eye irritation (conjunctivitis). 裁切時所產生的粉塵會導致溫和表面及短暫眼睛刺激。

• **INHALATION 吸入**

Fibrous glass dust may be released from the fiber glass cloth substrate when machined. 當玻纖布裁切時會產生的粉塵會影響呼吸道

• **INGESTION 食入**

Not considered a normal route of entry. 在一般使用並不考慮食入途徑

• **DELAYED EFFECTS**

This product is reinforced with continuous filament fiber glass. Dust generated from cutting, grinding, machining, etc. would not be expected to produce respirable parts. 此產品是以連續的玻纖布為加強物,由裁切,研磨,機械可產生粉塵。

• **Ingredients found on one of the OSHA designated carcinogen lists are listed below.** 在OSHA 中被列為致癌物質成分表列如下

None 無

#### 4. First Aid Measures 急救措施

• **SKIN 皮膚接觸**

Wash thoroughly with soap and water. Contaminated clothing should be changed. Consult a physician if a rash or discomfort develops. 用水,肥皂清潔, 污染衣服應更換, 若有發疹或不適尋求醫師診斷

• **EYES 眼睛接觸**

Flush with water for 15 minutes. If irritation persists, consult a physician. 用水清洗15分鐘, 如仍感不適, 尋求醫師診斷

• **INHALATION 吸入**

If overcome by dust or smoke, move to fresh air environment. If breathing becomes difficult consult a physician. 若有產生粉塵, 請移至新鮮空氣區域。如果呼吸感到困難, 請尋求醫師診斷

• **INGESTION 食入**

If large amounts are ingested contact a physician. 如有大量食入, 詢問醫生

• **ADVICE TO PHYSICIAN 對醫師之提示**

Treat symptomatically. 診斷治療

#### 5. Fire Fighting Measures 滅火措施

• **FLAMMABLE PROPERTIES**

• **Flash point 閃火點:** N/A 不適用

• **Flash point method 閃火點測試方式:** N/A 不適用



- **Autoignition temperature** 自燃溫度: N/A 不適用
- **Upper flame limit (Volume % in air)** 燃燒上限(在空氣中的體積百分比): N/A 不適用
- **Lower flame limit (Volume % in air)** 燃燒下限(在空氣中的體積百分比): N/A 不適用
- **Flame propagation rate (Solids)** 燃燒增值速率: N/A 不適用
- **OSHA flammability class** 耐燃等級: UL 94V-0
- **Extinguishing media** 適用滅火劑: Water, CO<sub>2</sub> and Dry Chemical 二氧化碳, 化學乾粉
- **Unusual fire and explosion hazards** 異常燃燒及爆炸危害: May give off hazardous gases may be carbon monoxide, and carbon dioxide, nitric oxide when thermally decomposed.  
高熱分解會產生危害性氣體一氧化碳, 二氧化碳, 二氧化氮
- **Special firefighting precautions/instructions** 特殊滅火程序: Firemen should wear proper protective equipment and positive pressure self-contained breathing apparatus. 消防人員穿戴正確保護設備, 正壓全面行自攜式呼吸防護具

## 6. Accidental Release Measures 洩漏處理方法

- **IN CASE OF SPILL OR OTHER RELEASE** (Always wear recommended personal protection equipment)  
氣體洩漏溢出或其他釋出(推薦穿戴個人保護設備)  
Not applicable. 不適用

## 7. Handling and Storage 安全處置與儲存方法

- **NORMAL HANDLING** 處置  
The primary exposure route is inhalation of dust when machined or punched or from fumes or vapors when heated.  
Local exhaust ventilation should be used to control dust during periods of cutting and drilling.  
當機械或沖床或加熱產生蒸氣, 是吸入主要的曝露粉塵吸入途徑, 在裁切板材, 鑽孔處, 須注意粉塵排出抽風設備, 避免粉塵污染
- **STORAGE RECOMMENDATIONS** 儲存  
Not applicable 不適用

## 8. Exposure Controls/ Personal Protection 暴露預防措施

- **ENGINEERING CONTROLS** 工程控制  
Use local exhaust to control dust. 使用粉塵排出抽風設備, 避免粉塵污染
- **PERSONAL PROTECTIVE EQUIPMENT** 個人防護設備
  - **Skin protection** 皮膚及身體防護:  
Gloves and aprons should be worn during prolonged exposure. 長期暴露應戴手套穿著工作服
  - **Eye protection** 眼睛防護:  
Appropriate eye protection shall be worn when machining material. 裁切板材應有著適當眼睛防護裝備



• **Respiratory protection**呼吸防護:

May require the use of a NIOSH approved respirator. 經NIOSH 認可口罩在切板材是需要使用的.

• **Additional recommendations**其他建議: N/A 無

## 9. Physical and Chemical Properties 物理及化學性質

• **APPEARANCE** 外觀:

Yellow sheet which may be clad with copper foil on one or both sides.上下兩面覆蓋銅箔之黃色板材

• **PHYSICAL STATE** 物質狀態: Solid 固態

• **MOLECULAR WEIGHT**分子量: N/A 不適用

• **CHEMICAL FORMULA**: N/A 不適用

• **ODOR**氣味: None unless heated 除非加熱,在常溫下無味,.

• **SPECIFIC GRAVITY**密度: (Water = 1.0) 2.0±0.5

• **SOLUBILITY IN WATER**水中溶解度: (Weight %) Negligible 可忽略的

• **PH**: N/A 不適用

• **BOILING POINT**沸點: N/A 不適用

• **MELTING POINT**熔解溫度: N/A 不適用

• **VAPOR PRESSURE**蒸氣壓: N/A 不適用

• **VAPOR DENSITY**蒸氣密度: (Air = 1.0) N/A 不適用

• **EVAPORATION RATE**蒸發速率: N/A 不適用

• **% VOLATILES**爆炸界限: N/A 不適用

• **FLASH POINT**閃火點: N/A 不適用

## 10. Stability and Reactivity 安定性及反應性

• **NORMALLY STABLE** 安定性

Stable good. Avoid formation of dust in working area.安定性佳, 避開有粉塵的工作區域

• **INCOMPATIBILITIES** 不相容性

To avoid strong oxidizing agents 避免強氧化劑

• **HAZARDOUS DECOMPOSITION PRODUCTS** 危害分解物

CO, CO<sub>2</sub>,NO<sub>2</sub> 高熱分解會產生,一氧化碳,二氧化碳,二氧化氮

• **HAZARDOUS POLYMERIZATION** 危害物聚合

Will not occur 不會發生



## 11. Toxicological Information 毒性資料

### • IMMEDIATE (ACUTE) EFFECTS 立即性效應

Dust may cause moderate eye, skin and respiratory irritation. 粉塵會影響眼睛、皮膚、呼吸道不適

### • DELAYED (SUBCHRONIC & CHRONIC) EFFECTS 慢毒性或長期毒性

Chronic exposure to fiberglass dust has been associated with bronchitis. 長期處於玻纖粉塵中易影響呼吸道

### • OTHER DATA 其他

The thermal degradation products, such CO, CO<sub>2</sub>,NO<sub>2</sub>. 高熱分解會產生,一氧化碳,二氧化碳,二氧化氮等

## 12. Ecological Information 生態資料

Not Biodegradable 不可生物分解

## 13. Disposal Considerations 廢棄處置方法

Disposal must be made in accordance with all applicable local, government regulations. Copper should be recycled.  
廢棄物處置依據當地政府法規要求,銅必須回收.

## 14. Transport Information 運送資料

### • US DOT HAZARD CLASS: N/A

### • US DOT ID NUMBER: N/A

For additional information on shipping regulations affecting this material, contact the information number found on the first page. 在運送過程對材料影響的規定,與供應聯絡資訊在第1頁.

## 15. Regulatory Information 法規資料

### • TOXIC SUBSTANCES CONTROL ACT (TSCA)

#### • TSCA inventory status: The resin system components used to make this material are on the TSCA inventory list.

The material itself is not required to be on the list.

毒性物質控制法規: 構成基板材料樹脂系統列於TSCA 物品清單, 然基板材料本身並未需要列於表上.

#### • Other tscA issues: N/A 不適用

#### • Section 311 hazard class: N/A 不適用

#### • Sara 313 toxic chemicals:

The following ingredients "Toxic Chemicals". CAS #'s and comment .以下成分銅列為毒性化學物質的CAS 編號備註.



Ingredient	CAS. NO.	Comment
Copper	7440-50-8	Recycle

- **ADDITIONAL REGULATORY INFORMATION 額外法規資訊**
- **EC Risk Phrases 歐盟風險規定:** Not classified as hazardous 未列為危害物質
- **EC Safety Phrases 歐盟安全規定:** Not classified as hazardous 未列為危害物質

## 16. Other Information 其他資料

**CURRENT ISSUE DATE:** New

**PREVIOUS ISSUE DATE:** New

### CHANGES TO MSDS FROM PREVIOUS ISSUE DATE ARE DUE TO THE FOLLOWING:

New Material Safety Data Sheet on January 1, 2007 製表日期

Inquires to specific nature of this ingredient and the potential health and safety issues associated with them should be directed to-詢問關於此物質成分特性對健康安全議題聯絡窗口

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*We will be happy to provide you with more information or clarification.*

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## MATERIAL SAFETY DATA SHEET 物質安全資料表

### 1. Chemical Product and Company Identification 物品與廠商資料

• **PRODUCT NAME/TYPE** 物品名稱/物品編號

Prepreg 黏合片/TU-74P

• **OTHER/GENERIC NAMES** 同義名稱

B Stage Epoxy Laminate Prepreg B stage半固化黏合片

• **PRODUCT USE** 產品應用

Substrate for printed circuitry 印刷電路板用基材

• **MANUFACTURER** 製造商或供應商名稱/地址

Taiwan Union Technology Corp. 台耀科技股份有限公司

803, Po Ai St., Chupei City, Hsinchu Hsien, Taiwan 新竹縣竹北市博愛街803號

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IN CASE OF EMERGENCY CALL: 886-3-5551103 (24 hours/day, 7 days/week)

### 2. Composition/ Information on Ingredients 成分辨識資料

INGREDIENT NAME 純物質	CAS # 化學文摘社登記號碼	WEIGHT %
Continuous Filament Fiber Glass 玻璃布	65997-17-3	20-70
Halogen free Resin 無鹵素樹脂	Proprietary	30~80

Trace impurities and additional material names not listed above may also appear in the Regulatory Information at the end of the MSDS.

### 3. Hazards Identification 危害辨識資料

• **EMERGENCY OVERVIEW** 最重要危害與效應

This a nonflammable, sheet material. Dust when machined or punched may cause skin or eye irritation. Fumes if decomposed may irritate eyes, nose and throat. 這是一個不可燃切張材料，由機械或沖床作用所產生的粉塵可能對皮膚及眼睛造成刺激感，經分解後所產生的毒氣可能刺激眼睛，鼻子，喉嚨

• **POTENTIAL HEALTH HAZARDS** 健康危害效應

No hazards under normal storage, Sheeting of products will release resin and fiberglass dust. 在一般存放條件下，不具危害性，產品在切張時會釋放樹脂及玻纖粉塵。

• **SKIN** 皮膚

Dust may cause moderate superficial and transient skin irritation. 裁切時所產生的粉塵會導致溫和表面及短暫皮膚刺激。

• **EYES** 眼睛



Dust may cause moderate transient eye irritation (conjunctivitis). 裁切時所產生的粉塵會導致溫和表面及短暫眼睛刺激。

• **INHALATION 吸入**

Fibrous glass dust may be released from the glass fiber cloth substrate when machined. 當玻纖布裁切時會產生的粉塵會影響呼吸道

• **INGESTION 食入**

Not considered a normal route of entry. 在一般使用並不考慮食入途徑

• **DELAYED EFFECTS**

This product is reinforced with continuous filament glass fiber. Dust generated from cutting, grinding, machining, etc. would not be expected to produce respirable parts. 此產品是以連續的玻纖布為加強物,由裁切,研磨,機械可產生粉塵。

• **Ingredients found on one of the OSHA designated carcinogen lists are listed below. 在OSHA 中被列為致癌物質成分表列如下**

None 無

#### **4. First Aid Measures 急救措施**

• **SKIN 皮膚接觸**

Wash thoroughly with soap and water. Contaminated clothing should be changed. Consult a physician if a rash or discomfort develops. 用水,肥皂清潔, 污染衣服應更換, 若有發疹或不適尋求醫師診斷

• **EYES 眼睛接觸**

Flush with water for 15 minutes. If irritation persists, consult a physician. 用水清洗15分鐘, 如仍感不適, 尋求醫師診斷

• **INHALATION 吸入**

If overcome by dust or smoke, move to fresh air environment. If breathing becomes difficult consult a physician. 若有產生粉塵, 請移至新鮮空氣區域。如果呼吸感到困難, 請尋求醫師診斷

• **INGESTION 食入**

If large amounts are ingested contact a physician. 如有大量食入, 詢問醫生

• **ADVICE TO PHYSICIAN 對醫師之提示**

Treat symptomatically. 診斷治療

#### **5. Fire Fighting Measures 滅火措施**

• **FLAMMABLE PROPERTIES**

• **Flash point 閃火點:** N/A 不適用

• **Flash point method 閃火點測試方式:** N/A 不適用

• **Autoignition temperature 自燃溫度:** N/A 不適用

• **Upper flame limit (Volume % in air) 燃燒上限(在空氣中的體積百分比):** N/A 不適用



- **Lower flame limit (Volume % in air) 燃燒下限(在空氣中的體積百分比):** N/A 不適用
- **Flame propagation rate (Solids) 燃燒增值速率:** N/A 不適用
- **OSHA flammability class 耐燃等級:** UL 94V-0
- **Extinguishing media 適用滅火劑:** Water, CO<sub>2</sub> and Dry Chemical 二氧化碳, 化學乾粉
- **Unusual fire and explosion hazards 異常燃燒及爆炸危害:** May give off hazardous gases may be carbon monoxide, and carbon dioxide, nitric oxide when thermally decomposed.  
高熱分解會產生危害性氣體 一氧化碳, 二氧化碳, 二氧化氮
- **Special firefighting precautions/instructions 特殊滅火程序:** Firemen should wear proper protective equipment and positive pressure self-contained breathing apparatus. 消防人員穿戴正確保護設備, 正壓全面行自攜式呼吸防護具

## 6. Accidental Release Measures 洩漏處理方法

- **IN CASE OF SPILL OR OTHER RELEASE (Always wear recommended personal protection equipment)**  
氣體洩漏溢出或其他釋出(推薦穿戴個人保護設備)  
Not applicable. 不適用

## 7. Handling and Storage 安全處置與儲存方法

- **NORMAL HANDLING 處置**  
The primary exposure route is inhalation of dust when machined or punched or from fumes or vapors when heated. Local exhaust ventilation should be used to control dust during periods of cutting and drilling.  
當機械或沖床或加熱產生蒸氣是吸入主要的曝露粉塵吸入途徑, 在裁切板材, 鑽孔處, 須注意粉塵排出抽風設備, 避免粉塵污染
- **STORAGE RECOMMENDATIONS 儲存**  
Avoid exposure to higher temp & higher humidity. 避免高溫高濕之環境

## 8. Exposure Controls/ Personal Protection 暴露預防措施

- **ENGINEERING CONTROLS 工程控制**  
Use local exhaust to control dust. 使用粉塵排出抽風設備, 避免粉塵污染
- **PERSONAL PROTECTIVE EQUIPMENT 個人防護設備**
  - **Skin protection 皮膚及身體防護:**  
Gloves and aprons should be worn during prolonged exposure. 長期暴露應戴手套穿著工作服
  - **Eye protection 眼睛防護:**  
Appropriate eye protection shall be worn when machining material. 裁切板材應有著適當眼睛防護裝備
  - **Respiratory protection 呼吸防護:**



May require the use of a NIOSH approved respirator. 經NIOSH 認可口罩在切板材是需要使用的。

- **Additional recommendations**其他建議: N/A 無

## 9. Physical and Chemical Properties 物理及化學性質

- **APPEARANCE** 外觀: Yellow黃色
- **PHYSICAL STATE** 物質狀態: Solid 固態
- **MOLECULAR WEIGHT**分子量: N/A 不適用
- **CHEMICAL FORMULA**: N/A 不適用
- **ODOR**氣味: None unless heated 除非加熱，在常溫下無味
- **SPECIFIC GRAVITY**密度: (Water = 1.0) 1.8±0.5
- **SOLUBILITY IN WATER**水中溶解度: (Weight %) Negligible 可忽略
- **PH**: N/A 不適用
- **BOILING POINT**沸點: N/A 不適用
- **MELTING POINT**熔解溫度: N/A 不適用
- **VAPOR PRESSURE**蒸氣壓: N/A 不適用
- **VAPOR DENSITY**蒸氣密度: (Air = 1.0) N/A
- **EVAPORATION RATE**蒸發速率: N/A 不適用
- **% VOLATILES**爆炸界限: <0.7%
- **FLASH POINT**閃火點: N/A 不適用

## 10. Stability and Reactivity 安定性及反應性

- **NORMALLY STABLE** 安定性  
Stable good. Avoid formation of dust in working area.安定性佳，避開有粉塵的工作區域
- **INCOMPATIBILITIES** 不相容性  
To avoid strong oxidizing agents 避免強氧化劑
- **HAZARDOUS DECOMPOSITION PRODUCTS** 危害分解物  
CO, CO<sub>2</sub>, NO<sub>2</sub> 高熱分解會產生，一氧化碳,二氧化碳,二氧化氮
- **HAZARDOUS POLYMERIZATION** 危害物聚合  
Will not occur 不會發生

## 11. Toxicological Information 毒性資料

- **IMMEDIATE (ACUTE) EFFECTS** 立即性效應



Dust may cause moderate eye, skin and respiratory irritation. 粉塵會影響眼睛、皮膚、呼吸道不適

• **DELAYED (SUBCHRONIC & CHRONIC) EFFECTS** 慢毒性或長期毒性

Chronic exposure to fiberglass dust has been associated with bronchitis. 長期處於玻纖粉塵中易影響呼吸道

• **OTHER DATA** 其他

The thermal degradation products, such CO, CO<sub>2</sub>, NO<sub>2</sub>.

高熱分解會產生一氧化碳,二氧化碳,二氧化氮等

## 12. Ecological Information 生態資料

Not Biodegradable 不可生物分解

## 13. Disposal Considerations 廢棄處置方法

Disposal must be made in accordance with all applicable local, government regulations.

廢棄物處置依據當地政府法規要求。

## 14. Transport Information 運送資料

• **US DOT HAZARD CLASS:** N/A

• **US DOT ID NUMBER:** N/A

For additional information on shipping regulations affecting this material, contact the information number found on the first page. 在運送過程對材料影響的規定,與供應聯絡資訊在第1頁。

## 15. Regulatory Information 法規資料

• **TOXIC SUBSTANCES CONTROL ACT (TSCA)**

• **Tsca inventory status:**

The resin system components used to make this material are on the TSCA inventory list. The material itself is not required to be on the list.

毒性物質控制法規: 構成基板材料樹脂系統列於TSCA 物品清單, 然基板材料本身並未需要列於表上。

• **Other tsca issues:** N/A 不適用

• **Section 311 hazard class:** N/A 不適用

• **Sara 313 toxic chemicals:** N/A 不適用

• **ADDITIONAL REGULATORY INFORMATION**

• **EC Risk Phrases:** Not classified as hazardous 未列為危害物質



- **EC Safety Phrases:** Not classified as hazardous 未列為危害物質
- **WHMIS CLASSIFICATION (CANADA):** N/A 不適用

## 16. Other Information 其他資料

- **CURRENT ISSUE DATE:** New
- **PREVIOUS ISSUE DATE:** New
- **CHANGES TO MSDS FROM PREVIOUS ISSUE DATE ARE DUE TO THE FOLLOWING:**

New Material Safety Data Sheet on January 1, 2007 製表日期

- Inquires to specific nature of this ingredient and the potential health and safety issues associated with them should be directed to- 詢問關於此物質成分特性對健康安全議題聯絡窗口-

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*We will be happy to provide you with more information or clarification.*

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