



东莞市一佳电子通讯科技有限公司

Dongguan YiJia Electronics Communication Technology Co.,Ltd.

# 规格承认书

## SPECIFICATION FOR APPROVAL

日期  
Date 2022/11/08

编号  
File No 22110801

版本  
Revision 1.0

客户  
CUSTOMER:

龙杰

客户料号

CUSTOMER NO:

ACR350

品名

PART NAME:

WiFi Antenna

供方料号

SUPPLIER NO:

YJQ01.160.001.303A

送样日期Date:

送样数量Q “TY:

客户确认CUSTOMER APPROVED BY

APPROVAL

CHIEF

SUPERVISOR

供方确认 SUPPLIER SIGNATURE

APPROVAL

CHECK

DESIGN

ChenGuoqiang

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YJ-RD-F04-A

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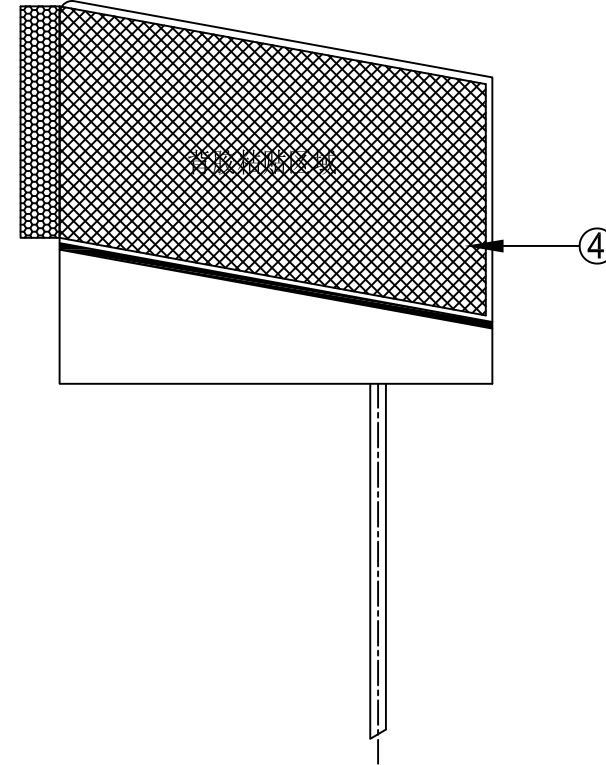
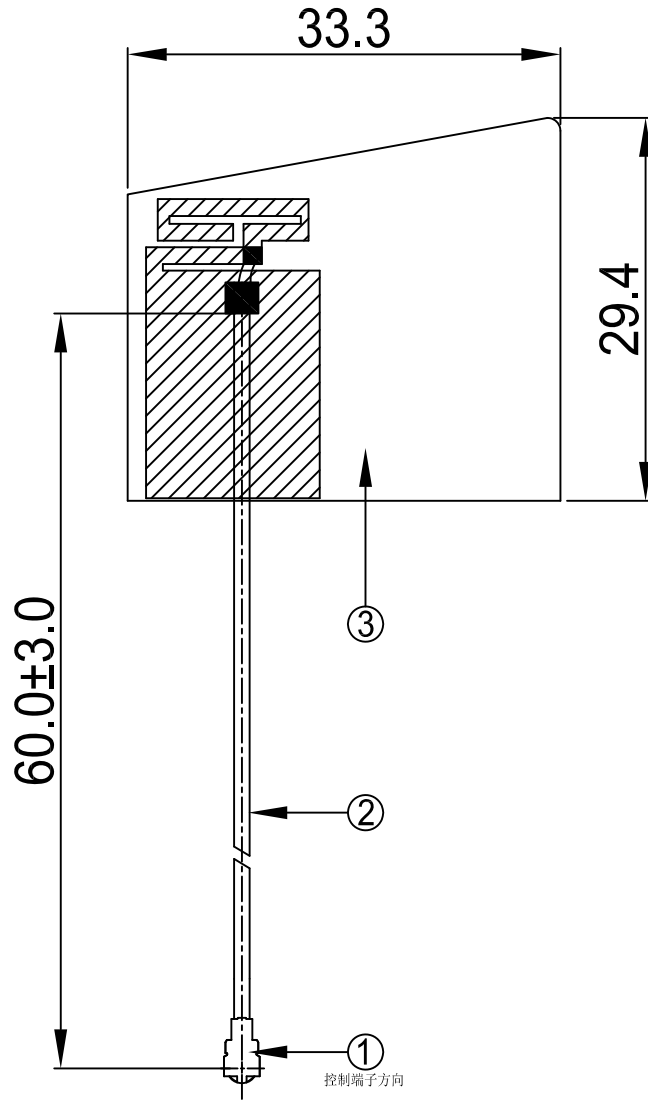
# 承认书项目表

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11	N/A	N/A	N/A
12	-	-	-
13	-	-	-

**RoHS**  
Compatible

CUSTOMER	
PART NO	

REV.	DESCRIPTION	DATE
△	首次发行	2020-01-08



4	Paste	33.0*17.8MM	3M	PAS10170A.P01	1
3	PCB Black	33.3*29.4MM	PCB	PCB10516A.P01	1
2	Coaxial Cable	O.D.1.13 Gray	O.D.1.13	COA10002A.P01	1
1	Mini Connector	Au Plated 1代	Cu	TER10001A.P01	1
NO	PART NAME	DESCRIPTION	Material	Part Number	Q.TY



东莞市一佳电子通讯科技有限公司  
Dongguan YiJia Electronics Communication Technology Co.,Ltd. Tel:0769-85535057 Fax:0769-81664308

PART NAME: WiFi Antenna			
PART NO.: YJQ01.160.001.303A		DATE: 2020-01-08	
APPROVED BY	CHECKED BY	DESIGNED BY	 Tolerance X.X ±0.50 X.XX±0.15 X° ±3°
陈国强	文雪	陈兴成	
UNITS: mm SCALE: 1/1 REVISION: A			



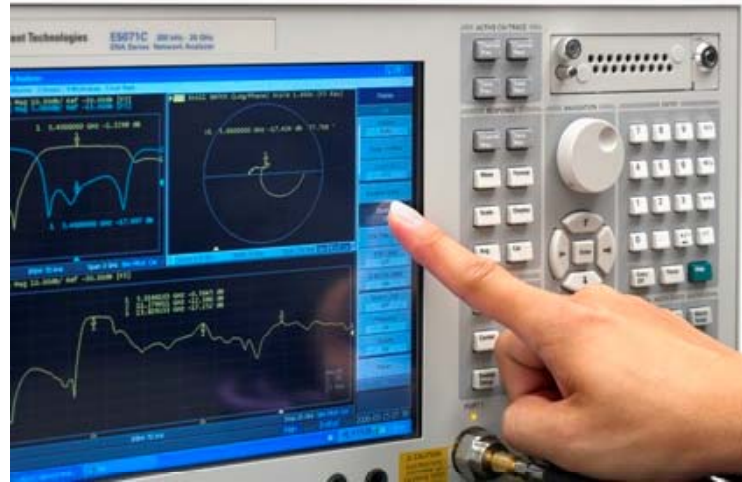
# 天线规格

## Antenna Specification

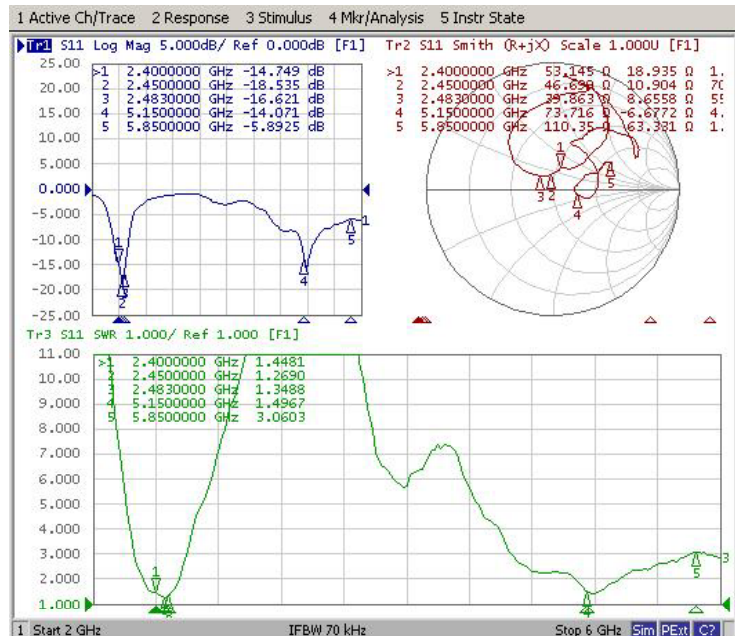
<b>Electrical Properties</b>	
Frequency	2.4-2.5GHz
Impedance	50 Ohm Nominal
V.S.W.R	2.0 Max@2.4-2.5GHz
Gain	2.2dBi @2.4-2.5GHz
Radiation	Omni-directional
Polarization	Linear
<b>Physical Properties</b>	
Connector	1代IPEX
Cable Type	O.D.1.13mm
Cable Length	60mm
Cable Color	Gray
Operating Temp.	-40 ~ +85 °C
Storage Temp / Humidity	25±5°C / <70%



# Agilent E5071B



# S Parameter Test // WiFi Antenna

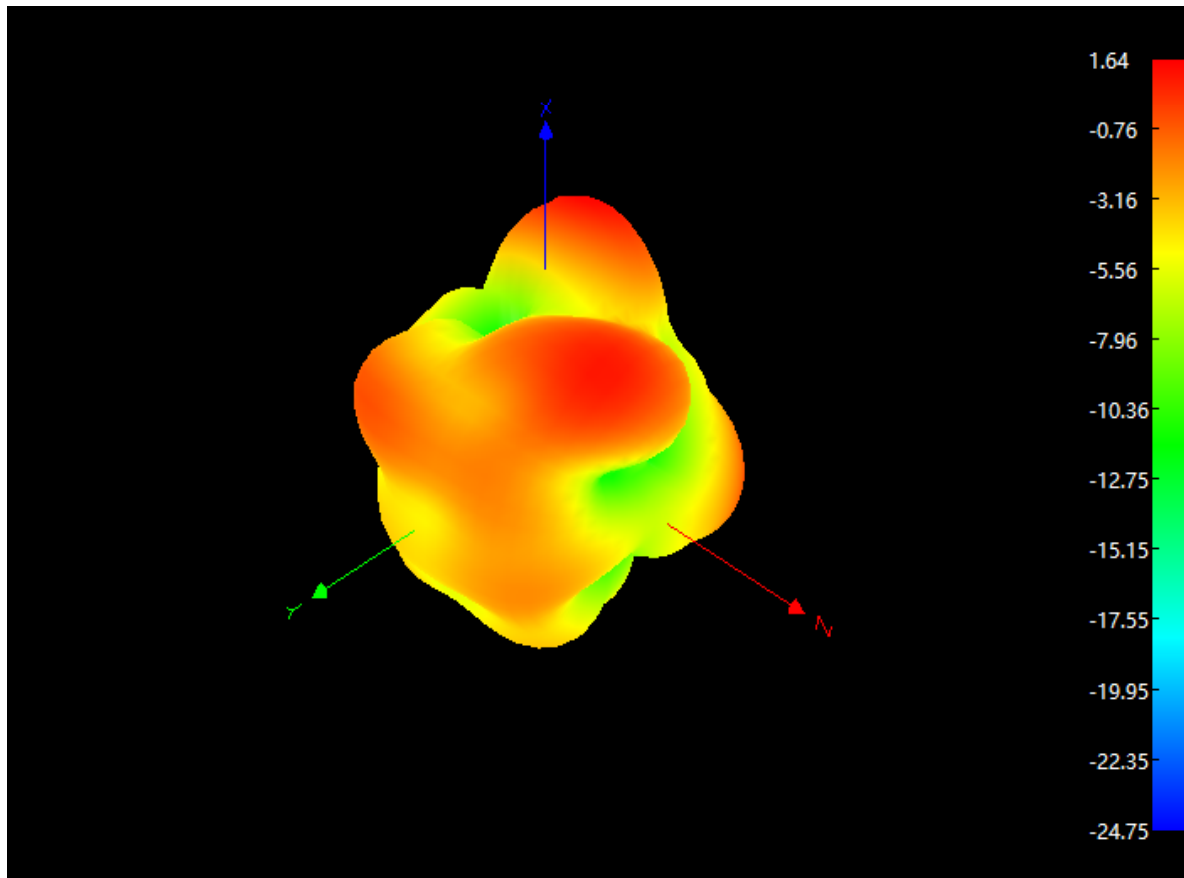




Passive Test For WiFi Antenna(2.4G)			
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
2400	33.3	-4.8	1.6
2410	32.1	-4.9	1.4
2420	32.7	-4.9	2.0
2430	34.1	-4.7	2.1
2440	34.5	-4.6	2.0
2450	34.8	-4.6	2.1
2460	33.1	-4.8	2.0
2470	33.8	-4.7	2.2
2480	32.7	-4.9	2.0
2490	32.5	-4.9	1.9
2500	30.3	-5.2	1.5



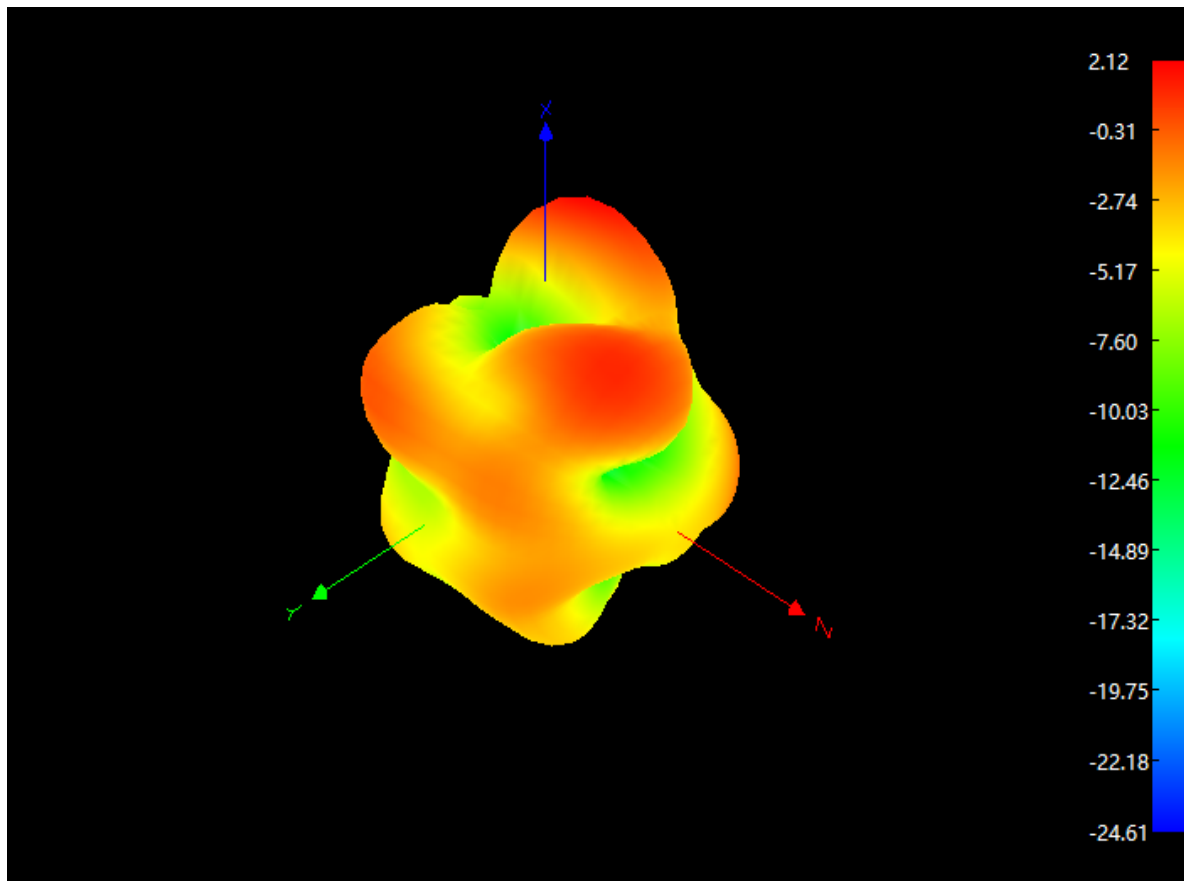
## Radiation Pattern For WiFi Antenna



**2400MHz**



## Radiation Pattern For WiFi Antenna

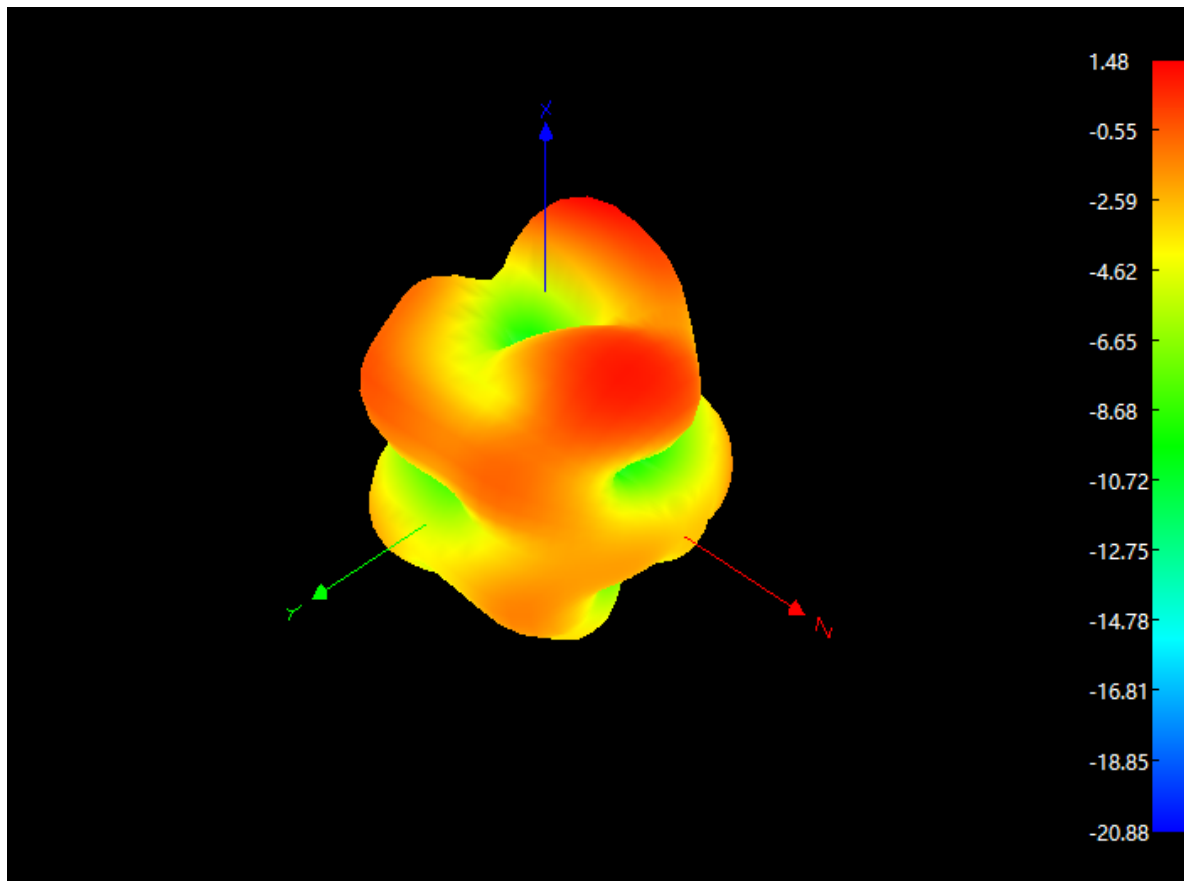


**2450MHz**





## Radiation Pattern For WiFi Antenna



**2500MHz**



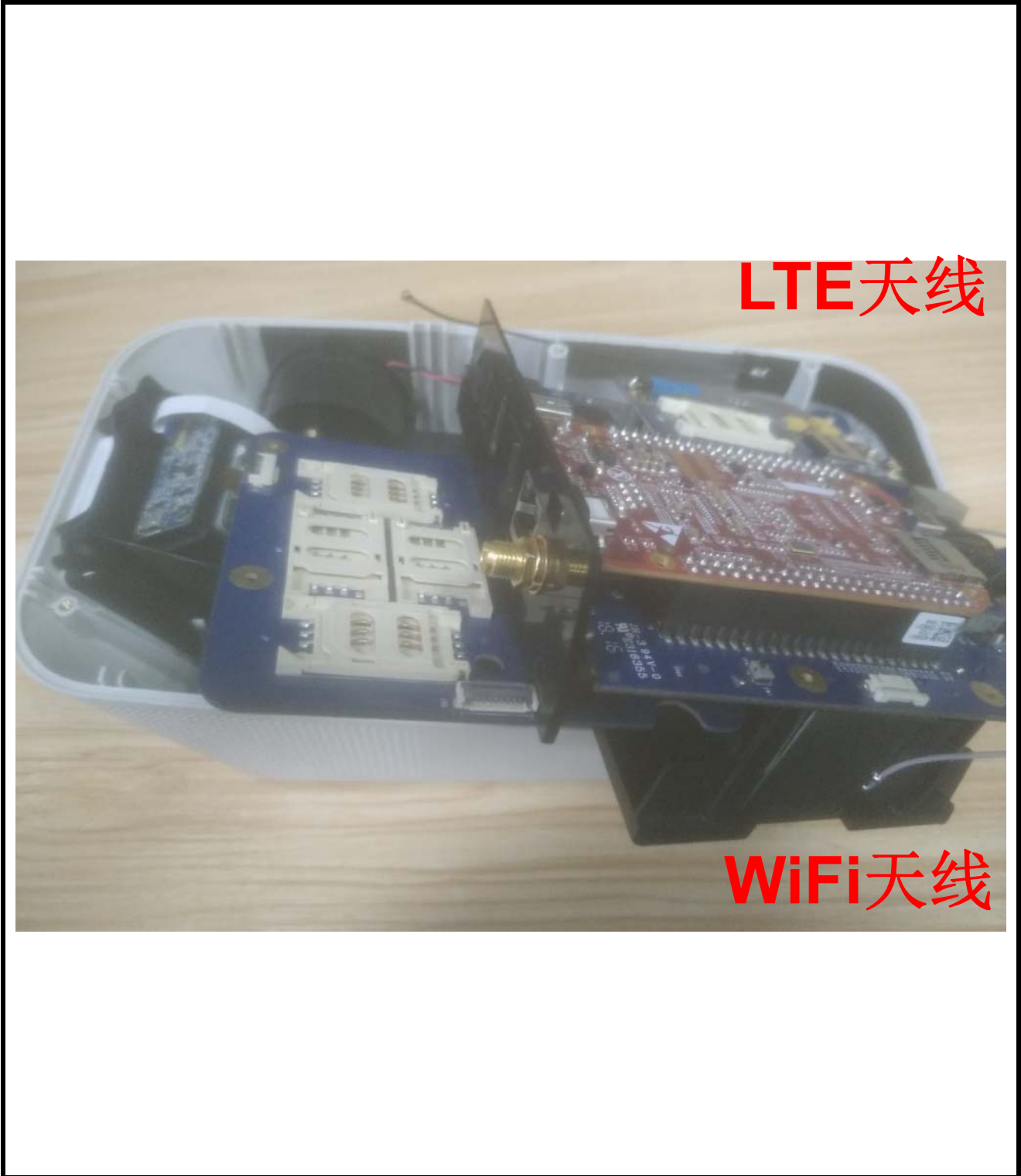
*Device*





*WiFi  
Antenna*





LTE天线

WiFi天线

# MATERIAL SAFETY DATA SHEET

## 物质安全资料表

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### 1、CHEMICAL PRODUCT AND COMPANY IDENTIFICATION:

产品和公司名称

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PRODUCT NAME : Copper Clad Laminate (FR-4)

产品名称: 覆铜箔板 (FR-4)

PRODUCT USE: Substrate for printed circuitry; Multilayer Boards

用途: 用于印制印刷电路板; 制作多层板

NAME OF COMPANY and ADDRESS: Goldenmax International Technology(zhuhai) Ltd.

NO .8 QinShi Road, Sanzao Town, Zhuhai City

Guangdong, China

公司名称及地址: 金安国纪科技(珠海)有限公司

中国广东珠海三灶科技工业园琴石路 8 号

FOR MORE INFORMATION CALL:

紧急联络电话: 86-0756-7638610

Fax: 86-0756-7762356

E-mail: GDMZHQA @163.com

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### 2、COMPOSITION/INFORMATION ON INGREDIENTS:

组成成分资料

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INGREDIENT NAME	CAS#	WEIGHT%
成分名称	化学文摘号	重量比
Continuous Filament Fiber Glass	(65997-17-3)	30-65
玻纤布		
Copper	(7440-50-8)	9-30
铜箔		
Epoxy Resin	(26265-08-7)	35-70
溴化环氧树脂		

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### 3、HAZARDS IDENTIFICATION:

危害性资料

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## EMERGENCY OVERVIEW

紧急情况概述:

A nonflammable sheet material , Dust when machined or punched may cause skin or eye irritation .Fumes if decomposed may irritate eyes .nose and throat.

是一种难燃的层压板，当使用或打孔时可能产生粉末，可能使皮肤或眼睛感到刺激。当分解时产生的气体会刺激眼睛、鼻和咽喉。

### POTENTIAL HEALTH HAZARDS:

潜在危害:

SKIN: Dust may cause moderate skin irritation.

皮肤：粉末将导致中等程度皮肤过敏。

EYES: Dust may cause moderate eye irritation. Fumes may irritation eyes.

眼睛：粉末将导致中等程度眼睛过敏。

INHALATION: Fibrous glass dust may be released from the fiberglass cloth substrate when machined. ACGIH TLV is 10mg/m<sup>3</sup> TWA for particles <5microns in diameter.

吸入物：当使用玻璃纤维布时玻璃纤维粉末可能会飞散出。对于直径<5 微米的颗粒 ACGIH TLV 是 10mg/m<sup>3</sup>。

INGESTION: Not determined.

摄食：没有参考值。

DELAYED EFFECTS: Our product is reinforced with continuous filament fiber glass . Dust generated from the cutting . grinding .machining etc .would not be expected to produce respirable particles . IARC considers continuous filaments as unclassifiable or probably non-carcinogenic.

慢性影响：我们的产品用的是加强型连续的玻璃纤维丝，当切割、打孔加工时不会产生可吸入的颗粒。IARC 没有把连续玻璃丝列入致癌物目录。

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## 4、FIRST AID MEASURES:

### 急救措施

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SKIN: Wash in flowing water or shower. Remove contaminated clothing.

皮肤：脱下已污染的衣服，用流动水冲洗。

EYE: Irrigate with flowing water for 15 minutes. If irritation persists consult a physician.

眼睛：用流动水冲洗 15 分钟，如过敏现象持续发生，请求助医生。

INHALATION: If overcome by dust or smoke move to fresh air .If not breathing give mouth-to-mouth resuscitation. Call physician.

吸入：如粉末烟尘太多请转移到有新鲜空气的地方，如停止了呼吸，请进行人工呼吸并致电医生。

INGESTION: If large amounts are ingested consult physician.

摄食：如吸入大量，请致电医生。

ADVICE TO PHYSICIAN: Treat symptomatically.

建议医生：处理出现的症状。

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## 5、 FIRE FIGHTING MEASURES:

### 消防措施

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FLAMMABLE PROPERTIES: n/a

易燃性：不适用

FLASH POINT: n/a

闪点：不适用

FLASH POINT METHOD: n/a

闪点方式：不适用

UPPER FLAME LIMITE %: n/a

燃烧上限：不适用

LOWER FLAME LIMITE%: n/a

燃烧下限：不适用

FLAME PROPAGATION RATE(solids) : UL94 V-0

燃烧等级：UL94 V-0

OSHA FLAMMABILITY CLASS: n/a

燃烧级别：不适用

EXTINGUISHING MEDIA: Water. CO2 and dry chemical

灭火介质：水、CO2 及干化学品

UNUSUAL FIRE AND EXPLOSION HAZARDS: May give off toxic hydrogen bromide when thermally decomposed.

不正常火灾及爆炸危险：当发生热分解时可能会释放出有毒的液态溴化物。

SPECIAL FIREFIGHTING PRECAUTIONS/INSTRUCTIONS:

Firemen should wear proper protective equipment and positive pressure self-contained breathing apparatus.

特别火灾指导：消防员需身穿保护装置及正压呼吸设施。

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## 6、 ACCIDENTAL RELEASE MEASURES:

### 泄漏应急处理

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IN CASE OF SPILL OR OTHER RELEASE (Always wear recommended personal protection equipment)

如有泄漏或其他释放（通常身穿所推荐的保护设施）

Not applicable material is an article.

不适用于固体材料。

Spills and releases may have to be reported to local authorities.

有关泄漏应报告当地政府。

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## 7、HANDLING AND STORAGE:

### 仓储指南

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General Handling 常规处理:

Avoid contact with eye 避免眼睛接触

Keep away from heat and flame and sun-light 远离热源、明火和直射阳光

Wash through after handling 处理完后彻底冲洗

Stored in dark and cool place 避光、阴凉的环境下储存

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## 8、EXPOSURE CONTROLS/PERSONAL PROTECTION:

### 接触控制/个人防护

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ENGINEERING CONTROLS: Use local exhaust ventilation to control dust

工程控制: 使用当地除尘通风设施

PERSONAL PROTECTIVE EQUIPMENT: 个人保护措施:

SKIN PROTECTION: For brief contact to dust no precautions other than clean body-covering clothing should be needed. Use gloves and aprons when prolonged or frequently repeated contact occurs.

皮肤保护: 对于短暂的接触粉尘, 需要时清洗身体或衣服, 无预防措施。

当需要长时间或经常性的接触须戴手套或防护装置。

EYE PROTECTION: Use appropriate eye protection when machining material.

眼睛保护: 当使用有关材料时使用眼睛保护装置。

RESPIRATORY PROTECTION: Atmospheric levels of Fibrous glass and Copper Dust should be maintained below exposure guidelines. When respiratory protection is required for certain operation use a NIOSH-approved dust respirator.

呼吸保护: 大气中的玻璃纤维必须低于暴露准则, 当进行某种操作时使用规范的粉尘防毒面罩。

ADDITIONAL RECOMMENDATIONS: N/A 其他建议: 不适用

EXPOSURE GUIDELINES: 暴露准则:

Ingredient Name	CAS#	ACGIH TLV	OSHA PEL	Other Limit
Copper Dust	(7440-50-8)	1 mg/m <sup>3</sup>	1 mg/m <sup>3</sup>	N/A
Fibrous Glass Dust	(65997-17-3)	10mg/m <sup>3</sup>	None	



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## 9、PHYSICAL AND CHEMICAL PROPERTIES:

### 物理化学性能

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APPEARANCE: Yellow or white to amber sheets

外观: 黄色或白色

PHYSICAL STATE: solid

物理形态: 固态

BOILING POINT : n/a

沸点: 不适用

FLASH POINT : n/a

闪点: 不适用

DISPOSITE POINT (5% LOSS) :

热分解点: 310°C(5%LOSS)

THE GLASS TRANSITION TEMPERATURE:

Tg: 110-150°C

ODOR: None, unless heated

气味: 无味, 除非加热

SPECIFIC GRAVITY : >1.5

比重: >1.5

PERCENT VOLATILE (PREPREG) : <4%

挥发份(半固化片) : <4%挥发

(LAMINATE): <0.5%

层压板: <0.5%

VAPOR DENSITY (Air=1) : n/a

蒸气密度(空气=1) : 不适用

VAPOR PRESSURE : n/a

蒸气压力: 不适用

ODOR: None unless heated

SOLUBILITY IN WATER: Negligible in water

水溶性: 在水中可忽略

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## 10、STABILITY AND REACTIVITY:

### 稳定性及反应性

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NORMALLY STABLE? : Stable

通常稳定? : 稳定

HAZARDOUS POLYMERIZATION? None

危险聚合物? : 无

HAZARDOUS DECOMPOSITION PRODUCTS:CO CO2 HBr Oxides of nitrogen heated in excess of 300deg.C.Laser drilling or cutting may result in copper metal fume.

危险的腐化产品: CO CO2 HBr Nox 当加热超过 300°C时, 打孔或切割时会产生铜金属烟尘。

HAZARDOUS POLYMERIZATION? None

危险聚合物? 无

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## 11、TOXICOLOGICAL INFORMATION:

### 毒物学的资料

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IMMEDIATE (ACUTE) EFFECTS: Dust may cause moderate eye skin and respiratory irritation.

敏感反应：粉尘将导致眼睛、皮肤中度过敏。

DELAYED EFFECTS: Our product is reinforced with continuous filament fiberglass. Dust generated from the cutting grinding machining etc. would not expected to produce respirable particles. IARC considers continuous glass filaments as unclassifiable or probably non-carcinogenic.

慢性反应：我们的产品是连续的玻璃纤维丝加强产品。当切割、研磨、制造时通常不会产生吸入性颗粒。IARC 组织认为连续型玻璃纤维丝不会致癌。

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## 12、ECOLOGICAL INFORMATION:

### 生态学资料

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Not Biodegradable

非生物降解。

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## 13、DISPOSAL CONSIDERATIONS:

### 处置问题

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Is the unused product a hazardous waste substances list of country hazardous waste if discarded?

No

列入国家危险废物名录的危险废物不能够再利用时是否被丢弃？ 不

OTHER DISPOSAL CONSIDERATIONS: Disposal must be made in accordance with all applicable Local regulations. Copper should be recycled.

其它处置问题：处置必须遵循当地的法律法规。铜箔是可以再利用的。

Suggestion method after products will be discarded:

产品报废之后有以下几种处置方法：

1. Separate reuse method: crush products into powder then separate the valued copper, recycling left plastic powder as a filler.

分离法，将产品粉碎，将铜箔回收利用，剩余物可作填充料。

2. Incineration method: incinerate the unused products, this method may produce some brominated compound gas.

焚烧法，焚烧过程中可能产生有毒的溴化物气体。

3. Bury into deep earth.

填埋法。

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#### **14、TRANSPORT INFORMATION:**

##### **运输资料**

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1. Special transport and attention: None

无须特殊的运输方式。

2. For additional information on shipping regulations affecting this material, contact the information number found on the first page.

附带资料是当运输规则影响到物料时，请和第一页所提供的联系方式联系。

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#### **15、ADDITIONAL REGULATORY INFORMATION:**

##### **附加法规资料**

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1. **HAZARDOUS WASTE SUBSTANCES LIST OF COUNTRY:** 国家危险废物名录

The resin system components listed in the hazardous waste substances list of country (HW13) .

环氧化合物类被列入国家危险废物名录当中 (HW13) 。

2. Goldenmax International Technology(zhuhai) Ltd.. Does not use polybromide -biphenyls or polybromide-biphenyloxides as a fire retardant in any of our epoxy resin systems., and meet ROHS requirement.

金安国纪科技（珠海）有限公司在产品的环氧树脂体系当中没有采用多溴联苯或多溴联苯基氧化物作为阻燃剂，符合 ROHS 要求。

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#### **16、OTHER INFORMATION:**

##### **附加信息**

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Current issue date:5/8/2015 最新修订日期：5/8/2015

Previous issue date:\*\*\*\*\* 上一次修订日期：\*\*\*\*\*

# 化学品安全技术说明书 MSDS

## 第一部分、化学品物品及企业标识 Part 1 Identifications of chemicals and Manufacturer

化学品物品名称 Chemical name:	液态感光阻焊油墨 YSR-900 Liquid photosensitive solder mask YSR-900
生效日期 Effective date:	2021.7.1
企业名称 Manufacturer name:	肇庆粤阳电子科技有限公司 Zhaoqing Yeyo Electronic tech Co.,Ltd
地址 Address:	肇庆市高要市蚬岗镇蚬岗工业区 Xian' gang Industrial Zone, Xian' gang Town, Gaoyao City, Zhaoqing
电话 Tel:	0758-8384062
传真 Fax:	0758-8384063
email	<a href="mailto:zqyeyo@163.com">zqyeyo@163.com</a>
应急咨询电话 Emergency call:	0758-8384062
推荐用途 Recommendations on usage:	用于 PCB 制作 PCB Manufacturing
限制用途 Restrictions on usage:	仅限工业用 industrial use only

## 第二部分、危险性概述 Part 2 Summary of danger

### GHS 危险性类别 Risk classification:

急性毒性-经口 类别 5 Acute toxicity-Oral type5

呼吸或皮肤过敏 类别 1 Respiratory or skin irritation type1

对水环境的急性危害 类别 3 Acute hazard to the water environment type3

对水环境的慢性危害 类别 3 Chronic harm to the water environment type3

### GHS 标签要素:



信号词: 警告 Signal: Warning

危险说明: Hazard statement:

最重要的危害效应 Most dangerous hazard	刺激性(皮肤、粘膜), 麻醉作用、肾脏障害, 经皮肤侵入人体 Irritation (skin, mucous membrane), anesthesia, kidney damage, invading the body through the skin
环境影响 Environmental	有机溶剂蒸发 Organic solvent evaporation
物理性及化学性危害 Physical & Chemical	其蒸气比空气轻, 易传播至远处。 Its vapor is lighter than air and easily spread to distant places.
特殊危害 Special Hazard	吸入性伤害及口、鼻、黏膜等接触性伤害 Inhalation injury and contact injury such as mouth, nose and mucous membrane
主要症状 Main symptoms	口、鼻、粘膜等发生刺激感、吸入过量导致晕眩感 Irritation in the mouth, nose, mucous membranes, etc.

第三部分、成分/组成信息 Part 3 Information of ingredients

物料主要成分明细: Details of main components of materials:

主要成分名称 Main ingredient name	CAS NO.	主要成分百分含量 Percentage
环氧树脂 Epoxy resin	25068-38-6	35-40
二丙二醇甲醚 DPM	34590-94-8	20-26
硫酸钡 Barium sulfate	7727-43-7	20-30
二氧化硅 Silica	10279-57-9	3-5
三羟甲基丙烷三丙烯酸酯 Trimethylolpropane triacrylate	15625-89-5	6-8

第四部分、急救措施 Part 4 Emergency measures

不同暴露途径之急救方法: (主要为溶剂性伤害, 应于第一时间主动告知医师) First aid methods for different exposure routes: (mainly for solvent injuries, you should take the initiative to inform the physician immediately)
吸入: 1、若有头痛、头晕, 应把患者立即移至新鲜空气处 Breathe in: 1、 If you have headache or dizziness, move the patient to fresh air immediately
2、并接受医师诊治 See your doctor.
皮肤接触: 1、用纱布擦拭, 再用中性肥皂彻底冲洗。如果发炎, 则应立即就医 Skin touch: 1 Wipe with gauze and rinse thoroughly with neutral soap. If irritation occurs, seek medical attention immediately
眼睛接触: 立即以大量流水冲洗 15 分钟以上, 再接受专科医师的诊治 Eyes touch: Immediately rinse with plenty of running water for more than 15 minutes, and then receive the diagnosis and treatment of a specialist
食入: 1、患者即将丧失意识或已无意识时, 不可喂食任何东西。 Eat: 1、 When the patient is about to lose consciousness or is unconscious, do not feed anything.
2、给患者喝下 240-300 毫升的水以行释胃中的化合物。 Give the patient 240-300 ml of water to release the compound in the stomach.
3、若患者有自发性的呕吐时, 应使患者身体向前倾以减低吸入的危险, 并让其漱口以及反复给水。 If the patient has spontaneous vomiting, the patient should be leaned forward to reduce the risk of inhalation, and they should be rinsed and given water repeatedly.
4、立即就医。 See your doctor.
最重要的症状及危害效应: 刺激感及晕眩感 The most important symptoms and harmful effects: irritation and dizziness
对急救人员之防护: 勿直接破触产品 Protection of first-aid personnel: Do not directly touch the product
对医师之提示: 溶剂类伤害 Tips for physicians: solvent damage

第五部分、消防措施 Part 5 Fire protection

粉末、二氧化碳、泡沫 Powder, carbon dioxide, foam
灭火时可能遭遇之特殊危害: 有机溶剂气体之吸入 Special hazards that may be encountered when extinguishing fires: inhalation of organic solvent gases
特殊减火程序: 依据有机溶剂火灾时的灭火程序 Special fire-fighting procedures: according to the fire-fighting procedures for organic solvent fires
消防人员之特殊防护设备: 应戴防毒面罩 Special protective equipment for firefighters: gas masks should

be worn

#### 第六部分、泄露应急处理 Part 6 Emergency measures against leak

个人应注意事项: Individuals should pay attention to:

1. 限制人员出入,直至外溢区完全清理干净为止. 1. Restrict personnel access until the overflow area is completely cleaned up.

2. 穿戴适当的个人防护装备. 2. Wear appropriate personal protective equipment.

环境注意事项: 将火源存放区隔离,并对泄露区通风换气,立即通知政府职业安全卫生及环保相关单位. Environmental precautions: Isolate the fire source storage area and ventilate the leaked area, immediately notify the government occupational safety and health and environmental protection units.

清理方法: Cleaning method:

1. 不要碰触外泄物。 Do not touch the leakage.

2. 避免处泄进入下水道或狭的空间内。 Avoid venting into sewers or narrow spaces.

3. 在安全许可的情形下,设法组织或减少溢漏。 In the case of security clearance, try to organize or reduce spills.

4. 少量泄露时,用不会和外泄物反应的泥土、沙和类似稳定且不可燃的物质围堵处泄物。 When a small amount of leakage occurs, use dirt, sand and similar stable and non-combustible materials that will not react with the spilled material to dispose of the spilled material.

5. 大量泄漏时,联络消防、紧急处理单位以及供应商寻求协助。 In case of a large amount of leakage, contact the fire department, emergency handling unit and supplier for assistance.

#### 第七部分、操作处置与储存 Part 7 Operation and storage

操作注意事项: Operating Caution:

1. 严禁烟火 Fireworks are strictly prohibited

2. 在通风良好的指定场所最小量使用。 Use in a minimum amount in a well-ventilated designated place.

3. 操作中请穿戴有机溶剂防护手套,并着合格之工作服 Please wear organic solvent protective gloves and qualified working clothes during operation

存储注意事项: Storage considerations:

1. 严禁烟火 Fireworks are strictly prohibited

2. 密封保管于通风良好的冷暗处,储存温度不可超过 25°C Sealed and stored in a cool and dark place with good ventilation, the storage temperature should not exceed 25°C

#### 第八部分、接触控制和个体防护 Part 8 Contact control and individual protection

工程控制: engineering control:

1. 使用时,以不产生火花及接地的通风系统并与一般排气系统分开。 When using, use a ventilation system that does not generate sparks and ground and separate from the general exhaust system.

2. 废气直接排到户外并对不幸保护采取适当措施。 Exhaust air is discharged directly to the outdoors and appropriate measures are taken to protect the unfortunate.

3. 在量操作时,使用局部排气和密闭制程。 3. During volume operation, use local exhaust and closed process.

4. 提供充分新鲜空气以补充系统排除之空气。 4. Provide sufficient fresh air to supplement the air exhausted by the system.
控制参数：依各厂区空间及排气设备调整 Control parameters: adjusted according to the space and exhaust equipment of each plant
八小时日时量平均容许浓度 / 短时间量平均容许浓度 / 最高容许浓度：100ppm(TKJ 建议值) Average allowable concentration for 8 hours per day/average allowable concentration for short time/Maximum allowable concentration: 100ppm
个人防护设备：Personal protective equipment:
呼吸防护：有机溶剂用防毒面罩。Respiratory protection: gas masks for organic solvents.
手部防护：橡胶制防护手套 Hand protection: rubber protective gloves
眼睛防护：有机溶剂护目镜 Eye protection: organic solvent goggles
皮肤及身体防护：上述塑胶材质防护衣、连身工作服、工作靴。Skin and body protection: the above-mentioned plastic protective clothing, coveralls, work boots.
卫生措施：Hygienic measures:
1. 工作后尽速脱掉污染之衣物、洗净后才可再穿戴或丢弃，且须告知洗衣人员污染物之危害性。 Take off contaminated clothing as soon as possible after work, wash it before wearing or discarding it, and inform the laundry staff of the danger of contaminants.
2. 工作场所严禁抽烟或饮食。 Smoking or eating is strictly prohibited in the workplace.
3. 处理此物后彻底洗手。 Remove the hands and wash your hands after handling this object.
4. 维持作业场所清洁。 Maintain clean working place.

#### 第九部分、理化特性 Part 9 Physicochemical property

物质状态：半固态 Material state: semi-solid	密度：约 1.3(25℃)Density: about 1.3 (25℃)
颜色：绿、黄、白、黑、红、蓝色 Color: green, yellow, white, black, red, blue	挥发性：含芳香味 Volatile: aromatic
PH 值：6-7 PH value: 6~7	闪火点：130° C; 测试方法：开杯 Flash point: 130° C; Test method: open cup
分解温度：360° C Decomposition temperature: 360° C	爆炸界限：上限 20% 下限 0.7% Explosion limit: upper limit 20% lower limit 0.7%
自燃温度：不自然 Auto-ignition temperature: unnatural	蒸气密度：0.9G/CM <sup>3</sup> Vapor density: 0.9G/CM <sup>3</sup>
蒸气压：约 0.5kPa(25℃) Vapor Pressure: about 0.5kPa(25℃)	溶解度：不溶于水 Solubility: insoluble in water

#### 第十部分、稳定性及反应活性 Part 10 Stability and reactivity

安定性：正常状态下安定。 Stability: Stable under normal conditions.
特殊条件下可能之危害反应：过氧化物、强还原剂、剧烈反应、增加反就剧烈物质。 Potential hazardous reactions under special conditions: over-oxidation, strong reducing agents, violent reactions, and increased violent substances.

应避免之状况泄露、火灾和其他火源。Conditions to avoid leakage, fire and other sources of fire.
应避免之物质：1. 强气化剂；2. 强还原剂；3. 酸卤化合物；4. 与水反就剧烈物质。Substances to be avoided: 1. Strong gasification agent; 2. Strong reducing agent; 3. Acid halide compound; 4. Violent substance against water.
危害分解物：热分解产生 CO、CO <sub>2</sub> 、NO、CH <sub>2</sub> O <sub>3</sub> 。Hazardous decomposition products: thermal decomposition produces CO、CO <sub>2</sub> 、NO、CH <sub>2</sub> O <sub>3</sub>

#### 第十一部分、毒理学信息

急毒性：异常状况下，过量溶剂吸入性伤害 Acute toxicity: under abnormal conditions, excessive solvent inhalation injury
局部效应：刺激感 Local effects: Irritation
致敏感性：对皮肤、眼睛有刺激性 Sensitization: Irritating to skin and eyes
慢毒性或长期毒性：未依安全操作建议导致化学物质累积至人体，造成皮肤异常及毒素累积 至体内 Slow toxicity or long-term toxicity: Failure to follow safe operation recommendations leads to accumulation of chemical substances into the human body, causing skin abnormalities and toxin accumulation.
特殊效应：无。Special effects: None.

#### 第十二部分、生态学信息 Part 12 Ecological Information

可能之环境影响/环境流布: Possible environmental impact/environmental distribution:
1. 释放至大气中会与氢气自由反应而快速分解掉。Released into the atmosphere will react freely with hydrogen and decompose quickly.
2. 释放至水中最主要由蒸汽作用排除掉。 Mostly released into water is mainly eliminated by steam.
3. 释放至土壤中会挥发及渗入地下。 Released into the soil will evaporate and penetrate into the ground.

#### 第十三部分、废弃处置 Part 13 Waste disposal

废气处置方法: Waste gas treatment method:
1. 参考相关法规处理。 Refer to relevant laws and regulations.
2. 依照仓储条件待处理的废弃物。 Waste to be treated in accordance with storage conditions.
3. 可采用特定的变化呀衍生掩埋法处理。 Specific changes can be adopted to deal with the landfill method.

#### 第十四部分、运输资料 Part 14 Transportation informations

国际运送规定：本产品系属混合性惰性化学物质，未单独列管于国际运送规定。 International Shipping Regulations: This product is a mixed inert chemical substance and is not separately listed in the international shipping regulations.
联合国编号：运送之注意事项请参考”国内运送规定 UN number: Please refer to “Domestic Shipping Regulations”
国内运送规定：1. 严禁烟火 Domestic delivery regulations: 1. Fireworks are strictly prohibited
2. 备妥灭火器 Prepare fire extinguisher
3. 备妥各类防护具 Prepare all kinds of protective equipment



第十五部分、法规资料 Part 15 Regulatory information

通用法规 Applicable laws and regulations:
劳工安全卫生设施规则。Labor safety and health facilities rules.
有机溶剂中毒预防规则。Organic solvent poisoning prevention rules.
道路交通安全规则。Road traffic safety rules.
危险及有害物通识规则。General rules of danger and harmful substances.
劳工作业环境空气中有害物质容许浓度标准。Standards for allowable concentration of hazardous substances in the air of labor operations.

第十六部分、其他信息 Part 16 Other information

无

制表人 Lister :李焯

上述数据已力求正确，但错误恐仍难免，各项数据与数据仅供参考，用户请依应用需求，自行判断其可用性本公司不负任何责任。

The above data has been tried to be correct, but errors may still be inevitable. The various data and data are for reference only, users please follow the application requirements, The company assumes no responsibility for its own judgment of availability.

# 江苏广信感光新材料股份有限公司

## 物质安全资料表(MSDS)

### 一、 物品与厂商资料表

物品名称	KSM-388W
同义名称	热固化标记油墨
制造商或供应商名称	江苏广信感光新材料股份有限公司
制造商或供应商地址	江苏省江阴市青阳镇华澄路 18 号
咨询者姓名	谢志明
紧急联络电话	0510-86590186
传真电话	0510-86915301

### 二、 分辨识资料

物料主要成分明细：

主要成分名称	CAS.NO	浓度或浓度范围 (成分百分比)
邻甲阶酚醛环氧树脂	29690-82-2	10%-30%
双酚 A 环氧树脂	25068-38-6	10%-30%
高沸点溶剂(DBE)	95481-62-2	10%-30%
无机填料 (SiO <sub>2</sub> )	14464-46-1	<10%
颜料	13463-67-7	20%-40%
固化促进剂	461-58-5	<10%
表面助剂	63148-62-9	<10%

### 三、 危害辨识资料

最重要的危害效应	会抑制中枢神经系统，吞食或呕吐时可能倒吸肺部。高浓度暴露可能导致意识丧失。
健康危害效应	蒸气释放至大气中会与氢气自由作用而快速分解掉。
环境影响	其蒸气比空气轻，易传播至远处。
物理性及化学性危害	其蒸气比空气轻，易传播至远处。
特殊危害	
主要症状	头痛、呕吐、晕眩、疲劳、食欲不振、皮肤干裂且灼热、红肿、角膜灼热、心率不整、呼吸困难、头晕眼花。

#### 四、紧急措施

不同暴露途径之急救方法：

吸入：1、移除污染源或将患者移至新鲜空气处。

2、立即就医。

皮肤接触：1、以水及肥皂冲洗受污染部位 5 分钟，或直到污染物除去。

眼睛接触：1、尽快擦掉或吸掉多余的化学品。

2、立即将眼皮撑开，用流动的温水缓和冲洗 15 分钟，或直到污染物除去。

食入：1、患者即将丧失意识或已无意识或昏迷时，不可喂食任何东西。

2、给患者喝下 240-300 毫升的水以稀释胃中的化合物。

3、若患者有自发性的呕吐时，应使患者身体向前倾以减低吸入的危险，并让其漱口以及反复给水。

4、立即就医。

最重要的症状及危害效应：蒸气会刺激眼睛、粘膜和皮肤；高浓度会引起麻醉。

对急救人员之防护：应空着 C 级防护装备在安全区实施急救。

对医师之提示：

#### 五、灭火措施

适应灭火剂：化学干粉、高效环保灭火器、水。

灭火时可能遭遇之特殊危害：灭火前先停止泄露，否则空气中有毒气体过高容易危害人体。

特殊灭火程式：退至上风处安全距离地点进行灭火程式。

消防人员之特殊防护设备：空气呼吸器、消防衣、防护手套。

#### 六、泄露处理方法

个人应注意事项：

1、限制人员出入，直至外溢区完全清理干净为止。

2、由受过训练之人员负责清理干净。

3、穿戴适当的个人防护装备。

环境注意事项：将火源存放区隔离，并对泄露区通风换气，立即通知政府职业安全卫生及环保相关单位。

清理方法：

1、不要碰撞触外泄物。

2、避免泄漏物进入下水道或狭窄的空间内。

3、在安全许可的情形下，设法组织或减少溢漏。

4、少量泄露时，用不会和外泄物反应的泥土、沙和类似稳定且不可燃的物质围住泄物。

5、大量泄漏时，联络消防紧急处理单位以及供应商寻求帮助。

## 七、暴露预防措施

## 处置：

- 1、使用时注意勿有外力寻致倾斜泄漏。
- 2、在通风良好的指定场所最小量使用。
- 3、须备有处理泄漏的紧急应变装置。

## 储存：

储存于阴凉、干燥、通风良好的地方,低于 25℃存放，远离火源及不相容物质。

## 八、物理及化学性质

## 工程控制：

- 1、使用时，以不产生火花及接地的通风系统并与一般排气系统分开。
- 2、废气直接排到户外并对不幸保护采取适当措施。
- 3、大量操作时，使用局部排气和密闭制程。
- 4、提供充分新鲜空气以补充系统排除之空气。

## 控制参数

八小时时量平均 允许浓度	短时间时量平均容许浓度	最高容许浓度	生物指标
25ppm (DEAC)	700ppm 以下 (DEAC)	50ppm (DEAC)	

## 个人防护设备：

呼吸防护：700ppm 以下含有机滤毒之呼吸防护具。

未知浓度：正式自揣式呼吸防护具。

手部防护：防渗手套、优质聚乙烯醇、VITON、4H、BARRICADE 为佳。

眼睛防护：防护面罩、化学安全护目镜。

皮肤及身体防护：上述塑胶材质防护衣、连身工作服、工作靴。

## 卫生措施：

- 1、工作后尽快脱掉污染之物，洗净后才可再穿戴或丢弃，且须告知洗衣人员污染物之危害性。
- 2、工作场所严禁抽烟或饮食。
- 3、处理此物后彻底洗手。
- 4、维持作业场所清洁。

## 九、物理及化学性质

物质状态：糊状物	形状：粘稠糊状物
颜色：白色	气味：含芳香味
PH 值：6~7	闪火点：130℃；测试方法：开杯
分解温度：300℃	爆炸界限
自燃温度：不自燃	蒸气密度：0.9g/cm <sup>3</sup>
蒸气压：04mmHg/25℃	溶解度：不溶于水
密度：1.35(水=1)	粘度(25℃)：240~320PS

## 十、安定性及反应性

安定性：正常状态下安定
特殊状态下可能之危害反应：过氧化物、强还原剂、剧烈反应、增加反应剧烈物质。
应避免之状况：泄露、火灾和其他火源。
应避免之物质：1、强氧化剂 2、强还原剂 3、酸卤化合物 4、与水反应剧烈物质。
危害分解物：热分解产生 CO、CO <sub>2</sub> 、NO、CH <sub>2</sub> O <sub>3</sub>

## 十一、毒性资料

急毒性：液体、蒸汽会刺激眼睛物、粘膜和皮肤。
吸入：1、短暂的暴露于 200ppm 浓度会刺激喉咙。 2、暴露于 700ppm 浓会引起恶心呕吐。 3、暴露于高浓度（大约 1000ppm）会引起动作不协调、失去意识、呼吸衰竭甚至死亡。 4、暴露于高浓度会引起肝脏和肾脏损害。
皮肤：1、接触会引起红斑、干燥和脱脂，长期接触引起皮肤炎。 2、蒸汽会刺激皮肤。
眼睛：1、蒸气会造成刺激。 2、其液体对眼睛具且严重刺激。
食入：1、刺激咽食道和胃。 2、大量食入之症状与吸入症状类似。 3、若吸入肺部会引起致命的肺部伤害。
局部效应：500mm/24H（兔子皮肤）造成轻微刺激。 57mm/24H（兔子皮肤）造成中度刺激。
致敏感性：
慢性毒或长期毒生：1、反复或长期暴露可能引起皮肤炎（干燥、龟裂）。 2、肝脏和肾脏损害。
特殊反应：

## 十二：生态资料

可能之环境影响/环境流布

- 1、释放至大气中会与氢气自由反应而快速分解掉。
- 2、释放至水中最主要由蒸汽作用排除掉。
- 3、释放至土壤中会挥发及渗入地下。

## 十三、废气处置方法

废气处置方法：

- 1、参考相关法规处理。
- 2、依照仓储条件待处理的废弃物。
- 3、可采用特定的变化呀衍生掩埋法处理。

## 十四、运送资料

国际运送规定：

联合国编号：

国内运送规定：1、道路交通安全规则第 84 条  
2、船舶危险品装载规则  
3、铁路局危险品装卸运输实施细则

特殊运送方法及注意事项：

## 十五、法规资料

通用法规：

劳工安全卫生设施原则。  
有机溶剂中毒预防规则。  
道路交通安全规则。  
危险及有害物通识规则。  
劳工作业环境空气中有害物质容许浓度标准。  
事业诚尽弃物储存处理方法设施标准。

## 十六、其他资料

生效日期：2017 年 09 月 22 日

修订部门：品质部

变更 MSDS 原因：重新修订是由于相关的要求所致。



# 安臣錫品製造有限公司

## ANSON SOLDER & TIN PRODUCTS MADE LTD

地址: 佛山市南海区狮山长虹岭工业园大道 Post Code: 528225

ADD: Chang Hong Ridge Industrial Park Shishan, Nanhai, Guangdong

Tel: (0757) 85506883 85581101 FAX: 85506882 E-mail: anson@anson-solder.com



### 物質安全資料表

### Material Safety Data Sheet

#### 一 制造商或供應商資料(Manufacturer Information)

公司名稱 Company Name	廣東安臣錫品製造有限公司 Guangdong Anson Solder & Tin Products Made Ltd.		
地址 Address	佛山市南海區獅山長虹嶺工業園大道 Chang Hong Ridge Industrial Park Shishan, Nanhai, Foshan, Guangdong		
聯絡人 Person in charge	冼陳列 Xian Chen Lie		
緊急聯絡電話 Emergency Phone #	0757-85506883	傳真號碼 Fax#	0757-85506882
物質名稱 Item Name	AS9905NC 無鉛焊錫條 AS9905NC Lead Free Solder Bar		
合金成分 Alloy Composition	Sn99.9-Ni		

#### 二 危害物質分類(Hazardous Ingredients)

危害性成份 Hazardous components			化學文摘社 登記號碼 CAS.NO	時量平均容 許濃度 TWA(mg/m <sup>3</sup> )	短時間時量 平均容許濃 度 STEL(mg/m <sup>3</sup> )	最高容許濃度 CEILING	測試動物 吸收途徑 LD 50	測試動物 吸收途徑 LC 50
名稱 Common Name	化學式 Chemical Formul	比率 weight%						
錫Tin	Sn	Bal.	7440-31-5	2	4	N/A	N/A	N/A
鎳	Ni	≤0.1	7440-02-0	0.015	N/A	N/A	N/A	N/A

#### 三 危害物質定義(Hazards Identification)

物質狀態及外觀 Physical State and Appearance	固體Solid
緊急情況概要 Emergency Overview	警告!Warning!
癌症的情況概要 Emergency Overview 癌症的風險取決於暴露的時間長短及程度。 避免眼睛,皮膚,以及衣物的接觸.不要吞食。 避免吸入粉塵.避免過長或是反覆的皮膚接 觸.保持容器緊閉.使用適當的通風設備。 懷孕期間避免暴露,并于使用後徹底洗淨。	Risk of cancer depends on duration and level of exposure. Avoid contact with eyes, skin and clothing. Do NOT ingest. Avoid breathing dust. Avoid prolonged or repeated contact with skin. Keep container closed. Use only with adequate ventilation. Avoid exposure during pregnancy. Wash thoroughly after handling.



潛入人體的途徑 <i>Routes of Entry</i>	吸入, 吞食 <i>Inhalation, Ingestion.</i>
潛在的急性健康影響 <i>Potential Acute Health Effects</i>	
眼睛 <i>Eyes</i>	如果發生眼睛接觸 (刺激物), 這產品可能是有害的。 This product may be hazardous in case of eye contact (irritant)
皮膚 <i>Skin</i>	如果發生皮膚接觸 (刺激物, 致敏物質), 這產品可能是有害的。 皮膚發炎的症狀特徵有發癢, 鱗癬, 發紅, 或偶爾會起水泡。 This product may be hazardous in case of skin contact (irritant, sensitizer). Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.
吸入 <i>Inhalation</i>	如果發生吸入的情況, 這個產品所產生的煙塵可能是有害的。 Fumes and/ or dusts produced by this product may be hazardous in case of inhalation.
吞食 <i>Ingestion</i>	如果發生吞食的情況, 這個產品所產生的煙塵可能是有害的。 Fumes and/ or dusts produced by this product may be hazardous in case of ingestion.
潛在的慢性健康影響 <i>Potential Chronic Health Effects</i>	
	慢性病影響: 如果發生吸入或是吞食的情況, 這個產品所產生的煙塵可能是有害的。如果發生皮膚接觸 (刺激物, 致敏物質), 或是眼睛接觸 (刺激物), 這產品可能是有害的。對皮膚非腐蝕性, 非滲透性。 Chronic effects: Fumes and/or dusts produced by this product may be hazardous in case of ingestion, of inhalation. This product may be hazardous in case of skin contact (irritant, sensitizer), of eye contact (irritant). Non-corrosive for skin. Non-permeator by skin.
暴露過度所造成的重大醫學疾病 <i>Medical Conditions Aggravated by overexposure.</i>	重復或是過長的暴露對於重大醫學疾病上沒有見過。 Repeated or prolonged exposure is not known to aggravate medical condition.
暴露過度 症候 徵狀 <i>Overexposure Signs Symptoms</i>	無法提供 Not available
詳見毒物資料 (第十一點說明)	See Toxicological Information (Section 11)

#### 四 急救措施 (First Aid Measures)

眼睛接觸 <i>Eye Contact</i>	檢查并移除任何隱形眼鏡. 如果發生任何接觸, 馬上用大量清水衝洗至15分鐘. 立即就醫。 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.
皮膚接觸 <i>Skin Contact</i>	如果發生接觸, 在移除受污染的衣物時, 馬上用大量清水衝洗皮膚至少15分鐘用潤膚劑覆蓋發炎的皮膚. 衣服及鞋子如果再使用時, 應徹底洗干淨, 馬上就醫。 In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.



有害物質的皮膚接觸 Hazardous Skin Contact	融熔的金屬可能會導致嚴重的灼傷！假如發生灼傷：不要使用水，用消毒過藥膏和抗菌紗布覆蓋。立即就醫。 MOLTEN METAL causes SEVERE BURNS! In case of BURNS:DO NOT USE WATER.Cover with antiseptic ointment and steril gauze.Seek IMMEDIATE medical attention.
吸入 Inhalation	如果吸入，移至新鮮空氣處，如果不能呼吸，施予人工呼吸.假如呼吸困難，給予氧氣，馬上就醫 If inhaled,remove to fresh air.if not breathing, give artificial respiration.if breathing is difficult ,give oxygen.Get medical attention.
有害物質的吸入 Hazardous Inhalation	無法提供 Not available.
吞食 Ingestion	不可催吐,除非經醫療人員指導.千萬不可給意識不清者吞食任何物品。假如有此類物質大量吞食,馬上就醫.鬆開緊貼的衣物,如衣領,領帶,皮帶或腰帶等。 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.

## 五 火警的措施 (Fire Fighting Measures)

產品的易燃性 Flammability of the product	不易燃 Non-flammable.
自然溫度 Auto-Ignition Temperature	不適用 Not applicable.
閃火點 Flash Points	不適用 Not applicable.
易燃的極限 Flammable Limits	不適用 Not applicable.
產品的燃燒 Products of Combustion	無法提供 Not available.
呈現于各種物質下的火災危害 Fire Hazards in Presence of Various Substances	在開放性的火焰下為可燃.氧化物質,金屬,酸,鹼,潮濕的情況下是不可燃的。 Combustible in presence of open flames.Non-flammable in presence of shocks,of oxidizing materials,of metals,of acids, of alkalis,of moisture.
呈現于各種物質下的爆炸危害 Explosion Hazards in Presence of Various Substances	靜態物質排出的爆炸現象：無法提供 撞擊及熱不會有爆炸的情形發生。 Risk of explosion of the product in presence of static discharge: Not available. Non-explosive in presence of shocks,of heat.
火警的媒介與指示 Fire Fighting Media and Instructions	小火：使用干粉滅火器 大火：使用水滅火 SMALL FIRE: Use DRY Chemical powder LARGE FIRE: Use water
防火衣 Protective Clothing(Fire)	不適用 Not applicable.
火災危害的特殊注解 Special Remarks on Fire Hazards	大量的金屬是不易燃的，粉塵與粉末可能是易燃的。 助焊劑蕊直接觸火焰會燃燒。 Massive metal is nonflammable.Dust and powders may be flammable.Flux core will burn on contact with direct flame.
爆炸危害的特殊注解 Special Remarks on Explosion Hazards	無法提供 Not available.



## 六、避免意外的措施 (Accidental release measures)

小量的溢出和泄漏 Small Spill and Leak	融熔中的金屬：再拿起前及回到過程是回收前，請待其冷卻。 其他：使用適當的工具溢出的固體轉入一個保存的容器。 MOLTEN METAL:Let cool before picking up and returning to process or recycling.OTHER:Use appropriate tools to put the spilled solid in a container reserved to that effect.
大量的溢出和泄漏 Large Spill and Leak	融熔中的金屬：再拿起前及回到過程是回收前，請待其冷卻。 其他：使用適當的工具溢出的固體轉入一個保存的容器。 MOLTEN METAL:Let cool before picking up and returning to process or recycling.OTHER:Use appropriate tools to put the spilled solid in a container reserved to that effect.

## 七 操作與誰儲藏 (Handling and storage)

操作 Handling	穿戴適當的保護衣物，在通風良好的區域操作，使用時請勿進食，飲水或是抽煙。避免接觸到皮膚及眼睛，并于使用后，用水及香皂徹底洗手。 Wear suitable protective clothing.Use in a well ventilated area.When using do not eat ,dring or eat,dring or smoke .Avoid contact with skin and eyes.After handing,always wash hands thoroughly with soap and water.
儲藏 Storage	保持容器干燥及緊密閉合.保持容器在一個涼爽,通風良好的地區.高度毒性或是傳染性的物質應當被存在一個隔離安全且上鎖的櫥櫃或是房間。 Keep container dry and tightly closed.Keep in a cool,well-ventilated area.Highly toxic or infectious materials should be stored in separate locked safety storage cabinet or room.

## 八、暴露的控制，個人的保護措施 (Exposure Controls,Personal Protection)

工程上的保護 Engineering Protection	使用圍住制程區域：區域排氣通風良好，或其他工程上控制來維持空氣中的水平在建議爆炸範圍之下。假如使用者操作過程制造出煙，塵或霧，良好的設備維護空氣中污染的爆炸性，低於爆炸界綫。 Use process enclosures,local exhaust ventilation,or other engineering controls to keep airborne levels below recommended exposure limits.If use operations generate dust,fume or mist,use ventilation to keep expousure to airborne contaminants below the exposure limit.
個人安全的保護 Personal Protection	眼睛Eyes 操作時：安全眼鏡。 HANDLING:Safety glasses. 再融熔時：護目境或是防面護罩。 REMELTING:splash goggles or face sheilds.
身體Body	再融熔時：工作服 REMLTING: coveralls
呼吸Respiratory	防塵口罩.確認使用一個經過認可 Dust respirator.Be sure to use an approved/ /證明的口罩或是相等物.當流通的 certified respirator or equivalent.Wear 空氣不充足時，穿戴適當的口罩 appropriate respirator when ventilation is inadequate.
手 Hands	手套(操作時適用) Gloves (suitable to the operation)
脚Feet	不適用 Not applicable.
注解：建議穿上保護的衣物在特定過程中可能是不足够的，使用前麻煩先諮詢專家 Note:Suggested protective clothing may not be adequate for a specific process. Consult a specialist before using.	



假如發生大量溢出時的個人安全保護 Personal Protection in case of a large Spill	護目鏡,全套的防護衣,護塵口罩,靴子,手套,一個自行控制呼吸的裝置應被除數用來避免產品的吸入,建議用的保護衣物,可能不是很足夠;在處理這項產品之前,請先詢問專家。 Splash goggles .Full Suit .Dust respirator. Boots .Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product .Suggested protective clothing might not be sufficient ; consult a specialist BEFORE handling this product
產品名稱 Product Name	Exposure Limits 曝露極限
(1) 錫 Tin	TWA: 2(mg/m <sup>3</sup> )
(2) 銅 Copper	TWA: 0.2(mg/m <sup>3</sup> )
(3) 松香 Rosin	TWA: 0.1(mg/m <sup>3</sup> )
諮詢地方當局的專家, 可接受的暴露範圍	Consult local authorize for acceptable exposure limits.

### 九 化學與物理物性 (Physical and Chemical Properties)

物理狀態與觀 Physical State and Appearance	固態 Solid
分子量 Molecular Weight	不適用 Not applicable
化學式 Chemical Formula	不適用 Not applicable
酸鹼值 (1% 溶液水) PH (1% Soln Water)	不適用 Not applicable
酸價 Acid Value	無法提供 Not available
沸點/凝結點 Boiling Condensation Point	無法提供 Not available
熔點 Melting Temperature	232°C
臨界溫度 Critical Temperature	無法提供 Not available
蒸氣壓 Vapor Pressure	不適用 Not applicable
蒸氣密度 Vapor Density	無法提供 Not available
揮發度 Volatility	無法提供 Not available
初味 Odor Threshold	無法提供 Not available
氣味 Odor	無味 Odorless
味覺 Taste	不適用 Not applicable
顏色 Color	銀灰色 silver-grey.
比重 Specific Gravity	7.5(water=1)
蒸發速率 Evaporation Rate	無法提供 Not applicable
揮發溶劑有機化合物 VOC	無法提供 Not applicable
粘度 Viscosity	無法提供 Not applicable
LogKow	這個產品在水及油中視不溶解的。 The product is insoluble in water and oil
電解度(水中) Ionicity (In Water)	非離子 Non-ionic
分散特性 Dispersion Properties	在冷水,熱水,甲醇,乙醚,n-辛醇,丙酮中無法被分離 Is not dispersed in cold water, hot water, methanol, diethyl ether, n-octanol, acetone
溶解性 Solubility	在冷水,熱水, 甲醇, 乙醚, n-辛醇, 丙酮是可溶的。 Insoluble in cold water, hot water, methanol, diethyl ether, n-octanol, acetone.
物理化學的注解 Physical Chemical Comments	無法提供 Not applicable



## 十 穩定性與反應特性(Stability and Reactivity)

穩定性與反應特性 <i>Stability and Reactivity</i>	這產品是穩定. This product is stable
不穩定的狀態 <i>Conditions of Instability</i>	超過熔點, 毒性金屬氧化物可能會形成. 一個較小數量的有機煙霧可能也會形成. Over melting point, toxic metallic oxides may be evolved. A small amount of organic fumes may also be evolved.
各物質的不相容性 <i>Incompatibility with Various Substances</i>	對於氧化劑, 酸, 濕氣有輕微的反應 Slightly reactive with oxidizing agents, acids moisture
危害分解產品 <i>Hazardous Decomposition Products</i>	無法提供. Not available.
危害的聚合作用 <i>Hazardous Polymerization</i>	不會發生. Will not occur.
腐蝕性 <i>Corrosivity</i>	對銅可能會導致輕微的腐蝕, 用銅, 鋁, 鋅, 不銹鋼, 方式不會腐蝕. Slightly corrosive in presence of copper. Non-corrosive in presence of glass of steel, of aluminum, of Zinc, of stainless steel.
對腐蝕性的特殊注解 <i>Special Remark on Corrosivity</i>	以有機為基礎的錫絲其主要任務是清除金屬表面, (移除及預防氧化)來改善與錫的結合. Organic base core is a solder wire has the primary task of cleaning metal surface (remove and prevent oxidation) to improve bonding with the solder.

## 十一 毒物資料 Toxicological Information

對動物的毒性試驗 <i>Toxicity to Animals</i>	LD50: 無法提供N/A LC50: 無法提供N/A
對人類的慢性影響 <i>Chronic Effects on Humans</i>	對以下器官造成傷害: 肺臟, 上呼吸道系統, 皮膚, 眼睛。 Causes damage to the following organs: lungs, upper respiratory tract, skin, eyes.
其他毒物對人類的影響 <i>Other Toxic Effects on Humans</i>	這個產品所產生的煙及塵, 假如發生吸食或吸入時, 可能會造成 危害。假如發生皮膚接觸(刺激物, 致敏物質), 也會造成危害。 <i>Fumes and/or dusts produced by this product may be hazardous in case of ingestion, of inhalation. This product may be hazardous in case of skin contact (irritant, sensitizer).</i>
對人類的慢性影響的特殊注解 <i>Special Remarks on Toxicity to Animals</i>	沒有額外的注解 No additional remark.



其他毒性對人類的影響 的特殊注解 Special Remarks on Chronic Effects on Humans	大量金屬不會有害，過度暴露于烟霧中可能導致上呼吸道， 消化系統及眼睛的刺激。過度暴露于氧化錫可能導致肺塵 病（錫）。重復或是過長的接觸可能會導致過敏或是皮膚炎。 Massive metal is not harmful. Overexposure to fumes may cause irritation to the respiratory tract, digestive system and to the eyes. Overexposure to tin oxide fumes may result in benign pemumoconiosis (stannosis). Repeated and prolonged contact may cause irritation or dermatitis.
對動物毒性的特殊注解 Special Remarks on Other Toxic Effects on Humans	融熔金屬可能導致嚴重的灼傷！烟霧可能會刺激眼睛及上呼吸道 過長或是重復的皮膚接觸可能導致過敏或皮膚炎。 MOLTEN METAL can cause severe BURNS! Fumes may irritate eyes and respiratory tract. Prolonged and repeated contact with bare skin may cause irritation or dematitis.

## 十二 生態資料 Ecological Information

環境毒性 Ecotoxicity	無法提供 Not available
生化需氧量 BOD5 and COD	無法提供 Not available
生物分解性 Biodegradable OECD	無法提供 Not available
Mobility 流動性	無法提供 Not available  短期可能的毒害降低產品品質情況不太可能發生，但是， 長期的話，降低產品品質的情況可能會產生 Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.
Toxicity of the Products of Biodegradation 產品的生物分解的毒性	產品本身以及品質的下降沒有毒性。 The product itself and its products of degradation are not toxic.
Special Remarks on the Products of Biodegradation 對產品生物分解的特殊注解	無法提供 Not available.

## 十三 Disposal Considerations 廢棄物處置辦法

廢棄物資訊 Waste Information	廢棄物的處理需要符合當地政府政府規則。 Waste must be disposed of in accordance with local environmental control regulations.
廢棄物流向 Waste Stream	無法提供 Not available.
諮詢當地或地區性專家 Consult your local or regional authorities.	



#### 十四 Transpor Information 運送資料

DOT Classification 運輸部分類	不是一個DOT控制的物料(美國) Not a DOT controlled material (United States)
Special Provisions for Transport 運輸特別條款	不適用Not applicable
IMO IMDG 分類 IMO IMDG Classification	不是在IMDG的規定下 Not controlled under IMDG
海運的污染 Marine Pollutant	無法提供Not available
ADR RID 分類 ADR RID Classification	不在ADR 的規定下 Not controlled under ADR
國際民航組織/ 國際空運協會分類 ICAO IATA classification	不在國際空運協會規定下 Not controllde under IATA

#### 十五 Regulatory Information 管理資訊

HCS 分類 HCS Classification	等級:敏感化物質 Class:sensitizing substance 等級:特定器官影響 Class:target organ effects.
EINECS	無法提供 Not available
DSCL(EEC)	36/38-刺激眼睛及皮膚 43-可能導致皮膚接觸的過敏作用 60-可能降低繁殖力 36/38-Irritating to eyes and skin. 43-May cause sensitization by skin contact. 60-May impair fertitily
國際名冊 International Lists	沒有產品發現.No products were found

#### 十六 Other Information 其它資料

制表單位 Company	名稱:廣東安臣錫品制造有限公司 Name: Guangdong Anson Solder & Tin Products Made Ltd.
	地址:佛山市南海區獅山長虹嶺工業園大道 Add:Chang Hong Ridge Industrial Park Shishan, Nanhai.Foshan.Guangdong
制表人 Person in charge	洗陳列 Name:Xian Chen Lie
Emergency Phone	0757-85506883
Fax	0757-85506882

4. MSDS

江阴凯博通信科技有限公司

JIANGYIN KAIBO COMMUNICATION TECHNOLOGY CO., LTD.

Material Safety Data Sheet (物质安全资料表)

一、物品与厂商资料

物品名称：同轴高频线

物品编号：KB113 系列

制造商或供货商名称、地址：江阴市凯博通信科技有限公司/江苏省江阴市澄江镇梅园大街 391 号

紧急联络电话/传真电话：0510-86070001/86070020

二、成分辨识资料

纯物质：

中英文名称：聚全氟乙丙烯 FLUORINATED PROPYLENE ETHYLENE/镀银铜线 Cu-silver plated/镀锡线 TINNED COPPER

同义名称：FEP/SC/TX

危害物质成分(成分百分比)：无

危害物质：

危害物质	浓度或浓度范围 (单位: ppm)	
铅及其化合物 Pb	≤90	
镉及其化合物 Cd	≤75	
汞及其化合物 Hg	≤1000	
六价铬及化合物	≤1000	
卤素	氯 Cl ≤900	氯 Cl+溴 Br ≤1500
	溴 Br ≤900	
SVHC15 种物质	禁止使用	

三、危害辨识数据

最 重 要 危 害 效 应	健康危害效应：在 260℃ 以上，可能会有吸入分解气体的危险。一定要安装排气装置。
	环境影响：要按废弃物处理及清扫法律法规处理，绝对不可燃烧。
	物理性及化学性危害：物理化学性能及其稳定，不易降解，不得擅自填埋。
	特殊危害：无
主要症状：对人的神经系统产生损害	
物品危害分类：大气和水源	

四、急救措施

不同暴露途径之急救方法：
· 吸入：到空气流通处换气。
· 皮肤接触：无
· 眼睛接触：无
· 食入：不消化，排出。



最重要症状及危害效应：无
对急救人员之防护：对流换气
对医师之提示：吸氧

#### 五、灭火措施

适用灭火剂：通用
灭火时可能遭遇之特殊危害：避免分解气体吸入
特殊灭火程序：无
消防人员之特殊防护设备：防毒面罩

#### 六、泄漏处理方法

个人应注意事项：粉状树脂
环境注意事项：不可填埋
清理方法：要按废弃物处理及清扫法律法规处理, 绝对不可燃烧.

#### 七、安全处置与储存方法

处置：避免与高温和火源接触.
储存：通风干燥处.

#### 八、暴露预防措施

工程控制：无
控制参数： · 八小时日时量平均容许浓度/短时间时量平均容许浓度/最高容许浓度： · 生物指标：
个人防护设备： · 呼吸防护：安装排气装置 · 手部防护：无 · 眼睛防护：无 · 皮肤及身体防护：无
卫生措施：应将衣服上附着的灰尘抖落, 手脸洗净, 不要让其附着于香烟上.

#### 九、物理及化学性质

物质状态：固体	形状：透明颗粒
颜色：透明	气味：无
pH 值：7	沸点/沸点范围：/
分解温度：360℃	闪火点：/
自燃温度：/	爆炸界限：/
蒸气压：/	蒸气密度：/
密度：2.2	溶解度：/

#### 十、安定性及反应性

安定性：很稳定
特殊状况下可能之危害反应：高温或燃烧分解气体对人体神经系统的损害.
应避免之状况：绝对不可燃烧.



应避免之物质：金属钠及其强酸的混合物。  
危害分解物： 气体及粉尘。

#### 十一、毒性资料

急毒性： /  
局部效应： /  
致敏感性： /  
慢毒性或长期毒性： /  
特殊效应： /

#### 十二、生态资料

可能之环境影响/环境流布： 不降解, 禁填埋

#### 十三、废弃处置方法

废弃处置方法： 按废弃物处理及清扫法律法规要求送专业资质处理公司处置。

#### 十四、运送资料

国际运送规定： /  
联合国编号： /  
国内运送规定： 无  
特殊运送方法及注意事项： 无

#### 十五、法规资料

适用法规： 遵循欧盟 REACH 法规相关要求。

#### 十六、其它数据

参考文献	杜邦产品说明/SONY 限用物资标准
制窗体位	名称： 江阴凯博通信科技有限公司
	地址/电话： 江阴市澄江街道梅园大街 391 号/0510-86070017
制表人	姓名(签章)： 庄科洁
制表日期	2011/11/3

# MATERIAL SAFETY DATA SHEET (MSDS)

Issued: Dec 20 , 2007

Revised: Dec 20 , 2007

File No. 2302

## 1. CHEMICAL PRODUCT & COMPANY IDENTIFICATION

CHEMICAL PRODUCT NAME : DURANEX XFR4840  
NAME OF COMPANY : WinTech Polymer Ltd.  
SECTION IN CHARGE : Quality Assurance Dept.  
ADDRESS : 2-18-1 Konan, Minato-ku, Tokyo,108-8280 Japan  
TELEPHONE NUMBER : 03-6711-8605  
FACSIMILE NUMBER : 03-6711-8616

## 2. COMPOSITION/INFORMATION ON INGREDIENTS

SUBSTANCE/PREPARATION : Preparation RATION  
COMMON CHEMICAL NAME : Polybutyleneterephthalate  
SYNONYMS : Polybutyleneterephthalate(PBT)  
INGREDIENTS AND COMPOSITION : PBT  $\geq$  80%, Phosphorus Flame retardant and others  $\leq$  20%  
CHEMICAL FORMULA :  $\{ \text{C}_6\text{H}_4\text{C}_6\text{H}_4\text{O}_2 \text{ (C}_2\text{H}_4\text{O)}_n$   
SERIAL No IN OFFICIAL GAZETTE : 7-1039 (base resin)  
(Law Concerning Examination and Regulation of Manufacture, etc., of Chemical Substances)  
CAS No : 2 4 9 6 8 - 1 2 - 5 (base resin)

## 3. HAZARDS IDENTIFICATION

PHYSICAL AND CHEMICAL HAZARDS : Not applicable  
HUMAN HEALTH EFFECTS : Not applicable  
ENVIRONMENTAL EFFECTS : Not applicable  
PHYSICAL AND CHEMICAL HAZARDS : It is inflammable substance and combustible if an igniting source is existent. Neither dangerous reaction, fire nor explosion can be caused under normal conditions.  
THE CLASSIFICATION : Not applicable

## 4. FIRST-AID MEASURES

INGESTION : Help to vomit as much as possible. If sick feeling continues, and ask a physician for advice.  
INHALATION : When a gas generated from the molten polymer, especially fume generated during combustion or heat, has been inhaled, remove fresh air without delay and wait until the victim is recovered. If sick feeling continues, ask a physician for advice.  
SKIN CONTACT : Cool the contacted skin with clean water without delay, if a contact with the polymer in a molten form. Do not force to remove the solid resin on the skin. If any burns are observed on the skin, ask a physician for advice.

EYE CONTACT : Cool and rinse the eye with clean water for at least 15 minutes when the eyes had contact with molten polymer. In case of wearing contact lenses,remove the lenses as soon as possible,and ask a physician for advice. When the eye had contact with the polymer in an ordinary solid form,rinse the eye with clean water without delay. If the discomfort persists,ask a physician for advice.

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#### 5. FIRE-FIGHTING MEASURES

EXTINGUISHING MEDIA : Water,form fire-extinguishing agent,powder fire-extinguishing agent,and carbon dioxide gas.

SPECIFIC METHODS : Extinguish the fire with water. A method of extinguishing an ordinary fire may be applied. Do not apply water directly to processing machines.

SPECIFIC HAZARDS : Incomplete combustion leads to generation of toxic gases such as carbon monoxide or tetrahydrofuran,in addition to carbonic acid gas and water.

SPECIAL EQUIPMENT FOR THE PROTECTION OF FIREFIGHTERS : In case the fire gained force,use a gas mask or other protective equipment.

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#### 6. ACCIDENTAL LEAKAGE MEASURES

PERSONAL PRECAUTIONS : When pellets were spilled on the road or floor,wipe them off with a besom or cleaner not to cause slipping.

ENVIRONMENTAL PRECAUTION : Handle the spillage in accordance with provisions given in the "Resin pellet spillage preventive manual",in order to prevent intakes by marine animals and birds.

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#### 7. HANDLING AND STORAGE

HANDLING : This resin in a pellet form will neither ignite nor explode at room temperatures.

HANDLING 2 : For molding work,effective means for local exhaust are required to discharge gases generated by melt processing.

HANDLING 3 : Avoid inhaling of gases generated in moulding work. Do not directly touch resin of high temperature.

HANDLING 4 : Avoid retaining hot resin in the processing machines for many hours.

HANDLING 5 : This pellets spilled on the floor are likely to cause slipping. Remove such spillage at any times.

STORAGE : Keep the substance away from any fire or heat sources for the sake of safe storage.

RECOMMENDED PACKAGING MATERIALS : No information.

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#### 8. EXPOSURE CONTROL / PERSONAL PROTECTION

CONTROL CONCENTRATION : None at present

PERMISSIBLE CONCENTRATION : OSHA PEL/1985  
Max. permissible concentration of inactive powder 15mg/m<sup>3</sup>  
- ditto - (Aspiration ) 5 mg/m<sup>3</sup>  
ACGIH TLV/1992 1993  
Exposure limit of the powder TWA 10 mg/m<sup>3</sup>

ENGINEERING MEASURE : When handling dust: Use totally enclosed containers resisting dust explosion.  
When heat melted in molding: Effective local ventilation must be provided.

PERSONAL PROTECTIVE EQUIPMENT	:	
RESPIRATORY PROTECTION	:	Wear a dust-proof mask.
EYE PROTECTION	:	Wear protective glasses or goggles.
HAND PROTECTION	:	Wear heat-resisting gloves against burns, when handling molten polymer.
SKIN & BODY PROTECTION	:	Wear long sleeve clothes against burns, when handling molten polymer.

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#### 9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE etc.	:	Pellet
BOILING POINT	:	Not applicable
VAPOUR PRESSURE	:	Not applicable
VOLATILITY	:	Not applicable
SUBLIMATION	:	None
MELTING POINT	:	228°C
DENSITY	:	1.32g/cm <sup>3</sup>
SOLUBILITY	:	Insoluble in water
FLASH POINT	:	300°C or higher
IGNITION POINT	:	300°C or higher
EXPLOSION PROPERTY	:	Not applicable
INFLAMMABILITY	:	None
REACTIVITY WITH WATER	:	None
OXIDIZABILITY	:	None
SELF-REACTIVITY	:	None
DUST EXPLOSIVENESS	:	Upper explosion limit : Not applicable. Lower explosion limit : 35g/m <sup>3</sup>

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#### 10. STABILITY AND REACTIVITY

STABILITY AND REACTIVITY	:	Stable for normal storage or handling.
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#### 11. TOXICOLOGICAL INFORMATION

SKIN CORROSIVE PROPERTIES	:	No finding.
SENSITIZING & IRRITANT EFFECTS	:	Gas generated in drying or melting is irritating eyes and skins.
ACUTE TOXICITY (INCLUDING LD50)	:	No finding.
SUBACUTE TOXICITY	:	No finding.
CHRONIC TOXICITY	:	No finding.

CARCINOGENECITY : No finding.

MUTAGENECITY(Mi : No finding.  
cro  
organisms,chromoso  
mal aberration)

REPRODUCTIVE : No finding.  
TOXICITY

TERATOGENICITY : No finding.

OTHERS(Including : No finding in this report means that there will be no hazard in  
generation of general,but no proving data available at the time of reporting.  
hazardous gases by  
reaction with  
water,for ezample)

OTHER CAUTIONS : With regard to dust,the maximum permissible concentration and limits  
are fixed by OSHA and ACGIH.

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#### 12. ECOLOGICAL INFORMATION

BIODEGRADABILITY : No finding.

BIOACCUMULATION : No finding.

FISH TOXICITY : No finding.

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#### 13. DISPOSAL CONSIDERATION

WASTE FROM : This is designated as waste plastics among industrial wastes by the  
RESIDUES Wastes Disposal Law. Disposal waste pellets through licensed wastes  
handlers or local autonomous bodies if they are handling wastes  
disposal.

WASTE FROM : When disposed by incineration,use the well controlled incinerators in  
RESIDUES 2 accordance with the Wastes Disposal Law,Air Pollution Control Law and  
Water Pollution Prevention Law.

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#### 14. TRANSPORT CONSIDERATION

UN : Not applicable  
CLASSIFICATION  
NUMBER

OTHER CAUSIONS : Handle with care so as not to give damages to containers or not to be  
subjected to wetting.

OTHER CAUSIONS : Secure the containers firmly so as not to cause collapsing.  
2

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#### 15. REGULATORY INFORMATION

WASTE DISPOSAL : Waste plastics among industrial wastes.  
LAW

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#### 16. OTHER INFORMATION

HANDLING OF THE : This MSDS is the English version translated from the Japanese MSDS  
DETAILS GIVEN which is prepared for domestic use.  
ABOVE Details given above are based on references, information and data  
available at this moment, but no warranty can be made on exactness of  
these details. They are also prepared on the assumption that the  
product will be handled in a normal way. For special handling, adequate  
safety and environmental measures should be taken in respect to its  
applications. Our products are not specifically intended for implants for  
medical and dental applications, and therefore they are not  
recommended for such applications.  
"No finding" in this report means that there will be no hazard in general,  
but no proving data is available at the time of reporting.

## MATERIAL SAFETY DATA SHEET

MSDS FILE No. (KURAMI WORKS) : 05-1225

(based on Form OSHA-174)

IDENTITY ( AS Used on Label and List )

Product Class : Phosphor Bronze Strip  
 Trade Name : JIS H3130 C5210R (Equivalent to ASTM B103 C52100)  
 CAS No. : Copper: 7440-50-8, Tin: 7440-31-5, Phosphor: 7723-14-0  
 Chemical Composition

	Content(wt-%)	CAS No.
Tin(Sn)	7.0~9.0	7440-31-5
Phosphor(P)	0.03~0.35	7723-14-0
Copper(Cu)	Balance	7440-50-8
Sn+P+Cu	99.7 $\leq$	-

## Section I

Manufacturer's Name NIKKO METAL MANUFACTURING CO., LTD. KURAMI WORKS	Date Prepared May 24th, 2005
Address 3 Kurami Samukawa-cho Kouza-gun Kanagawa prefecture 253-0101 JAPAN	Signature of Person in Charge <i>Chihiro Izumi</i> IZUMI, Chihiro Senior Technical Supervisor, Quality Assurance
Telephone Number for Information (Quality Assurance) +81-467-75-7285	Signature of Person Responsible <i>Hiroaki Watanabe</i>
Facsimile Number for Information (Quality Assurance) +81-467-74-6971	WATANABE, Hiroaki Manager, Quality Assurance Section

## Section II Hazardous Ingredients / Identity Information

Hazardous Components (Specific Chemical Identity : Names OSHA PeI ACGIH TLV)

Nothing for ordinary service condition

## Section III Physical / Chemical Characteristics

Boiling Point 2630 °C for Copper 2275 °C for Tin	Specific Gravity (H2O = 1) 8.80
Vapor Pressure (mmHg) N/A	Melting Point 1025 deg. centi. for C5210 Phosphor Bronze
Vapor Density (Air = 1) N/A	Evaporation Rate (Butyl Acetate = 1) N/A
Solubility in Water N/A	
Appearance and Odor Brown - Red (solid) : Odor - None	

## Section IV Fire and Explosion Hazard Data

Flash Point (Method Used) N/A	Flammable Limits N/A	LEL N/A	UEL N/A
Extinguishing Media N/A ( stable , nonflammable substance )			
Special Fire Fighting Procedures Not specified			
Unusual Fire and Explosion Hazards Metal products do not present fire or explosion hazards under normal conditions.			

**Section V Reactivity Data**

Stability	Unstable		Conditions to Avoid
	Stable	X	

Incompatibility (Materials to Avoid )

Nothing

Hazardous Decomposition or Byproducts

Nothing

Hazardous Polymerization	May Occur		Conditions to Avoid
	Will Not Occur	X	

**Section VI Health Hazard Data**

Route(s) of Entry :	Inhalation ?	Skin ?	Ingestion ?
	N/A	N/A	N/A

Health Hazardous (Acute and Chronic )

N/A

Carcinogenicity :	NTP ?	IARC Monographs ?	OSHA Regulated ?
	N/A	N/A	N/A

Signs and Symptoms of Exposure

N/A

Medical Conditions

Generally Aggravated by Exposure N/A

Emergency and First Aid Procedures

N/A

**Section VII Precautions for State Handling and Use**

Steps to Be Taken in Case Material Is Released or Spilled

N/A

Waste Disposal Method

Collect scrap for remelting.

Precautions to Be Taken in Handling and storing

For Handling

- Put safety gloves on to protect your hands from edges of coils which might cut your hands.
- Wear safety glasses when metal powders or chips are expected to be generated in the work.
- Put safety shoes on when handling heavy coils.

For Storing

- The environment of stocking area should be free from acid, alkali, chloride, sulfide and other corrosive chemicals to prevent from rusting or corrosion.

Other Precautions

No special requirements

**Section VIII Control Measures**

Respiratory Protection (Specify Type )

Wearing a mask be recommended in the work such as abrasion and buffing which generates metal powders or chips.

Ventilation	Local Exhaust	Special
	None	None
	Mechanical (General )	Other
	None	None

Protective Gloves

Put safety gloves on to protect your hands from edges of coils which might cut your hands.

Eye Protection

Wear safety glasses when metal powder is expected to be generated in the work.

Other Protective Clothing or Equipment

Put safety shoes on when handling heavy coils.

Work / Hygienic Practices

None

Influence to environments	Fish on toxicity : TLm 48 hr. on CuSO4
	Salmogairdeneri : 0.038 ~ 0.8 ppm
	Oryzias Latipes : 2.1 ~ 24ppm

# Material Safety Data Sheet

## 1. Manufacturer

- Company HARADA Metal Industry Co., Ltd.
- Address 10-18 Sasamekitamati, Toda, Saitama 335-0033, Japan  
TEL 048-422-1588  
FAX 048-449-6303
- Counter The domestic business department business primary and second section  
TEL 048-441-5115  
FAX 048-444-9104  
The domestic business department OSAKA service office  
TEL 06-531-8094  
FAX 06-531-8096  
The domestic business department NAGOYA service office  
TEL 052-821-9778  
FAX 052-822-7500  
The overseas business department export section  
TEL 048-441-5115  
FAX 048-444-9104
- Urgent place to contact  
The quality assurance department  
TEL 048-422-1588  
FAX 048-449-6303

## 2. Products

- Phosphor bronze plates and strips for springs
- Phosphor bronze plates and strips



### 3. Specification of the material

- The division of mixture or single product : Single product
- The chemical name : Copper alloy
- Chemical composition and content rate( wt.%)

Element	Percent					CAS No.
	C5210	C5212	C5191	C5102	C5111	
Copper	rem.	rem.	rem.	rem.	rem.	7440-50-8
Tin	7.0~9.0	7.0~9.0	5.5~7.0	4.5~5.5	3.5~4.5	7440-31-5
Phosphorus	0.03~0.35	0.03~0.35	0.03~0.35	0.03~0.35	0.03~0.35	7723-14-0
Lead	0.05 max	0.05 max	0.05 max	0.05 max	0.05 max	7439-92-1
Iron	0.1 max	0.1 max	0.1 max	0.1 max	0.1 max	7439-89-6
Zinc	0.2 max	0.2 max	0.2 max	0.2 max	0.2 max	7440-66-6

### 4. Classification of harmfulness

- The name of classification : Not classified into the dangerous harmfulness material.
- The danger : No knowledge
- The harmfulness : No knowledge
- The effect for the environment : No knowledge

### 5. First aid

- Eyes : Flush the water. Consult the doctor, when the simulation of the eye continues.
- Skin : Flush the water.
- Inhalation : Consult the doctor, when it was large inhaled.

### 6. The treatment in the fire

- Nonflammable.

### 7. Leakage

- Not applied (because of solid)

### 8. Attention in handling and storage

- Stored at the ordinary—temperature and usual humidity.
- Prohibition of the rapid temperature and humidity change.

9. Treatment on the exposure prevention

- Standard control concentration : Not regulated.
- Allowable temperature : Not regulated.
- Facility countermeasure : The whole ventilation is desirable.
- Protector : For lung ,the wear of protection mask is desirable for the power handling.  
For hand ,the wear of protective glove is desirable.  
For eyes ,the wear of safety goggles is desirable for the power handling.  
For body , the wear of protective clothing is desirable.

10. Physical and chemical characteristic

- Appearance and smell : The solid with the metallic luster. Odoless.
- Boiling point : The indistinctness.
- Solubility : Dissolves in the inorganic acid.

	C5210	C5212	C5191	C5102	C5111
Specific gravity	8.82	8.82	8.85	8.88	8.90
Melting point	1020°C	1020°C	1045°C	1050°C	1060°C

11. Information for danger

- Fire point : The indistinctness.
- Stability : Show the stability at room temperature and in the air.
- The situation to be avoided : —

12. Information for harmfulness

- The powder stimulates eyes , skin and bronchi.
- Produce the ulcer and the hepatic disorder rarely.

13. Information for environment

- No knowledge.

14. Attention for scrapping

- Possible to deal with ,as an industrial waste.

15. Attention for transportation

- No damage transportation is desirable.

16. Applying act

- —