

物质安全资料表 MATERIAL SAFETY DATA SHEET

一、物品与厂商资料 product and supplier information

物品名称 Product name: 冷镶埋树脂硬化剂 Cold setting resin hardener
其他名称 Other name: Acrylic hardener
建议用途及限制使用: PCB 冷镶埋。 Recommended usage and restricted use: PCB cold embedded.
供应商名称: 东莞市鼎麓电子科技有限公司 Supplier name: RAY SHINE ELECTRONIC (HK) LIMITED

二、危害辨识资料 Hazard identification data

物品危害分类: 易燃液体第 3 级、腐蚀 / 刺激皮肤物质第 2 级、严重损伤/刺激眼睛物质第 2A 级 / 皮肤过敏物质第 1 级、水环境之危害物质(极毒性)第 1 级、特定标的器官系统毒性物质~单一暴露第 3 级 Hazard classification of substances: flammable liquids, corrosive/irritating substances, skin substances, grade 2, serious injuries/eye substances, grade 2A/allergic substances, substances in water environment (extremely toxic), grade 1, Specific target organ system toxic substances ~ single exposure level 3
<ul style="list-style-type: none"> 象 征 符 号 : 火焰、惊叹号、环境 symbol symbol: flame, exclamation, environment 警 示 语 : 危险 p in language: danger 危害警告讯息: hazard warning message: 易燃液体和蒸气 Flammable liquids and vapors 造成皮肤刺激 Skin irritation 造成严重眼睛刺激 Cause severe eye irritation 可能造成皮肤过敏 Can cause skin irritation 对水生生物毒性非常大 It's very toxic to aquatic organisms 可能造成呼吸道刺激 May cause respiratory irritation
危害防范措施: hazards and preventive measures: 置容器于通风良好的地方 Keep the container in a well-ventilated area 勿吸入气体/烟气/蒸气/雾气 Do not inhale gas/smoke/steam/fog 戴上合适的手套 Wear the right gloves 带眼罩/护面罩 Wear an eye mask/mask 只能使用于通风良好的地方 Use only in a well-ventilated area 避免释放至环境中 Avoid release into the environment
其他危害 Other hazards: No

三、成分辨识资料 Component identification data

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纯物质: Pure substance

中英文名称: 甲基丙烯酸甲酯 (Isobutyl methacrylate)
同义名称: 2- Methyl-propenoic acid, 2- methylpropyl ester、 2-Methylpropyl methacrylate、 Methacrylic acid,isobutyl ester、 Isobutyl 2-methyl-2-propenoate
化学文摘社登记号码 Chemical abstracts agency registration number (CAS No.): 97-86-9
危害物质成分 (成分百分比) Hazardous substance composition (percentage of ingredients): 100

四、急救措施

不同暴露途径之急救方法 Different methods of first aid exposure
<ul style="list-style-type: none"> 吸入: 将患者移至新鲜空气处, 注意保暖及给予休息, 立即送医。sucked into: remove the patient to fresh air place, be sure to keep warm and give the rest, immediately. 皮肤接触: 脱除污染的衣物, 以大量水冲洗被喷溅的皮肤, 如果有发痒或红肿现象则送医治。skin contact: removing contaminated clothing, with a large number of water flushing was splashing skin, if there are itching or redness phenomenon to healing. 眼睛接触: 立即撑开眼皮以大量水缓和冲洗眼睛(情况许可拿出隐形眼镜, 继续冲洗), 至少 20 分钟以上, 立即送医。eye contact: immediately open eyes flush eyes with large amounts of water to ease (license out contact lenses, continue to rinse), at least 20 minutes above, immediately. 食入: 勿催吐, 用水漱口, 给患者喝下 240~300 毫升的水, 立即送医。Eating: not vomiting, water gargle, to drink 240-300 ml of water, immediately
最重要症状及危害效应 Most important symptoms and harmful effects:
<p>对眼睛、呼吸系统及皮肤产生刺激。接触皮肤可能会导致过敏。作业环境高浓度可能会导致呼吸系统的刺痛及麻痹效应甚至会丧失意识, 因肺水肿而致死。重复或长期的接触可能会导致皮肤炎。Stimulate the eyes, respiratory system and skin. Contact with skin can lead to allergies. High concentrations in the operating environment can lead to tingling and paralysing effects of the respiratory system and even loss of consciousness, resulting in death from pulmonary edema. Repeated or prolonged contact can lead to dermatitis.</p>
对急救人员之防护: 戴防渗手套, 以免接触污染物。Protection for first aid personnel: wear anti-seepage gloves to avoid exposure to contaminants.
对医师之提示 Tips for physicians: -----

五、灭火措施 fire-fighting measures

适用灭火剂: 化学干粉、泡沫、二氧化碳, 若有容器陷于火场则应以大量水喷洒。Suitable for extinguishing agent: dry chemical powder, foam, carbon dioxide, if there is a container in the fire place should be sprayed with large amount of water.
灭火时可能遭遇之特殊危害: Special hazards that may occur when extinguishing fire 1. 容器会有燃烧爆炸的危险。There is a danger of fire and explosion in the container. 2. 其蒸气比空气重, 可能会造成回火。The steam is heavier than air and may cause

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tempering.
<p>特殊灭火程序 Special fire extinguishing procedure:</p> <ol style="list-style-type: none"> 1.高度易燃，遇热则开始聚合，密闭之容器可能因而爆裂。 Highly flammable, begin to aggregate in case of heat, and the sealed container may burst. 2.有外泄，喷水雾可保护进行止漏人员，并分散所形成的蒸气，同时冲走外泄物，以免暴露其中。 With external leakage, the water spray mist can protect the personnel conducting the leakage check and disperse the steam formed, and wash away the leakage to avoid exposing it. 3.火灾中，容器内蒸气可能聚合，阻断排气功能，密闭之容器可能因而爆裂。 In a fire, the steam in the container may converge to block the exhaust function, and the sealed container may burst. 4.贮槽安全排气阀已响起或因着火而变色时立即撤离。 Immediately evacuate the storage tank when the safety exhaust valve has sounded or becomes discolored due to fire. 5.在不危及人员安全情况下将容器运离现场。 Remove containers from the site without endangering personnel. 6.从外侧以水冷却暴露于火燄中之容器。 A container cold from the outside but exposed to the flame. <p>消防人员之特殊防护设备 Special protective equipment for fire personnel:</p> <p>消防人员必须配戴空气呼吸器、防护手套、消防衣。 Fire personnel must wear air breathing apparatus, protective gloves and fire clothing.</p>

六、泄漏处理方法 Leakage treatment method

<p>个人应注意事项 Personal precautions:</p> <ol style="list-style-type: none"> 1.立刻消除火源 Eliminate fire immediately. 2.避免吸入蒸气，限制人员进入，直至外溢区完全清干净为止。 Avoid inhaling steam and restrict personnel access until the overflow area is completely cleared. 3.进行清理工作之前，复习灭火方法与操作之训练内容。 Review the training content of fire extinguishing methods and operations before cleaning. 4.且在清理过程中，使用合适的个人保护措施。 Use appropriate personal protective measures during the cleaning process
<p>环境注意事项 Environmental precautions:</p> <ol style="list-style-type: none"> 1.撤离人员至通风良好的地区，并使用自携式呼吸防护具。 Evacuate to a well-ventilated area and use a portable respirator. 2.移开热源、火花、火焰、电源 Remove heat source, spark, flame and power source 3.避免与硝酸盐、氧化剂(包括过氧化物)、聚合作用之起始剂、强碱、强酸等不兼容性物质接触。 Avoid contact with nitrate, oxidant (including peroxide), initiator of polymerization, strong alkali, strong acid and other incompatibilities. 4.将溢出物以筑堤方式围住，防止流入下水道。 Surround the overflow with embankment to prevent it from flowing into the sewer.
<p>清理方法 Cleaning method:</p> <ol style="list-style-type: none"> 1.勿碰触外泄物质，使用不起火花的工具。 Do not touch the leakage material, and use the

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non-spark tools.
2.避免外泄物流入下水道或密闭空间。Avoid leakage into sewers or confined Spaces.
3.若安全许可,设法阻止或减少溢漏。If safety permits, try to prevent or reduce spills.
4.用泥土、沙或不与外泄物起反应的吸收剂吸收外泄物质。Use soil, sand or absorbent that does not react with the spill to absorb the spill.
5.污染的吸收剂与外泄物具同等危害。The pollutant absorbent is equally harmful to the leakage.
6.少量外泄:用不与外泄物起反应的吸收剂吸收后,置于适当、容器处理或回收,用水冲洗该区。A small amount of leakage: after being absorbed with an absorbent that does not react with the leakage, place it in an appropriate container for treatment or recycling, and rinse the area with water.
7.大量外泄:联络消防及紧急处理中心或供应商寻求协助。Large leakage: contact the fire and emergency treatment center or the supplier for assistance

七、安全处置与储存方法 Safe handling and storage method

处置: The disposal of:
1.避免皮肤和眼睛接触此物,避免吸入高浓度的蒸气,应在通风良好之处所工作。Avoid contact between skin and eyes, avoid inhaling high concentration of steam, and work in a well-ventilated place.
2.贮存桶应接地,接地夹需触及裸金属。The storage tank shall be ground, and the grounding clamp shall touch the bare metal.
3.使用区张贴禁菸标志,远离火花及其它引火源。使用不产生火花的工具。No smoking signs shall be posted in the use area, away from sparks and other ignition sources. Use tools that do not generate sparks.
4.蒸气比空气重,注意沟渠及低洼处;输送时注意静电危害。If steam is heavier than air, pay attention to ditches and depressions; Pay attention to electrostatic hazard during transportation.
5.MMA 勿贮于惰气下,应接触到空气,贮存温度须控制于 25°C 以下,并排空所有水份。MMA should not be stored in inert gas, it should be exposed to air, the storage temperature should be controlled below 25°C, and all water should be drained.
6.抑制剂含量低于 25ppm,甲基丙烯酸甲酯可贮放达 6 个月,但建议在三个月内使用完毕。The inhibitor content is lower than 25ppm, and methyl methacrylate can be stored for up to 6 months, but it is recommended to be used up within 3 months.
7.若其抑制剂含量较低时,如 TA 2ppm,应尽量保持贮存温度在 15°C 以下,并于一星期内使用完毕。If the inhibitory content is low, if TA 2ppm, keep the storage temperature below 15°C as far as possible and use it within one week.
储存 Storage:
1.应贮于阴凉、干燥而通风良好场所,避免阳光直射,远离热、引火源及不兼容物。Store in a cool, dry and well-ventilated place, avoid direct sunlight and stay away from heat, ignition sources and incompatibilities.
2.使用接地,以免成为引燃源。Use ground to avoid becoming the ignition source.
3.储存处所应加标示,严禁吸烟。The storage place should be marked. Smoking is prohibited.
4.应特别注意,储存时应接触到空气(氧气)。Special attention should be paid to air (oxygen) during storage.
5.甲基丙烯酸甲酯蒸气是不含抑制剂,因此储槽的通气孔(vent)或火燄阻绝器(flame

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arrester)可能会被聚合物堵塞。Methyl methacrylate vapor is free of inhibitors, so the vent or flame arrester in the tank may be blocked by the polymer.

八、暴露预防措施 Exposure prophylaxis

工程控制:采用局部通风或整体换气装置, 控制制程条件或制程改良, 确保作业环空气中物质之浓度在限值以下.

Engineering control: use local ventilation or integrated ventilation to control process conditions or process improvement to ensure the concentration of the air in the operating environment is below the limit.

控制参数 Control parameters			
八小时日时量平均 容许浓度 The average permissible concentration is 8 hours per day TWA	短时间时量平均 容许浓度 Average permissible concentration for a short time STEL	最高容许 浓度 The concentration of CEILING	生物指标 Biological indicators BEIs
100ppm	125ppm	—	—

个人防护设备 Personal protective equipment

呼吸防护 Respiratory protection: 当工作环境空气中的浓度超过暴露容许浓度, 可使用能过滤有机气体的滤毒罐。大量泄漏或滤毒罐无法提供适当保护时, 就必须使用正压呼吸空气供给设备. When the concentration of air in the working environment exceeds the allowable concentration of exposure, a filter can be used to filter organic gases. When a large number of leaks or canisters fail to provide adequate protection, positive pressure breathing air supply equipment must be used.

手部防护: 很多种材质手套都足够防护

Hand protection: many types of gloves are protective enough, for example 例如 Latex(natural rubber), neoprene(polyisoprene), nitrilerubber(ABS rubber), butyl rubber, polyvinyl alcohol(PVA), polyvinyl chloride(PVC).

眼睛防护: 戴安全眼镜, 当作业时有可能因喷洒, 飞溅而接触眼部或脸部时, 应该穿戴罩面式护目镜。

Eye protection: wear safety glasses. If you have contact with eyes or face due to spraying or splashing when working, you should wear protective goggles.

皮肤及身体防护: 穿着不会渗透的衣物以避免皮肤之接触, 如手套、围裙、胶靴或罩衣。

Skin and body protection: wear non-permeable clothing to avoid skin contact, such as gloves, aprons, rubber boots or overalls.

九、物理及化学性质 Physical and chemical properties

外观: 澄清无色 Appearance: clear colorless	气味: 刺激味 Smell: pungent
嗅觉阈值 Olfactory threshold: 0.5-1.0 ppm	熔点 Melting point: -48°C
pH 值: 6	沸点 / 沸点范围 Boiling point/boiling point

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	range: 100.5°C (760mmHg)
易燃性(固体、气体)Flammability (solid, gas): -	闪火点 Flash point: 10 ° C
分解温度 Decomposition temperature: —	测试方法 Test method: 闭杯 closed cup
自燃温度 Spontaneous combustion temperature: 421°C	爆炸界限 Explosion limit: 2.1%~12.5% (%V/V)
蒸气压 Vapor pressure: 0.668 (25°C,psia) 28mmHg (20°C)	蒸气密度 Vapor density: 3.5 (空气=1)
密度: 0.94 g/cm ³ 0.949g/ml (15.5°C)	溶解度 solubility: 1.6 wt % (20°C) (水)
辛醇 / 水分配系数 (log Kow) : 0.95-1.03	挥发速率: 3.1(乙酸丁酯 =1) Volatilization rate: 3.1 (butyl acetate =1)
最低引火能量 Minimum ignition energy (MJ) (MIE) 0.89-0.97 (23°C)	

十、安定性及反应性

安定性: 在抑制剂存在下安定, 蒸气可能剧烈聚合, 避免受热或高温。
特殊状况下可能之危害反应: 避开热源、火花、火焰、电源避免与硝酸盐、氧化剂(包括过氧化物)、聚合作用之起始剂、强碱、强酸等不兼容性物质接触。 Possible hazardous reactions under special conditions: avoid heat source, spark, flame, power source and contact with nitrates, oxidants (including peroxides), starting agent for polymerization, strong alkali, strong acid and other incompatible substances.
应避免之状况: Situation to be avoided 1.抑制剂不足。Insufficient inhibitor. 2.静电、火焰、火花热及引火源。Static electricity, flame, spark heat and ignition source. 3. 与不兼容物混合。Mix with incompatibles.
应避免之物质 Substances to be avoided: 1.硝酸盐 Nitrates 2.氧化剂(包括过氧化物): Oxidants (including peroxides) 3. 聚合作用之起始剂 Initiator of polymerization 4. 强碱 Strong alkali 5. 强酸等不兼容性物质接触。Incompatibility of substances such as strong acids.
危害分解物: 一氧化碳、二氧化碳 Hazardous decomposition products: carbon monoxide, carbon dioxide

十一、毒性资料 Toxicity data

暴露途径: 皮肤、吸入、食入、眼睛 Exposure route: skin, inhalation, ingestion, eyes
症状: 刺激感、困倦、皮肤发红、头昏眼花 Symptoms: irritation, drowsiness, redness of skin, dizziness
急毒性 Urgent toxicity: 皮肤: 可能产生敏感, 刺激皮肤, 长期及重覆之接触, 会导致皮肤炎。Skin: can produce

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<p>sensitive, stimulate the skin, long-term and repeat contact, can cause dermatitis.</p> <p>吸入：刺激呼吸道系统，高浓度蒸气会刺激呼吸系统，产生眩晕，头痛及麻痺感。</p> <p>Inhalation: stimulates the respiratory system. High concentrations of vapors stimulate the respiratory system, causing dizziness, headache and paralysis.</p> <p>食入：1.会刺激口腔、胃、引发恶心、呕吐、晕眩及昏睡。Ingestion: 1. Can stimulate mouth, stomach, induce nausea, vomiting, dizziness and lethargy.</p> <p>2.可能伤害肝及肾。May injure liver and kidney.</p> <p>眼睛：Eyes</p> <p>1.高浓度蒸气会刺激眼睛，引发流泪。High concentration of steam can irritate eyes and cause tears.</p> <p>2.液体相当刺激眼睛，可能造成灼伤。Fluids can irritate the eyes and cause burns.</p> <p>LD50 (测试动物、吸收途径)：7872mg/kg(大鼠、吞食) LD50 (test animals, absorption pathway) : 7872mg/kg(rats, swallowed)</p> <p>LC50 (测试动物、吸收途径)：78000mg/m³/4H(大鼠、吸入) LC50 (test animals, absorption pathway) : 78000mg/m³/4H(rats, inhalation)</p> <p>慢毒性或长期毒性：toxicity</p> <p>长期暴露：重覆暴露在高浓度下会对肺、肝、肾、心脏产生刺激作用。动物重覆吸入浓度值超过职业暴露容许浓度对鼻腔细胞产生刺激作用(100- 400ppm)。甲基丙烯酸甲酯不会有致癌及病变的危害，文献中对动物研究，相关病变学及传染病学都有完整的报告，报告也显示动物在高浓度下对母体及胚胎不会产生影响。Slow or long term:</p> <p>Long-term exposure: repeated exposure to high concentrations can stimulate the lung, liver, kidney and heart. Repeated inhalation concentrations in animals exceed the permitted concentration of occupational exposure to stimulate nasal cells (100-400 PPM). Methyl methacrylate does not cause cancer or damage to lesions. There are complete reports on animal studies, related pathologies and infectious diseases in the literature , and the reports also show that the animals do not have any influence on the mother and embryo at high concentration.</p>

十二、生态资料 Ecological data

<p>生态毒性：Ecological toxicity</p> <ul style="list-style-type: none"> 对鱼低毒性 low toxicity to the fish LC50(鱼)一般类(Typically)>100mg/l。LC50(fish) general class (Typically)>100mg/l. LC50 大头鲤鱼(fathead minnow)(96 小时)(静态)130mg/l。LC50 big head carp (fathead minnow)(96 hours)(static)130mg/l. 会伤害水中的无脊椎动物 will damage the invertebrates in the water EC50 水蚤(Daphnia Magna)(48 小时)69mg/l。EC50 water flea (Daphnia Magna)(48 hours)69mg/l 对海藻低毒性 to algae low toxicity
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<p>EC50 月芽藻属(<i>Selenastrum Capricornutum</i>)(96 小时)170mg/l。</p> <ul style="list-style-type: none"> 对废水处理之影响: influence on wastewater treatment: 以生化处理过程, 能有效清除。With a biochemical process, it can be removed effectively.
<p>持久性及降解性: Durability and degradation:</p> <ul style="list-style-type: none"> 可能之环境影响/环境流布: 产品高产率。为中度挥发性之液体, 微溶于水。Possible environmental impact/environmental streamer: high yield. A moderately volatile liquid, slightly soluble in water. 持续性和分解性: 生物可分解性, 化学需氧量(COD)88%(28 天)。continuity and decomposability: biological decomposability, chemical oxygen demand (COD) 88% (28 days). 先天性生物分解: 可溶性有机碳去除(Dissolved Organic Carbon Removal)>95%(28 天)。Congenital biological decomposition: soluble Organic Carbon Removal (Dissolved Organic Carbon Removal) > 95% (28 days).
<p>生物蓄积性: 不太可能蓄积, 因会迅速转换成其他物质。Bioaccumulation: it is unlikely to accumulate because it will be quickly converted into other substances.</p>
<p>土壤中之流动性: 当释放至土壤中, 预期会挥发及渗入地下水。Mobility in soil: when released into soil, expected to evaporate and leach into groundwater.</p>
<p>其他不良效应 Other adverse effects: —</p>

十三、废弃处置方法 Waste disposal method

<p>废弃处置方法: Waste disposal method</p> <ol style="list-style-type: none"> 依现行法规处理。Handled in accordance with existing laws and regulations. 可采用特定的焚化法或卫生掩埋法处理。Specific incineration or sanitary landfill may be used. 空桶在回收前应先除污。The pollution of empty barrels should be removed before recycling.
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十四、运送资料 Shipping information

<p>联合国编号 United Nations number: 1247</p>
<p>联合国运输名称: 甲基丙烯酸甲酯, 加抑制剂的 UN transport name: methyl methacrylate, with inhibitor</p>
<p>运输危害分类: 第三类易燃性液体 Transportation hazard classification: the third category of flammable liquids</p>
<p>包装类别(Packing group): II</p>
<p>海洋污染物(是/否): 否 Marine contaminants (yes/no) : no</p>
<p>ADR Classification Code: F1</p>

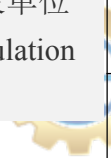

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ADR HIN: 339
ADR Transport Category Code: D1E
UK CDG Road: Emergency Action Code: 3YE
特殊运送方法及注意事项 Special delivery methods and precautions: -----

十五、法规资料 Regulations data

适用法规: Applicable regulations:	
1. 劳工安全卫生设施规则 Rules on labor safety and health facilities	
2. 危险物及有害物通识规则 General rules for dangerous and harmful substances	
3. 劳工作业环境空气中有毒物容许浓度标准 Allowable concentrations of hazardous substances in air in the working environment.	
4. 道路交通安全规则第 84 条 Rule 84 of road traffic safety rules	
5. 事业废弃物贮存清除处理方法及设施标准 Enterprise waste storage and removal treatment methods and facilities standards	
6. 有机溶剂中毒预防规则 Rules for the prevention of organic solvent poisoning	
EC Classification: 高度易燃及刺激性 (Highly Flammable and Irritant)	
危害信号 Hazard Symbol: F, Xi	
危险词组: R11, 高度易燃 Highly Flammable	
(Risk Phrases) R37/38: 对呼吸系统和皮肤有刺激性 Irritating to respiratory system and skin.	
R43: 皮肤接触可能造成过敏 May cause sensitisation by skin contact.	
安全词组: S24: 避免接触皮肤 Avoid contact with skin.	
(Safety Phrases) S37: 戴适当的手套 Wear suitable gloves.	
S46: 如果吞食立刻就医并出示容器之标示 If swallowed, seek medical advice immediately and show this container or label.	

十六、其他资料 Other materials

参考文献 reference	工研院环安中心物质安全资料表 Material safety data sheet of ring 'an center of industrial research institute		
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