

Monocure Pty Ltd

Chemwatch: **5314-67** Version No: **4.2.5.1**

Safety Data Sheet according to WHS Regulations (Hazardous Chemicals) Amendment 2020 and ADG requirements

Chemwatch Hazard Alert Code: 2

Issue Date: 01/11/2019 Print Date: 14/05/2021 L.GHS.AUS.EN

SECTION 1 Identification of the substance / mixture and of the company / undertaking

Product Identifier

Product name	PLATEBOND Adhesion Promoter (3D SEMI FLEXIBLE RESIN)	
Chemical Name	ot Applicable	
Synonyms	ot Available	
Chemical formula	Not Applicable	
Other means of identification	Not Available	

Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses 3D printing resin

Details of the supplier of the safety data sheet

Registered company name	Monocure Pty Ltd	
Address	Unit 16 / 364 Park Rd Regents Park NSW 2143 Australia	
Telephone	+61 2 9738 5340	
Fax	Not Available	
Website	www.monocure3d.com.au	
Email	support@monocure3d.com.au	

Emergency telephone number

Association / Organisation	CHEMWATCH EMERGENCY RESPONSE	
Emergency telephone numbers	+61 2 9186 1132	
Other emergency telephone numbers	+61 1800 951 288	

Once connected and if the message is not in your prefered language then please dial 01

SECTION 2 Hazards identification

Classification of the substance or mixture		
Poisons Schedule	Not Applicable	
Classification ^[1]	Acute Toxicity (Oral) Category 4, Skin Corrosion/Irritation Category 2, Skin Sensitizer Category 1, Eye Irritation Category 2A, Specific target organ toxicity - single exposure Category 3 (respiratory tract irritation), Acute Aquatic Hazard Category 3, Chronic Aquatic Hazard Category 3	
Legend:	1. Classified by Chemwatch; 2. Classification drawn from HCIS; 3. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI	

Label elements

Hazard pictogram(s)	
Signal word	Warning

Hazard statement(s)

H302	Harmful if swallowed.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.

H319	Causes serious eye irritation.	
H335	May cause respiratory irritation.	
H412	Harmful to aquatic life with long lasting effects.	

Precautionary statement(s) Prevention

P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.
P261	Avoid breathing mist/vapours/spray.
P270	Do not eat, drink or smoke when using this product.
P273	Avoid release to the environment.
P272	Contaminated work clothing should not be allowed out of the workplace.

Precautionary statement(s) Response

P302+P352	IF ON SKIN: Wash with plenty of water and soap.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P333+P313	If skin irritation or rash occurs: Get medical advice/attention.
P337+P313	If eye irritation persists: Get medical advice/attention.
P362+P364	Take off contaminated clothing and wash it before reuse.
P301+P312	IF SWALLOWED: Call a POISON CENTER/doctor/physician/first aider if you feel unwell.
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P330	Rinse mouth.

Precautionary statement(s) Storage

• • • • •	-
P405	Store locked up.
P403+P233	Store in a well-ventilated place. Keep container tightly closed.

Precautionary statement(s) Disposal

P501 Dispose of contents/container to authorised hazardous or special waste collection point in accordance with any local regulation.

SECTION 3 Composition / information on ingredients

Substances

See section below for composition of Mixtures

Mixtures

CAS No	%[weight]	Name
109-17-1	>60	tetraethylene glycol dimethacrylate
97-63-2	<10	ethyl methacrylate
Not Available	10-30	Ingredients determined not to be hazardous
Legend:	1. Classified by Chernwatch; 2. Classification drawn from HCIS; 3. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI; 4. Classification drawn from C&L * EU IOELVs available	

SECTION 4 First aid measures

Description of first aid measures

Eye Contact	 If this product comes in contact with the eyes: Wash out immediately with fresh running water. Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids. Seek medical attention without delay; if pain persists or recurs seek medical attention. Removal of contact lenses after an eye injury should only be undertaken by skilled personnel. 	
Skin Contact	 If skin contact occurs: Immediately remove all contaminated clothing, including footwear. Flush skin and hair with running water (and soap if available). Seek medical attention in event of irritation. 	
Inhalation	 If fumes or combustion products are inhaled remove from contaminated area. Lay patient down. Keep warm and rested. Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures. Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary. Transport to hospital, or doctor, without delay. 	
Ingestion	 IF SWALLOWED, REFER FOR MEDICAL ATTENTION, WHERE POSSIBLE, WITHOUT DELAY. For advice, contact a Poisons Information Centre or a doctor. Urgent hospital treatment is likely to be needed. In the mean time, qualified first-aid personnel should treat the patient following observation and employing supportive measures as indice by the patient's condition. If the services of a medical officer or medical doctor are readily available, the patient should be placed in his/her care and a copy of the should be provided. Further action will be the responsibility of the medical specialist. If medical attention is not available on the worksite or surroundings send the patient to a hospital together with a copy of the SDS. 	

Where medical attention is not immediately available or where the patient is more than 15 minutes from a hospital or unless instructed otherwise:
 INDUCE vomiting with fingers down the back of the throat, ONLY IF CONSCIOUS. Lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.
 NOTE: Wear a protective glove when inducing vomiting by mechanical means.

Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5 Firefighting measures

Extinguishing media

- Foam.
- Dry chemical powder.BCF (where regulations permit).
- Carbon dioxide.
- Water spray or fog Large fires only.

Special hazards arising from the substrate or mixture

	Fire Incompatibility	Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result
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Advice for firefighters

Fire Fighting	 Alert Fire Brigade and tell them location and nature of hazard. May be violently or explosively reactive. Wear full body protective clothing with breathing apparatus. Prevent, by any means available, spillage from entering drains or water course. Fight fire from a safe distance, with adequate cover. If safe, switch off electrical equipment until vapour fire hazard removed. Use water delivered as a fine spray to control the fire and cool adjacent area. Avoid spraying water onto liquid pools. Do not approach containers suspected to be hot. Cool fire exposed containers with water spray from a protected location. If safe to do so, remove containers from path of fire.
Fire/Explosion Hazard	 The material is not readily combustible under normal conditions. However, it will break down under fire conditions and the organic component may burn. Not considered to be a significant fire risk. Heat may cause expansion or decomposition with violent rupture of containers. Decomposes on heating and may produce toxic fumes of carbon monoxide (CO). May emit acrid smoke. Decomposes on heating and produces: carbon dioxide (CO2) nitrogen oxides (NOx) phosphorus oxides (POx) other pyrolysis products typical of burning organic material. May emit courds of acrid smoke. May emit poisonous fumes. May emit corrosive fumes.
HAZCHEM	Not Applicable

SECTION 6 Accidental release measures

Personal precautions, protective equipment and emergency procedures

See section 8

Environmental precautions

See section 12

Methods and material for containment and cleaning up

Methods and material for conta	annion and obtaining up
Minor Spills	 Remove all ignition sources. Clean up all spills immediately. Avoid breathing vapours and contact with skin and eyes. Control personal contact with the substance, by using protective equipment. Contain and absorb spill with sand, earth, inert material or vermiculite. Wipe up. Place in a suitable, labelled container for waste disposal.
Major Spills	 DO NOT touch the spill material Moderate hazard. Clear area of personnel and move upwind. Alert Fire Brigade and tell them location and nature of hazard. Wear breathing apparatus plus protective gloves. Prevent, by any means available, spillage from entering drains or water course. No smoking, naked lights or ignition sources. Increase ventilation. Stop leak if safe to do so. Contain spill with sand, earth or vermiculite. Collect recoverable product into labelled containers for recycling.

	 Absorb remaining product with sand, earth or vermiculite. Collect solid residues and seal in labelled drums for disposal. Wash area and prevent runoff into drains. If contamination of drains or waterways occurs, advise emergency services.
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Personal Protective Equipment advice is contained in Section 8 of the SDS.

SECTION 7 Handling and storage

recautions for safe handling	
Safe handling	 Most acrylic monomers have low viscosity therefore pouring, material transfer and processing of these materials do not necessitate heating. Viscous monomers may require heating to facilitate handling. To facilitate product transfer from original containers, product must be heated to no more than 60 deg. C. (140 F). Do NOT use localised heat sources such as band heaters to heat/ melt product. Do NOT use so rhot rooms are recommended for heating/ melting material. The hot box or hot room should be set a maximum temperature of 60 deg. C. (140 F). Do NOT overheat - this may compromise product quality and /or result in an uncontrolled hazardous polymerisation. If product freezes, heat as indicated above and mix gently to redistribute the inhibitor. Product should be consumed in its entirety after heating/ melting avoid multiple "reheats" which may affect product quality or result in product degradation. Product should be packaged with inhibitor(s). Unless inhibited, product may polymerise, raising temperature and pressure, possibly rupturing container. Check inhibitor level periodically, adding to bulk material if needed. In addition, the product sinhibitor(s) require the presence of dissolved oxygen. Maintain, at a minimum, the original headspace in the product container and do NOT blanket or mix with oxygen-free gas as it renders the inhibitor ineffective. Ensure air space (oxygen) is present during product heating / melting. Store product indoors at temperatures greater than the product's freeing point (or greater than 0 deg. C. (32 F).) if no freezing point available and below 38 deg. C (100 F). Avoid prolonged storage (longer than shelf-life) storage temperatures above 38 deg. C (100 F). Store in tightly closed containers in a properly vented storage area away from heat, sparks, open flame, strong oxidisers, radiation and other initiators. Prevent contamitation by foreig
Other information	 Store in original containers. Keep containers securely sealed. Store in a cool, dry, well-ventilated area. Store away from incompatible materials and foodstuff containers. Protect containers against physical damage and check regularly for leaks. Observe manufacturer's storage and handling recommendations contained within this SDS.

Conditions for safe storage, including any incompatibilities

Suitable container 0.5 L,	L, 1 L, 5 L, 15 L Plastic Bottles
Storage incompatibility	Avoid strong acids, bases. Avoid reaction with oxidising agents

SECTION 8 Exposure controls / personal protection

Control parameters						
Occupational Exposure Limits (O	Occupational Exposure Limits (OEL)					
INGREDIENT DATA						
Not Available						
Emergency Limits	Emergency Limits					
Ingredient	TEEL-1 TEEL-2			TEEL-3		
ethyl methacrylate	5.5 ppm 61 ppm			370 ppm		
Ingredient Original IDLH Revised IDLH						
tetraethylene glycol						
dimethacrylate	Not Available		Not Available			
ethyl methacrylate	Not Available		Not Available			
Occupational Exposure Banding						

Ingredient

Occupational Exposure Band Rating

Occupational Exposure Band Limit

Ingredient	Occupational Exposure Band Rating	Occupational Exposure Band Limit	
tetraethylene glycol dimethacrylate	E	≤ 0.1 ppm	
ethyl methacrylate	E ≤ 0.1 ppm		
Notes:	Occupational exposure banding is a process of assigning chemicals into specific categories or bands based on a chemical's potency and the adverse health outcomes associated with exposure. The output of this process is an occupational exposure band (OEB), which corresponds to a range of exposure concentrations that are expected to protect worker health.		

MATERIAL DATA

NOTE D: Certain substances which are susceptible to spontaneous polymerisation or decomposition are generally placed on the market in a stabilised form. It is in this form that they are listed on Annex I

When they are placed on the market in a non-stabilised form, the label must state the name of the substance followed by the words "non-stabilised" European Union (EU) List of harmonised classification and labelling hazardous substances, Table 3.1, Annex VI, Regulation (EC) No 1272/2008 (CLP) - up to the latest ATP

Exposure controls

Appropriate engineering controls	be highly effective in protecting workers and will typically be i The basic types of engineering controls are: Process controls which involve changing the way a job activit Enclosure and/or isolation of emission source which keeps a "adds" and "removes" air in the work environment. Ventilation ventilation system must match the particular process and che Employers may need to use multiple types of controls to prev General exhaust is adequate under normal operating conditio overexposure exists, wear approved respirator. Supplied-air ensure adequate protection. Provide adequate ventilation in workplace possess varying "escape" velocities which, in turn remove the contaminant. Type of Contaminant: solvent, vapours, degreasing etc., evaporating from tank (ii aerosols, fumes from pouring operations, intermittent conta drift, plating acid fumes, pickling (released at low velocity in direct spray, spray painting in shallow booths, drum filling, generation into zone of rapid air motion) grinding, abrasive blasting, tumbling, high speed wheel gervery high rapid air motion) Within each range the appropriate value depends on: Lower end of the range 1: Room air currents minimal or favourable to capture 2: Contaminants of low toxicity or of nuisance value only. 3: Intermittent, low production. 4: Large hood or large air mass in motion Simple theory shows that air velocity falls rapidly with distance with the square of distance from the extraction point (in simpl accordingly, after reference to distance from the contaminatir 1-2 m/s (200-400 f/min) for extraction of solvents generated i	a selected hazard "physically" away from the worker and ventilation that strategically ion can remove or dilute an air contaminant if designed properly. The design of a chemical or contaminant in use. revent employee overexposure. itions. Local exhaust ventilation may be required in special circumstances. If risk of ir type respirator may be required in special circumstances. Correct fit is essential to n warehouses and enclosed storage areas. Air contaminants generated in the rn, determine the "capture velocities" of fresh circulating air required to effectively (in still air). (in still air). (in still air). (in still air). (conveyer loading, crusher dusts, gas discharge (active generated dusts (released at high initial velocity into zone of (50-2000 f/min.) Upper end of the range 1: Disturbing room air currents	
Personal protection			
Eye and face protection	 Safety glasses with side shields. Chemical goggles. Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lenses or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59], [AS/NZS 1336 or national equivalent] 		
Skin protection	See Hand protection below		
Hands/feet protection	 NOTE: The material may produce skin sensitisation in predisposed individuals. Care must be taken, when removing gloves and other protective equipment, to avoid all possible skin contact. Contaminated leather items, such as shoes, belts and watch-bands should be removed and destroyed. The selection of suitable gloves does not only depend on the material, but also on further marks of quality which vary from manufacturer to manufacturer. Where the chemical is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application. The exact break through time for substances has to be obtained from the manufacturer of the protective gloves and has to be observed when making a final choice. Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturiser is recommended. Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include: 		

	Europe EN 374, US F739, AS/NZS 2161.1 or national equivalent). Intact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 10.1 or national equivalent) is recommended. we with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to nt) is recommended. ad by movement and this should be taken into account when considering gloves for long-term gloves are rated as: nin .typically greater than 0.35 mm, are recommended. ot necessarily a good predictor of glove resistance to a specific chemical, as the permeation exact composition of the glove material. Therefore, glove selection should also be based on tedge of breakthrough times. gloves of varying thickness may be required for specific tasks. For example: hay be required where a high degree of manual dexterity is needed. However, these gloves are rould normally be just for single use applications, then disposed of. be required where there is a mechanical (as well as a chemical) risk i.e. where there is abrasion using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed only recommended gloves - using the wrong gloves may increase the risk: Use of thin nitrile rubber gloves: Nitrile rubber (0.1 mm) Excellent tactibility ("feel"), powder-free Disposable Inexpensive	
	Little physical stress Exposure condition Medium time use; less than 4 hours Physical stress (opening drums, using tools, etc.)	Give adequate protection to low molecular weigh acrylic monomers Use of medium thick nitrile rubber gloves Nitrile rubber, NRL (latex) free; <0.45 mm Moderate tactibility ("feel"), powder-free Disposable Moderate price Gives adequate protection for most acrylates up to 4 hours Do NOT give adequate protection to low molecular weight monomers at exposures longer than 1 hour
	Exposure condition Long time Cleaning operations	Nitrile rubber, NRL (latex) free; >0.56 mm low tactibility ("feel"), powder free High price Gives adequate protection for most acrylates in combination with commonly used solvents up to 8 hours Do NOT give adequate protection to low molecular weight monomers at exposures longer than 1 hour Avoid use of ketones and acetates in wash-up solutions.
	ketones, use laminated multilayer gloves.	(for example in long term handling of acrylates containing high levels of acetates and/ or B Acrylates Third edition, 231 October 2007 - Cefic
Body protection	See Other protection below	
Other protection	 Overalls. P.V.C apron. Barrier cream. Skin cleansing cream. Eve wash unit. 	

Recommended material(s)

GLOVE SELECTION INDEX

Glove selection is based on a modified presentation of the:

"Forsberg Clothing Performance Index".

The effect(s) of the following substance(s) are taken into account in the *computer-generated* selection:

PLATEBOND Adhesion Promoter (3D SEMI FLEXIBLE RESIN)

Material	СРІ
PVA	А

* CPI - Chemwatch Performance Index

A: Best Selection

B: Satisfactory; may degrade after 4 hours continuous immersion

C: Poor to Dangerous Choice for other than short term immersion

 $\ensuremath{\text{NOTE}}$ As a series of factors will influence the actual performance of the glove, a final selection must be based on detailed observation. -

* Where the glove is to be used on a short term, casual or infrequent basis, factors such as "feel" or convenience (e.g. disposability), may dictate a choice of gloves which might

Respiratory protection

Type A-P Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent)

Selection of the Class and Type of respirator will depend upon the level of breathing zone contaminant and the chemical nature of the contaminant. Protection Factors (defined as the ratio of contaminant outside and inside the mask) may also be important.

Required minimum protection factor	Maximum gas/vapour concentration present in air p.p.m. (by volume)	Half-face Respirator	Full-Face Respirator
up to 10	1000	A-AUS / Class1 P2	-
up to 50	1000	-	A-AUS / Class 1 P2
up to 50	5000	Airline *	-
up to 100	5000	-	A-2 P2

Continued...

otherwise be unsuitable following long-term or frequent use. A qualified practitioner should be consulted.

up to 100	10000	-	A-3 P2
100+			Airline**

* - Continuous Flow ** - Continuous-flow or positive pressure demand A(All classes) = Organic vapours, B AUS or B1 = Acid gasses, B2 = Acid gas or hydrogen cyanide(HCN), B3 = Acid gas or hydrogen cyanide(HCN), E = Sulfur dioxide(SO2), G = Agricultural chemicals, K = Ammonia(NH3), Hg = Mercury, NO = Oxides of nitrogen, MB = Methyl bromide, AX = Low boiling point organic compounds(below 65 degC)

- Cartridge respirators should never be used for emergency ingress or in areas of unknown vapour concentrations or oxygen content.
- The wearer must be warned to leave the contaminated area immediately on detecting any odours through the respirator. The odour may indicate that the mask is not functioning properly, that the vapour concentration is too high, or that the mask is not properly fitted. Because of these limitations, only restricted use of cartridge respirators is considered appropriate.
- Cartridge performance is affected by humidity. Cartridges should be changed after 2 hr of continuous use unless it is determined that the humidity is less than 75%, in which case, cartridges can be used for 4 hr. Used cartridges should be discarded daily, regardless of the length of time used

Avoid inhalation.

SECTION 9 Physical and chemical properties

Information on basic physical and chemical properties

Appearance	Hazy, pigmented, transparent liquid; does not mix with	n water.	
Physical state	Liquid	Relative density (Water = 1)	1.12 @ 20C
Odour	Not Available	Partition coefficient n-octanol / water	Not Available
Odour threshold	Not Available	Auto-ignition temperature (°C)	~200
pH (as supplied)	6.5	Decomposition temperature	Not Available
Melting point / freezing point (°C)	-10	Viscosity (cSt)	Not Available
Initial boiling point and boiling range (°C)	>100	Molecular weight (g/mol)	Not Applicable
Flash point (°C)	>120	Taste	Not Available
Evaporation rate	Not Available	Explosive properties	Not Available
Flammability	Not Applicable	Oxidising properties	Not Available
Upper Explosive Limit (%)	Not Available	Surface Tension (dyn/cm or mN/m)	Not Available
Lower Explosive Limit (%)	Not Available	Volatile Component (%vol)	Not Available
Vapour pressure (kPa)	Not Available	Gas group	Not Available
Solubility in water	Immiscible	pH as a solution (1%)	Not Applicable
Vapour density (Air = 1)	Not Available	VOC g/L	Not Available

SECTION 10 Stability and reactivity

Reactivity	See section 7
Chemical stability	 Polymerisation may occur at elevated temperatures. Polymerisation may be accompanied by generation of heat as exotherm. Process is self accelerating as heating causes more rapid polymerisation. Exotherm may cause boiling with generation of acrid, toxic and flammable vapour. Polymerisation and exotherm may be violent if contamination with strong acids, amines or catalysts occurs. Polymerisation and exotherm of material in bulk may be uncontrollable and result in rupture of storage tanks. Polymerisation may occur if stabilising inhibitor becomes depleted by aging. Stabilising inhibitor requires dissolved oxygen to be present in liquid for effective action. Specific storage requirements must be met for stability on ageing and transport.
Possibility of hazardous reactions	See section 7
Conditions to avoid	See section 7
Incompatible materials	See section 7
Hazardous decomposition products	See section 5

SECTION 11 Toxicological information

Information on toxicological effects

Inhaled individuals, may howev

Evidence shows, or practical experience predicts, that the material produces irritation of the respiratory system, in a substantial number of individuals, following inhalation. In contrast to most organs, the lung is able to respond to a chemical insult by first removing or neutralising the irritant and then repairing the damage. The repair process, which initially evolved to protect mammalian lungs from foreign matter and antigens, may however, produce further lung damage resulting in the impairment of gas exchange, the primary function of the lungs. Respiratory tract irritation often results in an inflammatory response involving the recruitment and activation of many cell types, mainly derived from the vascular

	system. Inhalation of vapours may cause drowsiness and dizziness. This may be accompanied by narcosis, reduced alertness, loss of reflexes, lack of coordination and vertigo. Inhalation hazard is increased at higher temperatures. Acute effects from inhalation of high vapour concentrations may be chest and nasal irritation with coughing, sneezing, headache and even nausea.
Ingestion	Accidental ingestion of the material may be harmful; animal experiments indicate that ingestion of less than 150 gram may be fatal or may produce serious damage to the health of the individual.
Skin Contact	 The material produces mild skin irritation; evidence exists, or practical experience predicts, that the material either produces mild inflammation of the skin in a substantial number of individuals following direct contact, and/or produces significant, but mild, inflammation when applied to the healthy intact skin of animals (for up to four hours), such inflammation being present twenty-four hours or more after the end of the exposure period. Skin irritation may also be present after prolonged or repeated exposure; this may result in a form of contact dermatitis (nonallergic). The dermatitis is often characterised by skin redness (erythema) and swelling (oedema) which may progress to blistering (vesiculation), scaling and thickening of the epidermis. At the microscopic level there may be intercellular oedema of the spongy layer of the skin (spongiosis) and intracellular oedema of the epidermis. Entry into the blood-stream through, for example, cuts, abrasions, puncture wounds or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.
Eye	Evidence exists, or practical experience predicts, that the material may cause eye irritation in a substantial number of individuals and/or may produce significant ocular lesions which are present twenty-four hours or more after instillation into the eye(s) of experimental animals. Repeated or prolonged eye contact may cause inflammation characterised by temporary redness (similar to windburn) of the conjunctiva (conjunctivitis); temporary impairment of vision and/or other transient eye damage/ulceration may occur.
Chronic	Long-term exposure to respiratory irritants may result in disease of the airways involving difficult breathing and related systemic problems. Practical experience shows that skin contact with the material is capable either of inducing a sensitisation reaction in a substantial number of individuals, and/or of producing a positive response in experimental animals. Substances that can cause occupational asthma (also known as asthmagens and respiratory sensitisers) can induce a state of specific airway hyper-responsiveness via an immunological, irritant or other mechanism. Once the airways have become hyper-responsive, further exposure to the substance, sometimes even to tiny quantities, may cause respiratory symptoms. These symptoms can range in severity from a runny nose to asthma. Not all workers who are exposed to a sensitiser will become hyper-responsive and it is impossible to identify in advance who are likely to become hyper-responsive. Substances than can cuase occupational asthma should be distinguished from substances which may trigger the symptoms of asthma in people with pre-existing air-way hyper-responsiveness. The latter substances that can cuase occupational asthma should be prevented. Where this is not possible the primary aim is to apply adequate standards of control to prevent workers from becoming hyper-responsive. Activities giving rise to short-term peak concentrations should receive particular attention when risk management is being considered. Health surveillance is appropriate consultation with an occupational exposure may produce cumulative health effects involving organs or biochemical systems. Fully reacted polyurethane polymer is chemically inert. No exposure limits have been established in the U.S. by OSHA (Occupational Safety and Health Administration) or ACGIH (American Conference of Governmental Industrial Hygienists). It is not regulated by OSHA for carcinogenicity. Liquid resin blends containing residual isocryanates may contain hazardous or regulated components.

TOXICITY	IRRITATION
Not Available	Not Available
ΤΟΧΙΟΙΤΥ	IRRITATION
Dermal (rabbit) LD50: >3000 mg/kg ^[2]	Eye: no adverse effect observed (not irritating) ^[1]
Oral(Rat) LD50; >5000 mg/kg ^[1]	Skin (rabbit): 500 mg - mild
	Skin: no adverse effect observed (not irritating) ^[1]
ΤΟΧΙΟΙΤΥ	IRRITATION
Dermal (rabbit) LD50: >9100 mg/kg ^[1]	Eye: no adverse effect observed (not irritating) ^[1]
Inhalation(Rat) LC50; 55 mg/l4h ^[1]	Skin (rabbit): 10000 mg/kg (open)
Oral(Rabbit) LD50; >2720 mg/kg ^[1]	Skin: adverse effect observed (irritating) ^[1]
 Value obtained from Europe ECHA Registered Substances - Acute toxicity 2.* Value obtained from manufacturer's SDS. Unless otherwise specified data extracted from RTECS - Register of Toxic Effect of chemical Substances 	
	Not Available TOXICITY Dermal (rabbit) LD50: >3000 mg/kg ^[2] Oral(Rat) LD50; >5000 mg/kg ^[1] TOXICITY Dermal (rabbit) LD50: >9100 mg/kg ^[1] Inhalation(Rat) LC50; 55 mg/l4h ^[1] Oral(Rabbit) LD50; >2720 mg/kg ^[1] 1. Value obtained from Europe ECHA Registered Substantiant

Sensitisation may give severe responses to very low levels of exposure, in situations where exposure may occur.

UV (ultraviolet)/ EB (electron beam) acrylates are generally of low toxicity UV/EB acrylates are divided into two groups; "stenomeric" and "eurymeric" acrylates.

The first group consists of well-defined acrylates which can be described by a simple idealised chemical; they are low molecular weight species with a very narrow weight distribution profile. The eurymeric acrylates cannot be described by an idealised structure and may differ fundamentally between various suppliers; they are of

TETRAETHYLENE GLYCOL DIMETHACRYLATE

relatively high molecular weigh and possess a wide weight distribution. Stenomeric acrylates are usually more hazardous than the eurymeric substances. Stenomeric acrylates are also well defined which allows comparison and exchange of toxicity data - this allows more accurate classification.

The stenomerics cannot be classified as a group; they exhibit substantial variation.

The material may cause skin irritation after prolonged or repeated exposure and may produce a contact dermatitis (nonallergic). This form of dermatitis is often characterised by skin redness (erythema) and swelling epidermis. Histologically there may be intercellular oedema of the

	spongy layer (spongiosis) and intracellular oedema of	the epidermis.	
ETHYL METHACRYLATE	Inhalation (rat) LC50: >2700-3200/8h* * Rohm & Haas	Mouse cell mutagen Reproductive e	ffector in rats
TETRAETHYLENE GLYCOL DIMETHACRYLATE & ETHYL METHACRYLATE	The following information refers to contact allergens as Contact allergies quickly manifest themselves as conta eczema involves a cell-mediated (T lymphocytes) imm involve antibody-mediated immune reactions. The sign distribution of the substance and the opportunities for distributed can be a more important allergen than one clinical point of view, substances are noteworthy if the Asthma-like symptoms may continue for months or ev condition known as reactive airways dysfunction syndh compound. Key criteria for the diagnosis of RADS incl onset of persistent asthma-like symptoms within minut spirometry, with the presence of moderate to severe b lymphocytic inflammation, without eosinophilia, have a irritating inhalation is an infrequent disorder with rates Industrial bronchitis, on the other hand, is a disorder th particulate in nature) and is completely reversible after production. Where no "official" classification for acrylates and mett of contrary evidence. For example Monalkyl or monoarylesters of methacrylic acid should be Monoalkyl or monoarylesters of methacrylic acid should be Monoalkyl or monoarylesters of methacrylic acid should Review Division (HERD), Office of Toxic Substances (methacrylate moiety (CH2=CHCOO or CH2=C(CH3)C adequate testing. This position has now been revised and acrylates and	act eczema, more rarely as urticaria of nune reaction of the delayed type. Oth ifficance of the contact allergen is not contact with it are equally important. <i>J</i> with stronger sensitising potential wit y produce an allergic test reaction in r en years after exposure to the materi- rome (RADS) which can occur followi ude the absence of preceding respira- tes to hours of a documented exposu ronchial hyperreactivity on methachol also been included in the criteria for di- related to the concentration of and du- nat occurs as result of exposure due to r exposure ceases. The disorder is ch- hacrylates exists, there has been cau classified as R36/37/38 and R51/53 ald be classified as R36/37/38 a better understanding of the carcino OTS), of the US EPA previously conc iOO) should be considered to be a car	or Quincke's oedema. The pathogenesis of contact ter allergic skin reactions, e.g. contact urticaria, simply determined by its sensitisation potential: the A weakly sensitising substance which is widely h which few individuals come into contact. From a more than 1% of the persons tested. al ceases. This may be due to a non-allergenic ng exposure to high levels of highly irritating tory disease, in a non-atopic individual, with abrupt re to the irritant. A reversible airflow pattern, on line challenge testing and the lack of minimal agnosis of RADS. RADS (or asthma) following an uration of exposure to the irritating substance. o high concentrations of irritating substance (often aracterised by dyspnea, cough and mucus tious attempts to create classifications in the absence genic mechanism the Health and Environmental luded that all chemicals that contain the acrylate or irrinogenic hazard unless shown otherwise by
Acute Toxicity	✓	Carcinogenicity	×
Skin Irritation/Corrosion	✓	Reproductivity	×
0	✓	STOT - Single Exposure	✓
Serious Eye Damage/Irritation			
Serious Eye Damage/Irritation Respiratory or Skin sensitisation	*	STOT - Repeated Exposure	×

^{👽 –} Data available to make classification

SECTION 12 Ecological information

Toxicity

PLATEBOND Adhesion	Endpoint	Test Duration (hr)	Species	Value	Source
Promoter (3D SEMI FLEXIBLE RESIN)	Not Available	Not Available	Not Available	Not Available	Not Available
	Endpoint	Test Duration (hr)	Species	Value	Source
tetraethylene glycol	EC10(ECx)	72h	Algae or other aquatic plants	16mg/l	2
dimethacrylate	EC50	72h	Algae or other aquatic plants	32mg/l	2
	EC50	48h	Crustacea	391mg/l	2
ethyl methacrylate	Endpoint	Test Duration (hr)	Species	Value	Source
	NOEC(ECx)	96h	Algae or other aquatic plants	0.004mg/l	2
	EC50	96h	Algae or other aquatic plants	0.64mg/l	2
	EC50	72h	Algae or other aquatic plants	>72mg/l	2
	LC50	96h	Fish	100mg/l	2

Extracted from 1. IOCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 3. EPIWIN Suite V3.12 (QSAR) - Aquatic Toxicity Data (Estimated) 4. US EPA, Ecotox database - Aquatic Toxicity Data 5. ECETOC Aquatic Hazard Assessment Data 6. NITE (Japan) - Bioconcentration Data 7. METI (Japan) - Bioconcentration Data 8. Vendor Data

DO NOT discharge into sewer or waterways.

Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Persistence and degradability

Ingredient	Persistence: Water/Soil	Persistence: Air
tetraethylene glycol dimethacrylate	HIGH	HIGH
ethyl methacrylate	LOW	LOW

Bioaccumulative potential

Ingredient

Bioaccumulation

Continued...

ethyl methacrylate

PLATEBOND Adhesion Promoter (3D SEMI FLEXIBLE RESIN)

Ingredient	Bioaccumulation
tetraethylene glycol dimethacrylate	LOW (LogKOW = 1.3856)
ethyl methacrylate	LOW (LogKOW = 1.94)
Mobility in soil	
Ingredient	Mobility

SECTION 13 Disposal considerations

Waste treatment methods Product / Packaging disposal Product /

SECTION 14 Transport information

Labels Required

Marine Pollutant	NO
HAZCHEM	Not Applicable

Land transport (ADG): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

LOW (KOC = 18.7)

Air transport (ICAO-IATA / DGR): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

Sea transport (IMDG-Code / GGVSee): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

Transport in bulk according to Annex II of MARPOL and the IBC code

Not Applicable

Transport in bulk in accordance with MARPOL Annex V and the IMSBC Code

Product name	Group
tetraethylene glycol dimethacrylate	Not Available
ethyl methacrylate	Not Available

Transport in bulk in accordance with the ICG Code

Product name	Ship Type
tetraethylene glycol dimethacrylate	Not Available
ethyl methacrylate	Not Available

SECTION 15 Regulatory information

Safety, health and environmental regulations / legislation specific for the substance or mixture

tetraethylene glycol dimethacrylate is found on the following regulatory lists

Australian Inventory of Industrial Chemicals (AIIC)

ethyl methacrylate is found on the following regulatory lists

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) -Schedule 5 Australian Inventory of Industrial Chemicals (AIIC)

National Inventory Status

National Inventory	Status	
Australia - AIIC / Australia Non-Industrial Use	Yes	
Canada - DSL	Yes	
Canada - NDSL	No (tetraethylene glycol dimethacrylate; ethyl methacrylate)	
China - IECSC	Yes	
Europe - EINEC / ELINCS / NLP	Yes	

National Inventory	Status	
Japan - ENCS	Yes	
Korea - KECI	Yes	
New Zealand - NZIoC	Yes	
Philippines - PICCS	Yes	
USA - TSCA	Yes	
Taiwan - TCSI	Yes	
Mexico - INSQ	No (tetraethylene glycol dimethacrylate)	
Vietnam - NCI	No (tetraethylene glycol dimethacrylate)	
Russia - FBEPH	Yes	
Legend:	nd: Yes = All CAS declared ingredients are on the inventory No = One or more of the CAS listed ingredients are not on the inventory and are not exempt from listing(see specific ingredients in brai	

SECTION 16 Other information

Revision Date	01/11/2019
Initial Date	31/08/2018

SDS Version Summary

Version	Date of Update	Sections Updated
4.1.1.1	01/11/2019	One-off system update. NOTE: This may or may not change the GHS classification
4.1.2.1	26/04/2021	Regulation Change
4.1.3.1	03/05/2021	Regulation Change
4.1.4.1	06/05/2021	Regulation Change
4.1.5.1	10/05/2021	Regulation Change
4.2.5.1	14/05/2021	Synonyms

Other information

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

The SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

Definitions and abbreviations

PC-TWA: Permissible Concentration-Time Weighted Average
PC-STEL: Permissible Concentration-Short Term Exposure Limit
IARC: International Agency for Research on Cancer
ACGIH: American Conference of Governmental Industrial Hygienists
STEL: Short Term Exposure Limit
TEEL: Temporary Emergency Exposure Limit。
IDLH: Immediately Dangerous to Life or Health Concentrations
ES: Exposure Standard
OSF: Odour Safety Factor
NOAEL :No Observed Adverse Effect Level
LOAEL: Lowest Observed Adverse Effect Level
TLV: Threshold Limit Value
LOD: Limit Of Detection
OTV: Odour Threshold Value
BCF: BioConcentration Factors
BEI: Biological Exposure Index
AIIC: Australian Inventory of Industrial Chemicals
DSL: Domestic Substances List
NDSL: Non-Domestic Substances List
IECSC: Inventory of Existing Chemical Substance in China
EINECS: European INventory of Existing Commercial chemical Substances
ELINCS: European List of Notified Chemical Substances
NLP: No-Longer Polymers
ENCS: Existing and New Chemical Substances Inventory
KECI: Korea Existing Chemicals Inventory
NZIOC: New Zealand Inventory of Chemicals
PICCS: Philippine Inventory of Chemicals and Chemical Substances
TSCA: Toxic Substances Control Act
TCSI: Taiwan Chemical Substance Inventory
INSQ: Inventario Nacional de Sustancias Químicas
NCI: National Chemical Inventory
FBEPH: Russian Register of Potentially Hazardous Chemical and Biological Substances

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