

DENTSPLY DEGUFIX

ChemWatch Material Safety Data Sheet
Issue Date: Mon 18-Oct-2004

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Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME

DENTSPLY DEGUFIX

SYNONYMS

! 05/03

PRODUCT USE

Extremely strong, fast-setting, general purpose adhesive.

SUPPLIER

Company: Dentsply (Australia) Pty Ltd (ABN: 15 004 290 322)
Address:
11-21 Gilby Road
Mount Waverley
VIC, 3149
AUS
Telephone: +61 03 9538 8240
Emergency Tel: 0413 830 239
Fax: 03 9538 8260

Section 2 - HAZARDS IDENTIFICATION

STATEMENT OF HAZARDOUS NATURE

HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS.

According to the Criteria of NOHSC, and the ADG Code.

POISONS SCHEDULE

S5

RISK

Irritating to eyes, respiratory system and skin.
Cumulative effects may result following exposure*.
Possible respiratory and skin sensitiser*.
* (limited evidence)

SAFETY

Do not breathe gas/fumes/vapour/spray.
Avoid contact with skin.
Wear eye/face protection.
In case of contact with eyes, rinse with plenty of water and contact Doctor or Poisons Information Centre.

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Section 2 - HAZARDS IDENTIFICATION ...

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
ethyl cyanoacrylate	7085-85-0	>60

Section 4 - FIRST AID MEASURES

SWALLOWED

- Immediately give a glass of water.
- First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor.

For material bonded in the mouth seek medical/dental attention.

EYE

- Apply moist pad and maintain in position.
- DO NOT force separation.
- Transport to hospital, or doctor without delay.
- Minor eye contamination should be treated by copious washing with water or 1% sodium carbonate solution.
- Removal of contact lenses after eye injury should only be undertaken by skilled personnel.

SKIN

- IMMEDIATELY immerse affected areas in warm soapy water.
- DO NOT force bonded surfaces apart.
- Use a gentle rolling action to peel surfaces apart if possible.
- Seek medical attention without delay.
- A solvent such as acetone may be used (with care!) to separate bonded skin surfaces. NEVER use solvent near eyes, mouth, cuts, or abrasions.

INHALED

- 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.

NOTES TO PHYSICIAN

Treat symptomatically.

It should never be necessary to use surgical means to separate tissues which become accidentally bonded. The action of physiological fluids or warm soapy water will cause this adhesive to eventually fail.

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Section 4 - FIRST AID MEASURES ...

Section 5 - FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

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

FIRE FIGHTING

- Alert Fire Brigade and tell them location and nature of hazard.
- Wear full body protective clothing with breathing apparatus.
- Prevent, by any means available, spillage from entering drains or water course.
- Use water delivered as a fine spray to control 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

- Combustible.
- Slight fire hazard when exposed to heat or flame.
- Heating may cause expansion or decomposition leading to violent rupture of containers.
- On combustion, may emit toxic fumes of carbon monoxide (CO).
- May emit acrid smoke.
- Mists containing combustible materials may be explosive.

Combustion products include

carbon dioxide (CO₂)

nitrogen oxides (NO_x)

other pyrolysis products typical of burning organic material

May emit poisonous fumes.

May emit corrosive fumes.

FIRE INCOMPATIBILITY

Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result

HAZCHEM

None

Personal Protective Equipment

PERSONAL PROTECTION EQUIPMENT

Gas tight chemical resistant suit.

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Section 5 - FIRE FIGHTING MEASURES ...

Limit exposure duration to 1 BA set - 30 mins.

Section 6 - ACCIDENTAL RELEASE MEASURES

EMERGENCY PROCEDURES

MINOR SPILLS

- Remove all ignition sources.
- Clean up all spills immediately.
- Avoid breathing vapours and contact with skin and eyes.
- Control personal contact 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

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.

Personal Protective Equipment advice is contained in Section 8 of the MSDS.

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING

- Avoid all personal contact, including inhalation.
- Wear protective clothing when risk of exposure occurs.
- Use in a well-ventilated area.
- Prevent concentration in hollows and sumps.
- DO NOT enter confined spaces until atmosphere has been checked.
- Avoid smoking, naked lights or ignition sources.
- Avoid contact with incompatible materials.
- When handling, DO NOT eat, drink or smoke.
- Keep containers securely sealed when not in use.
- Avoid physical damage to containers.

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Section 7 - HANDLING AND STORAGE ...

- Always wash hands with soap and water after handling.
 - Work clothes should be laundered separately.
 - Use good occupational work practice.
 - Observe manufacturer's storing and handling recommendations.
 - Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions.
- DO NOT allow clothing wet with material to stay in contact with skin

SUITABLE CONTAINER

- Check that containers are clearly labelled
Packaging as recommended by manufacturer.

STORAGE INCOMPATIBILITY

Avoid reaction with oxidising agents
Avoid contact with
water
alcohols
selected amines
alkalies
peroxides
metal oxides

STORAGE REQUIREMENTS

- Store in original containers.
- Keep containers securely sealed.
- No smoking, naked lights or ignition sources.
- 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 storing and handling recommendations.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

EXPOSURE STANDARDS FOR MIXTURE

"Worst Case" computer-aided prediction of vapour components/concentrations:

Composite Exposure Standard for Mixture (TWA) (mg/m³): 1 mg/m³

If the breathing zone concentration of ANY of the components listed below is exceeded, "Worst Case" considerations deem the individual to be overexposed.

Component Breathing Zone ppm Breathing Zone mg/m³ Mixture Conc: (%)

Component	Breathing zone (ppm)	Breathing Zone (mg/m ³)	Mixture Conc (%)
ethyl cyanoacrylate	0.20	1.0000	100.0

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Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION ...

INGREDIENT DATA

ETHYL CYANOACRYLATE:

TLV TWA: 0.2 ppm [ACGIH]

TLV TWA: 0.2 ppm, 1 mg/m³

Designated S in List of MAK values: Danger of sensitization

MAK values, and categories and groups are those recommended within the Federal Republic of Germany

Odour Threshold: 1-3 ppm

PERSONAL PROTECTION

EYE

- Safety glasses with side shields.
- Chemical goggles.
- Contact lenses pose a special hazard; soft lenses may absorb irritants and all lenses concentrate them. DO NOT wear contact lenses.

HANDS/FEET

Wear chemical protective gloves, eg. PVC.

Wear safety footwear or safety gumboots, eg. Rubber

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.

OTHER

- Overalls.
- P.V.C. apron.
- Barrier cream.
- Skin cleansing cream.
- Eye wash unit.

RESPIRATOR

Respiratory protection is required when ANY "Worst Case" vapour-phase concentration is exceeded (see Computer Prediction in "Exposure Standards").

Protection Factor (Min)	Half-Face Respirator	Full-Face Respirator
10 x ES	A-AUS A-PAPR-AUS	- -
50 x ES	-	A-AUS A-PAPR-AUS
100 x ES	-	A-2 A-PAPR-2

^ - Full-face

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Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION ...

The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required. For further information consult site specific CHEMWATCH data (if available), or your Occupational Health and Safety Advisor.

ENGINEERING CONTROLS

Local exhaust ventilation usually required. If risk of overexposure exists, wear approved respirator. Correct fit is essential to obtain adequate protection. Supplied-air type respirator may be required in special circumstances. Correct fit is essential to ensure adequate protection. An approved self contained breathing apparatus (SCBA) may be required in some situations. Provide adequate ventilation in warehouse or closed storage area.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE

Clear colourless liquid with a sharp, irritating pungent odour. Moisture initiates polymerisation. Solidifies instantly in contact with water.

PHYSICAL PROPERTIES

Liquid.

Molecular Weight: Not Available
Melting Range (°C): Not Available
Solubility in water (g/L): Reacts
pH (1% solution): Not Applicable
Volatile Component (%vol): Not Available
Relative Vapour Density (air=1): 3 approx.
Lower Explosive Limit (%): Not Available
Autoignition Temp (°C): Not Available
State: Liquid

Boiling Range (°C): >200
Specific Gravity (water=1): 1.05-1.08 @ 20 degC
pH (as supplied): Not Applicable
Vapour Pressure (kPa): Not Available
Evaporation Rate: Not Available
Flash Point (°C): 87
Upper Explosive Limit (%): Not Available
Decomposition Temp (°C): Not Available

Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

CONDITIONS CONTRIBUTING TO INSTABILITY

- Presence of incompatible materials.
- Product is considered stable.
- Hazardous polymerisation will not occur.

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Section 11 - TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED

Uncured cyanoacrylates are difficult to swallow as saliva cures the surface of the adhesive with negligible bonding. The cured material is considered to be non-hazardous.

EYE

This material can cause eye irritation and damage in some persons. Exposure to cyanoacrylate vapours can cause discomfort and tears, nasal discharge, and blurred vision. The eyelids may be glued shut. Double vision and corneal scratching may occur.

SKIN

This material can cause inflammation of the skin on contact in some persons. The material may accentuate any pre-existing dermatitis condition. Skin contact is not thought to have harmful health effects (as classified under EC Directives); the material may still produce health damage following entry through wounds, lesions or abrasions. Small n-alkyl cyanoacrylates cause burns and irritation on skin contact. Exposure to their vapours can cause irritation, but usually only in dry conditions.

INHALED

The material can cause respiratory irritation in some persons. The body's response to such irritation can cause further lung damage. The material has NOT been classified by EC Directives or other classification systems as "harmful by inhalation". This is because of the lack of corroborating animal or human evidence. In the absence of such evidence, care should be taken nevertheless to ensure exposure is kept to a minimum and that suitable control measures be used, in an occupational setting to control vapours, fumes and aerosols. In low humidity, cyanoacrylate vapours are irritating to the respiratory system and eyes. High concentrations may cause inflammation of the lungs and other complications. They are much less dangerous in high humidity.

CHRONIC HEALTH EFFECTS

Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure. Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergenic condition known as reactive airways dysfunction syndrome (RADS) which can occur following exposure to high levels of highly irritating compound. Key criteria for the diagnosis of RADS include the absence of preceding respiratory disease, in a non-atopic individual, with abrupt onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. A reversible airflow pattern, on spirometry, with the presence of moderate to severe bronchial hyperreactivity on methacholine challenge testing and the lack of minimal lymphocytic inflammation, without eosinophilia, have also been

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Section 11 - TOXICOLOGICAL INFORMATION ...

included in the criteria for diagnosis of RADS. RADS (or asthma) following an irritating inhalation is an infrequent disorder with rates related to the concentration of and duration of exposure to the irritating substance. Industrial bronchitis, on the other hand, is a disorder that occurs as result of exposure due to high concentrations of irritating substance (often particulate in nature) and is completely reversible after exposure ceases. The disorder is characterised by dyspnea, cough and mucous production. There is some evidence that inhaling this product is more likely to cause a sensitisation reaction in some persons compared to the general population. There is limited evidence that, skin contact with this product is more likely to cause a sensitisation reaction in some persons compared to the general population. Respiratory sensitisation may result in allergic/asthma like responses; from coughing and minor breathing difficulties to bronchitis with wheezing, gasping. Dermatitis may result from prolonged exposures. On repeated and prolonged exposure by skin contact or inhalation, a small proportion of individuals develop allergic sensitivities. Chronic exposure to cyanides and certain nitriles may result in interference to iodine uptake by thyroid gland and its consequent enlargement. This occurs following metabolic conversion of the cyanide moiety to thiocyanate. Thyroid insufficiency may also occur as a result of metabolic conversion of cyanides to the corresponding thiocyanate. Exposure to small amounts of cyanide compounds over long periods are reported to cause loss of appetite, headache, weakness, nausea, dizziness, abdominal pain, changes in taste and smell, muscle cramps, weight loss, flushing of the face, persistent runny nose and irritation of the upper respiratory tract and eyes. These symptoms are not specific to cyanide exposure and therefore the existence of a chronic cyanide toxicity remains speculative. Repeated minor contact with cyanides produce a characteristic rash with itching, papules (small, superficial raised spots on the skin) and possible sensitisation. Concerns have been expressed that low-level, long term exposures may result in damage to the nerves of the eye.

Dentsply Degufix

Not available. Refer to individual constituents.
unless otherwise specified data extracted from RTECS - Register of Toxic Effects
of Chemical Substances

ETHYL CYANOACRYLATE:

TOXICITY

Oral (rat) LD50: >5000 mg/kg

Oral (rat) LD50: 0.18 ml/kg *

Dermal (rabbit) LD50: >2000 mg/kg

Dermal (rabbit) 0.22 ml/kg *

IRRITATION

Nil reported

[Manufacturer]

* [AIHAAP]

Based on the available oncogenicity data and without a better understanding of the carcinogenic mechanism the Health and Environmental Review Division (HERD), Office of Toxic Substances (OTS), of the US EPA previously concluded that all chemicals that contain the acrylate or methacrylate moiety ($\text{CH}_2=\text{CHCOO}$ or $\text{CH}_2=\text{C}(\text{CH}_3)\text{COO}$) should be considered to be a carcinogenic hazard unless shown otherwise by adequate testing.

This position has now been revised and acrylates and methacrylates are no longer de facto carcinogens.

Section 12 - ECOLOGICAL INFORMATION

DO NOT discharge into sewer or waterways.

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Section 13 - DISPOSAL CONSIDERATIONS

- Consult manufacturer for recycling options and recycle where possible .
 - Consult State Land Waste Management Authority for disposal.
 - Incinerate residue at an approved site.
 - Recycle containers if possible, or dispose of in an authorised landfill.
- Puncture containers to prevent re-use and bury at an authorised landfill.

Section 14 - TRANSPORTATION INFORMATION

Shipping Name:

None

Dangerous Goods Class: None

UN/NA Number: None

ADR Number: None

Packing Group: None

Labels Required:

Additional Shipping Information:

International Transport Regulations:

IMO: None

HAZCHEM

None

Section 15 - REGULATORY INFORMATION

POISONS SCHEDULE

S5

REGULATIONS

The following substances are found on Australian Inventory of Chemical Substances (AICS):
ethyl cyanoacrylate (CAS: 7085-85-0)

Section 16 - OTHER INFORMATION

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