



MATERIAL SAFETY DATA SHEET

Thermally Conductive Epoxy Adhesive

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

1.1 Product Identifiers

Product name : Thermally Conductive Epoxy Adhesive
 Brand : DML DM-TIM
 Product codes : DM-TIM-15340
 REACH No. : Not available. Annual tonnage does not require a registration.

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

Identified uses : Scientific research and development, professional use only, thermal interface material

1.3 Details of the supplier of the safety data sheet

Company : Dycotec Materials Ltd
 Unit 6 Stanier Road,
 Porte Marsh Industrial Estate,
 Calne, Wiltshire SN11 9PX UK
 Telephone : +44 (0) 1788 814025
 E-mail address : info@dycotecmaterials.com

1.4 Emergency telephone number

Emergency Phone No. : +44 (0) 7495 248908 Only available during office hours

SECTION 2: Hazards Identification

2.1 Classification of the substance or mixture Classification (EC 1272/2008)

Short-term (acute) aquatic hazard (Category 2), H411
 Long-term (chronic) aquatic hazard (Category 2), H411.
 Skin sensitization (Category 1), H317 – May cause allergic skin reaction
 Eye irritation (Category 2), H319 – Causes Serious eye irritation.
 Skin corrosion/irritation (Category 1C), H314 - Causes severe skin burns and eye damage.
 Skin Corrosion/Irritation Hazard (Category 2), H315 - Causes skin irritation
 Damage to Fertility (Category 1B), H360FD – May damage fertility. May damage the unborn child.

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 Label elements



Signal word : Warning
 Hazard statements : H314 - Causes severe skin burns and eye damage.
 H315 – Causes skin irritation
 H317 – May Cause an allergic reaction
 H319 – Causes Serious eye irritation.
 H360FD – May damage fertility. May damage the unborn child.
 H411 – Toxic to aquatic life with long lasting effects
 EUH205 – Contains epoxy constituents. May produce an allergic reaction.

Precautionary statements : P202 – Do not handle until all safety precautions have been read and understood.
 P261 - Avoid breathing gas, fume, vapors or spray
 P264 – Wash Skin thoroughly after handling
 P272 – Contaminated work clothing should not be allowed out of the workplace.
 P273 – Avoid release to the environment
 P280 – Wear protective gloves/protective clothing/ eye protection/ face protection.
 P302 + P352 – IF ON SKIN: wash with soapy water.
 P303+P361+P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
 P304+P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P305 + P351 + P338 – IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 P308 + P313 - IF exposed or concerned: Get medical advice/ attention.
 P333 + P313 - If skin 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
 P391 – Collect spillage
 P501 – Dispose off contents/container in accordance with local/regional/national/international regulations

2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substance

Not applicable

3.2 Mixtures

Epoxy Resin		<20 %
CAS #: 1675-84-3, 28064-14-4		
Classification	H315, H319, H317, H411	
Aluminium Nitride		> 85%
CAS #: 24304-00-5	EC #: 246-140-8	
Classification	H400, H410	
Epoxy Accelerator		< 5 %
CAS #: 38668-46-1,		
Classification	H360FD	
Epoxy Resin #2		< 5 %
CAS #: 30499-70-8		
Classification	H360F, H314, H317, H411	

The full text for all Hazard Statements are displayed in Section 16.

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

General information

Remove affected person from source of contamination. Remove contaminated clothing. First aid personnel must be aware of own risk during rescue. Consult a physician. Show this safety data sheet to the doctor in attendance.

Inhalation

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

Ingestion

Never give anything by mouth to an unconscious person. Rinse mouth with plenty of water. Consult a physician

Skin contact

Wash off with soap and plenty of water. Consult a physician

Eye contact

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician

4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and or in section 11.

4.3 Indication of any immediate medical attention and special treatment needed

No data available

SECTION 5: FIRE-FIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide

5.2 Special hazards arising from the substance or mixture

Toxic fumes may be released

5.3 Advice for firefighters

Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

5.4 Further information

The product itself does not burn under normal storage condition.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust. For personal protection see section 8.

6.2 Environmental precautions

Avoid release to the environment.

6.3 Methods and materials for containment and cleaning up

For containment : Collect spillage.

Methods for cleaning up : Mechanically recover the product.

Other information : Dispose of materials or solid residues at an authorized site

6.4 Reference to other sections

For disposal see section 13.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

7.2 Conditions for safe storage, including any incompatibilities

Store in a well-ventilated place. Keep refrigerated (4 – 7 °C).

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters – Components with workplace control parameters

No occupational exposure limits known.

8.2 Exposure Controls**Protective equipment****Appropriate engineering controls**

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Eye/face protection

Use approved safety glasses with side shields. Eyewear complying with an approved standard should be worn if a risk assessment indicate eye contact is possible. The following protection should be worn: Chemical splash goggles or face shield.

Hand protection

Handle with gloves. Gloves must be inspected prior to use. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it. Wear protective gloves made of the following material: Nitrile rubber. The most suitable glove should be chosen in consultation with the glove supplier/manufacturer, who can provide information about the breakthrough time of the glove material. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Other skin and body protection

Wear appropriate clothing to prevent any possibility of liquid contact and repeated or prolonged vapour contact

Hygiene measures

Do not smoke in work area. Wash hands thoroughly after handling. Promptly remove any clothing that becomes contaminated. When using do not eat, drink or smoke. Contaminated clothing should be placed in a closed container for disposal of decontamination. Warn cleaning personnel of any hazardous properties of the product.

Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face particlerespirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**9.1 Information on basic physical and chemical properties**

Appearance	Paste
Colour	Grey
Odour	No data available
Odour Threshold	No data available
pH	No data available
Melting / freezing point	No data available
Initial boiling point and boiling range	No data available
Flash point	No data available
Evaporation rate	No data available
Flammability (solid, gas)	No data available
Upper/lower flammability or explosive limits	No data available
Vapour pressure	No data available
Vapour density	No data available
Relative density	No data available
Water solubility	No data available
Partition coefficient	No data available
Auto-ignition temperature	No data available
Decomposition temperature	No data available
Viscosity	See TDS
Explosive properties	No data available
Oxidizing properties	No data available

9.1 Other information

No data available

SECTION 10: STABILITY AND REACTIVITY**10.1 Reactivity**

The product is non-reactive under normal conditions of use, storage and transport.

10.2 Chemical stability

Stable under normal conditions.

10.3 Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use

10.4 Conditions to avoid

See section 7 – Handling and storage

10.5 Incompatible materials

Strong oxidizing agents, Strong acids, Strong alkalis.

10.6 Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - Nitrogen oxides (NO_x), Aluminum oxide

Other decomposition products - No data available

In the event of fire: see section 5

SECTION 11: TOXICOLOGICAL INFORMATION

Component / CAS #		
Epoxy Resin 1675-84-3, 28064-14-4	Oral rat Dermal Rabbit Inhalation Rat	LD ₅₀ > 2,000 mg/kg LD ₅₀ > 2000 mg/Kg LC50 4hr > 5 mg/l (Dust/Mist)
Aluminium Nitride 24304-00-5	LD50 oral rat	3450 mg/kg (OECD Test Guideline 401)
Epoxy Accelerator 38668-46-1	ATE oral	500 mg/kg

Skin corrosion/irritation:

May cause allergic skin reaction.

Causes skin sensitization.

Causes severe skin burns.

Serious eye damage/eye irritation:

Causes eye irritation.

Causes severe eye damage.

Respiratory or skin sensitization:

No data available

Germ cell mutagenicity:

No data available

Carcinogenicity

This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification.

Reproductive toxicity:

No data available

Specific target organ toxicity – single exposure:

No data available

Specific target organ toxicity – repeated exposure:

No data available

Aspiration hazard:

No data available

Additional Information:

RTECS - No data available.

SECTION 12: ECOLOGICAL INFORMATION**12.1 : Toxicity**

Ecology – general:

Toxic to aquatic life with long lasting effects. Before neutralisation, the product may represent a danger to aquatic organisms. Very toxic to aquatic life.

Hazardous to the aquatic environment, short-term (acute):

Toxic to aquatic life.

Hazardous to the aquatic environment, long-term (chronic)

Toxic to aquatic life with long lasting effects.

Not rapidly degradable

Component / CAS #		
Aluminium Nitride 24304-00-5	LC50 fish	0.57 mg/l – 96 h (OECD Test Guideline 203)
Epoxy Resin 1675-84-3, 28064-14-4	LC ₅₀ Fish EC ₅₀ Daphnia EC ₅₀ Green Algae	3.6 mg.l – 96 hr 2.8 mg/l – 48 hr <10 mg/l

12.2 Persistence and degradability

No additional information available

12.3 Bioaccumulative potential

No additional information available

12.4 Mobility in soil

No additional information available

12.5 Results of PBT and vPvB assessment

No additional information available

12.6 Other adverse effects

No additional information available

SECTION 13: DISPOSAL CONSIDERATIONS**13.1 Waste treatment methods**

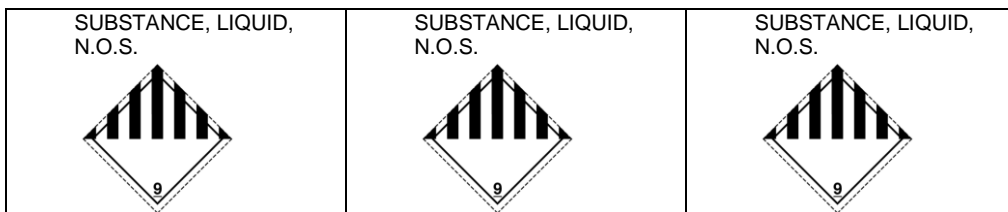
Waste treatment methods : Dispose of contents/container in accordance with licensed collector's sorting instructions.

SECTION 14: TRANSPORT INFORMATION**14.1 UN number**

ADR/RID	IMO	IATA
UN3082	UN3082	UN 3082

14.2 UN proper shipping name

ADR/RID	IMO	IATA
ENVIRONMENTALLY HAZARDOUS	ENVIRONMENTALLY HAZARDOUS	ENVIRONMENTALLY HAZARDOUS

**14.3 Transport hazard class(es)**

ADR/RID	IMO	IATA
9	9	9

14.4 Packaging group

ADR/RID	IMO	IATA
III	III	III

14.5 Environmental hazards

ADR/RID	IMO Marine pollutant	IATA
no	Yes	no

14.6 Special precautions for user

Read safety instructions, SDS and emergency procedures before handling

SECTION 15: REGULATORY INFORMATION

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

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

15.2 Chemical Safety Assessment

For this product a chemical safety assessment was not carried out.

SECTION 16: OTHER INFORMATION

General Information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is finished without warranty and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

This is an experimental product. This safety data sheet is for product trials only!

Hazard statements in full

Short-term (acute) aquatic hazard (Category 2), H411

Long-term (chronic) aquatic hazard (Category 2), H411.

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Skin corrosion/irritation (Category 1C), H314 - Causes severe skin burns and eye damage.

Skin Corrosion/Irritation Hazard (Category 2), H315 - Causes skin irritation

Damage to Fertility (Category 1B), H360FD – May damage fertility. May damage the unborn child.