MATERIAL SAFETY DATA SHEET

Thermally Conductive Phase Change Material

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

1.1 Product Identifiers

Product name	:	Thermally Condyctive Phase Change Material
Brand	:	DML DM-TIM
Product codes	:	DM-TIM-15203
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 1), H400
Long-term (chronic) aquatic hazard (Category 1), H410
For the full text of the H-Statements mentioned in this Section, see Section 16.
Very toxic to aquatic life with long lasting effects. Very toxic to aquatic life.

2.2 Label elements

Signal word	:	Warning
Hazard statements	:	H410 – Very toxic to aquatic life with long lasting effects H400 – Very toxic to aquatic life
Precautionary statements	:	P273 – Avoid release to the environment P301 +P310 – IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician P331 - Do NOT induce vomiting P391 – Collect spillage P405 – Store locked up 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

Aluminium Nitride		< 85%
CAS #: 24304-00-5	EC #: 246-140-8	
Classification	H400, H410	

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 penty 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 symptons 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 cool.

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 breakthough 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 orsmoke. Contaminiated 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 (NOx), Aluminum oxide
Other decomposition products - No data available
In the event of fire: see section 5

SECTION 11: TOXICOLOGICAL INFORMATION

Component / CAS #		
Aluminium Nitride 24304-00-5	LD50 oral rat	3450 mg/kg (OECD Test Guideline 401)

Skin corrosion/irritation:
No data available
Serious eye damage/eye irritation:
No data available
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)

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	IMDG	IATA
-	-	-

14.2 UN proper shipping name

ADR/RID	IMDG	IATA
-		

14.3 Transport hazard class(es)

ADR/RID	IMDG	IATA
-		

14.4 Packaging group

ADR/RID	IMDG	IATA
-		

14.5 Environmental hazards

ADR/RID	IMDG Marine pollutant	IATA
no	no	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 emplayees. This informationis finished without warranty and any use of the product not in conformance with this Material Safety Data Aheet, 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 Toxic to aquatic life with long lasting effects
Long-term (chronic) aquatic hazard (Category 2), H411 Toxic to aquatic life with long lasting effects