Safety Data Sheet

Document group:	25-2226-6	**Version number:**	3.00
Revision date:	31/05/2013	**Supersedes date:**	22/05/2013

Transportation version number: 2.00 (04/06/2013)

This Safety Data Sheet has been prepared in accordance with the REACH Regulation (EC) 1907/2006 and its modifications.

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

1.1. Product identifier

3M Thermally Conductive Grease 2033 and TPS 235

Product identification numbers

70-0715-4507-6 70-0715-4510-0 GE-7000-3598-5

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

Identified uses

Thermal Interface Material

1.3. Details of the supplier of the substance or mixture

Address: 3M United Kingdom PLC, 3M Centre, Cain Road, Bracknell, Berkshire, RG12 8HT.

E Mail: tox.uk@mmm.com
Website: www.3M.com/uk

1.4. Emergency telephone number

+44 (0)1344 858 000

SECTION 2: Hazard identification

2.1. Classification of the substance or mixture

Dangerous substances(67/548/EEC)/preparations(1999/45/EC) directive
Indication of danger

Dangerous for the environment; N; R50/53

For full text of R phrases, see Section 16.

2.2. Label elements

Dangerous substances(67/548/EEC)/preparations(1999/45/EC) directive

Symbol(s)

Dangerous for the environment

Contains:

No ingredients are assigned to the label.

Risk phrases
R50/53 Very toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment.

Safety phrases
S61 Avoid release to the environment. Refer to special instructions/safety data sheets.

2.3. Other hazards

None known.

SECTION 3: Composition/information on ingredients

Ingredient	CAS Nbr	EU Inventory	% by Wt	Classification
Silicon Carbide	409-21-2	EINECS 206-991-8	40 - 60	
Aluminium	7429-90-5	EINECS 231-072-3	20 - 30	F:R11-15 - Nota T (EU) Flam. Sol. 1, H228; Water-react. 2, H261 - Nota T (CLP)
Zinc oxide	1314-13-2	EINECS 215-222-5	5 - 25	N:R50/53 (EU) Aquatic Acute 1, H400,M=10; Aquatic Chronic 1, H410,M=1 (CLP)
Polyol Esters	Trade Secret		2 - 10	
Polymeric Dispersant	Trade Secret		2 - 6	
2-Methoxy-1-methylethyl acetate	108-65-6	EINECS 203-603-9	1 - 3	R10 (EU) Flam. Liq. 3, H226 (CLP)

Please see section 16 for the full text of any R phrases and H statements referred to in this section
Please refer to section 15 for the any applicable Notas that have been applied to the above components

For information on ingredient occupational exposure limits or PBT or vPvB status, see sections 8 and 12 of this SDS

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation
Remove person to fresh air. If you feel unwell, get medical attention.

Skin contact
Wash with soap and water. If signs/symptoms develop, get medical attention.

Eye contact
Flush with large amounts of water. Remove contact lenses if easy to do. Continue rinsing. If signs/symptoms persist, get medical attention.

If swallowed
Rinse mouth. If you feel unwell, get medical attention.

4.2. Most important symptoms and effects, both acute and delayed
See Section 11.1 Information on toxicological effects

4.3. Indication of any immediate medical attention and special treatment required
Not applicable

SECTION 5: Fire-fighting measures

5.1. Extinguishing media
In case of fire: Use a fire fighting agent suitable for ordinary combustible material such as water or foam.

5.2. Special hazards arising from the substance or mixture
None inherent in this product.

Hazardous Decomposition or By-Products

Substance	Condition
Carbon monoxide.	During combustion.
Carbon dioxide.	During combustion.

5.3. Advice for fire-fighters
No unusual fire or explosion hazards are anticipated.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
Ventilate the area with fresh air. Refer to other sections of this SDS for information regarding physical and health hazards, respiratory protection, ventilation, and personal protective equipment.

6.2. Environmental precautions
Avoid release to the environment. For larger spills, cover drains and build dykes to prevent entry into sewer systems or bodies of water.

6.3. Methods and material for containment and cleaning up
Working from around the edges of the spill inward, cover with bentonite, vermiculite, or commercially available inorganic absorbent material. Mix in sufficient absorbent until it appears dry. Remember, adding an absorbent material does not remove a toxic, corrosivity or flammability hazard. Remember, adding an absorbent material does not remove a physical, health, or environmental hazard. Collect as much of the spilled material as possible. Place in a closed container approved for transportation by appropriate authorities. Clean up residue with an appropriate solvent selected by a qualified and authorised person. Ventilate the area with fresh air. Read and follow safety precautions on the solvent label and Safety Data Sheet. Seal the container. Dispose of collected material as soon as possible.

6.4. Reference to other sections
Refer to Section 8 and Section 13 for more information

SECTION 7: Handling and storage

7.1. Precautions for safe handling
Avoid breathing dust/fume/gas/mist/vapours/spray. Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Avoid release to the environment. Avoid contact with oxidising agents (eg. chlorine, chromic acid etc.)

7.2. Conditions for safe storage including any incompatibilities
Store away from oxidising agents.

7.3. Specific end use(s)
See information in Section 7.1 and 7.2 for handling and storage recommendations. See Section 8 for exposure controls and personal protection recommendations.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limits

Ingredient	CAS Nbr	Agency	Limit type	Additional comments
2-Methoxy-1-methylethyl acetate	108-65-6	Health and Safety Comm. (UK)	TWA:274 mg/m3(50 ppm);STEL:548 mg/m3(100 ppm)	Skin Notation
Silicon Carbide	409-21-2	Health and Safety Comm. (UK)	TWA(Inhalable):10 mg/m3;TWA(respirable):4 mg/m³	
Aluminium	7429-90-5	Health and Safety Comm. (UK)	TWA(as inhalable dust):10 mg/m³;TWA(as respirable dust):4 mg/m³	

Health and Safety Comm. (UK) : UK Health and Safety Commission
TWA: Time-Weighted-Average
STEL: Short Term Exposure Limit
ppm: parts per million
mg/m³: milligrams per cubic metre
CEIL: Ceiling

8.2. Exposure controls

8.2.1. Engineering controls
Use general dilution ventilation and/or local exhaust ventilation to control airborne exposures to below relevant Exposure Limits and/or control dust/fume/gas/mist/vapours/spray. If ventilation is not adequate, use respiratory protection equipment.

8.2.2. Personal protective equipment (PPE)

Eye/face protection

The following eye protection(s) are recommended: Safety glasses with side shields.

Skin/hand protection

Select and use gloves and/or protective clothing to prevent skin contact based on the results of an exposure assessment.
Consult with your glove and/or protective clothing manufacturer for selection of appropriate compatible materials.
Gloves made from the following material(s) are recommended: Neoprene.
Nitrile rubber.

Respiratory protection
None required.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	Liquid.
Specific Physical Form:	Paste
Appearance/Odour	Grey Paste
Odour threshold	*No data available.*
pH	*Not applicable.*
Boiling point/boiling range	*No data available.*
Melting point	*Not applicable.*
Flammability (solid, gas)	Not applicable.
Explosive properties	Not classified
Oxidising properties	Not classified
Flash point	No flash point [*Test Method:*Closed Cup]
Autoignition temperature	*Not applicable.*
Flammable Limits(LEL)	*Not applicable.*
Flammable Limits(UEL)	*Not applicable.*
Vapour pressure	*No data available.*
Relative density	2.56 [*Ref Std:*WATER=1]
Water solubility	Nil
Solubility- non-water	*No data available.*
Partition coefficient: n-octanol/water	*No data available.*
Evaporation rate	*No data available.*
Vapour density	*No data available.*
Decomposition temperature	*No data available.*
Viscosity	>=50 Pa-s
Density	2.56 g/ml

9.2. Other information

SECTION 10: Stability and reactivity

10.1 Reactivity
This material may be reactive with certain agents under certain conditions - see the remaining headings in this section

10.2 Chemical stability
Stable.

10.3 Possibility of hazardous reactions
Hazardous polymerisation will not occur.

10.4 Conditions to avoid
Not determined

10.5 Incompatible materials
Strong oxidising agents.

10.6 Hazardous decomposition products

Substance	Condition
None known.	

SECTION 11: Toxicological information

The information below may not be consistent with the material classification in Section 2 if specific ingredient classifications are mandated by a competent authority. In addition, toxicological data on ingredients may not be reflected in the material classification and/or the signs and symptoms of exposure, because an ingredient may be present below the threshold for labelling, an ingredient may not be available for exposure, or the data may not be relevant to the material as a whole.

11.1 Information on Toxicological effects

Signs and Symptoms of Exposure

Based on test data and/or information on the components, this material may produce the following health effects:

Inhalation
Respiratory tract irritation: Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain.

Skin contact
Contact with the skin during product use is not expected to result in significant irritation.

Eye contact
Contact with the eyes during product use is not expected to result in significant irritation.

Ingestion
Harmful if swallowed.
Gastrointestinal irritation: Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhoea.

Toxicological Data

Acute Toxicity

Name	Route	Species	Value
Overall product	Ingestion		Data not available or insufficient for classification; calculated ATE1,843.6 mg/kg
Silicon Carbide			Data not available or insufficient for classification
Aluminium	Ingestion	Rat	LD50 > 730 mg/kg
Zinc oxide			Data not available or insufficient for classification
Polyol Esters			Data not available or insufficient for classification
2-Methoxy-1-methylethyl acetate			Data not available or insufficient for classification

ATE = acute toxicity estimate

Skin Corrosion/Irritation

Name	Species	Value
Silicon Carbide		Data not available or insufficient for classification
Aluminium		Data not available or insufficient for classification
Zinc oxide		Data not available or insufficient for

		classification
Polyol Esters		Data not available or insufficient for classification
2-Methoxy-1-methylethyl acetate		Data not available or insufficient for classification

Serious Eye Damage/Irritation

Name	Species	Value
Silicon Carbide		Data not available or insufficient for classification
Aluminium		Data not available or insufficient for classification
Zinc oxide		Data not available or insufficient for classification
Polyol Esters		Data not available or insufficient for classification
2-Methoxy-1-methylethyl acetate		Data not available or insufficient for classification

Skin Sensitisation

Name	Species	Value
Silicon Carbide		Data not available or insufficient for classification
Aluminium		Data not available or insufficient for classification
Zinc oxide		Data not available or insufficient for classification
Polyol Esters		Data not available or insufficient for classification
2-Methoxy-1-methylethyl acetate		Data not available or insufficient for classification

Respiratory Sensitisation

Name	Species	Value
Silicon Carbide		Data not available or insufficient for classification
Aluminium		Data not available or insufficient for classification
Zinc oxide		Data not available or insufficient for classification
Polyol Esters		Data not available or insufficient for classification
2-Methoxy-1-methylethyl acetate		Data not available or insufficient for classification

Germ Cell Mutagenicity

Name	Route	Value
Silicon Carbide		Data not available or insufficient for classification
Aluminium	In vivo	Mutagenic
Zinc oxide		Data not available or insufficient for classification
Polyol Esters		Data not available or insufficient for classification
2-Methoxy-1-methylethyl acetate		Data not available or insufficient for classification

Carcinogenicity

Name	Route	Species	Value

Silicon Carbide			Data not available or insufficient for classification
Aluminium			Data not available or insufficient for classification
Zinc oxide			Data not available or insufficient for classification
Polyol Esters			Data not available or insufficient for classification
2-Methoxy-1-methylethyl acetate			Data not available or insufficient for classification

Reproductive Toxicity

Reproductive and/or Developmental Effects

Name	Route	Value	Species	Test result	Exposure Duration
Silicon Carbide		Data not available or insufficient for classification			
Aluminium		Data not available or insufficient for classification			
Zinc oxide		Data not available or insufficient for classification			
Polyol Esters		Data not available or insufficient for classification			
2-Methoxy-1-methylethyl acetate		Data not available or insufficient for classification			

Target Organ(s)

Specific Target Organ Toxicity - single exposure

Name	Route	Target Organ(s)	Value	Species	Test result	Exposure Duration
Silicon Carbide			Data not available or insufficient for classification			
Aluminium	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for classification		Irritation Positive	
Zinc oxide			Data not available or insufficient for classification			
Polyol Esters			Data not available or insufficient for classification			
2-Methoxy-1-methylethyl acetate			Data not available or insufficient for classification			

Specific Target Organ Toxicity - repeated exposure

Name	Route	Target Organ(s)	Value	Species	Test result	Exposure Duration
Silicon Carbide	Inhalation	pneumoconiosis	Some positive data exist, but the data are not		HHA	

			sufficient for classification			
Aluminium	Ingestion	bone, teeth, nails, and/or hair	Some positive data exist, but the data are not sufficient for classification	Human	NOAEL N/A	
Aluminium	Ingestion	hematopoietic system | central nervous system	Some positive data exist, but the data are not sufficient for classification		NOAEL N/A	
Zinc oxide			Data not available or insufficient for classification			
Polyol Esters			Data not available or insufficient for classification			
2-Methoxy-1-methylethyl acetate			Data not available or insufficient for classification			

Aspiration Hazard

Name	Value
Silicon Carbide	Not an aspiration hazard
Aluminium	Not an aspiration hazard
Zinc oxide	Not an aspiration hazard
Polyol Esters	Not an aspiration hazard
2-Methoxy-1-methylethyl acetate	Not an aspiration hazard

Please contact the address or phone number listed on the first page of the SDS for additional toxicological information on this material and/or its components.

SECTION 12: Ecological information

The information below may not be consistent with the material classification in Section 2 if specific ingredient classifications are mandated by a competent authority. Additional information leading to material classification in Section 2 is available upon request. In addition, environmental fate and effects data on ingredients may not be reflected in this section because an ingredient is present below the threshold for labelling, an ingredient is not expected to be available for exposure, or the data is considered not relevant to the material as a whole.

12.1. Toxicity

Acute aquatic hazard:
GHS Acute 1: Very toxic to aquatic life.

Chronic aquatic hazard:
GHS Chronic 2: Toxic to aquatic life with long lasting effects.

No product test data available.

Material	CAS Nbr	Organism	Type	Exposure	Test endpoint	Test result
Zinc oxide	1314-13-2	Green algae	Laboratory	72 hours	EC50	0.037 mg/l
Zinc oxide	1314-13-2	Water flea	Laboratory	48 hours	LC50	2.6 mg/l
Zinc oxide	1314-13-2		Laboratory	96 hours	LC50	0.182 mg/l
Zinc oxide	1314-13-2	Green algae	Laboratory	72 hours	NOEC	0.017 mg/l

12.2. Persistence and degradability
No test data available.

12.3 : Bioaccumulative potential

Material	CAS Nbr	Test type	Duration	Study Type	Test result	Protocol
Zinc oxide	1314-13-2	Laboratory BCF - Other	56 days	Bioaccumulation factor	<217	OECD 305E - Bioaccumulation flow-through fish test

12.4. Mobility in soil
Please contact manufacturer for more details

12.5. Results of the PBT and vPvB assessment

No information available at this time, contact manufacturer for more details

12.6. Other adverse effects
No information available.

SECTION 13: Disposal considerations

13.1 Waste treatment methods
Dispose of contents/ container in accordance with the local/regional/national/international regulations

Incinerate in a permitted waste incineration facility. Proper destruction may require the use of additional fuel during incineration processes. Empty drums/barrels/containers used for transporting and handling hazardous chemicals (chemical substances/mixtures/preparations classified as Hazardous as per applicable regulations) shall be considered, stored, treated & disposed of as hazardous wastes unless otherwise defined by applicable waste regulations. Consult with the respective regulating authorities to determine the available treatment and disposal facilities.

The coding of a waste stream is based on the application of the product by the consumer. Since this is out of the control of 3M, no waste code(s) for products after use will be provided. Please refer to the European Waste Code (EWC - 2000/532/EC and amendments) to assign the correct waste code to your waste stream. Ensure national and/or regional regulations are complied with and always use a licensed waste contractor.

EU waste code (product as sold)
160304 Inorganic wastes other than those mentioned in 16 03 03

SECTION 14: Transportation information

70-0715-4507-6, 70-0715-4510-0

ADR/RID: UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.SLIMITED QUANTITY, (ZINC OXIDE), 9., III, (E), ADR Classification Code: M7.
IMDG-CODE: UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., (ZINC OXIDE), 9., III, LIMITED QUANTITY, EMS: FA,SF.
ICAO/IATA: UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., (ZINC OXIDE), 9., III, fish and tree marking may be required (> 5kg/l).

GE-7000-3598-5

ADR/RID: UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE,LIQUID,N.O.S.LIMITED QUANTITY,

(ZINC OXIDE), 9., III, (E), ADR Classification Code: M6.
IMDG-CODE: UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE,LIQUID, N.O.S., (ZINC OXIDE), 9., III, LIMITED QUANTITY, Marine Pollutant, (ZINC OXIDE), EMS: FA,SF.
ICAO/IATA: UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE,LIQUID,N.O.S., (ZINC OXIDE), 9., III, fish and tree marking may be required (> 5kg/l).

SECTION 15: Regulatory information

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

Global inventory status
Contact 3M for more information. The components of this product are in compliance with the chemical notification requirements of TSCA.

15.2. Chemical Safety Assessment
Not applicable

SECTION 16: Other information

List of relevant H statements

H226	Flammable liquid and vapour.
H228	Flammable solid.
H261	In contact with water releases flammable gas.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.

List of relevant R-phrases

R10	Flammable.
R11	Highly flammable.
R15	Contact with water liberates highly flammable gases.
R50/53	Very toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment.

Revision information:
Revision Changes:
Section 1: Product identification numbers was modified.
Section 8: Skin protection - protective clothing text was added.

DISCLAIMER: The information on this Safety Data Sheet is based on our experience and is correct to the best of our knowledge at the date of publication, but we do not accept any liability for any loss, damage or injury resulting from its use (except as required by law). The information may not be valid for any use not referred to in this Data Sheet or use of the product in combination with other materials. For these reasons, it is important that customers carry out their own test to satisfy themselves as to the suitability of the product for their own intended applications.

3M United Kingdom MSDSs are available at www.3M.com/uk