MATERIAL SAFETY DATA SHEET

The SDS is prepared according to the MOEL Public notice No 2020-130

Revision date 2024-Aug-13 Revision number 3.07
MSDS Number: AA17649-0000000002

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

A Product identifier

Product name	BISOMER® BDDMA
Product code	745803
Synonyms	Tetramethylene dimethacrylate

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

Recommended use [RU]	Monomer for special polymers
Uses advised against	None known

C Details of the supplier of the safety data sheet

Importer	Paragon JND #1609-2, (Ace Gasan Tower), 121, Digital-ro, Geumcheon-gu, Seoul, Republic of Korea 08505
Supplier	GEO Specialty Chemicals UK Ltd Charleston Road, Hardley, Hythe Southampton, Hampshire SO45 3ZG United Kingdom Phone: +44 (0)23 80894666 Fax No: +44 (0)23 80243113
Responsibility Statement	For further information, please contact safety-data-sheet-fp@geosc.com

D Emergency telephone number

Emergency telephone	24 Hour Emergency Phone Number GEO Specialty Chemicals UK Ltd +44 (0)23 80891806 Paragon JND Tel No: +82-2-6297-5000 Fax No: +82-2-6297-5004

2. HAZARDS IDENTIFICATION

A Classification of the substance or mixture

Skin sensitization	Category 1B

B Label elements

Signal word	Warning
Hazard statements	H317 - May cause an allergic skin reaction

Precautionary Statements - EU (§28, 1272/2008)

Prevention	Wear protective gloves Avoid breathing dust/fume/gas/mist/vapors/spray
Response	IF ON SKIN: Wash with plenty of soap and water If skin irritation or rash occurs: Get medical advice/attention Take off contaminated clothing and wash before reuse
Disposal	Dispose of contents/container to an approved waste disposal plant

C Other hazards which do not result in classification

Not applicable

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance

Chemical name	Common name	CAS No	Korea INV No	Weight-%
Tetramethylene dimethacrylate	Tetramethylene dimethacrylate	2082-81-7	Non-Listed Substance	> 98%

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

4. FIRST AID MEASURES

A Description of first aid measures

General advice	In case of adverse health effects seek medical advice.
Eye contact	Rinse immediately with plenty of running water (for 10 minutes). Seek medical attention if necessary.
Skin contact	Rinse with running water and soap. If skin irritation occurs: Get medical advice/attention.
Ingestion	Rinse mouth.
Inhalation	Remove to fresh air.

B Most important symptoms and effects, both acute and delayed

Most important symptoms and effects	Itching. rash. Hives.

C Indication of any immediate medical attention and special treatment needed

Note to physicians	Treat symptomatically.

5. FIRE-FIGHTING MEASURES

A Extinguishing media

Suitable extinguishing media	Water spray jet, Alcohol-resistant foam, Extinguishing powder, Carbon dioxide.
Extinguishing media which must not be used for safety reasons	High pressure waterjet.

B Special hazards arising from the substance or mixture

Special Hazard	Formation of toxic gases is possible during heating or in fires. The product may undergo spontaneous polymerization at high temperatures. Polymerization is exothermic and may cause damage to the container and/or release of thermal decomposition products.

C Advice for firefighters

Special protective equipment for firefighters	Full protective clothing and approved self-contained breathing apparatus required for firefighting personnel.
Firefighting measures	Cool exposed containers with water spray after extinguishing fire.

6. ACCIDENTAL RELEASE MEASURES

A Personal precautions, protective equipment and emergency procedures

Personal precautions	Wear suitable protective clothing and gloves. Ensure adequate ventilation. Use Appropriate protective equipment. Evacuate area. Keep people away from and upwind of spill/leak.

B Environmental precautions

Environmental precautions	Do not empty into drains/surface water/ground water. Inform authorities in the event of product spillage to water courses or sewage systems.

C Methods and material for containment and cleaning up

Methods for cleaning up	Remove with liquid-absorbing material (sand, peat, sawdust). Dispose of contaminated material as waste according to Section 13.

D Reference to other sections

See Section 12 for additional Ecological Information

7. HANDLING AND STORAGE

A Precautions for safe handling

Advice on safe handling	Ensure that eyewash stations and safety showers are close to the workstation location Use only in well-ventilated areas Use good industrial hygiene practices in handling this material. Avoid contact with eyes, skin and clothing Do not eat, drink or smoke when using this product

Take off contaminated clothing and wash before reuse

B Conditions for safe storage, including any incompatibilities

Technical measures and storage conditions: The product is stabilized against spontaneous polymerization before delivery. However, if the permissible storage time or storage temperature are greatly exceeded the product may polymerize.
Keep only in the original container in a cool, well-ventilated place
Store at temperatures not exceeding 25 °C/ 77 °F
Store in a dry place. Store away from direct heat or sunlight.
Tanks should preferably contain no dead spaces where the product can be trapped and polymerize. Internal structural members should therefore be kept to a minimum and tanks should be welded.
Storage tank vents, especially those fitted with flame arrestors, should be inspected regularly for polymer fouling which can arise from vapor phase polymerization.
Do not store together with oxidants.
Do not store together with reductants.

Materials to avoid: Reaction with oxidants. Reaction with reducing agents.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

A Control parameters

Occupational exposure limit value

Chemical name	CAS No	National occupational exposure limits	ACGIH TLV
Tetramethylene dimethacrylate	2082-81-7	No data available	No data available

B Appropriate engineering controls

Environmental exposure controls: No data available

C Personal Protective Equipment

Eye/face Protection: Tight sealing safety goggles.

Hand Protection: Polychloroprene gloves. Coating thickness 1.1 mm. Level 5 > 240 min breakthrough time.

Skin and body protection: Wear suitable protective clothing

Respiratory protection: Use only in well-ventilated areas. Filter A2 is recommended in cases of prolonged exposure.

Other personal protection data: Eyewash fountains and safety showers must be easily accessible.

Hygiene measures: Handle in accordance with good industrial hygiene and safety practice

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance
Physical state: liquid
Color: colorless

Odor: characteristic

Odor threshold: No data available

pH: No data available

Melting / freezing point	-23 °C / -9.4 °F - OECD Test No. 102/EU Method A.1
Boiling point / boiling range	> 250.0 °C / °F - OECD Test No. 103/EU Method A.2
Flash point	139 °C / 282.2 °F - EU Method A.9: Closed Cup
Evaporation rate	No data available
Flammability (solid, gas)	No data available
Flammability Limit in Air	
Upper flammability limit	No data available
Lower flammability limit	No data available
Vapor pressure	0.1 Pa @ 20 °C - OECD Test No. 104
Vapor density	No data available
Specific gravity	No data available
Solubility(ies)	
Solubility (water)	243 mg/L @ 20 °C - OECD Test No. 105
Solubility in other solvents	No data available
Partition coefficient: n-octanol/water	log Pow = 3.1 - OECD Test No. 117/EU Method A.8
Autoignition temperature	290 °C / 554 °F - EU method A.15
Viscosity	
Kinematic viscosity	5.29 mm2/s @ 20 °C - OECD Test No. 114
Dynamic viscosity	No data available
Molecular weight	226 g/mol

10. STABILITY AND REACTIVITY

A Reactivity

Reactivity: Polymerizes readily unless inhibited. Polymerization is highly exothermic and, if not controlled, may be violent.

B Chemical stability

Chemical stability: Stable under normal conditions of handling, use and transportation. Periodic air sparging in storage will assist long term stability.

C Possibility of hazardous reactions

Hazardous polymerization: May occur if inhibitor is depleted or if exposed to high temperature.

D Conditions to avoid

Conditions to avoid: This product contains a peroxidation inhibitor. To maintain inhibitor activity, oxygen must not be eliminated from the atmosphere above the product. Avoid radical forming substances (metal-ions, peroxides). Avoid heating. If prolonged excursions above the recommended storage temperature occur, then the rate of inhibitor depletion could accelerate, leading to an increased risk of polymerization. In these circumstances it is recommended that the inhibitor level be checked periodically using ASTM procedure D 3125, and more inhibitor added if depletion is observed.

E Incompatible materials

Materials to avoid	Reaction with oxidants. Reaction with reducing agents.

F Hazardous decomposition products

Hazardous decomposition products	Carbon oxides. Irritating vapors.

11. TOXICOLOGICAL INFORMATION

A Information on likely routes of exposure

Acute health hazard

Eye contact	May cause slight irritation.
Skin contact	May cause sensitization by skin contact. Repeated or prolonged skin contact may cause allergic reactions with susceptible persons.
Ingestion	Low toxicity by this route.
Inhalation	None known.

B Health hazards

Acute toxicity - Product Information

Oral LD50	> 10000 mg/kg (rat)
Dermal LD50	> 3000 mg/kg (rabbit) - Analogy
Inhalation LC50	No data available

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
Tetramethylene dimethacrylate 2082-81-7 (> 98%)	--	> 3000 mg/kg (Rabbit)	--

Skin corrosion/irritation	Slightly irritating, does not require labelling Method: OECD Test No. 404: Acute Dermal Irritation/Corrosion
Serious eye damage/eye irritation	Slightly irritating, does not require labelling Method: OECD Test No. 405: Acute Eye Irritation/Corrosion
Sensitization	Dermal sensitization: sensitizing Method: OECD Test No. 429: Skin Sensitization: Local Lymph Node Assay
Germ cell mutagenicity	Not mutagenic Method: OECD Test No. 471: Bacterial Reverse Mutation Test
Carcinogenicity	Not Carcinogenic
Reproductive toxicity	No toxicity to reproduction NOAEL = 300 mg/kg body weight/day Method: OECD Test No. 422: Combined Repeated Dose Toxicity Study with the Reproduction/Developmental Toxicity Screening Test
Specific target organ toxicity - Single exposure	The substance or mixture is not classified as specific target organ toxicant, single exposure. (Expert assessment)
Specific target organ toxicity - Repeated exposure	The substance or mixture is not classified as specific target organ toxicant, repeated exposure. (Expert assessment)
Aspiration hazard	No data available

12. ECOLOGICAL INFORMATION

A Toxicity

Acute aquatic toxicity - Product Information

Fish	No data available
Crustacea	NOEC = 7.51 mg/L Method: OECD Test No. 211: Daphnia magna Reproduction Test
Algae/aquatic plants	No data available

B Persistence and degradability

Persistence and degradability	This substance is not considered to be persistent, bioaccumulating nor toxic (PBT)
Ultimate biodegradation	Readily biodegradable. Method: OECD Test No. 310.

C Bioaccumulative potential

Bioaccumulative potential	This substance is not considered to be persistent, bioaccumulating nor toxic (PBT)

D Mobility in soil

Mobility	No data available

E Results of PBT and vPvB assessment

PBT and vPvB assessment	This substance is not considered to be persistent, bioaccumulating nor toxic (PBT) This substance is not considered to be very persistent nor very bioaccumulating (vPvB)
Results of PBT and vPvB assessment	No data available

F Other adverse effects

Other information	No other ecological studies have been carried out on this product.

13. DISPOSAL CONSIDERATIONS

A Waste treatment methods

Disposal of wastes	Waste incineration with the approval of the responsible local authority.
Contaminated packaging	Disposal must be made according to official regulations. Packaging that cannot be cleaned are to be disposed of in the same manner as the product.

14. TRANSPORT INFORMATION

US DOT Not applicable

14.1 DOT UN/NA Number
14.2. UN proper shipping name
14.3 Hazard class
14.4 Packing group
14.5 Marine pollutant

Land transport (ADR/RID) Not applicable
14.1 UN number
14.2. UN proper shipping name
14.3 Hazard class
14.4 Packing group
14.5 Environmental hazard

Air transport (ICAO-TI / IATA-DGR) Not applicable
14.1 UN number
14.2. UN proper shipping name
14.3 Hazard class
14.4 Packing group
14.5 Environmental hazard

Sea transport (IMDG) Not applicable
14.1 UN number
14.2. UN proper shipping name
14.3 Hazard class
14.4 Packing group
14.5 Environmental hazard

14.6 Special precautions for user
Not applicable

15. REGULATORY INFORMATION

A Industrial Safety and Health Act

Article 37 - Harmful Substances Prohibited for Manufacturing, Importing, Transferring, or Supplying
None of the components are listed.

Article 38 - Harmful substances requiring permission
None of the components are listed.

Hazardous substances subject to control
Not applicable

Harmful agents subject to workers requiring health examination
Not applicable

Harmful agents subject to work environment monitoring
Not applicable

Occupational exposure limits
See section 8 for more information

B Chemicals Control Act

Not applicable

C Safety Control of Dangerous Substances Act

Not applicable

D Waste Control Act

Dispose of contents/container in accordance with all local, regional, national, and international regulations.

E Other information

International Inventories

Australia (AICS)
All ingredients are on the inventory or exempt from listing

Canada (DSL)
All ingredients are on the inventory or exempt from listing

Canada (NDSL)
None of the ingredients are on the inventory.

China (IECSC)
All ingredients are on the inventory or exempt from listing

European Union (EINECS)
All ingredients are on the inventory or exempt from listing

European Union (ELINCS)
None of the ingredients are on the inventory.

Japan (ENCS)
All ingredients are on the inventory or exempt from listing

EC-Label
All ingredients are on the inventory or exempt from listing

Philippines (PICCS)
All ingredients are on the inventory or exempt from listing

United States (TSCA)
All ingredients are on the inventory or exempt from listing

Legend

AIIC - Australian Inventory of Industrial Chemicals
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
IECSC - China Inventory of Existing Chemical Substances
EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

16. OTHER INFORMATION

Product code	745803
Revision date	2024-Aug-13
MSDS Number:	AA17649-0000000002

Key or legend to abbreviations and acronyms used in the safety data sheet
NAV - Not available

Additional information
BISOMER® is a registered trademark of GEO Specialty Chemicals UK Ltd.

GEO Specialty Chemicals UK Ltd. has appointed Knoel Korea Limited as the sole representative of the Act on the Registration and Evaluation of Chemicals.

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