SAFETY DATA SHEET

Revision date 2015-08-07 Revision number 1.01

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

1.1 Product identifier

Product name	BISOMER® HEMA
Product code	745757
Synonyms	2-Hydroxyethyl methacrylate

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

Recommended use [RU]	Monomer for special polymers
Uses advised against	Mixtures containing unreacted liquid monomer intended to come into contact with skin or nails

1.3 Details of the supplier of the safety data sheet

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

1.4 Emergency telephone number

Emergency telephone	24 Hour Emergency Phone Number GEO Specialty Chemicals UK Ltd +44 (0)23 80891806

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Skin Corrosion/Irritation	Category 2
Serious eye damage/eye irritation	Category 2
Skin sensitization	Category 1

2.2 Label elements

Signal word	WARNING
Hazard statements	H315 - Causes skin irritation H317 - May cause an allergic skin reaction H319 - Causes serious eye irritation
Precautionary statements	
Prevention	P262 - Do not get in eyes, on skin, or on clothing P280 - Wear protective gloves/protective clothing/eye protection/face protection
Response	P303 + P361 + P353 - IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
Hazard components for labeling	2-Hydroxyethyl methacrylate

2.3 Other hazards which do not result in classification

None known

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance

Component	Common name	CAS-No	weight-%
2-Hydroxyethyl methacrylate	Hydroxyethyl methacrylate (HEMA)	868-77-9	> 97%

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

4.1 Description of first aid measures

General advice	In case of adverse health effects seek medical advice.
Eye contact	Remove contact lenses, if worn. Immediately flush with plenty of water for at least 10 minutes, holding eyelids apart to ensure flushing of the entire surface. Seek medical advice immediately.
Skin contact	Wash off immediately with soap and plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing before reuse. If skin irritation occurs: Get medical advice/attention.
Ingestion	If swallowed: Drink 1 or 2 glasses of water. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Get medical attention.
Inhalation	Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

4.2 Most important symptoms and effects, both acute and delayed

Most important symptoms and effects	No information available.
Chronic effects	Repeated or prolonged exposure may result in liver or kidney damage.

4.3 Indication of any immediate medical attention and special treatment needed

Note to physicians	Treat symptomatically.

5. FIRE-FIGHTING MEASURES

5.1 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.

5.2 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.

5.3 Advice for firefighters

Special protective equipment for firefighters	Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear.
Firefighting measures	Cool exposed containers with water spray after extinguishing fire.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions	Wear suitable protective clothing and gloves.

6.2 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.

6.3 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.

6.4 Reference to other sections

See Section 12 for additional Ecological Information

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Advice on safe handling

Avoid contact with eyes, skin and clothing
Avoid breathing vapor or mist
Use only in well-ventilated areas
Personal protective equipment comprising: suitable protective gloves, safety goggles and protective clothing.
Wash thoroughly after handling
Ensure that eyewash stations and safety showers are close to the workstation location.

7.2 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 reductants.
Do not store together with oxidants.

Materials to avoid

Reaction with reducing agents.
Reaction with oxidants.
Acids or alkalies.
Free radical producing initiators.
Primary and Secondary Amines.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Occupational exposure limit value

Component	Ministry of Labor (Republic of Korea, 3/2012)	ACGIH TLV
2-Hydroxyethyl methacrylate 868-77-9	NAV	NAV

Legend NAV - Not available

8.2 Appropriate engineering controls

Environmental exposure controls No information available

8.3 Personal Protective Equipment

Eye/face Protection If splashes are likely to occur: Chemical 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 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 information available
pH	< 7.0
Melting / freezing point	No information available
Boiling point / boiling range	213 °C / 415 °F - OECD Test No. 103
Flash point	106 °C / 222 °F - Directive 84/449/EEC, A.9
Evaporation rate	No information available
Flammability (solid, gas)	No information available
Flammability Limit in Air	
Upper flammability limit	No information available
Lower flammability limit	No information available
Vapor pressure	0.08 mbar - OECD Test No. 104
Vapor density	>= 1
Specific gravity	No information available
Solubility(ies)	
Solubility (water)	> 100 g/L @ 20 °C
Solubility in other solvents	No information available
Partition coefficient: n-octanol/water	0.42 @ 25 °C - OECD Test No. 107
Autoignition temperature	375 °C / 707 °F - Directive 84/449/EEC, A.15
Decomposition temperature	No information available
Viscosity	
Kinematic viscosity	No information available
Dynamic viscosity	6 mPa s @ 20 °C - OECD Test No. 114
Molecular weight	130 g/mol
Density	1.0720 g/cm^3 - ASTM D 1298-99

10. STABILITY AND REACTIVITY

10.1 Reactivity

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

10.2 Chemical stability

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

10.3 Possibility of hazardous reactions

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

10.4 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.

10.5 Incompatible materials

Materials to avoid	Reaction with reducing agents. Reaction with oxidants. Acids or alkalies. Free radical producing initiators. Primary and Secondary Amines.

10.6 Hazardous decomposition products

Hazardous decomposition products	Carbon monoxide. Carbon dioxide. Irritating vapors.

11. TOXICOLOGICAL INFORMATION

11.1 Information on likely routes of exposure

Acute health hazard

Inhalation	Vapors may be irritating.
Eye contact	Causes eye irritation.
Skin contact	May cause sensitization by skin contact.
Ingestion	May be harmful if swallowed.

11.2 Health hazards

Acute toxicity - Product Information

Oral LD50	> 5000 mg/kg body weight (Experiment)
Dermal LD50	> 5000 mg/kg body weight (Experiment)
Inhalation LC50	No information available
Skin corrosion/irritation	Not irritating Method: OECD Test No. 404: Acute Dermal Irritation/Corrosion
Serious eye damage/eye irritation	Irritating Method: OECD Test No. 405: Acute Eye Irritation/Corrosion
Sensitization	Dermal sensitization: sensitizing (Experiment)

Germ cell mutagenicity	No information available
Mutagenicity	**In vitro mutagenicity:** not mutagenic Method: OECD Test No. 471: Bacterial Reverse Mutation Test
Carcinogenicity	Not classifiable as a human carcinogen Method: OECD Test No. 451: Carcinogenicity Studies
Reproductive toxicity	No toxicity to reproduction Method: OECD Test No. 416: Two-Generation Reproduction Toxicity
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 aspiration toxicity classification (Expert assessment)

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Acute aquatic toxicity

Fish	LC50 (96 hour) > 100 mg/L Method: OECD Test No. 203: Fish, Acute Toxicity Test
Crustacea	EC50 (48 hour): 380 mg/L (*Daphnia magna*) Method: OECD Test No. 202
Algae/aquatic plants	EC50 (72 hour): 836 mg product/L. Method: OECD 201 / DIN 38412, part 9

Chronic aquatic toxicity

Fish	NOEC > 10 - <= 100 mg product/L. (analogy)
Crustacea	NOEC > 10 - <= 100 mg product/L Method: OECD Test No. 211: Daphnia magna Reproduction Test
Bacteria toxicity	EC50: 2204 mg/L. Method: Chronic bacterial toxicity according to test method DIN 38 412

12.2 Persistence and degradability

Persistence and degradability	This substance is not considered to be persistent, bioaccumulating nor toxic (PBT). (Expert assessment)
Ultimate biodegradation	Readily and rapidly degradable. All organic substances contained in the product achieve > 60% BOD/COD or CO2 liberation, or > 70% DOC reduction in tests for ease of degradability. Threshold values for 'readily degradable' (e.g. to OECD method 301) are reached.

12.3 Bioaccumulative potential

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

12.4 Mobility in soil

Mobility	No information available

12.5 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)

12.6 Other adverse effects

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

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Disposal of wastes	Dispose of according to regulations.
Contaminated packaging	Packaging that cannot be cleaned are to be disposed of in the same manner as the product. Disposal must be made according to official regulations.

14. TRANSPORT INFORMATION

DOT (US) Not regulated
14.1 UN number
14.2 Proper shipping name
14.3 Hazard class
14.4 Packing group
14.5 Environmental hazard

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

Inland waterway transport (ADN) Not regulated
14.1 UN number
14.2 Proper shipping name
14.3 Hazard class
14.4 Packing group
14.5 Environmental hazard

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

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

14.6 Special precautions for user
No information available

15. REGULATORY INFORMATION

15.1 Industrial Safety and Health Law

ISHA Article 37 None of the components are listed.

ISHA Article 38 None of the components are listed.

Component	ISHA - Substances to be controlled - Acids and bases	ISHA - Substances to be controlled - Metals	ISHA - Substances to be controlled - Organic Substances
2-Hydroxyethyl methacrylate	Not applicable	Not applicable	Not applicable

Component	ISHA - Harmful factors subject to special health check-up - Acids and bases	ISHA - Harmful factors subject to special health check-up - Metals	ISHA - Harmful factors subject to special health check-up - Organic Substances
2-Hydroxyethyl methacrylate	Not applicable	Not applicable	Not applicable

Component	ISHA - Harmful agents subject to Work Environment Measuring - Acids and bases	ISHA - Harmful agents subject to Work Environment Measuring - Metals	ISHA - Harmful agents subject to Work Environment Measuring - Organic Substances
2-Hydroxyethyl methacrylate	Not applicable	Not applicable	Not applicable

Occupational exposure limits See section 8 for more information

15.2 Toxic Chemicals Control Law

Component	TCCA - Toxic Chemicals	TCCA - Observational Chemicals	TCCA Article 32 (Banned)	TCCA Article 32 (Restricted)	Accident Precaution Chemicals
2-Hydroxyethyl methacrylate	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable

15.3 Dangerous Substances Safety Management Act

Not classified

15.4 Wastes Management

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

15.5 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

EINECS (European Inventory of Existing Chemical Substances)
All ingredients are on the inventory or exempt from listing

ELINCS (European List of Notified Chemical Substances)
None of the ingredients are on the inventory.

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

South Korea (KECL)
All ingredients are on the inventory or exempt from listing

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

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

Legend
AICS - Australian Inventory of Chemical Substances
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
IECSC - China Inventory of Existing 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	745757
Revision date	2015-08-07

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.

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