MATERIAL SAFETY DATA SHEET

Urease 50% Glycerol (DTT Process)

Section 1: Product and Company Identification

Material name **Urease 50% Glycerol (DTT Process)**
Synonyms Urease
Product No. 70-6734-01
Product description Liquid preparation containing glycerol, enzyme (protein), acetylated amino acid, polyethylene glycol, preservatives and salt.
Product use Enzyme reagent for laboratory use.

Emergency Telephone Numbers
Americas: +1-760-476-3962
Europe, Middle East & Africa: +1-760-476-3961
Asia Pacific: +1-760-476-3960
Access code: 333512

Manufacturer/Distributor
Sekisui Diagnostics (UK) Ltd
50 Gibson Drive
Kings Hill, West Malling
Kent ME19 4AF UK
Phone: 44 (0) 1732 220022

Corporate Headquarters/Distributor
Sekisui Diagnostics LLC
31 New York Avenue
Framingham, MA 01701
USA
Phone: 508-661-1835

Section 2: Hazards Identification

OSHA regulatory status This preparation is classified as hazardous under U.S. OSHA 29 CFR 1910.1200; E.C. Directive 1999/45/EC; Canadian R.S. 1985, c. H-3; U.K. CHIP 2002 No. 1689; and/or U.N. GHS ST/SG/AC 10/30. Refer to Sec. 15, Regulatory Information, for details regarding hazard classification.
None of the components present in this preparation at concentrations equal to or greater than 0.1% are listed by IARC, NTP, OSHA or ACGIH as a carcinogen.

Precautionary statements CAUTION! The chemical, physical and toxicological properties of this preparation have not been thoroughly characterized. Avoid contact with eyes and skin. Do not ingest or inhale. Preparation appearance: clear, yellowish liquid.

Potential health effects:

- **Routes of exposure** Occupational exposure routes may include eye contact, skin contact and inhalation.
- **Eyes** No data available. Eye exposure may cause irritation, redness and itching.
- **Skin** No data available. Skin contact may cause irritation, dryness and redness.
- **Inhalation** No data available. Although there is no evidence that the enzyme(s) in this preparation induces specific respiratory hypersensitivity, all proteins are potential respiratory allergens and may result in respiratory sensitization in certain individuals after repeated and/or prolonged inhalation exposure, producing mild to severe symptoms similar to pollen allergy or asthma, including mucous membrane or eye irritation, itching of the skin or eyes, sneezing, nasal or sinus congestion, coughing, and tightness in the chest. These symptoms may develop as late as 12 hours after exposure.
- **Ingestion** No data available.
- **Chronic effects** No data available. Repeated inhalation may result in respiratory sensitization.
- **Target organs** Unknown.

Potential environmental effects No data available.

Section 3: Composition / Information on Ingredients

Ingredient Name	CAS #	EC #	% (wt/wt)
Glycerol	56-81-5	200-289-5	40 - 60
EC R-Phrases: None	**EC Hazard Class:** None		
Urease	9002-13-5	232-656-0	20 - 30
EC R-Phrases: None	**EC Hazard Class:** None		
BES	10191-18-1	233-465-5	5 - 15
EC R-Phrases: None	**EC Hazard Class:** None		
Acetylcysteine	616-91-1	210-498-3	1 - 10
EC R-Phrases: None	**EC Hazard Class:** None		
Polyethylene glycol	25322-68-3	500-038-2 NLP	1 - 10
EC R-Phrases: None	**EC Hazard Class:** None		
Methylparaben	99-76-3	202-785-7	< 1
EC R-Phrases: R36/37/38, R43	**EC Hazard Class:** Xi		
Dithiothreitol	27565-41-9	248-531-9	< 0.1
EC R-Phrases: R22	**EC Hazard Class:** Xn		
Ethylenediaminetetraacetic acid, disodium, dihydrate	6381-92-6	Not Assigned	< 0.1
EC R-Phrases: None	**EC Hazard Class:** None		
Propylparaben	94-13-3	202-307-7	< 0.1
EC R-Phrases: None	**EC Hazard Class:** None		

NOTE - Urease - Enzyme source: Jack bean, Enzyme Commission number: 3.5.1.5
NOTE - Polyethylene glycol = PEG 8000

Section 4: First Aid Measures

First aid procedures:

Eye contact	Immediately flush eyes with plenty of tepid water for 15 minutes while separating eyelids with fingers. Remove contact lenses if worn. Obtain medical attention if needed or if symptoms, such as redness or irritation persist.
Skin contact	In case of contact, flush skin with cool water and remove contaminated clothing. Obtain medical attention if needed or if irritation or other symptoms develop.
Inhalation	If inhaled, move from exposure area to fresh air. Seek medical attention if breathing becomes difficult or if cough or other symptoms develop.
Ingestion	In case of ingestion, contact a poison control center or physician for instructions.

Section 5: Fire Fighting Measures

Flammable properties	Solution may be combustible.
Suitable extinguishing media	Use extinguishing media suitable for surrounding fire, such as carbon dioxide, chemical foam, dry chemical or water spray.
Unsuitable extinguishing media	Unknown.
Specific hazards arising from the chemical	Glycerol decomposes on heating producing corrosive fumes of acrolein.
Standard protective equipment and precautions for firefighters	Firefighters should wear NIOSH-approved or equivalent Self-Contained Breathing Apparatus and full protective gear.

Section 6: Accidental Release Measures

Personal precautions	Avoid physical contact with material and avoid aerosol inhalation. Wear Personal Protective Equipment (PPE) as indicated in Section 8. Wash hands thoroughly after handling.
Environmental precautions	No information available.
Methods and materials for containment and clean-up	Absorb spill with inert material/sorbent. Decontaminate the spill site following standard procedures. Dispose of materials in accordance with all applicable federal, state, local and provincial environmental regulations, per Section 13.

Section 7: Handling and Storage

Handling	Follow good laboratory hygiene practices. See Section 8, Engineering Controls. Minimize contact and contamination of personal clothing and skin. Wash hands thoroughly after handling.
Storage	Store at 2 - 8°C (36 - 46°F). Do not store with incompatible substances; see Section 10.

Section 8: Exposure Controls / Personal Protection

Exposure guidelines:

ACGIH - Threshold Limits Values - Time Weighted Averages (TLV-TWA)		
Glycerol	56-81-5	10 mg/m3 TWA
Australia - Occupational Exposure Standards - TWAs		
Glycerol	56-81-5	10 mg/m3 TWA
Canada - Quebec - Occupational Exposure Limits - TWAEVs		
Glycerol	56-81-5	10 mg/m3 TWAEV (mist)
Germany - DFG - Recommended Exposure Limits - Ceilings (Peak Limitations)		
Glycerol	56-81-5	100 mg/m3 Peak (inhalable fraction)
Polyethylene glycol	25322-68-3	8000 mg/m3 Peak (inhalable fraction, average molecular weight 200-600)
Germany - DFG - Recommended Exposure Limits - MAK Values		
Glycerol	56-81-5	50 mg/m3 MAK (inhalable fraction)
Polyethylene glycol	25322-68-3	1000 mg/m3 MAK (inhalable fraction, average molecular weight 200-600)
Germany - TRGS 900 - Occupational Exposure Limits - TWAs		
Polyethylene glycol	25322-68-3	1000 mg/m3 TWA (exposure factor 8, inhalable fraction)
Israel - Occupational Exposure Limits - TWAs		
Glycerol	56-81-5	10 mg/m3 TWA
Korea - Occupational Exposure Limits - TWAs		
Glycerol	56-81-5	10 mg/m3 TWA
U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs)		
Glycerol	56-81-5	15 mg/m3 TWA (total); 5 mg/m3 TWA (respirable fraction)

Engineering controls	Use in well ventilated areas. If handling large quantities or there is a potential for dust or aerosol generation, use local exhaust ventilation. Facilities storing or using this material should be equipped with an eyewash fountain and a safety shower.

Personal protective equipment:

Eye / face protection	Wear appropriate protective chemical safety glasses.
Skin protection	Wear lab coat or other protective garments. Remove contaminated clothing promptly.
Hand protection	Wear chemical resistant protective gloves.
Respiratory protection	A respirator is not required under normal conditions of use.
General	Follow company-specific safety procedures.

Section 9: Physical and Chemical Properties

Appearance	Clear, yellowish liquid
Odor	Not available
pH	Not available
Melting point/Freezing point	Not applicable / Not available
Boiling point	Not available
Evaporation rate	Not available
Flash point	Not available
Flammability/explosivity limits in air, upper	Not available
Flammability/explosivity limits in air, lower	Not available
Vapor pressure	Not available
Solubility	Water-soluble
Partition coefficient (n-octanol/water)	Not available
Auto-ignition temperature	Not applicable

Section 10: Chemical Stability and Reactivity Information

Possibility of hazardous reactions	Hazardous polymerization will not occur.
Chemical stability	Stable under ordinary conditions of use and storage. See Section 7.
Conditions to avoid	Unknown.
Incompatible materials	

Physical Properties - Chemical Incompatibilities

Glycerol	56-81-5	Polymerizes at approximately 300 °F. Incompatible with acetic anhydride, potassium permanganate, strong acids, caustics, aliphatic amines, isocyanates, oxidizers.

Hazardous decomposition products	Thermal decomposition may lead to release of irritating gases and vapors.

Section 11: Toxicological Information

Acute effects:

Toxicological data - Selected LD50s and LC50s

Acetylcysteine	616-91-1	Oral LD50 Rat: 5050 mg/kg
Glycerol	56-81-5	Inhalation LC50 Rat: >570 mg/m3/1H; Oral LD50 Rat:12600 mg/kg; Dermal LD50 Rat:>21900 mg/kg
Polyethylene glycol	25322-68-3	Oral LD50 Rat: 28 g/kg; Dermal LD50 Rabbit: >20 g/kg

Local effects

Irritation:

Skin	Draize Test, Rabbit, Mild, 500 mg/24H (Glycerol)
Eye	Draize Test, Rabbit, Mild, 126 mg (Glycerol)
Chronic effects	No data available.
Sensitization	No data available.
Carcinogenicity	No data available.
Mutagenicity	No data available.
Reproductive effects	No data available.
Teratogenicity	No data available.

Section 12: Ecological Information

Ecotoxicity:

Ecotoxicity - Freshwater Fish Species Data

Glycerol	56-81-5	96 Hr LC50 Oncorhynchus mykiss: 51000-57000 mg/L
Polyethylene glycol	25322-68-3	24 Hr LC50 Carassius auratus: >5000 mg/L (PEG 200, 400, 800)

Ecotoxicity - Microtox Data

Polyethylene glycol	25322-68-3	15 min EC50 Photobacterium phosphoreum: 100000 mg/L (polymer unspecified)

Ecotoxicity - Water Flea Data

Glycerol	56-81-5	24 Hr EC50 Daphnia magna: >500 mg/L

Persistence and degradability	No data available.
Bioaccumulation potential	No data available.
Mobility in environmental media	No data available.

Section 13: Disposal Considerations

Methods of disposal Dispose of unused product, spilled material and waste in accordance with all applicable federal, state, local and provincial environmental and hazardous waste regulations.

Section 14: Transport Information

Basic shipping description Not classified as dangerous goods. Not regulated per IATA and DOT regulations.

Section 15: Regulatory Information

US Federal Regulations:

Inventory - United States - Section 8(b) Inventory (TSCA):

Acetylcysteine	616-91-1	Present
BES	10191-18-1	Present
Glycerol	56-81-5	Present
Polyethylene glycol	25322-68-3	XU
Urease	9002-13-5	XU

International Regulations:

Canada - WHMIS - Classifications of Substances		
Glycerol	56-81-5	Uncontrolled product according to WHMIS classification criteria
Germany - Water Classification (VwVwS) - Annex 2 - Water Hazard Classes		
Glycerol	56-81-5	ID Number 116, hazard class 1 - low hazard to waters
Polyethylene glycol	25322-68-3	ID Number 279, hazard class 1 - low hazard to waters
Inventory - Australia - Inventory of Chemical Substances (AICS)		
Acetylcysteine	616-91-1	Present
BES	10191-18-1	Present
Glycerol	56-81-5	Present
Polyethylene glycol	25322-68-3	Present
Urease	9002-13-5	Present
Inventory - Canada - Domestic Substances List (DSL)		
Acetylcysteine	616-91-1	Present
BES	10191-18-1	Present
Glycerol	56-81-5	Present
Polyethylene glycol	25322-68-3	Present
Urease	9002-13-5	Present
Inventory - Canada - Organisms on the Non-Domestic Substances List (NDSL)		
Urease	9002-13-5	IUB #3.5.1.5
Inventory – China		
Acetylcysteine	616-91-1	Present
BES	10191-18-1	Present
Glycerol	56-81-5	Present
Polyethylene glycol	25322-68-3	Present
Inventory - European Union - European Inventory of Existing Commercial Chemical Substances (EINECS)		
Acetylcysteine	616-91-1	210-498-3
BES	10191-18-1	233-465-5
Glycerol	56-81-5	200-289-5
Urease	9002-13-5	232-656-0
Inventory - Japan Existing and New Chemical Substances (ENCS)		
Acetylcysteine	616-91-1	2-2757
BES	10191-18-1	2-3343
Glycerol	56-81-5	2-242; 7-338
Polyethylene glycol	25322-68-3	2-441; 7-129; 8-429
Inventory - Korea - Existing and Evaluated Chemical Substances		
Acetylcysteine	616-91-1	KE-00114
Glycerol	56-81-5	KE-29297
Polyethylene glycol	25322-68-3	KE-20228
Urease	9002-13-5	KE-35145
Canadian Hazardous Products		
WHMIS Status	Non-controlled	
European Communities Dangerous Substances/Preparations		
EC Hazard Class	None	
Risk Phrases	None	
Safety Phrases	None	

Section 16: Other Information

Further Information:
This MSDS has been prepared in accordance with the ANSI Z400.1 format. Every effort has been made to adhere to the hazard criteria and content requirements of the U.S. OSHA Hazard Communication Standard, Canadian Controlled Products Regulation (CPR), UK Chemical Hazard Information and Packaging Regulations, European Communities REACH Regulation, and UN Globally Harmonized System of Classification and Labelling of Chemicals.

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