



SECTION 1: PRODUCT and COMPANY IDENTIFICATION

PRODUCT NAME:
Liquid Stable Lithium Enzymatic Assay
Reagent R1
Reagent R2

CATALOG #
DZ116B
DZ116B-R1
DZ116B-R2

Supplier: **Diazyme Laboratories**
12889 Gregg Court
Poway, CA 92064, USA
858-455-4754

Manufacturer: **Diazyme Laboratories**
12889 Gregg Court
Poway, CA 92064, USA
858-455-4754

Authorized Representative: **MDSS GmbH**
Schiffgraben 41
30175 Hannover
Germany

In case of Emergency: Call Diazyme Laboratories (858-455-4754)

Intended Use: Refer to the instruction booklet for proper and intended use. Otherwise, contact supplier for specific applications.

SECTION 2: HAZARDOUS INGREDIENTS

Product	Ingredient	Amount	CAS #	EINECS #	Symbols	R-Phrase	S-Phrase
Reagent R1	D(-)-Mannitol	6%	69-65-8	200-711-8	None Listed	None Listed	None Listed
	PPG	5%	25322-69-4	200-338-0	None Listed	None Listed	None Listed
	PEG	5%	25322-68-3	500-038-2	None Listed	None Listed	None Listed
Reagent R2	D(-)-Mannitol	6%	69-65-8	200-711-8	None Listed	None Listed	None Listed
	D-Sorbitol	12%	50-70-4	200-061-5	None Listed	None Listed	None Listed
	PPG	5%	25322-69-4	200-338-0	None Listed	None Listed	None Listed
	PEG	5%	25322-68-3	500-038-2	None Listed	None Listed	None Listed

NOTE: Physical and health hazard information on reagent mixtures has not been determined. Any physical and health information noted is based on 1) evaluation of data for the pure ingredients, and 2) concentration of ingredients as packaged.

SECTION 3: HAZARD IDENTIFICATION

D(-)-MANNITOL & D-SORBITOL:

EMERGENCY OVERVIEW

Not available

Potential Health Effects

Eye: Dust may cause mechanical irritation.
Skin: May cause skin irritation. Low hazard for usual industrial handling.
Ingestion: Ingestion of large amounts may cause gastrointestinal irritation. Expected to be a low ingestion hazard.
Inhalation: May cause respiratory tract irritation. Low hazard for usual industrial handling.
Chronic: No information found.

POLYPROPYLENE GLYCOL (PPG):

EMERGENCY OVERVIEW

Not available

Potential Health Effects

Eye: May cause eye irritation.
Skin: May be harmful if absorbed through skin. May cause skin irritation.
Ingestion: May be harmful if swallowed.
Inhalation: May cause respiratory tract irritation.
Chronic: No information found.

POLYETHYLENE GLYCOL (PEG):

EMERGENCY OVERVIEW

Hygroscopic (absorbs moisture from the air).



Potential Health Effects

- Eye:** May cause eye irritation.
- Skin:** May be harmful if absorbed through skin. May cause skin irritation.
- Ingestion:** May be harmful if swallowed.
- Inhalation:** May cause respiratory tract irritation.
- Chronic:** No information found.

		D(-)-Mannitol	D-Sorbitol	PPG	PEG
HMIS RATING	HEALTH:	0	0	0	0
	FLAMMABILITY:	0	0	0	0
	REACTIVITY:	0	0	0	0
NFPA RATING	HEALTH:	0	0	0	0
	FLAMMABILITY:	0	0	0	0
	REACTIVITY:	0	0	0	0
HAZARD SYMBOLS:		N/A	N/A	N/A	N/A
R-Phrase:		None Listed	None Listed	None Listed	None Listed
S-Phrase:		None Listed	None Listed	None Listed	None Listed

SECTION 4: FIRST AID MEASURES

D(-)-MANNITOL & D-SORBITOL:

- Eyes:** Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid immediately.
- Skin:** Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid if irritation develops or persists.
- Ingestion:** If victim is conscious and alert, give 2-4 cupfuls of milk or water. Get medical aid immediately.
- Inhalation:** Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.
- Notes to Physician:** None.

POLYPROPYLENE GLYCOL (PPG):

- Eyes:** In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.
- Skin:** In case of contact, immediately wash skin with soap and copious amounts of water.
- Ingestion:** If swallowed, wash out mouth with water provided person is conscious. Call a physician.
- Inhalation:** If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.
- Notes to Physician:** Persons with impaired kidney function may be more susceptible to the effects of this substance. Treat symptomatically and supportively.

POLYETHYLENE GLYCOL (PEG):

- Eyes:** In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical aid.
- Skin:** In case of contact, immediately wash skin with soap and copious amounts of water.
- Ingestion:** If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical aid.
- Inhalation:** If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.
- Notes to Physician:** Persons with impaired kidney function may be more susceptible to the effects of this substance. Treat symptomatically and supportively.

SECTION 5: FIRE FIGHTING MEASURES

D(-)-MANNITOL & D-SORBITOL:

- General Information:** As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Dusts at sufficient concentrations can form explosive mixtures with air.
- Extinguishing Media:** For small fires, use water spray, dry chemical, carbon dioxide or chemical foam.

POLYPROPYLENE GLYCOL (PPG):

- General Information:** As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.



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Effective 08/06/08

Extinguishing Media: Suitable: Carbon dioxide, dry chemical powder, or appropriate foam. Foam and water spray are effective but may cause frothing.
Specific Hazard(s): Emits toxic fumes under fire conditions.

POLYETHYLENE GLYCOL (PEG):

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.

Extinguishing Media: Use water spray, dry chemical, carbon dioxide, or alcohol-resistant foam.

SECTION 6: ACCIDENTAL RELEASE MEASURES

D(-)-MANNITOL & D-SORBITOL:

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Wash area with soap and water. Clean up spills immediately, observing precautions in the Protective Equipment section. Sweep up, then place into a suitable container for disposal. Avoid generating dusty conditions. Provide ventilation.

POLYPROPYLENE GLYCOL (PPG):

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Clean up spills immediately, observing precautions in the Protective Equipment section. Provide ventilation.

POLYETHYLENE GLYCOL (PEG):

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Clean up spills immediately, observing precautions in the Protective Equipment section. Provide ventilation.

SECTION 7: HANDLING AND STORAGE

D(-)-MANNITOL & D-SORBITOL:

Handling: Avoid breathing dust, vapor, mist, or gas. Avoid contact with skin and eyes.

Storage: Store in a tightly closed container. Store in a dry area.

POLYPROPYLENE GLYCOL (PPG):

Handling: User Exposure: Avoid inhalation. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure.

Storage: Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Store protected from moisture.

POLYETHYLENE GLYCOL (PEG):

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.

Storage: Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Store protected from moisture.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

D(-)-MANNITOL & D-SORBITOL:

Engineering Controls:

Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

Exposure Limits

CAS# 69-65-8, # 50-70-4: Contains no substances with occupational exposure limit values.

Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear appropriate protective gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.



POLYPROPYLENE GLYCOL (PPG):

Engineering Controls:

Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

Exposure Limits

CAS# 25322-69-4: Contains no substances with occupational exposure limit values.

Personal Protective Equipment

- Eyes:** Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
- Skin:** Wear appropriate protective gloves to prevent skin exposure.
- Clothing:** Wear appropriate protective clothing to prevent skin exposure.
- Respirators:** A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.

POLYETHYLENE GLYCOL (PEG):

Engineering Controls:

Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

Exposure Limits

CAS# 25322-68-3: Contains no substances with occupational exposure limit values.

Personal Protective Equipment

- Eyes:** Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
- Skin:** Wear appropriate protective gloves to prevent skin exposure.
- Clothing:** Wear appropriate protective clothing to prevent skin exposure.
- Respirators:** A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

D(-)-MANNITOL:

- Physical State:** Solid
- Color:** white
- Odor:** Odorless.
- pH:** 5.0 - 6.5 at 182 g/l at 25 °C (77 °F)
- Vapor Pressure:** Negligible.
- Viscosity:** Not available
- Boiling Point:** Not available
- Freezing/Melting Point:** 165 deg C (329°F)
- Autoignition Temperature:** Not available.
- Flash Point:** Not available
- Explosion Limits: Lower:** Not available
- Explosion Limits: Upper:** Not available
- Decomposition Temperature:** Not available
- Solubility in water:** 182 g/l at 20 °C (68 °F) - completely soluble
- Specific Gravity/Density:** Not available.
- Molecular Formula:** C₆H₁₄O₆
- Molecular Weight:** 182.17

D-SORBITOL:

- Physical State:** Solid
- Color:** white
- Odor:** Odorless.
- pH:** 5.0 – 7.0 at 182 g/l at 25 °C (77 °F)
- Vapor Pressure:** < 0.1 hPa (< 0.1 mmHg) at 25 °C (77 °F)
- Viscosity:** Not available
- Boiling Point:** Not available
- Freezing/Melting Point:** 98 - 100 °C (208 - 212 °F)



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Effective 08/06/08

Autoignition Temperature: Not available.
Flash Point: Not available
Explosion Limits: Lower: Not available
Explosion Limits: Upper: Not available
Decomposition Temperature: Not available
Solubility in water: 182 g/l at 20 °C (68 °F) - completely soluble
Specific Gravity/Density: Not available.
Molecular Formula: C₆H₁₄O₆
Molecular Weight: 182.17

POLYPROPYLENE GLYCOL (PPG):

Physical State: Liquid
Color: colorless viscous
Odor: Odorless
pH: Not available
Vapor Pressure: < 0.01 mm Hg @ 20 deg C
Vapor Density: > 1 g / L
Viscosity: 100 Pas @ 20 deg C
Boiling Point: Not available
Freezing/Melting Point: Not available
Autoignition Temperature: Not available
Flash Point: 112.8 deg C (235 deg F) Method: Closed Cup
Explosion Limits: Lower: Not available
Explosion Limits: Upper: Not available
Decomposition Temperature: Not available
Solubility in water: Not available
Specific Gravity/Density: 1.01 g/cm³
Refractive Index: 1.447
Molecular Formula: C₃H₈O₂
Molecular Weight: Not available

POLYETHYLENE GLYCOL (PEG):

Physical State: Powder
Color: White
Odor: Odorless
pH: 5.5 - 7 at 50 g/l at 25 °C (77 °F)
Vapor Pressure: Not available
Viscosity: Not available
Boiling Point: Not available
Freezing/Melting Point: Not available
Autoignition Temperature: Not available
Flash Point: Not available
Explosion Limits: Lower: Not available
Explosion Limits: Upper: Not available
Decomposition Temperature: Not available
Solubility in water: 50 g/l at 20 °C (68 °F) – soluble
Specific Gravity/Density: Not available
Molecular Formula: (C₂H₄O)_nH₂O
Molecular Weight: Average 3,350

SECTION 10: STABILITY AND REACTIVITY

D(-)-MANNITOL & D-SORBITOL:

Chemical Stability: Stable under normal temperatures and pressures.
Conditions to Avoid: Incompatible materials.
Incompatibilities with Other Materials: Strong oxidizing agents.
Hazardous Decomposition Products: Carbon monoxide, carbon dioxide.
Hazardous Polymerization: Has not been reported.

POLYPROPYLENE GLYCOL (PPG):



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Chemical Stability: Stable under normal temperatures and pressures.
Conditions to Avoid: Excess heat, moist air.
Incompatibilities with Other Materials: Strong oxidizing agents.
Hazardous Decomposition Products: Carbon monoxide, carbon dioxide.
Hazardous Polymerization: Will not occur.

POLYETHYLENE GLYCOL (PEG):

Chemical Stability: Stable under normal temperatures and pressures. Hygroscopic: absorbs moisture or water from the air.
Conditions to Avoid: Excess heat, moist air.
Incompatibilities with Other Materials: Strong oxidizing agents.
Hazardous Decomposition Products: Hazardous decomposition products formed under fire conditions. - Nature of decomposition products not known.
Hazardous Polymerization: Will not occur.

SECTION 11: TOXICOLOGICAL INFORMATION

D(-)-MANNITOL:

RTECS#: CAS# 69-65-8: OP2060000
LD50/LC50: RTECS:
CAS# 69-65-8: Oral, mouse: LD50 = 22 gm/kg;
Oral, rat: LD50 = 13500 mg/kg;
Carcinogenicity: D-mannitol - Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65.
Other: See actual entry in RTECS for complete information.

D-SORBITOL:

RTECS#: CAS# 50-70-4: LZ4290000
LD50/LC50: RTECS:
CAS# 50-70-4: Oral, rat: LD50 = 15900 mg/kg;
Carcinogenicity: D-sorbitol - Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65.
Chronic Exposure: Genotoxicity in vitro: Hamster – ovary; cytogenetic analysis
Other: See actual entry in RTECS for complete information.

POLYPROPYLENE GLYCOL (PPG):

RTECS#: CAS# 57-55-6: TR5250000
LD50/LC50: RTECS:
CAS# 25322-69-4: Oral, rat: LD50 > 2000 mg/kg;
Irritation Data: Eyes, rabbit: 500 mg/kg; Remarks: Mild Irritation effect.
Carcinogenicity: Polypropylene glycol - Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65.
Other: See actual entry in RTECS for complete information.

POLYETHYLENE GLYCOL (PEG):

RTECS#: CAS# 25322-68-3: None listed
LD50/LC50: RTECS: Not available.
Carcinogenicity: Polyethylene glycol - Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65.
Other: See actual entry in RTECS for complete information.

SECTION 12: ECOLOGICAL INFORMATION

D(-)-MANNITOL, D-SORBITOL, POLYPROPYLENE GLYCOL (PPG) & POLYETHYLENE GLYCOL (PEG):

Not available



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SECTION 13: DISPOSAL CONSIDERATIONS

D(-)-MANNITOL & D-SORBITOL:

Products considered hazardous for supply are classified as Special Waste and the disposal of such chemicals is covered by regulations which may vary according to location. Contact a specialist disposal company or the local authority or advice. Empty containers must be decontaminated before returning for recycling.

POLYPROPYLENE GLYCOL (PPG):

Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Observe all federal, state, and local environmental regulations.

POLYETHYLENE GLYCOL (PEG):

Dispose of in a manner consistent with federal, state, and local regulations.

SECTION 14: TRANSPORTATION INFORMATION

D(-)-MANNITOL, D-SORBITOL, POLYPROPYLENE GLYCOL (PPG) & POLYETHYLENE GLYCOL (PEG):

	IATA	IMO	RID/ADR
Shipping Name:	Not regulated.	Not regulated.	Not regulated.
Hazard Class:			
UN Number:			
Packing Group:			

SECTION 15: REGULATORY INFORMATION

D(-)-MANNITOL:

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols: Not available

Risk Phrases:

Safety Phrases:

WGK (Water Danger/Protection)

CAS# 69-65-8: 0

Canada

CAS# 69-65-8 is listed on Canada's DSL List

US Federal

TSCA

CAS# 69-65-8 is listed on the TSCA Inventory.

D-SORBITOL:

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols: Not available

Risk Phrases:

Safety Phrases:

WGK (Water Danger/Protection)

CAS# 50-70-4: 0

Canada

CAS# 50-70-4 is listed on Canada's DSL List

US Federal

TSCA

CAS# 50-70-4 is listed on the TSCA Inventory.

POLYPROPYLENE GLYCOL (PPG):

European/International Regulations



Conforms to 93/112/EC and ISO 11014-1

Responsible Name: Diazyme Administration

Effective 08/06/08

European Labeling in Accordance with EC Directives

Hazard Symbols: Not available

Risk Phrases:

Safety Phrases:

WGK (Water Danger/Protection)

CAS# 25322-69-4: Not available

Canada

CAS# 25322-69-4 is listed on Canada's DSL List

US Federal

TSCA

CAS# 25322-69-4 is listed on the TSCA Inventory.

POLYETHYLENE GLYCOL (PEG):

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols: Not available

Risk Phrases:

Safety Phrases:

WGK (Water Danger/Protection)

CAS# 25322-68-3: Not available

Canada

CAS# 25322-68-3 is listed on Canada's DSL List

US Federal

TSCA

CAS# 25322-68-3 is listed on the TSCA Inventory.

SECTION 16: OTHER INFORMATION

PREPARED BY: Diazyme Administration

PHONE NO: 858-455-4754

DATE PREPARED: 24 July 2008

The information provided on this Material Safety Data Sheet is provided in the interest of promoting safe handling of the material. While this information is believed to be correct Diazyme makes no warranty in respect to any of the information disclosed. Observe all federal, provincial, state and local laws concerning health and pollution.