

## MATERIAL SAFETY DATA SHEET

### 1. PRODUCT IDENTIFICATION

<u>TRADE NAME (AS LABELED):</u>	<b>Glycan Labeling and Reagent Kits</b>
<u>CODE NUMBERS:</u>	PN 760523, PN 760525
<u>U.N. NUMBER:</u>	UN 3316
<u>U.N. DANGEROUS GOODS CLASS/SUBSIDIARY RISK:</u>	Class 9
<u>HAZCHEM CODE (AUSTRALIA):</u>	Not applicable
<u>POISONS SCHEDULE NUMBER (AUSTRALIA):</u>	Not applicable
<u>PRODUCT USE:</u>	Laboratory Biological Research
<u>U.S. SUPPLIER/MANUFACTURER'S NAME:</u>	<b>Caliper Life Sciences</b>
<u>Address:</u>	68 Elm Street Hopkinton, MA 01748
<u>Business Phone:</u>	+1-800-LAB-CHIP (toll-free) +1-800-522-2447 (toll-free) +1-508-435-3439 (outside North America)

AUSTRALIAN SUPPLIER/DISTRIBUTOR'S NAME:

Address:

Business Phone:

EUROPEAN SUPPLIER/ DISTRIBUTOR'S NAME:

Address:

Business Phone:

EMERGENCY PHONE:

1-800-255-3924 (CHEM-TEL) in U.S., Canada, Puerto Rico, U.S. Virgin Islands

EMAIL ADDRESS/COMPETENT PERSON FOR MSDS:

Technical Support: Tech.Support@caliperls.com

DATE OF PREPARATION:

January 4, 2010

DATE OF REVISION:

New

NOTE: ALL United States Occupational Safety and Health Administration Standard (29 CFR 1910.1200), U.S. State equivalent Standards, Canadian WHMIS [Controlled Products Regulations], European Union [Regulation (EC) 1907/2006 Annex II], Australian [NOHSC:2011 (2003)], and Japanese Industrial Standard (JIS Z 7250: 2000) required information is included in appropriate sections based on the U.S. ANSI Z400.1-2004 format. This product has been classified in accordance with the hazard criteria of the countries listed above.

### 2. HAZARD IDENTIFICATION

EU/AUSTRALIAN LABELING/CLASSIFICATION: Some components of this product meet the definition of various hazard classes, as defined by the European Union Council Directive 67/548/EEC and subsequent Directives and by the Australian National Occupational Health and Safety Commission [NOHSC(1008:2004)].

Glycan 3X Denaturing Buffer:

Glycan Labeling Solution:

All Other Components:

Hazard Classification: Irritant.

Hazard Classification: Irritant.

Hazard Classification: Not applicable.

Risk Phrases: R 43

Risk Phrases: R 36/38

Risk Phrases: Not applicable.

**TSCA Status:** Some components of this product contain ingredients not included in the TSCA Inventory. In accordance with the conditions listed in 40 CFR 720.36 and 721.47, this product must be used only for research and development, pharmaceutical manufacture, or export. It must be used by, or directly under the supervision of, a technically qualified individual. The manufacturer should be consulted prior to using this compound for other applications. Other requirements may apply.

**Health Hazards:**

Glycan 3X Denaturing Buffer: The Sodium Dodecyl Sulfate constituent is a skin sensitizer; subsequent exposure to very small amounts may cause allergic reaction.

Glycan Labeling Solution: Can irritate the eyes and skin.

All Other Components: The chief hazard in event of overexposure is the potential for irritation of contaminated skin or eyes.

**Flammability Hazards:** The components of this product present no significant fire hazards. In the event of a fire, this product will not contribute significant additional hazards.

**Reactivity Hazards:** This product is not reactive.

**Environmental Hazards:** Negligible.

### 3. COMPOSITION AND INFORMATION ON INGREDIENTS

This Material Safety Data sheet describes the Glycan Labeling and Reagent Kits. This product consists of seven solutions. This Material Safety Data Sheet provides complete information on all the components described in the following tables. Unless otherwise specified, the information in each of the following sections (Sections 3–16) of this document is pertinent to each solution. The components of this product are mixtures (preparations) of the following chemical components:

CHEMICAL NAME	CAS #	EINECS#	ENCS#	% v/v	EU CLASSIFICATION FOR COMPONENTS
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#### GLYCAN RELEASE AND LABELING KIT

##### **COMPONENT 1: GLYCAN 3X DENATURING BUFFER**

Sodium Dodecyl Sulfate	151-21-3	205-788-1	2-1679	1–5	SELF-CLASSIFICATION HAZARD CLASSIFICATION: Irritant RISK PHRASES: R 43.
Sodium Phosphate Dibasic	7558-79-4	231-448-7	1-497	1–5	HAZARD CLASSIFICATION: Not applicable. RISK PHRASES: Not applicable.
Sodium Phosphate Monobasic	7558-80-7	231-449-2	1-497	10–25	HAZARD CLASSIFICATION: Not applicable. RISK PHRASES: Not applicable.
Water and other constituents. Each of the other constituents is present in less than 1 percent concentration (0.1% concentration for potential carcinogens, reproductive toxins, respiratory tract sensitizers, and mutagens).				1–5	None of the other constituents in these solutions contribute significantly to the hazards associated with these solutions.

See Section 16 for full text of Ingredient Risk Phrases

NOTE: Unless otherwise indicated, the hazard assessments in the following sections are pertinent to all component reagents.

### 3. COMPOSITION AND INFORMATION ON INGREDIENTS (Continued)

CHEMICAL NAME	CAS #	EINECS#	ENCS#	% v/v	EU CLASSIFICATION FOR COMPONENTS
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#### COMPONENT 2: GLYCAN DIGESTION SOLUTION

Water and other constituents. Each of the other constituents is present in less than 1 percent concentration (0.1% concentration for potential carcinogens, reproductive toxins, respiratory tract sensitizers, and mutagens).	Balance	None of the other constituents in these solutions contribute significantly to the hazards associated with these solutions.			
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#### COMPONENT 3: GLYCAN LABELING SOLUTION

Acetic Acid	64-19-7	200-580-7	2-688	10-20	HAZARD CLASSIFICATION: Corrosive. RISK PHRASES: R 10; R 35. SYMBOL: C
Water and other constituents. Each of the other constituents is present in less than 1 percent concentration (0.1% concentration for potential carcinogens, reproductive toxins, respiratory tract sensitizers, and mutagens).	Balance	None of the other constituents in these solutions contribute significantly to the hazards associated with these solutions.			

#### HT GLYCAN LABCHIP REAGENT KIT

##### COMPONENT 1: HT GLYCAN DILUTION BUFFER

Water and other constituents. Each of the other constituents is present in less than 1 percent concentration (0.1% concentration for potential carcinogens, reproductive toxins, respiratory tract sensitizers, and mutagens).	Balance	None of the other constituents in these solutions contribute significantly to the hazards associated with these solutions.			
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##### COMPONENT 2: HT GLYCAN GEL MATRIX

Poly( <i>N,N</i> -dimethylacrylamide)				3-7	HAZARD CLASSIFICATION: Not applicable. RISK PHRASES: Not applicable.
Water and other constituents. Each of the other constituents is present in less than 1 percent concentration (0.1% concentration for potential carcinogens, reproductive toxins, respiratory tract sensitizers, and mutagens).	Balance	None of the other constituents in these solutions contribute significantly to the hazards associated with these solutions.			

##### COMPONENT 3: HT GLYCAN LADDER

Acetic Acid	64-19-7	200-580-7	2-688	1-5	HAZARD CLASSIFICATION: Corrosive. RISK PHRASES: R 10; R 35. SYMBOL: C
Water and other constituents. Each of the other constituents is present in less than 1 percent concentration (0.1% concentration for potential carcinogens, reproductive toxins, respiratory tract sensitizers, and mutagens).	Balance	None of the other constituents in these solutions contribute significantly to the hazards associated with these solutions.			

##### COMPONENT 4: HT GLYCAN MARKER

Acetic Acid	64-19-7	200-580-7	2-688	1-5	HAZARD CLASSIFICATION: Corrosive. RISK PHRASES: R 10; R 35. SYMBOL: C
Water and other constituents. Each of the other constituents is present in less than 1 percent concentration (0.1% concentration for potential carcinogens, reproductive toxins, respiratory tract sensitizers, and mutagens).	Balance	None of the other constituents in these solutions contribute significantly to the hazards associated with these solutions.			

See Section 16 for full text of Ingredient Risk Phrases

NOTE: Unless otherwise indicated, the hazard assessments in the following sections are pertinent to all component reagents.

### 4. FIRST-AID MEASURES

Contaminated individuals must seek medical attention if any adverse effect occurs. Rescuers should be taken for medical attention, if necessary. Take a copy of label and MSDS to physician or health professional with the contaminated individual.

**SKIN EXPOSURE:** If this product contaminates the skin, begin decontamination with copious amounts of running water. Remove exposed or contaminated clothing, taking care not to contaminate eyes. Contaminated clothing must be removed and laundered before re-use. The contaminated individual must seek medical attention if any adverse effect develops after the area is flushed.

**EYE EXPOSURE:** If this product contaminates the eyes, open victim's eyes while under gently running water. Use sufficient force to open eyelids. Have the contaminated individual "roll" eyes. Minimum flushing is for 20 minutes. The contaminated individual must seek medical attention if adverse effects occur after flushing.

**INHALATION:** If vapors, mists or sprays from this product are inhaled, remove contaminated individual to fresh air. If necessary, use artificial respiration to support vital functions. Remove or cover gross contamination to avoid exposure to rescuers. Seek medical attention if adverse effect continues after removal to fresh air.

**INGESTION:** If this product is swallowed, CALL PHYSICIAN OR POISON CONTROL CENTER FOR MOST CURRENT INFORMATION. DO NOT INDUCE VOMITING unless directed by medical personnel. Have contaminated individual rinse mouth with water. Never induce vomiting or give diluents (milk or water) to someone who is unconscious, having convulsions, or unable to swallow. If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain an open airway and prevent aspiration. If contaminated individual is convulsing, maintain an open airway and obtain immediate medical attention.

**MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:** Pre-existing dermatitis, other skin conditions, respiratory conditions, and liver disorders may be aggravated by overexposure to components of this product.

**RECOMMENDATIONS TO PHYSICIANS:** Treat symptoms and eliminate overexposure.

### 5. FIRE-FIGHTING MEASURES

**FLASH POINT:** Not flammable.

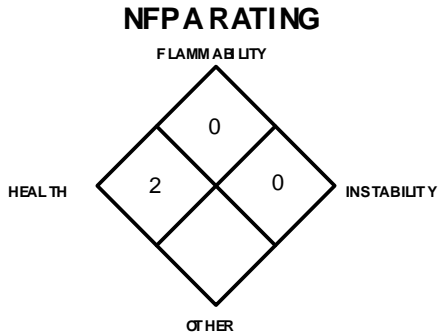
**AUTOIGNITION TEMPERATURE:** Not applicable.

**FLAMMABLE LIMITS (in air by volume, %):** Not applicable.

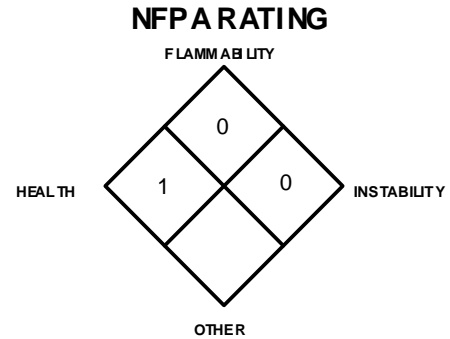
**FIRE EXTINGUISHING MATERIALS:** In the event of a fire, use suppression methods for surrounding materials (e.g., water spray, dry chemical, carbon dioxide, foam, any "ABC" class extinguisher).

**FIRE EXTINGUISHING MATERIALS NOT BE USED:** None known.

## 5. FIRE-FIGHTING MEASURES



**Glycan 3X Denaturing Buffer and Glycan Labeling Solution**



**All Other Reagents**

**UNUSUAL FIRE AND EXPLOSION HAZARDS:** When involved in a fire, this product's components will decompose and produce irritating vapors and toxic gases (including carbon oxides, sodium oxides, phosphorus oxides, and nitrogen oxides).

**Explosion Sensitivity to Mechanical Impact:** Not sensitive.

**Explosion Sensitivity to Static Discharge:** Not sensitive.

**SPECIAL FIRE-FIGHTING PROCEDURES:** Move containers from fire area if it can be done without risk to personnel. Incipient fire responders should wear eye protection. Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment. Chemical resistant clothing may be necessary. If possible, prevent runoff water from entering storm drains, bodies of water, or other environmentally sensitive areas.

## 6. ACCIDENTAL RELEASE MEASURES

**SPILL AND LEAK RESPONSE:** Trained personnel using pre-planned procedures should respond to uncontrolled releases. Proper protective equipment should be used. In case of a spill, clear the affected area and protect people. The atmosphere must have levels of constituents lower than those listed in Section 8, (Exposure Controls and Personal Protective Equipment), if applicable, and have at least 19.5 percent oxygen before personnel can be allowed into the area without Self-Contained Breathing Apparatus (SCBA).

**Small Spills:** Lightweight gloves, a lab coat, and eye protection should be worn. Absorb spilled liquid with paper towels. Wash contaminated area with soap and water, absorb with paper towels, and rinse with water.

**Large Spills:** Minimum Personal Protective Equipment should be **Level D: lab-gloves, chemical resistant apron, boots, and splash goggles. Respiratory protection should not be necessary.** Absorb spilled liquid with polypads or other suitable absorbent materials. Dike or otherwise contain spill and remove with vacuum truck or pump to storage/salvage vessels. Decontaminate the area thoroughly. Prevent material from entering sewer or confined spaces, waterways, soil or public waters. Monitor area and confirm levels are below exposure limits given in Section 8 (Exposure Controls-Personal Protection), if applicable, before non-response personnel are allowed into the spill area.

Place all spill residue in a double plastic bag or other containment and seal. Decontaminate the area thoroughly. Do not mix with wastes from other materials. Dispose of in accordance with applicable International, National, and local procedures (see Section 13, Disposal Considerations). For spills on water, contain, minimize dispersion and collect. Dispose of recovered material and report spill per regulatory requirements.

## 7. HANDLING and STORAGE

**WORK PRACTICES AND HYGIENE PRACTICES:** As with all chemicals, avoid getting this product's components ON YOU or IN YOU. Wash thoroughly after handling this product's components. Avoid splashing or spraying this product's components. Do not eat or drink while handling this product's components.

**STORAGE AND HANDLING PRACTICES:** All employees who handle this material should be trained to handle it safely. This material must be used by, or directly under the supervision of, a technically qualified individual. Avoid breathing vapors, mists, or airborne dusts generated by this product's components. Ensure containers of this product's components are properly labeled. Open containers slowly on a stable surface. Store vials as directed in the product insert. Keep vials tightly closed when not in use. Store away from incompatible materials. Inspect vials containing this product's components for leaks or damage. Read instructions provided with the product prior to use.

**SPECIFIC USE(S):** This product is for use in laboratory biological research. Follow all industry standards for use.

**PROTECTIVE PRACTICES DURING MAINTENANCE OF CONTAMINATED EQUIPMENT:** Follow practices indicated in Section 6 (Accidental Release Measures). Make certain that application equipment is locked and tagged-out safely, as applicable. Collect all rinsates and dispose of according to applicable International, National, and local hazardous waste disposal regulations.

## 8. EXPOSURE CONTROLS - PERSONAL PROTECTION

**VENTILATION, ENGINEERING, AND OCCUPATIONAL EXPOSURE CONTROLS:** Use with adequate ventilation to ensure exposure levels are maintained below the limits provided below, if applicable. If necessary, refer to Australian National Code of Practice for the Control of Workplace Hazardous Substances [NOHSC: 2007 (1994)] for further information. As with all products that contain chemicals, ensure proper decontamination equipment (e.g., eyewash/safety shower stations) are available near areas where this product is used as necessary.

**8. EXPOSURE CONTROLS - PERSONAL PROTECTION (Continued)****EXPOSURE LIMITS/GUIDELINES:**

NOTE: For components not specifically listed, those components are primarily water and trace constituents, no exposure limits are applicable.

CHEMICAL NAME	CAS #	EXPOSURE LIMITS IN AIR									
		ACGIH-TLVs		OSHA-PELs		NIOSH-RELs		NIOSH	AIHA WEELs		OTHER
		TWA mg/m <sup>3</sup>	STEL mg/m <sup>3</sup>	TWA mg/m <sup>3</sup>	STEL mg/m <sup>3</sup>	TWA mg/m <sup>3</sup>	STEL mg/m <sup>3</sup>	IDLH mg/m <sup>3</sup>	TWA mg/m <sup>3</sup>	STEL mg/m <sup>3</sup>	mg/m <sup>3</sup>

**GLYCAN RELEASE AND LABELING KIT****COMPONENT 1: GLYCAN 3X DENATURING BUFFER**

Sodium Dodecyl Sulfate	151-21-3	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Sodium Phosphate Dibasic	7558-79-4	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Sodium Phosphate Monobasic	7558-80-7	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE

**COMPONENT 3: GLYCAN LABELING SOLUTION**

Acetic Acid	64-19-7	25	37	25	NE	25	37	NE	NE	NE	DFG MAKs: TWA = 250 PEAK = 2•MAK 15 min. average value, 1-hr interval, 4 per shift Pregnancy Risk Group C
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**HT GLYCAN LABCHIP REAGENT KIT****COMPONENT 2: HT GLYCAN GEL MATRIX**

Poly(N,N-dimethylacrylamide)	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Acetic Acid	64-19-7	25	37	25	NE	25	37	NE	NE	NE	DFG MAKs: TWA = 250 PEAK = 2•MAK 15 min. average value, 1-hr interval, 4 per shift Pregnancy Risk Group C	

**COMPONENT 4: HT GLYCAN MARKER**

Acetic Acid	64-19-7	25	37	25	NE	25	37	NE	NE	NE	DFG MAKs: TWA = 250 PEAK = 2•MAK 15 min. average value, 1-hr interval, 4 per shift Pregnancy Risk Group C
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NE = Not Established.

See Section 16 for Definitions of Terms Used.

**INTERNATIONAL OCCUPATIONAL EXPOSURE LIMITS:** Currently the following international exposure limits are in place for the some constituents of this product. Values given may not be the most current; individual country lists should be consulted to determine most current values available.

**ACETIC ACID:**

Australia: TWA = 10 ppm (25 mg/m<sup>3</sup>), STEL = 15 ppm (37 mg/m<sup>3</sup>), JUL 2008  
 Belgium: TWA = 10 ppm (25 mg/m<sup>3</sup>), STEL 15 ppm (38 mg/m<sup>3</sup>), MAR 2002  
 Denmark: TWA = 10 ppm (25 mg/m<sup>3</sup>), OCT 2002  
 Finland: TWA = 10 ppm (25 mg/m<sup>3</sup>), STEL = 15 ppm (37 mg/m<sup>3</sup>), Skin, JAN 1993  
 France: VLE = 10 ppm (25 mg/m<sup>3</sup>), FEB 2006  
 Hungary: TWA = 25 mg/m<sup>3</sup>, STEL = 25 mg/m<sup>3</sup>, SEP 2000  
 Japan: OEL = 10 ppm (25 mg/m<sup>3</sup>), APR 2007

**ACETIC ACID (continued):**

Korea: TWA = 10 ppm (25 mg/m<sup>3</sup>), STEL = 15 ppm (37 mg/m<sup>3</sup>), 2006  
 Mexico: TWA = 10 ppm (25 mg/m<sup>3</sup>); STEL = 15 ppm (37 mg/m<sup>3</sup>), 2004  
 The Netherlands: MAC-TGG = 25 mg/m<sup>3</sup>, 2003  
 New Zealand: TWA = 10 ppm (25 mg/m<sup>3</sup>); STEL = 15 ppm (37 mg/m<sup>3</sup>), JAN 2002  
 Norway: TWA = 10 ppm (25 mg/m<sup>3</sup>), JAN 1999  
 The Philippines: TWA = 10 ppm (25 mg/m<sup>3</sup>), JAN 1993

**ACETIC ACID (continued):**

Poland: MAC(TWA) = 5 mg/m<sup>3</sup>, MAC(STEL) = 35 mg/m<sup>3</sup>, JAN 1999  
 Russia: STEL = 5 mg/m<sup>3</sup>, Skin, JUN 2003  
 Sweden: TWA = 5 ppm (13 mg/m<sup>3</sup>); STEL = 10 ppm (25 mg/m<sup>3</sup>), JUN 2005  
 Switzerland: MAK-W = 10 ppm (25 mg/m<sup>3</sup>), KZG-W = 20 ppm (50 mg/m<sup>3</sup>), DEC 2006  
 Thailand: TWA = 10 ppm (25 mg/m<sup>3</sup>), JAN1993  
 Turkey: TWA = 10 ppm (25 mg/m<sup>3</sup>), JAN1993  
 In Argentina, Bulgaria, Colombia, Jordan, Singapore, Vietnam, check ACGIH TLV

The following information on appropriate Personal Protective Equipment is provided to assist employers in complying with OSHA regulations found in 29 CFR Subpart I (beginning at 1910.132), equivalent standards of Canada (including CSA Standard Z94.4-02 and CSA Standard Z94.3-07), standards of EU member states (including EN 529:2005 for respiratory PPE, CEN/TR 15419:2006 for hand/body protection, and CR 13464:1999 for face/eye protection), standards of Australia (including AS/NZS 1715:1994 for respiratory PPE, AS/NZS 4501.2:2006 for protective clothing, AS/NZS 2161.1:2000 for glove selection, and AS/NZS 1336:1997 for eye protection), or standards of Japan (including JIS T 8116:2005 for glove selection, JIS T 8150:2006 for respiratory PPE, JIS T 8147:2003 for eye protectors, and JIS T 8030:2005 for protective clothing). Please reference applicable regulations and standards for relevant details.

**RESPIRATORY PROTECTION:** Respiratory protection is not generally needed when using this product. Maintain airborne contaminant concentrations below limits listed in this section. If mists, sprays or vapors from this product are created during use, use appropriate respiratory protection. If necessary, use only respiratory protection authorized in the U.S. Federal OSHA Respiratory Protection Standard (29 CFR 1910.134), equivalent U.S. State standards, Canadian CSA Standard Z94.4-02, European Standard EN 529:2005, EU member state standards, Australian Standard 1716-Respiratory Protective Devices and Australian Standard 1715-Selection, Use, and Maintenance of Respiratory Protective Devices, or Japanese Standard JIS T 8150:2006. Oxygen levels below 19.5% are considered IDLH by OSHA. In such atmospheres, use of a full-facepiece pressure/demand SCBA or a full facepiece, supplied air respirator with auxiliary self-contained air supply is required under U.S. Federal OSHA's Respiratory Protection Standard (1910.134-1998).

**EYE PROTECTION:** Depending on the use of this product, splash goggles or safety glasses may be worn. Use goggles or safety glasses for spill response, as stated in Section 6 (Accidental Release Measures) of this MSDS. If necessary, refer to U.S. OSHA 29 CFR 1910.133, Canadian CSA Standard Z94.3-07, European Standard CR 13464:1999, Australian Standard 1337-Eye Protection for Industrial Applications and Australian Standard 1336-Recommended Practices for Eye Protection in the Industrial Environment, or Japanese Standard JIS T 8147:2003.

## 8. EXPOSURE CONTROLS - PERSONAL PROTECTION (Continued)

**HAND PROTECTION:** Wear butyl rubber, neoprene, or nitrile rubber or latex gloves for routine use. Use triple gloves for spill response. If necessary, refer to U.S. OSHA 29 CFR 1910.138, Australian Standard 2161-Industrial Safety Gloves and Mittens, European Standard CEN/TR 15419:2006, or Japanese Standard JIS T 8116:2005.

**BODY PROTECTION:** Use body protection appropriate for task, such as a lab coat. If necessary, refer to OSHA Technical Manual (Section VII: Personal Protective Equipment), European Standard CEN/TR 15419:2006, Australian Standard 3765-Clothing for Protection Against Hazardous Chemicals, or Japanese Standard JIS T 8030:2005. If a hazard of injury to the feet exists due to falling objects, rolling objects, where objects may pierce the soles of the feet or where employee's feet may be exposed to electrical hazards, use foot protection, as described in U.S. OSHA 29 CFR 1910.136, Canadian CSA Standard Z195.1-02, *Guideline on Selection, Care, and Use of Protective Footwear*, or European Standard CEN ISO/TR 18690:2006.

## 9. PHYSICAL and CHEMICAL PROPERTIES

### APPEARANCE AND COLOR:

Glycan Labeling Solution: Clear, colorless liquid with a vinegar odor.

Glycan Ladder and Glycan Marker: Clear, colorless liquids with a faint vinegar odor

All Other Components: Clear, odorless, colorless liquids.

### HOW TO DETECT THIS SUBSTANCE:

Glycan Labeling Solution, Glycan Ladder, and Glycan Marker: The odor may act as a warning property associated with this component.

All Other Components: There are no unusual warning properties associated with these components.

### pH:

Glycan Labeling Solution: Not established.

All Other Components: 6.0–10.7

**BOILING POINT:** Not established.

**FREEZING/MELTING POINT:** Not established.

**FLASH POINT:** Not flammable.

**FLAMMABILITY:** Not flammable.

**EXPLOSIVE PROPERTIES:** Not explosive

**OXIDIZING PROPERTIES:** Not an oxidizer.

**VAPOR PRESSURE:** Not established.

**SPECIFIC GRAVITY:** Not established.

**SOLUBILITY:** Miscible in methanol and ethanol.

**SOLUBILITY IN WATER:** Completely soluble.

**VISCOSITY:** Not established.

**RELATIVE VAPOR DENSITY (air = 1):** Not established.

**EVAPORATION RATE:** Similar to water.

**ODOR THRESHOLD:** Not established.

**COEFFICIENT OF OIL/WATER DISTRIBUTION (PARTITION COEFFICIENT):** Not established.

## 10. STABILITY AND REACTIVITY

**STABILITY:** Stable.

### DECOMPOSITION PRODUCTS:

Combustion: Carbon oxides, sodium oxides, phosphorus oxides, and nitrogen oxides.

Hydrolysis: None known.

### MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE:

Glycan Labeling Solution, Glycan Ladder, and Glycan Marker: Strong oxidizers, strong alkalis, strong bases, most common metals, acetaldehyde, ammonium nitrate, phosphorus isocyanate, phosphorus trichloride, potassium *tert*-butoxide, substances that are incompatible with water.

All Other Components: Strong oxidizers, strong acids, some metals, substances that are incompatible with water.

**HAZARDOUS POLYMERIZATION:** Will not occur.

**CONDITIONS TO AVOID:** Any conditions that are incompatible with water, mixing this product with incompatible chemicals.

## 11. TOXICOLOGICAL INFORMATION

**HEALTH EFFECTS OR RISKS FROM EXPOSURE:** An explanation in lay terms:

### Acute:

Glycan Labeling Solution: Ingestion can cause nausea, vomiting, diarrhea, and cyanosis (blue color to skin due to lack of oxygen) caused by methemoglobinemia (a condition that affects the ability of the blood to carry oxygen).

All Other Components: Beyond mild irritation of the skin or eyes, contact with these components does not usually cause acute health effects.

### Chronic:

Glycan 3X Denaturing Buffer: The Sodium Dodecyl Sulfate constituent of this component is a skin sensitizer; subsequent exposure to very small amounts may cause allergic reaction.

Glycan Labeling Solution: The Hydroxylamine Hydrochloride constituent is a skin sensitizer; subsequent exposure to very small amounts may cause allergic reaction. Symptoms of eye overexposure may include redness, tearing, temporary blurred vision, and pain.

All Other Components: These components are not known to cause any significant chronic health effects.

### TARGET ORGANS:

#### Acute:

Glycan 3X Denaturing Buffer: Eyes.

Glycan Labeling Solution: Eyes, skin, blood.

All Other Solutions: Eyes, gastrointestinal tract.

#### Chronic:

Glycan 3X Denaturing Buffer and Glycan Labeling Solution: Skin.

All Other Solutions: None known.

**TOXICITY DATA:** The following information is available for the constituents in this product present in greater than 1 percent concentration and listed in Section 3 (Composition and Information on Ingredients).

#### ACETIC ACID:

Skin Irritancy (human) = 50 mg/24 hours; mild

LDLo (unknown, man) = 308 mg/kg

TDLo (oral, human) = 1470 µg/kg; Gastrointestinal: changes in structure or function of esophagus, ulceration or bleeding from small intestine, ulceration or bleeding from large intestine

TDLo (rectal, child) = 281 µL/kg; Alteration in gastric secretion; Liver function tests impaired; Kidney, Ureter, Bladder: changes in tubules (including acute renal failure, acute tubular necrosis)

#### ACETIC ACID (continued):

TCLo (inhalation, human) = 816 ppm/3 minutes; Nose, Eye, Pulmonary system effects

Skin Irritancy (rabbit) = 20 mg/24 hours; moderate

Skin Irritancy (rabbit) = 525 mg/open; severe

Skin Irritancy (rabbit) = 50 mg/24 hours; mild

Eye Irritancy (rabbit) = 50 µg/open; severe

Eye Irritancy (rabbit) = 5 mg/30 seconds/rinse; mild

LC<sub>50</sub> (inhalation, mouse) = 5620 ppm/1 hours

LD<sub>50</sub> (oral, rat) = 3310 mg/kg

LD<sub>50</sub> (skin, rabbit) = 1060 mg/kg

#### ACETIC ACID (continued):

LD<sub>50</sub> (intravenous, mouse) = 525 mg/kg

LDLo (oral, rabbit) = 600 mg/kg

LDLo (subcutaneous, rabbit) = 600 mg/kg

LDLo (rectal, rabbit) = 600 mg/kg

LCLo (inhalation, rat) = 16,000 ppm/4 hours

TDLo (oral, rat) = 700 mg/kg/18 days post;

Reproductive effects

TDLo (oral, rat) = 22680 mg/kg/9 weeks/continuous;

Behavioral: food intake (animal); Weight loss or decreased weight gain

## 11. TOXICOLOGICAL INFORMATION

### TOXICITY DATA (continued):

#### ACETIC ACID (continued):

TCLo (inhalation, rat) = 5070 µg/m<sup>3</sup>/24 hours/95 days/continuous; Changes in urine composition; Blood: changes in leukocyte (WBC) count; Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels

TDLo (intratesticular, rat) = 400 mg/kg/male 1 day pre-mating; Reproductive: Fertility - male fertility index (e.g. # males impregnating females per # males exposed to fertile non-pregnant females)

Sister Chromatid Exchange (lymphocyte, human) = 5 mmol/L

Mutation in Microorganisms (*Escherichia coli*) = 300 ppm/3 hours

Sex Chromosome Loss and Nondisjunction (inhalation, *Drosophila melanogaster*) = 1000 ppm/24 hours

Sex Chromosome Loss and Nondisjunction (oral, *Drosophila melanogaster*) = 1000 ppm

Cytogenetic Analysis (parenteral, grl) = 40 µmol/L

Cytogenetic Analysis (ovary, hamster) = 10 mmol/L

Unscheduled DNA Synthesis (skin, mouse) = 79279 µg/kg

#### SODIUM DODECYL SULFATE:

Skin Irritancy (human) = 250 mg/24 hours; mild

Skin Irritancy (human) = 25 mg/24 hours; mild

DNA Inhibition (lymphocyte, human) = 100 mg/L

LD<sub>50</sub> (oral, rat) = 1288 mg/kg

LC<sub>50</sub> (inhalation, rat) > 3900 mg/m<sup>3</sup>/1 hour

LD<sub>50</sub> (intraperitoneal, rat) = 210 mg/kg

#### SODIUM DODECYL SULFATE (continued):

LD<sub>50</sub> (intraperitoneal, mouse) = 250 mg/kg; Behavioral: somnolence (general depressed activity), changes in motor activity (specific assay); Vascular: regional or general arteriolar or venous dilation

LD<sub>50</sub> (intravenous, rat) = 118 mg/kg

LD<sub>50</sub> (intravenous, mouse) = 118 mg/kg

LDLo (skin, rabbit) = 10 g/kg; Behavioral: ataxia; Gastrointestinal: changes in structure or function of salivary glands; Gastrointestinal: hypermotility, diarrhea

TDLo (oral, rat) = 75 mg/kg/3 days/ intermittent; Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels; hepatic microsomal mixed oxidase (dealkylation, hydroxylation, etc.)

TDLo (oral, rat) = 22750 mg/kg/13 weeks/continuous; Liver: changes in liver weight

TDLo (oral, rat) = 840 mg/kg/28 days/continuous; Endocrine: changes in adrenal weight

TDLo (skin, mouse) = 480 mg/kg/6–13 days pregnant; Reproductive: Effects on Fetus, fetotoxicity (except death, e.g., stunted fetus)

Skin Irritancy (mouse) = 25 mg/24 hours; moderate

Skin Irritancy (rabbit) = 50 mg/24 hours; severe

Skin Irritancy (rabbit) = 25 mg/24 hours; moderate

Skin Irritancy (rabbit) = 250 mg/24 hours; moderate

Skin Irritancy (rabbit) = 50 mg/24 hours; mild

Skin Irritancy (dog) = 25 mg/24 hours; mild

Skin Irritancy (pig) = 25 mg/24 hours; mild

Skin Irritancy (guinea pig) = 25 mg/24 hours; mild

#### SODIUM DODECYL SULFATE (continued):

Eye Irritancy (rabbit) = 100 mg/24 hours; moderate

Eye Irritancy (rabbit) = 250 µg; mild

Eye Irritancy (rabbit) = 2 mg

Eye Irritancy (rabbit) = 10 mg; moderate

Mutation in Microorganisms (*Saccharomyces cerevisiae*) = 3500 µmol/L

Mutation in Microorganisms (other microorganisms) = 200 mg/L

Sex Chromosome Loss and Non-disjunction (*Aspergillus nidulans*) = 900 ppm

DNA Repair (*Escherichia coli*) = 12500 nL/well

DNA Damage (liver, rat) = 243 µmol/L

DNA Inhibition (kidney, guinea pig) = 60 µmol/L

#### SODIUM PHOSPHATE, DIBASIC:

Standard Draize Test (skin, rabbit) = 500 mg/24 hours; Mild

Standard Draize Test (eye, rabbit) = 500 mg/24 hours; Mild

LD<sub>50</sub> (oral, rat) = 17 g/kg

LDLo (intraperitoneal, rat) = 1 g/kg

LDLo (subcutaneous, rat) = 1 g/kg

LDLo (intramuscular, rat) = 1 g/kg

LDLo (intravenous, rabbit) = 1075 mg/kg; Behavioral: tetany

#### SODIUM PHOSPHATE, MONOBASIC:

Standard Draize Test (Eye-Human) 50 mg; Mild

Standard Draize Test (Eye-Rabbit) 150 mg; Mild

LD<sub>50</sub> (Oral-Rat) 8290 mg/kg

LD<sub>50</sub> (Intramuscular-Rat) 250 mg/kg

**CARCINOGENIC POTENTIAL:** The constituents in the components of this product are not found on the following lists: U.S. EPA, U.S. NTP, U.S. OSHA, U.S. NIOSH, GERMAN MAK, IARC, or ACGIH and therefore are neither considered to be nor suspected to be cancer causing agents by these agencies.

### IRRITANCY OF PRODUCT:

**Glycan Labeling Solution:** Skin and eye contact irritates contaminated tissue.

**All Other Components:** Contact with the skin or eyes may cause mild irritation, which is alleviated upon rinsing.

### SENSITIZATION TO THE PRODUCT:

**Glycan 3X Denaturing Buffer:** The Sodium Dodecyl Sulfate constituent of this component is a skin sensitizer; subsequent exposure to very small amounts may cause allergic reaction.

**All Other Components:** All other components of this product are not known to cause skin or respiratory sensitization.

**REPRODUCTIVE TOXICITY INFORMATION:** Listed below is information concerning the effects of this product and its components on the human reproductive system.

**Mutagenicity:** The constituents in the components in this product are not reported to produce mutagenic effects in humans.

**Embryotoxicity:** The constituents in the components in this product are not reported to cause human embryotoxic effects.

**Teratogenicity:** The constituents in the components in this product are reported to cause teratogenic effects in humans.

**Reproductive Toxicity:** The constituents in the components in this product are not reported to cause adverse reproductive effects in humans.

A **mutagen** is a chemical that causes permanent changes to genetic material (DNA) such that the changes will propagate through generation lines.

An **embryotoxin** is a chemical that causes damage to a developing embryo (i.e., within the first eight weeks of pregnancy in humans), but the damage does not propagate across generational lines. A **teratogen** is a chemical that causes damage to a developing fetus, but the damage does not propagate across generational lines. A **reproductive toxin** is any substance that interferes in any way with the reproductive process.

**BIOLOGICAL EXPOSURE INDICES:** Currently, there are no Biological Exposure Indices (BEIs) determined for the constituents in this product's components.

## 12. ECOLOGICAL INFORMATION

**MOBILITY:** This product has not been tested for mobility in soil. The following information is available for some components of this product.

#### ACETIC ACID:

Adsorption of Acetic Acid to 3 nearshore marine sediments collected from three different locations (clastic mud, 3.5% organic carbon, pH=7.0; lateritic muddy sand, 1.3% organic carbon, pH=7.7; and fine carbonate sand; 0.17% organic carbon, pH=8.1) ranged from 9 to 23% of Acetic Acid; Kd values of 0.65 (Koc=228), 0.085 (Koc=6.5), and 0.046 (Koc=27) were measured for the clastic mud, muddy sand, and carbonate sand, respectively. A log Koc of 0.00 (Koc=1), which was derived from experimental measurements, was reported for Acetic Acid. According to a classification scheme, Koc values ranging from 1 to 228 suggest that Acetic Acid is expected to have very high to moderate mobility in soil. No detectable sorption was measured for Acetic Acid using the OECD Guideline 106 method; three different soils were used, an acidic forest soil, pH=2.8, an agricultural soil, pH=6.7, and a lake sediment, pH=7.1.

#### SODIUM DODECYL SULFATE:

Using a structure estimation method based on molecular connectivity indices, the Koc for Sodium Dodecyl Sulfate can be estimated to be 1.0X10<sup>4</sup>. According to a classification scheme, this estimated Koc value suggests that Sodium Dodecyl Sulfate is expected to be immobile in soil.

**PERSISTENCE AND BIODEGRADABILITY:** This product has not been tested for persistence or biodegradability. It is expected that the constituents of this product will slowly degrade in the environment and form a variety of organic and inorganic materials; however, no specific information is known. Additional environmental data for components are available as follows:

#### ACETIC ACID:

Formation of Acetic Acid can occur via the reaction of olefins with ozone in the atmosphere. Decomposition of solid biological wastes produces Acetic Acid which is readily metabolized by living organisms; Acetic Acid occurs as a normal metabolite in both plants and animals. If released to air, a vapor pressure of 15.7 mm Hg at 25°C indicates Acetic Acid will exist solely as a vapor in the ambient atmosphere. Vapor-phase Acetic Acid will be degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals; the half-life for this reaction in air is estimated to be 22 days. Acetic acid does not absorb light with wavelengths > 290 nm, and is not expected to be susceptible to direct photolysis by sunlight. If released to soil, Acetic Acid is expected to have very high to moderate mobility based upon Koc values ranging from 6.5 to 228. Volatilization from moist soil surfaces is not expected to be an important fate process, since the pKa of Acetic Acid is 4.74, indicating that it will primarily exist in the dissociated form in the environment. Acetic acid may volatilize from dry soil surfaces based upon its vapor pressure. The major environmental fate process for Acetic Acid is biodegradation. A large number of biological screening studies have determined that Acetic Acid biodegrades readily under both aerobic and anaerobic conditions. If released into water, Acetic Acid is not expected to adsorb to suspended solids and sediment based upon the Koc values. Acetic acid is expected to exist in the dissociated form in the environment and therefore volatilization from water surfaces is not expected to be an important fate process. Hydrolysis is not expected to be an important environmental fate process since this compound lacks functional groups that hydrolyze under environmental conditions.

## 12. ECOLOGICAL INFORMATION (Continued)

### PERSISTENCE AND BIODEGRADABILITY (continued):

#### ACETIC ACID (continued):

##### SODIUM DODECYL SULFATE:

If released to air, an estimated vapor pressure of 4.7X10<sup>-13</sup> mm Hg at 25°C indicates Sodium Dodecyl Sulfate will exist solely in the particulate phase in the ambient atmosphere. Particulate-phase Sodium Dodecyl Sulfate will be removed from the atmosphere by wet and dry deposition. If released to soil, Sodium Dodecyl Sulfate is expected to have no mobility based upon an estimated Koc of 1.0X10<sup>+4</sup>. Volatilization from moist soil surfaces is not expected to be an important fate process based upon a water solubility of 1.00X10<sup>+5</sup> mg/L and that it is a salt. Sodium Dodecyl Sulfate is not expected to volatilize from dry soil surfaces based upon its estimated vapor pressure. Approximately 60% of Sodium Dodecyl Sulfate, present at 10 mg/kg, was mineralized in a creosote-contaminated sandy loam soil in 10 days. If released into water, Sodium Dodecyl Sulfate is expected to adsorb to suspended solids and sediment in water based upon the estimated Koc. Approximately 80% of the initial concentration (approximately 25 ppm) of Sodium Dodecyl Sulfate was biodegraded in four samples of surface water in 50-140 hours, depending upon the season in which the samples were collected and inoculum source. Volatilization from water surfaces is not expected to be an important fate process based upon this compound's water solubility and that it is a salt. Hydrolysis of Sodium Dodecyl Sulfate is not expected to occur due to the lack of hydrolyzable functional groups.

##### SODIUM PHOSPHATE, DIBASIC:

Water Solubility = 12.5 g/100 mL (25°C); 14 lbs/ 100 gal (0°C)

##### SODIUM PHOSPHATE, MONOBASIC:

Water Solubility = 87 g/100 mL

**BIO-ACCUMULATION POTENTIAL:** This product has not been tested for bio-accumulation potential. Additional data for components are available as follows:

#### ACETIC ACID:

An estimated BCF of 3.2 was calculated for Acetic Acid, using a log Kow of -0.71 and a regression-derived equation. According to a classification scheme, this BCF suggests the potential for bioconcentration in aquatic organisms is low

##### SODIUM DODECYL SULFATE:

An estimated BCF of 71 was calculated for Sodium Dodecyl Sulfate, using a log Kow of 1.6 and a regression-derived equation. According to a classification scheme, this BCF suggests the potential for bioconcentration in aquatic organisms is moderate.

**ECOTOXICITY:** This product has not been tested for aquatic or animal toxicity. All releases to terrestrial, atmospheric and aquatic environments should be avoided. Additional aquatic toxicity data are available as follows:

#### ACETIC ACID:

##### Phytotoxicity:

EC<sub>50</sub> (Corn) fumigation 2 hours = 50.1 mg/m<sup>3</sup>, effect: leaf injury  
 EC<sub>50</sub> (Soybean) fumigation 2 hours = 20.1 mg/m<sup>3</sup>, effect: leaf injury  
 EC<sub>50</sub> (Tobacco) fumigation 2 hours = 41.2 mg/m<sup>3</sup>, effect: leaf injury  
 EC<sub>50</sub> (Alfalfa) fumigation 2 hours = 8 mg/m<sup>3</sup>, effect: leaf injury  
 EC<sub>50</sub> (Wheat) fumigation 2 hours = 23.3 mg/m<sup>3</sup>, effect: leaf injury  
 EC<sub>0</sub> (*Pseudomonas putida* bacteria) 16 hours = 2,850 mg/L  
 EC<sub>0</sub> (*Microcystis aeruginosa* algae) = 85-90 mg/L  
 EC<sub>0</sub> (*Scenedesmus quadricauda* green algae) 16 hours = 4,000 mg/L  
 NOEC (*Chlamydomonas dysosmos* algae) motility 5 min = 17 mg/L  
 NOEC (*Chlamydomonas moewusii* algae) motility 5 min = 8.4 mg/L  
 NOEC (*Chlamydomonas moewusii* algae) motility 5 min = 17 mg/L  
 NOEC (*Chlamydomonas monoica* algae) motility 5 min = 33 mg/L  
 NOEC (*Chlamydomonas reinhardi* algae) motility 5 min = 63 mg/L  
 NOEC (*Chlamydomonas monoica* algae) motility 5 min = 66 mg/L  
 EC<sub>100</sub> (*Chlamydomonas dysosmos* algae) immobility 5 min = 63 mg/L  
 EC<sub>100</sub> (*Chlamydomonas moewusii* algae) immobility 5 min = 17 mg/L  
 EC<sub>100</sub> (*Chlamydomonas moewusii* algae) immobility 5 min = 52 mg/L  
 EC<sub>100</sub> (*Chlamydomonas monoica* algae) immobility 5 min = 131 mg/L  
 EC<sub>100</sub> (*Chlamydomonas reinhardi* algae) immobility 5 min = 131 mg/L  
 EC<sub>100</sub> (*Chlamydomonas monoica* algae) immobility 5 min = 131 mg/L

##### Aquatic:

Perturbation Level (*Gammarus pulex*) = 6 mg/L  
 Perturbation Level (*Lymnaea ovata*) = 15 mg/L  
 Lethal (goldfish) after 20 hours = 423 mg/L  
 EC<sub>0</sub> (*Entosiphon sulcatum* protozoa) 72 hours = 78 mg/L  
 EC<sub>0</sub> (*Uronema parducci* Chatton-Lwoff protozoa) = 1,350 mg/L  
 EC<sub>0</sub> (*Daphnia magna*) 24 hours = 78 mg/L  
 EC<sub>0</sub> (*Daphnia magna*) 24 hours = 950 mg/L (at pH 7)  
 EC<sub>50</sub> (*Daphnia magna*) 24 hours = 95 mg/L  
 EC<sub>50</sub> (*Daphnia magna*) 24 hours = 6,000 mg/L (at pH 7)  
 EC<sub>100</sub> (*Daphnia magna*) 24 hours = 114 mg/L  
 EC<sub>100</sub> (*Daphnia magna*) 24 hours = 7,145 mg/L (at pH 7)  
 LD<sub>0</sub> (Goldfish) 10 mg/L; long-time exposure in hard water  
 LC<sub>0</sub> (creek chub) 24 hours = 100 mg/L  
 LC<sub>0</sub> (*Leuciscus idus melanotus*) 48 hours = 368 mg/L  
 LC<sub>50</sub> (brine shrimp) 24-48 Hours = 42-32 mg/L  
 LC<sub>50</sub> (*Daphnia magna*) 24 hours = 47 mg/L  
 LC<sub>50</sub> (*Gammarus Hyale plumulosa*) 96 hours = 310 mg/L  
 LC<sub>50</sub> (*Goniobasis livescens*) 24 hours = 640 mg/L  
 LC<sub>50</sub> (*Goniobasis livescens*) 48 hours = 460 mg/L  
 LC<sub>50</sub> (*Lymnaea emarginata*) 24 hours = 390 mg/L  
 LC<sub>50</sub> (*Lymnaea emarginata*) 48 hours = 320 mg/L  
 LC<sub>50</sub> (bluegill) 96 hours = 75 mg/L  
 LC<sub>50</sub> (*Lepomis macrochirus*) 24 hours = 100-1,000 mg/L  
 LC<sub>50</sub> (bluegill sunfish) 96 hours = 75 mg/L  
 LC<sub>50</sub> (mosquito fish) 24-96 hours = 251 mg/L  
 LC<sub>50</sub> (Goldfish) 1; 24; 48; 72; 96 hours = > 315; 122; 92; 88 mg/L, static bioassay in reconstituted water at 18-22°C, pH 5.9  
 LC<sub>50</sub> (Goldfish) 1; 24; 48; 72; 96 hours = 175; 106; 106; 79; 79 mg/L  
 LC<sub>50</sub> (*Leuciscus idus melanotus*) 48 hours = 410 mg/L  
 LC<sub>50</sub> (*Oryzias latipes* red killifish) 96 hours = in seawater: 530 mg/L  
 LC<sub>50</sub> (*Oryzias latipes* red killifish) 96 hours = in freshwater: 94 mg/L  
 LC<sub>100</sub> (*Leuciscus idus melanotus*) 48 hours = 452 mg/L  
 LC<sub>100</sub> (creek chub) 24 hours = 200 mg/L  
 LC<sub>100</sub> (*Salmo gairdneri*) 24 hours = > 315 mg/L

##### SODIUM DODECYL SULFATE:

EC<10 (*Pseudomonas putida*) 30 min = >9,050 mg/L  
 EC<10 (*Pseudomonas putida*) 16 hours = 290 mg/L  
 EC<0 (*Entosiphon sulcatum*) 72 hours = 40 mg/L  
 EC<0 (*Uronema parducci* - Chatton-Lwoff) = 0.75 mg/L  
 EC<0 (*Scenedesmus quadricauda*) 7 days = 0.02 mg/L  
 EC<0,S (*Daphnia magna*) 24 hours = 17; 23; 27; 5; 41 mg/L  
 EC<1,S (*Microcystis aeruginosa*) 8 days = 7 mg/L

#### SODIUM DODECYL SULFATE (continued):

EC<sub>10</sub> (*Pseudomonas putida*) 16 hours = 9,050 mg/L  
 EC<sub>50</sub> (*Daphnia magna*) 48 hours = 6.3; 6.2-9; 7.1-49.4 mg/L  
 EC<sub>50</sub> (*Pseudomonas fluorescens*) = 18 hours = 1,650; 1,700 mg/L  
 EC<sub>50</sub> (*Neomysis americana*) 96 hours = 5.7-8.8 mg/L  
 EC<sub>50</sub> (*Cephaloscyllium ventriosum*) avoidance = 160 mg/L  
 EC<sub>50</sub> (*Heterodontus franciscanus*) avoidance = 174 mg/L  
 EC<sub>50</sub> (*Crassostrea virginica*) 48 hours = 0.37 mg/L  
 EC<sub>50</sub> (*Mercenaria mercenaria*) 48 hours = 0.47 mg/L  
 EC<sub>50</sub> (*Acartia tonsa*) 96 hours = 55 mg/L  
 EC<sub>50</sub> (*Eurytemora affinis*) 96 hours = 2.0-3.1 mg/L  
 EC<sub>50</sub> (*Triakis semifasciata*) avoidance = 113 mg/L  
 EC<sub>50</sub>,S (*Aeromonas hydrophila*) 18 hours = 3,700 mg/L  
 EC<sub>50</sub>,S (*Skeletonema costatum*) 2 hours = 2.3 mg/L  
 EC<sub>50</sub>,S (*Pseudoisochrysis paradoxa*) 2 hours = 1.3 mg/L  
 EC<sub>50</sub>,S (*Prorocentrum minimum*) 2 hours = 1.3 mg/L  
 EC<sub>50</sub>,S (*Selenastrum capricornutum*) 8 days = 3.7 mg/L  
 EC<sub>50</sub>,S (*Daphnia magna*) 24 hours = 5-20.2; 33; 38-44; 79 mg/L  
 EC<sub>50</sub>,S (*Acanthomyia sculpta*) 72 hours = 0.94-0.96 mg/L  
 EC<sub>50</sub>,S (*Gammarus pulex*) 4 days = 3.6-4.6; 9.4-13 mg/L  
 EC<sub>50</sub>,S (*Daphnia magna*) 24 hours = 9.8; 10-33; 80 mg/L  
 EC<sub>50</sub>,S (*Palaemonetes pugio*) 96 hours = 13.8; 108 mg/L  
 EC<sub>50</sub>,S (*Mysidopsis bahia*) 72 hours = 4.5-3.8 mg/L  
 EC<sub>90</sub> (*Spirillum volutans*) 2 hours = 4.2; 43 mg/L  
 EC<100,S (*Daphnia magna*) 24 hours = 58; 63; 118 mg/L  
 NOEC (*Pimephales promelas* larvae) 8 days = 2.2-4.6 mg/L  
 NOEC,S (*Daphnia magna*) 10 days = 2 mg/L  
 LC<0 (*Leuciscus idus*) 48 hours = 10; 12.5 mg/L  
 LC<10 (*Pimephales promelas* larvae) 8 days = 4-4.5 mg/L  
 LC<50 (*Pimephales promelas* larvae) 8 days = 4.8-5.9 mg/L  
 LC<50 (*Artemia salina*) 48 hours = 2.2-3.2 mg/L  
 LC<50 (*Artemia salina*) 24 hours = 3.6; 6.9; 13.3-19.9; 14.8-18.5; 18.8-24.8; 19.1; 20-22.5 mg/L  
 LC<50 (*Ceriodaphnia dubia*) 48 hours = 48 mg/L  
 LC<50 (*Daphnia pulex*) 24 hours = 5-20; 14-18 mg/L  
 LC<50 (*Daphnia pulex*) 48 hours = 1.4-15; 10-13 mg/L  
 LC<50 (*Artemia salina*) 24 hours = 3.6; 6.9-25 mg/L  
 LC<50 (*Artemia salina*) 24 hours = 0.94-21.1 mg/L  
 LC<50 (*Ceriodaphnia dubia*) = 36-59 mg/L  
 LC<50 (*Daphnia magna*) 24 hours = 10-33; 13-21; 6.3 mg/L  
 LC<50 (*Daphnia magna*) 48 hours = 105.4-15; 11-13; 2.8; 1.8 mg/L  
 LC<50 (*Oryzias latipes*) 48 hours = 10 mg/L  
 LC<50 (*Tresus capax* larvae) 48 hours = 0.35 mg/L  
 LC<50 (*Limnaea peregra*) 96 hours = 0.54 mg/L  
 LC<50 (*Crassostrea gigas*) 48 hours = 0.58-1.16; 1 mg/L  
 LC<50 (brown trout) 0.07 hour = 560 mg/L  
 LC<50 (brown trout) 0.08 hour = 320 mg/L  
 LC<50 (brown trout) 0.15 hour = 180 mg/L  
 LC<50 (brown trout) 0.26 hour = 150 mg/L  
 LC<50 (*Flordichthys carpio*) 5 hours = 3 mg/L  
 LC<50 (brown trout) 2.15 hours = 100 mg/L  
 LC<50 (brown trout) 6.5 hours = 56 mg/L  
 LC<50 (brown trout) 32 hours = 32 mg/L  
 LC<50 (brown trout) 45 hours = 18 mg/L  
 LC<50 (*Fundulus heteroclitus*) 1 hour = 4.5-80 mg/L  
 LC<50 (*Leuciscus idus*) 48 hours = 15.6; 22; 27 mg/L  
 LC<50 (*Carassius auratus*) 96 hours = 23.7-34.9 mg/L  
 LC<50 (*Fundulus similis*) 96 hours = 4.5 mg/L  
 LC<50 (*Brachydanio rerio*) 96 hours = 9.9-20 mg/L  
 LC<50 (*Cichlasoma nigrofasciatum*) 96 hours = 16-30 mg/L  
 LC<50 (*Cyprinus carpio*) 96 hours = 1.31 mg/L  
 LC<50 (*Lebistes reticulatus*) 96 hours = 13.5-18 mg/L  
 LC<50 (*Lepomis macrochirus*) 96 hours = 4.5 mg/L  
 LC<50 (*Macrones vittatus*) 96 hours = 1.39 mg/L  
 LC<50 (*Oncorhynchus mykiss*) 96 hours = 4.62; 4.3 mg/L

## 12. ECOLOGICAL INFORMATION (Continued)

### EFFECT OF CHEMICAL ON AQUATIC LIFE (continued):

#### SODIUM DODECYL SULFATE (continued):

LC<sub>50</sub> (*Oncorhynchus mykiss*) 48 hours = 5.95 mg/L  
 LC<sub>50</sub> (*Oryzias latipes*) 6 hours = 67 mg/L  
 LC<sub>50</sub> (*Oryzias latipes*) 24 hours = 46; 70 mg/L  
 LC<sub>50</sub> (*Menidia beryllina*) 96 hours = 1.48 mg/L  
 LC<sub>50</sub> (*Pleuronectes platessa*) 24 hours = 5.8 mg/L  
 LC<sub>50</sub> (*Palaemonetes pugio*) 48 hours = 70–162 mg/L  
 LC<sub>50</sub> (*Oryzias latipes*) 48 hours = 46 mg/L  
 LC<sub>50</sub> (*Pimephales promelas*) 96 hours = 6.6; 10–22 mg/L  
 LC<sub>50</sub> (*Atherinops affinis*) 96 hours = 1.88 mg/L  
 LC<sub>50</sub>,F (*Corbicula fluminea*) 5 days = 7.8–23.6 mg/L  
 LC<sub>50</sub>,F (trout) 48 hours = 5.9 mg/L  
 LC<sub>50</sub>,F (trout) 96 hours = 4.6 mg/L  
 LC<sub>50</sub>,F (trout) 10 days = 2.8 mg/L  
 LC<sub>50</sub>,F (*Brachydanio rerio*) 48 hours = 8.8 mg/L  
 LC<sub>50</sub>,F (*Brachydanio rerio*) 96 hours = 8.0 mg/L  
 LC<sub>50</sub>,F (*Brachydanio rerio*) 10 days = 8.0 mg/L  
 LC<sub>50</sub>,F (*Salmo gairdneri*) 96 hours = 5.3 mg/L  
 LC<sub>50</sub>,F (*Jordanella floridae*) 48 hours = 10.0 mg/L  
 LC<sub>50</sub>,F (*Jordanella floridae*) 96 hours = 8.1 mg/L  
 LC<sub>50</sub>,F (*Jordanella floridae*) 10 days = 6.9 mg/L  
 LC<sub>50</sub>,S (*Mysidopsis bahia*) 96 hours = 6.1–7.1; 7–18.3 mg/L  
 LC<sub>50</sub>,S (*Mysidopsis bahia*) 7 days = 5.9–14.5 mg/L  
 LC<sub>50</sub>,S (*Nereis virens*) 96 hours = 13.5 mg/L

#### SODIUM DODECYL SULFATE (continued):

LC<sub>50</sub>,S (*Crassostrea gigas* larvae) 48 hours = 0.91 mg/L  
 LC<sub>50</sub>,S (*Corbicula fluminea*) 96 hours = 27.2–36.2 mg/L  
 LC<sub>100</sub> (*Leuciscus idus*) 48 hours = 20; 30 mg/L  
 LC<sub>50</sub>,S (*Salmo gairdneri*) 96 hours = 4.6; 6.2 mg/L  
 LC<sub>50</sub>,S (*Pimephales promelas* fry) 96 hours = 10.2 mg/L  
 LC<sub>50</sub>,S (*Pimephales promelas* juvenile) 96 hours = 17 mg/L  
 LC<sub>50</sub>,S (*Pimephales promelas* adult) 96 hours = 22.5 mg/L  
 LC<sub>50</sub>,S (*Pimephales promelas*) 48 hours = 5.1–5.9 mg/L  
 LC<sub>50</sub>,S (*Cichlasoma nigrofasciatum*) 96 hours = 16.1–30 mg/L  
 LC<sub>50</sub>,S (*Poecilia reticulata*) 96 hours = 13.5–18.3 mg/L  
 LC<sub>50</sub>,S (*Carassius auratus*) 6 hours = 60 mg/L  
 LC<sub>50</sub>,S (*Phoxinus phoxinus*) 24 hours = 30.5 mg/L  
 LC<sub>50</sub>,S (*Macrones vittatus*) 96 hours = 1.4–1.5 mg/L  
 LC<sub>50</sub>,S (*Cyprinodon variegatus*) 96 hours = 3.8–4.5; 9 mg/L  
 LC<sub>50</sub>,S (*Cyprinodon variegatus*) 7 days = 1.8–3.4 mg/L  
 LC<sub>50</sub>,S (*Menidia beryllina*) 7 days = 1.5–2.2 mg/L  
 LC<sub>50</sub>,S (*Menidia beryllina*) 96 hours = 1.5; 2.5–3.0; 2.8 mg/L  
 LC<sub>50</sub>,S (*Gasterosteus aculeatus*) 96 hours = 0.5–4.2 mg/L  
 LC<sub>50</sub>,S (*Fundulus heteroclitus*) 96 hours = 4.5–5.6 mg/L at 20 ppt salt  
 LC<sub>50</sub>,S (*Fundulus similis*) 96 hours = 0.5–1.8 mg/L at 20 ppt salt

#### SODIUM PHOSPHATE DIBASIC:

LC<sub>50</sub> (*Daphnia magna* Water flea) 25 hours = 154 mg/L; static  
 LC<sub>50</sub> (*Daphnia magna* Water flea) 50 hours = 1089 mg/L; static

**ENVIRONMENTAL EXPOSURE CONTROLS:** Controls should be engineered to prevent release to the environment, including procedures to prevent spills, atmospheric release and release to waterways.

## 13. DISPOSAL CONSIDERATIONS

**DISPOSAL METHODS:** Do NOT dispose of any solution of this product by pouring down the drain. It is the responsibility of the generator to determine at the time of disposal whether the product meets the criteria of a hazardous waste per regulations of the area in which the waste is generated and/or disposed of. Waste disposal must be in accordance with appropriate Federal, State, and local regulations. This product, if unaltered by use, may be disposed of by treatment at a permitted facility or as advised by your local hazardous waste regulatory authority. Shipment of wastes must be done with appropriately permitted and registered transporters.

**DISPOSAL CONTAINERS:** Waste materials must be placed in and shipped in appropriate 5-gallon or 55-gallon poly or metal waste pails or drums. Permeable cardboard containers are not appropriate and should not be used. Ensure that any required marking or labeling of the containers be done to all applicable regulations.

**PRECAUTIONS TO BE FOLLOWED DURING WASTE HANDLING:** Wear proper protective equipment when handling waste materials.

**U.S. EPA WASTE NUMBER:** Not applicable.

**EWG WASTE CODE:** Wastes from research, diagnoses, treatment, or preventions of disease involving animals: chemicals other than containing dangerous substances: 18-02-06

## 14. TRANSPORTATION INFORMATION

**U.S. DEPARTMENT OF TRANSPORTATION REGULATIONS:** This product is not classified as dangerous goods, per U.S. DOT regulations, under 49 CFR 172.101.

**TRANSPORT CANADA TRANSPORTATION OF DANGEROUS GOODS REGULATIONS:** This product is NOT classified as Dangerous Goods, per regulations of Transport Canada.

**INTERNATIONAL AIR TRANSPORT ASSOCIATION/ICAO (IATA/ICAO):** This product is NOT classified as dangerous goods, per rules of IATA.

**INTERNATIONAL MARITIME ORGANIZATION (IMO):** This product is NOT classified as dangerous goods, per the rules of IMO.

**EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY ROAD (ADR):**

This product is NOT classified by the United Nations Economic Commission for Europe to be dangerous goods.

**AUSTRALIAN FEDERAL OFFICE OF ROAD SAFETY CODE FOR THE TRANSPORTATION OF DANGEROUS GOODS BY ROAD OR RAIL:** This product is NOT dangerous goods, per regulations of the Office of Road Safety.

## 15. REGULATORY INFORMATION

### ADDITIONAL U.S. REGULATIONS:

**U.S. SARA REPORTING REQUIREMENTS:** The constituents in components of this product are not subject to Sections 302, 304, and 313 reporting requirements under the Superfund Amendment and Reauthorization Act.

**U.S. SARA THRESHOLD PLANNING QUANTITY:** There are no specific Threshold Planning Quantities for the constituents in components of this product. The default Federal MSDS submission and inventory requirement filing threshold of 10,000 lbs (4,540 kg) therefore applies, per 40 CFR 370.20.

**U.S. CERCLA REPORTABLE QUANTITY (RQ):** Not applicable.

**U.S. TSCA INVENTORY STATUS:** Some solutions of this product contain ingredients not included in the TSCA Inventory. In accordance with the conditions listed in 40 CFR 720.36 and 721.47, this product must be used only for research and development, pharmaceutical manufacture, or export. It must be used by, or directly under the supervision of, a technically qualified individual. The manufacturer should be consulted prior to using this product for other applications. Other requirements may apply.

**OTHER U.S. FEDERAL REGULATIONS:** Not applicable.

**CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65):** No component of this product is on the California Proposition 65 lists.

## 15. REGULATORY INFORMATION (Continued)

### ADDITIONAL U.S. REGULATIONS (continued):

#### ANSI LABELING (Z129.1; Provided to Summarize Occupational Hazard Information):

Glycan 3X Denaturing Buffer: **WARNING!** MAY CAUSE ALLERGIC SKIN REACTION. MAY CAUSE SKIN, EYE, AND RESPIRATORY TRACT IRRITATION. MAY CAUSE DISCOMFORT IF SWALLOWED. Avoid prolonged or repeated skin contact. Avoid skin contact. Avoid breathing mists or sprays. Do not taste or swallow. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling. Wear gloves and goggles. **FIRST-AID:** In case of contact, immediately flush skin or eyes with plenty of water. If inhaled, remove to fresh air. If ingested, do not induce vomiting. Get medical attention if necessary. **IN CASE OF FIRE:** Use water fog, dry chemical, CO<sub>2</sub>, or "alcohol" foam. **IN CASE OF SPILL:** Absorb spill with polypads and place in suitable container. Consult Material Safety Data Sheet for additional information.

All Other Solutions: **CAUTION!** MAY CAUSE SKIN, EYE, AND RESPIRATORY TRACT IRRITATION. MAY CAUSE DISCOMFORT IF SWALLOWED. Do not taste or swallow. Avoid skin or eye contact. Avoid prolonged or repeated skin contact. Avoid breathing mists or sprays. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling. Wear gloves and goggles. **FIRST-AID:** In case of contact, immediately flush skin or eyes with plenty of water. If inhaled, remove to fresh air. If ingested, do not induce vomiting. Get medical attention if necessary. **IN CASE OF FIRE:** Use water fog, dry chemical, CO<sub>2</sub>, or "alcohol" foam. **IN CASE OF SPILL:** Absorb spill with polypads and place in suitable container. Consult Material Safety Data Sheet for additional information.

### ADDITIONAL CANADIAN REGULATIONS:

CANADIAN DSL/NDSL INVENTORY STATUS: Some components of this product contain ingredients not included in the DSL/NDSL Inventory. This product must be used only for research and development purposes. The manufacturer should be consulted prior to using this product for other applications. Other requirements may apply.

OTHER CANADIAN REGULATIONS: Not applicable.

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) PRIORITY SUBSTANCES LISTS: The constituents in components of this product are not on the CEPA Priority Substances Lists.

#### CANADIAN WHMIS CLASSIFICATION AND SYMBOLS:

Glycan 3X Denaturing Buffer: D2B Materials Causing Other Toxic Effects (Contains skin sensitizer in greater than 1%)



All Other Components: Not applicable.

### EUROPEAN UNION INFORMATION:

LABELING/CLASSIFICATION: Some components of this product meet the definition of various hazard classes, as defined by the European Union Council Directive 67/548/EEC and subsequent Directives.

Glycan 3X Denaturing Buffer:

Hazard Classification: Irritant.

Risk Phrases: R 43: May cause sensitization by skin contact

Safety Phrases: S 1/2: Keep locked up and out of reach of children. S 24: Avoid contact with skin. S 37: Wear suitable gloves. S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

Annex II Hazard Symbol: Xi



Glycan Labeling Solution:

Hazard Classification: Irritant.

Risk Phrases: R 36/38: Irritating to eyes and skin.

Safety Phrases: S 2: Keep out of the reach of children. S 36/37: Wear suitable protective clothing and gloves.

Annex II Hazard Symbol: Xi



All Other Components:

Hazard Classification: Not applicable.

Risk Phrases: Not applicable.

Safety Phrases: Not applicable.

Annex II Hazard Symbol: Not applicable.

### FOR CONSTITUENTS:

#### **Acetic Acid:**

Hazard Classification: Corrosive.

Risk Phrases: R 10: Flammable. R 35 Causes severe burns.

Safety Phrases: S 1/2: Keep locked up and out of reach of children. S 23: Do not breathe mists or sprays. S 26: Do not breathe gas/fumes/vapour/spray (Appropriate wording to be specified by the manufacturer). S 45: In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

Annex II Hazard Symbol: Xi

#### **Poly(N,N-dimethylacrylamide):**

An official classification for this substance has not been published in Commission Directives 93/72EEC, 94/69/EC, 96/56/EC, or 98/98/EC.

#### **Sodium Dodecyl Sulfate (Self-classification):**

Classification: Irritant.

Risk Phrases: R 43: May cause sensitization by skin contact.

Safety Phrases: S 1/2: Keep locked up and out of reach of children. S 24: Avoid contact with skin. S 37: Wear suitable gloves. S 45: In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

#### **Sodium Phosphate Dibasic:**

An official classification for this substance has not been published in Commission Directives 93/72EEC, 94/69/EC, 96/56/EC, or 98/98/EC.

#### **Sodium Phosphate Monobasic:**

An official classification for this substance has not been published in Commission Directives 93/72EEC, 94/69/EC, 96/56/EC, or 98/98/EC.

**15. REGULATORY INFORMATION (Continued)****AUSTRALIAN INFORMATION FOR PRODUCT:**

**AUSTRALIAN INVENTORY OF CHEMICAL SUBSTANCES (AICS) STATUS:** The constituents in components of this product are on the AICS as indicated in composition tables in Section 3 (Composition and Information on Ingredients).

**LIST OF DESIGNATED SUBSTANCES:** Not applicable.

**STANDARD FOR THE UNIFORM SCHEDULING OF DRUGS AND POISONS:** Not applicable.

**LABELING AND CLASSIFICATION:**

Glycan 3X Denaturing Buffer:

Hazard Classification: Irritant.

Risk Phrases: R 43: May cause sensitization by skin contact

Safety Phrases: S: 1/2: Keep locked up and out of reach of children. S 24: Avoid contact with skin. S 37: Wear suitable gloves. S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

Hazard Symbol: Xi



Glycan Labeling Solution:

Hazard Classification: Irritant.

Risk Phrases: R 36/38: Irritating to eyes and skin.

Safety Phrases: S 2: Keep out of the reach of children. S 36/37: Wear suitable protective clothing and gloves.

Hazard Symbol: Xi



All Other Components:

Hazard Classification: Not applicable.

Risk Phrases: Not applicable.

Safety Phrases: Not applicable.

Hazard Symbol: Not applicable.

**JAPANESE INFORMATION FOR PRODUCT:**

**JAPANESE ENCS:** The constituents in components of this product are on the ENCS Inventory as indicated in composition tables in Section 3 (Composition and Information on Ingredients).

**POISONOUS AND DELETERIOUS SUBSTANCES CONTROL LAW:** No constituent in the components of this product is a listed Specified Poisonous Substance under the Poisonous and Deleterious Substances Control Law.

**JAPANESE MINISTRY OF ECONOMY, TRADE, AND INDUSTRY (METI) STATUS:** There is Biodegradation and Bioconcentration information from tests conducted according to the Chemical Substances Control Law on the following components: Acetic Acid.

**16. OTHER INFORMATION****PREPARED BY:**

CHEMICAL SAFETY ASSOCIATES, Inc.

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