# MATERIAL SAFETY DATA SHEET

## 1. PRODUCT IDENTIFICATION

| | |
|---|---|
| TRADE NAME (AS LABELED): | **HT RNA Reagent Kit** |
| CODE NUMBERS: | PN 760410 |
| U.N. NUMBER: | Not Applicable |
| U.N. DANGEROUS GOODS CLASS/SUBSIDIARY RISK: | Not Applicable |
| HAZCHEM CODE (AUSTRALIA): | Not Applicable |
| POISONS SCHEDULE NUMBER (AUSTRALIA): | Not Applicable |
| PRODUCT USE: | Laboratory Biological Research |
| SUPPLIER/MANUFACTURER'S NAME: | **Caliper Life Sciences** |
| ADDRESS: | 68 Elm Street<br>Hopkinton, MA 01748 |
| EMERGENCY PHONE: | 1-800-255-3924 (CHEM-TEL) in U.S., Canada, Puerto Rico, U.S. Virgin Islands |
| EMAIL ADDRESS/COMPETENT PERSON FOR MSDS INFORMATION NUMBER: | Technical Support @ Tech.Support@caliperls.com<br>+1-800-LAB-CHIP (toll-free)<br>+1-800-522-2447 (toll-free)<br>+1-508-435-3439 (outside North America) |

NOTE: Some constituents 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.

## 2. HAZARD IDENTIFICATION

This Material Safety Data sheet describes the HT RNA Reagent Kit. This product consists of six solutions. This Material Safety Data Sheet provides complete information on all the constituents described in the tables in Section 3 (Composition and Information on Ingredients). Unless otherwise specified, the information in each section of this document is pertinent to each solution. The solutions of this product are mixtures (preparations) of chemical compounds.

EU/AUSTRALIAN LABELING AND CLASSIFICATION: This product does not meet the definition of any hazard class 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)].

HEALTH HAZARDS:

Dye Concentrate: Chronic ingestion of the Dimethyl Sulfoxide constituent of this solution may affect the liver and kidneys.

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

FLAMMABILITY HAZARDS: This product presents 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

| CHEMICAL NAME | CAS # | EINECS# | AICS Inventory Listing | ENCS# | % v/v | Classification, Risk Phrases, Symbol Letters |
|---|---|---|---|---|---|---|
| **COMPONENT 1: HT RNA DYE CONCENTRATE** | | | | | | |
| Dimethyl Sulfoxide | 67-68-5 | 200-664-3 | Listed | 2-1553 | 90–99 | HAZARD CLASSIFICATION: Not applicable.<br>RISK PHRASES: Not applicable. |
| Water and Other Non-Hazardous Ingredients | | | | | | |
| **COMPONENTS 2: HT RNA SAMPLE BUFFER CONCENTRATE** | | | | | | |
| 3-(Tris(hydroxymethyl)-methyl-amino)propane-1-sulphonic acid | 29915-38-6 | 249-954-1 | Listed | Not Listed | 1–5 | HAZARD CLASSIFICATION: Not applicable.<br>RISK PHRASES: Not applicable. |
| Water and Other Non-Hazardous Ingredients | | | | | | |
| **COMPONENTS 3: HT RNA GEL MATRIX** | | | | | | |
| 3-(Tris(hydroxymethyl)-methyl-amino)propane-1-sulphonic acid | 29915-38-6 | 249-954-1 | Listed | Not Listed | 3–7 | HAZARD CLASSIFICATION: Not applicable.<br>RISK PHRASES: Not applicable. |
| Water and Other Non-Hazardous Ingredients | | | | | | |
| COMPONENT 4: HT RNA MARKER | | | | | | |
| 3-(Tris(hydroxymethyl)-methyl-amino)propane-1-sulphonic acid | 29915-38-6 | 249-954-1 | Listed | Not Listed | 1–5 | HAZARD CLASSIFICATION: Not applicable.<br>RISK PHRASES: Not applicable. |
| Water and Other Non-Hazardous Ingredients | | | | | | |
| **COMPONENT 5: HT RNA LADDER** | | | | | | |
| Water and Other Non-Hazardous Ingredients | | | | | | |
| **COMPONENT 6: HT RNA CHIP STORAGE BUFFER** | | | | | | |
| 3-(Tris(hydroxymethyl)-methyl-amino)propane-1-sulphonic acid | 29915-38-6 | 249-954-1 | Listed | Not Listed | 1–5 | HAZARD CLASSIFICATION: Not applicable.<br>RISK PHRASES: Not applicable. |
| Water and Other Non-Hazardous Ingredients | | | | | | |

See Section 16 for full text of Ingredient Risk and Safety Phrases

## 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 15 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.

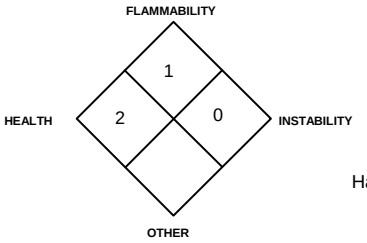
MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Pre-existing dermatitis, other skin conditions, respiratory conditions, and liver disorders may be aggravated by overexposure to solutions of this product.

RECOMMENDATIONS TO PHYSICIANS: Treat symptoms and eliminate overexposure.

## 5. FIRE-FIGHTING MEASURES

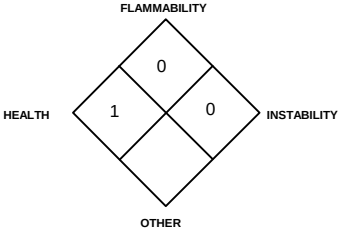
**Dye Concentrate**

**NFPA RATING**




**All Other Reagents**

**NFPA RATING**




Hazard Scale: **0** = Minimal **1** = Slight **2** = Moderate **3** = Serious **4** = Severe

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: Halon extinguishers should not be used for fires involving the solutions of this product.

UNUSUAL FIRE AND EXPLOSION HAZARDS: When involved in a fire, the solutions of this product will decompose and produce irritating vapors and toxic gases (including carbon oxides, dimethyl amine, hydrogen sulfide, cyanides, sodium oxides, and nitrogen oxides).

SPECIAL FIRE-FIGHTING PROCEDURES: Do not use halogenated extinguishing media. 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. Eliminate all sources of ignition before cleanup begins. Use non-sparking tools. 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 bellow 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 Federal, State, 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

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

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 or mists generated by this product's solutions. Ensure containers of this product's solutions 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 solutions 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 of this product.

## 8. EXPOSURE CONTROLS - PERSONAL PROTECTION

VENTILATION, ENGINEERING, AND OCCUPATIONAL EXPSOURE CONTROLS: Use with adequate ventilation to ensure exposure levels are maintained below the limits provided below, if applicable. 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.

EXPOSURE LIMITS/GUIDELINES:

NOTE: For Component Numbers not specifically listed those solutions consist primarily of 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 ppm | STEL ppm | TWA ppm | STEL ppm | TWA ppm | STEL ppm | IDLH ppm | TWA ppm | STEL ppm | ppm |
| **COMPONENT 1: HT RNA DYE CONCENTRATE** | | | | | | | | | | | |
| Dimethyl Sulfoxide | 67-68-5 | NE | NE | NE | NE | NE | NE | NE | 250 | NE | NE |
| **COMPONENTS 2: HT RNA SAMPLE BUFFER CONCENTRATE** | | | | | | | | | | | |
| 3-(Tris(hydroxymethyl)-methylamino)propane-1-sulphonic Acid | 29915-38-6 | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| **COMPONENTS 3: HT RNA GEL MATRIX** | | | | | | | | | | | |
| 3-(Tris(hydroxymethyl)-methylamino)propane-1-sulphonic Acid | 29915-38-6 | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| **COMPONENT 4: HT RNA MARKER** | | | | | | | | | | | |
| 3-(Tris(hydroxymethyl)-methylamino)propane-1-sulphonic Acid | 29915-38-6 | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| **COMPONENT 6: HT RNA CHIP STORAGE BUFFER** | | | | | | | | | | | |
| 3-(Tris(hydroxymethyl)-methylamino)propane-1-sulphonic Acid | 29915-38-6 | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |

NE = Not Established. DSEN = May Cause Dermal Sensitization 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.

**DIMETHYL SULFOXIDE:**
Germany: No MAK Established, JAN 1999
Russia: STEL = 20 mg/m$^3$, JUN 2003

**DIMETHYL SULFOXIDE (continued):**
Sweden: TWA = 50 ppm (150 mg/m$^3$), KTV = 150 ppm (500 mg/m$^3$), Skin, JAN 1999

**DIMETHYL SULFOXIDE (continued):**
Switzerland: MAK-W = 50 ppm (160 mg/m$^3$), Skin, JAN 1999
The Netherlands: MAC-TGG = 150 mg/m$^3$, Skin, 2003

*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 standard of Canada, Australia, Japan or standards of EU member states. 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. In instances where inhalable mists or sprays of product may be generated, and respiratory protection is necessary, use only respiratory protection authorized in the U.S. Federal OSHA Respiratory Protection Standard (29 CFR 1910.134), or equivalent U.S. State standards, Canadian CSA Standard Z94.4-02, the European Standard EN 529:2005, and EU member states, or the Australian Standard 1716-Respiratory Protective Devices, the Australian Standard 1715-Selection, Use, and Maintenance of Respiratory Protective Devices, as well as requirements of Japan. 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, SAR with auxiliary self-contained air supply is required under 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, the European Standard CR 13464:1999 and the Canadian CSA Standard Z94.3-02, *Industrial Eye and Face Protectors*, the Australian Standard 1337-Eye Protection for Industrial Applications and Australian Standard 1336-Recommended Practices for Eye Protection in the Industrial Environment, as well as requirements of Japan for further information.

HAND PROTECTION: Wear butyl rubber, neoprene, or nitrile rubber or latex gloves for routine use. If necessary, refer to U.S. OSHA 29 CFR 1910.138 appropriate Standards of Canada, the European Standard CEN/TR 15419:2006 or the Australian Standard 2161-Industrial Safety Gloves and Mittens, and applicable Standards of Japan, for further information.

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

BODY PROTECTION: Use body protection appropriate for task, such as a lab coat. If necessary, use body protection appropriate for task (e.g., Tyvek suit, rubber apron). If necessary, refer appropriate Standards of Canada, the European Standard CEN/TR 15419:2006 the to Australian Standard 3765-Clothing for Protection Against Hazardous Chemicals, or Japan for further information. 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 and the Canadian CSA Standard Z195-02, *Protective Footwear*.

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

## 9. PHYSICAL and CHEMICAL PROPERTIES

APPEARANCE, ODOR and COLOR:

Dye Concentrate: Clear, dark blue solution with a mild, garlic-like odor. All Other Components: Clear, odorless, colorless liquids.

HOW TO DETECT THIS SUBSTANCE:

Dye Concentrate: The odor may act as a warning property associated with this solution.

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

pH:

Dye Concentrate: Not established. All Other Components: 6.0–10.7

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

FLASH POINT: Not applicable. FLAMMABILITY: Not flammable.

EXPLOSIVE PROPERTIES: Not explosive OXIDIZING PROPERTIES: Not an oxidizer.

VAPOR PRESSURE: Not established. SPECIFIC GRAVITY: Not established.

SOLUBILITY: Not miscible in organic solvents. SOLUBILITY IN WATER: Completely soluble.

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

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

EVAPORATION RATE: Similar to water. ODOR THRESHOLD: Not established.

## 10. STABILITY AND REACTIVITY

DECOMPOSITION CONDITIONS/STABILITY: Stable.

DECOMPOSITION PRODUCTS:

Combustion: carbon oxides, dimethyl amine, hydrogen sulfide, cyanides, sodium oxides, and nitrogen oxides.

Hydrolysis: None known.

MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE:

Dye Concentrate: Strong oxidizers, acetyl chloride, cyanuric chloride, acid chlorides, phosphorus halides, strong acids, strong reducers, 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

IRRITANCY OF PRODUCT:

Dye Concentrate: Depending on the duration and concentration of overexposure, skin and eye contact can irritate contaminated tissue.

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

SENSITIZATION TO THE PRODUCT: The constituents of this product are not known to cause skin or respiratory sensitization.

Dye Concentrate: The Dimethyl Sulfoxide constituent of this product can cause anaphylactic reaction by unspecified exposure routes; symptoms may include rash, abdominal cramps, nausea, chills, and chest pain.

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

HEALTH HAZARDS:

Dye Concentrate: Inhalation of vapors, mists, or sprays of this solution may irritate the nose, throat, and lungs. Symptoms may include nausea, headache, and vomiting. Depending on the duration and concentration of overexposure, skin and eye contact may irritate contaminated tissue. Symptoms of skin overexposure may include redness and discomfort. Symptoms of eye overexposure may include redness, tearing, and pain. The Dimethyl Sulfoxide constituent of this solution can be absorbed through the skin and may carry dissolved chemicals with it into the body. Symptoms of overexposure for a prolonged period of time and a large area of skin may include redness, burning, itching, scaling, vision disturbance, photophobia, headache, and diarrhea. If this solution is swallowed, it may cause gastric distress. Large doses may cause nausea, vomiting, chills, cramps, and lethargy. Chronic ingestion of the Dimethyl Sulfoxide constituent of this solution may affect the liver and kidneys.

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

TOXICITY DATA: The following information is available for the constituents in constituents in these products present in greater that 1 percent concentration and listed in Section 2 (Composition and Information on Ingredients). Only human data and $LD_{50}$ Oral-Rat, $LD_{50}$ Oral-Mouse, and irritancy data are provided. Other data are available, but are not provided in this MSDS:

**DIMETHYL SULFOXIDE:**

TDLo (intravenous, man) = 606 mg/kg: Gastrointestinal: nausea or vomiting; Liver: jaundice, other or unclassified

**DIMETHYL SULFOXIDE (continued):**

$LD_{50}$ (oral, rat) = 14500 mg/kg: Sense Organs and Special Senses (Eye): hemorrhage; conjunctive irritation

**DIMETHYL SULFOXIDE (continued):**

$LD_{50}$ (oral, mouse) = 7920 mg/kg

CARCINOGENICITY INFORMATION: The constituents in the solutions 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.

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

Mutagenicity: The constituents in the solutions in this product are not reported to produce mutagenic effects in humans. Human mutation data are available for the Dimethyl Sulfoxide constituent in this product's solutions; these data were obtained during clinical studies on specific human tissues exposed to high doses of these compounds.

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

## 11. TOXICOLOGICAL INFORMATION (Continued)

REPRODUCTIVE TOXICITY INFORMATION (continued):

Teratogenicity: The constituents in the solutions in this product are reported to cause teratogenic effects in humans. Clinical studies on test animals exposed to relatively high doses of the Dimethyl Sulfoxide constituent in this product's solutions indicate teratogenic effects.

Reproductive Toxicity: The constituents in the solutions in this product are not reported to cause adverse reproductive effects in humans. Clinical studies on test animals exposed to relatively high doses of the Dimethyl Sulfoxide constituent in this product's solutions indicate adverse reproductive effects.

*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 solutions.

## 12. ECOLOGICAL INFORMATION

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

MOBILITY: This product has not been tested for mobility 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. Data for constituents of this product are available as follows:

**DIMETHYL SULFOXIDE:**

Biological Half-Life: Dermal application resulted in 50-60 mg % in blood in 4-8 hr; half-life 11-14 hr. 220-340 mg % reported following oral admin of 1,000 mg/kg; half-life 20 hr.

Biodegradation: No degradation of Dimethyl Sulfoxide (%) was noted in a screening test using an activated sludge inoculum. Dimethyl Sulfoxide is considered to be very difficult to degrade in water, based on available data. The data used to make this classification were not indicated. A variety of microorganisms, including some that are found in anaerobic lake mud, have the ability to transform Dimethyl Sulfoxide to dimethyl sulfide.

BIO-ACCUMULATION POTENTIAL: This product has not been tested for bio-accumulation potential. No information is available for constituents.

ECOTOXICITY: This product has not been tested for aquatic or animal toxicity. All releases to terrestrial, atmospheric and aquatic environments should be avoided. The following aquatic toxicity data for some constituents of this product are available as follows:

**DIMETHYL SULFOXIDE:**

TLm (bluegill) 48 hours = 33,500 ppm; fresh water

OTHER ADVERSE EFFECTS: This product does not contain any constituent with known ozone depletion potential.

## 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.

EWC 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 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 in 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 solutions 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 solutions 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.

## 15. REGULATORY INFORMATION (Continued)

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

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 constituent of this product is on the California Proposition 65 lists.

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

Dye Concentrate: **CAUTION!** MAY CAUSE SENSITIZATION BY UNSPECIFIED ROUTE OF EXPOSURE. 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, $CO_2$, 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, $CO_2$, 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 solutions 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 solutions of this product are not on the CEPA Priority Substances Lists.

CANADIAN WHMIS CLASSIFICATION AND SYMBOLS:

Dye Concentrate: D2B Materials Causing Other Toxic Effects (Contains sensitizer in greater than 1%)

All Other Components: Not applicable.

**EUROPEAN UNION INFORMATION:**

EU LABELING/CLASSIFICATION: This product does not meet the definition of any hazard class, as defined by the European Union Council Directives 67/548/EEC and subsequent directives. Caution: this preparation has not been fully tested.

EUROPEAN UNION INFORMATION FOR CONSTITUENTS:

**DIMETHYL SULFOXIDE:** 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.

**3-(TRIS(HYDROXYMETHYL)-METHYLAMINO)PROPANE-1-SULPHONIC ACID:** 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.

**AUSTRALIAN INFORMATION FOR PRODUCT:**

AUSTRALIAN INVENTORY OF CHEMICAL SUBSTANCES (AICS) STATUS: The constituents in this product's solutions are on the AICS as indicated in composition tables in Section 3 (Composition and Information on Ingredients). Hydrates of listed compounds and biological materials are exempt from listing. Any chemical not included in AICS is regarded as a new industrial chemical unless it is outside the scope of the Industrial Chemicals (Notification and Assessment) Act 1989 OR is otherwise exempt from notification. New industrial chemicals must be notified and assessed before being manufactured or imported into Australia.

HAZARDOUS SUBSTANCES INFORMATION SYSTEM (HSIS): The constituents in this product's solutions are not listed in the HSIS.

CLASSIFICATION: This product does not meet the definition of hazardous, as defined by the Australian National Occupational Health and Safety Commission [NOHSC (1008:2004)].

POISONS SCHEDULE NUMBER: Not applicable.

**JAPANESE INFORMATION FOR PRODUCT:**

JAPANESE ENCS: The constituents in this product's solutions 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 solutions of this product is a listed Specified Poisonous Substance under the Poisonous and Deleterious Substances Control Law.

## 16. OTHER INFORMATION

PREPARED BY: CHEMICAL SAFETY ASSOCIATES, Inc.
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