

MSDS

Product and Company Identification

Product Name: MCNext™ Ultra DNA Sample Prep Kit
Cat #: MCUDS-4, MCUDS-24, MCUDS-96
Product Use: For Research Use Only. Not for use in diagnostic procedures
Company: Molecular Cloning Laboratories (MCLAB)
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Product Name

MCNext™ DNA Sample Preparation Reagents

Hazards Identification

GLOBAL HARMONIZATION AND EU CLP REGULATION (EC) 1272/2008 LABELING AND CLASSIFICATION:

This product has been classified per CLP Regulation (EC) 1272/2008 and Japanese Industrial Standard Z 7251:2006.

Tagmentation Buffer:

Classification: Reproductive Toxicity Category 1B, Eye Irritation Category 2.

Signal Word: Danger

Hazard Statement Codes: H319, H360D

Precautionary Statement Codes: P201, P202, P264, P280, P281, P305 + P351 + P338, P308 + P313, P337 + P313, P405, P501

Hazard Symbol/Pictogram: GHS08

All Other Solutions:

Classification: Not applicable. Signal Word: Not applicable.

Hazard Statement Codes: Not applicable.

Precautionary Statement Codes: Not applicable.

Hazard Symbol/Pictogram: Not applicable.

EU 67/548/EEC /AUSTRALIAN LABELING AND CLASSIFICATION:

This product has been classified per European Union Council Directive 67/548/EEC and subsequent Directives and Australian National Occupational Health and Safety Commission [NOHSC(1008:2004)].

Tagmentation Buffer:

Classification: Toxic to Reproduction Category 2, Irritant.

Risk Phrases: R36, R61

Symbol: 

All Other Solutions:**Classification:** Not applicable.**Risk Phrases:** Not applicable. Symbol: Not applicable.**EMERGENCY OVERVIEW:****Product Description:****Tagmentation Buffer:** These solutions are clear, colorless liquids with a mildly sulfurous odor.**All Other Solutions:** These solutions are clear, colorless, odorless liquids.**Health Hazards:****Tagmentation Buffer:** The Aliphatic Amide constituent of these components is considered toxic to reproduction. **All Other Solutions:** The chief hazard in event of overexposure is the potential for irritation of contaminated skin or eyes.**Flammability Hazards:****All Other Solutions:** These solutions present no significant fire hazards.**Reactivity Hazards:** These solutions are not reactive.**Environmental Hazards:** Negligible.**Emergency Recommendations:** Emergency responders must wear personal protective equipment suitable for the situation to which they are responding.

Composition And Information On Ingredients

Tagmentation Enzyme

CHEMICAL NAME	CAS #	European EINECS#	Japanese ENCS#	Australian AICS	% v/v	EU Classification (67/548/EEC) GHS & EU Classification (1272/2008 EC)
Aliphatic Triol	Proprietary	Listed	Listed	Listed	30–55	EU 67/548 HAZARD CLASSIFICATION: Not Applicable GHS & EU 1272/2008 CLASSIFICATION: Not Applicable
Water and other trace constituents.					Balance	EU 67/548 HAZARD CLASSIFICATION: Not Applicable. GHS & EU 1272/2008 CLASSIFICATION: Not Applicable

Tagmentation Buffer

CHEMICAL NAME	CAS #	European EINECS#	Japanese ENCS#	Australian AICS	% v/v	EU Classification (67/548/EEC) GHS & EU Classification (1272/2008 EC)
Aliphatic Amide	Proprietary	Listed	Listed	Listed	15–25	EU 67/548: Hazard Classification: Toxicity for Reproductive Cat. 2; Harmful; Irritant Risk Phrases: R20/21; R36; R61 GHS & EU 1272/2008: Classification: Reproductive Toxicity Cat. 1B, Acute Toxicity Cat. 4, Eye Irritation Cat. 2 Hazard Statement Codes: H312, H319, H332, H360D

Water and other trace constituents.	Balance	EU 67/548 HAZARD CLASSIFICATION: Not Applicable. GHS & EU 1272/2008 CLASSIFICATION: Not Applicable.
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Resuspension Buffer

CHEMICAL NAME	CAS #	European EINECS#	Japanese ENCS#	Australian AICS	% v/v	EU Classification (67/548/EEC) GHS & EU Classification (1272/2008 EC)
Water and other trace constituents.					Balance	EU 67/548 HAZARD CLASSIFICATION: Not Applicable GHS & EU 1272/2008 CLASSIFICATION: Not Applicable

First-Aid Measures

PROTECTION OF FIRST AID RESPONDERS:

Rescuers should be taken for medical attention if necessary. Remove or cover gross contamination to avoid exposure to rescuers.

DESCRIPTION OF FIRST AID MEASURES:

Contaminated individuals must seek medical attention if any adverse effect occurs. 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. 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.

IMPORTANT SYMPTOMS AND EFFECTS:

See Sections (Hazard Identification) and (Toxicological Information).

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:

Pre-existing dermatitis, other skin conditions, respiratory conditions, and liver, kidney, and cardiovascular disorders may be aggravated by overexposure to components of this product.

IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED:

Treat symptoms and eliminate overexposure.

Fire-Fighting Measures

FLASH POINT:

Not flammable.

AUTOIGNITION TEMPERATURE:

Not applicable.

FLAMMABLE LIMITS (in air by volume, %):

Not applicable

FIRE EXTINGUISHING MEDIA:

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).

UNSUITABLE EXTINGUISHING MEDIA:

Halon extinguishers should not be used for fires involving this product.

SPECIAL FIRE AND EXPLOSION HAZARDS:

Tagmentation Buffer: The Aliphatic Amide constituent of this component is considered toxic to reproduction. When involved in a fire, this product's components will decompose and produce irritating vapors and toxic gases (including carbon oxides, dimethyl amine, hydrogen chloride, and potassium and nitrogen oxides).

Explosion Sensitivity to Mechanical Impact: Not sensitive.

Explosion Sensitivity to Static Discharge: Not sensitive.

ADVICE FOR FIREFIGHTERS:

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.

Accidental Release Measures

PERSONAL PRECAUTIONS:

In the event of a spill, clear the area and protect people. Trained personnel using pre-planned procedures should respond to uncontrolled releases. Avoid generating airborne mists or sprays. The atmosphere must have levels of components lower than those listed in Section (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). Monitor area and confirm levels are below exposure limits given in Section (Exposure Controls-Personal Protection), if applicable, before non-response personnel are allowed into the spill area.

PROTECTIVE EQUIPMENT:

Small Spills: For incidental spills (e.g., 1 bottle), wear lightweight gloves, a lab coat, and eye protection.

Large Spills: For large spills (e.g., a case of bottles), protective apparel should be Level C: triple-gloves (rubber gloves and nitrile gloves over latex gloves), chemical resistant suit and boots, hardhat, and Air-Purifying respirator with organic vapor cartridge. Self-Contained Breathing Apparatus must be selected if release occurs in confined or poorly ventilated areas or in situations in which the level of oxygen is below 19.5%.

METHODS FOR CLEANUP AND CONTAINMENT:

Small Spills: Absorb spilled liquid with polypads or other suitable absorbent material.

Large Spills: 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.

All Spills: Decontaminate the area of the spill thoroughly using detergent and water. Place all spill residue in an appropriate container and seal. Do not mix with wastes from other materials. If necessary, discard contaminated response equipment or rinse with soapy water before returning such equipment to service. Dispose of

in accordance with applicable international, national, state, and local procedures (see Section Disposal Considerations).

ENVIRONMENTAL PRECAUTIONS:

Prevent material from entering sewer or confined spaces, waterways, soil or public waters. Do not flush to sewer. For spills on water, contain, minimize dispersion and collect.

Handling And Storage

PRECAUTIONS FOR SAFE HANDLING:

All employees who handle this material should be trained to handle it safely. As with all chemicals, avoid getting this product’s components ON YOU or IN YOU. Open containers slowly on a stable surface. Avoid splashing or spraying this product’s components. Avoid breathing vapors, mists, or sprays generated by this product’s components. Do not eat or drink while handling this product’s components. Wash thoroughly after handling this product’s components.

CONDITIONS FOR SAFE STORAGE:

Ensure containers of this product’s components are properly labeled. Store vials as directed in the product insert. Store away from incompatible materials. Material should be stored in secondary containers, as appropriate. Storage areas should be made of fire resistant materials. Post warning and “NO SMOKING” signs in storage and use areas, as appropriate. Have appropriate extinguishing equipment in the storage area (i.e., sprinkler system, portable fire extinguishers). Keep vials tightly closed when not in use. Inspect vials containing this product’s components for leaks or damage. Read instructions provided with the product prior to use.

SPECIFIC END USE(S):

This product is for use in laboratory biological research. Follow industry standards for use.

PROTECTIVE PRACTICES DURING MAINTENANCE OF CONTAMINATED EQUIPMENT:

Follow practices indicated in Section (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 Federal, State, and local procedures standards.

Exposure Controls - Personal Protection

EXPOSURE LIMITS/CONTROL PARAMETERS:

Workplace/Occupational Exposure Limits: NOTE: Solutions not specifically listed are primarily water and trace constituents; no exposure limits are applicable.

Tagmentation Enzyme

CHEMI-CAL NAME	CAS #	EXPOSURE LIMITS IN AIR							
		ACGIH-TLVs		OSHA-PELs		NIOSH-RELs		NIOSH	OTHER
		TWA mg/m ³	STEL mg/m ³	TWA mg/m ³	STEL mg/m ³	TWA mg/m ³	STEL mg/m ³	IDLH mg/m ³	mg/m ³
Aliphatic Triol		10 ppm (mist)	NE	15 (total dust) 5 (resp. frac.) Vacated 1989 PEL: 10 total	NE	NE	NE	NE	DFG MAKs: TWA = 50 (inhalable fraction) PEAK = 2•MAK 15 min. average value, 1-hr interval, 4 per shift Pregnancy Risk Group C

Tagmentation Buffe

CHEMI- CAL NAME	CAS #	EXPOSURE LIMITS IN AIR							
		ACGIH-TLVs		OSHA-PELs		NIOSH-RELS		NIOSH	OTHER
		TWA mg/ m ³	STEL mg/m ³	TWA mg/m ³	STEL mg/ m ³	TWA mg/m ³	STEL mg/m ³	IDLH mg/m ³	mg/m ³
Aliphatic Amide		30 (skin)	NE	30 (skin)	NE	30 (skin)	NE	1520	DFG MAK: TWA = 15 (skin) PEAK = 4•MAK 15 min. average value, 1-hr interval, 4 per shift Danger of cutaneous absorption Pregnancy Risk Group B Carcinogen: IARC-3, TLV A4

ENGINEERING CONTROLS:

Ventilation: 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.

PERSONAL PROTECTIVE EQUIPMENT:

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 above. In instances where inhalable mists or sprays of product may be generated and respiratory protection is necessary, use only respiratory protection authorized per regulatory authorities. 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 (Accidental Release Measures) of this MSDS. If necessary, appropriate country regulations for eye protective equipment.

Hand Protection: Wear butyl rubber, neoprene, or nitrile rubber or latex gloves for routine use. If necessary, refer to appropriate country regulations for hand protection.

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 to U.S. OSHA Technical Manual (Section VII: Personal Protective Equipment), appropriate individual country standards. 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 and appropriate individual country standards.

Physical And Chemical Properties

The following information is component specific.

ODOR:

Tagmentation Buffe: Slight fishy odor.

All Other Solutions: Odorless.

HOW TO DETECT THESE SUBSTANCES:

Tagmentation Buffe: The odor may act as a warning property associated with this liquid.

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

The following information applies to all components, in general.

MOLECULAR WEIGHT (single entity only):	Not applicable.
pH:	6–10
COLOR:	Colorless.
APPEARANCE:	Clear.
BOILING POINT:	Not established.
RELATIVE VAPOR DENSITY (air = 1):	Not established.
FLASH POINT:	Not applicable.
UPPER EXPLOSIVE LIMIT:	Not established.
AUTOIGNITION TEMPERATURE:	Not established.
EXPLOSIVE PROPERTIES:	Not applicable.
EVAPORATION RATE (n-BuAc = 1):	Not established.
DENSITY/SPECIFIC GRAVITY:	Not established.
SOLUBILITY:	Miscible in some organic solvents.
PARTITION COEFFICIENT (n-octanol/water):	Not established.
VISCOSITY:	Not established.
PHYSICAL STATE:	Liquid.
MELTING/FREEZING POINT:	Not established.
VAPOR PRESSURE:	Not established.
FLAMMABILITY:	Not flammable.
LOWER EXPLOSIVE LIMIT:	Not established.
DECOMPOSITION TEMPERATURE:	Not established.
OXIDIZING PROPERTIES:	Not applicable.
% VOLATILITY:	Not established.
ODOR THRESHOLD:	Not established.
SOLUBILITY IN WATER:	Completely soluble.

Stability And Reactivity

REACTIVITY/CHEMICAL STABILITY:

Stable at room temperature in sealed containers. This product is not expected to be reactive.

POSSIBILITY OF HAZARDOUS POLYMERIZATION:

Will not occur.

CONDITIONS TO AVOID:

Mixing with incompatible chemicals or as given above.

INCOMPATIBLE MATERIALS:

Tagmentation Buffe: Carbon tetrachloride; other halogenated compounds when in contact with iron; strong oxidizers; alkyl aluminums; inorganic nitrates.

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

HAZARDOUS DECOMPOSITION PRODUCTS:

Combustion: Carbon oxides, dimethyl amine, hydrogen chloride, and potassium and nitrogen oxides.

Hydrolysis: None known.

Toxicological Information

SYMPTOMS OF OVEREXPOSURE BY ROUTE OF EXPOSURE:

No adverse health effects should occur from routine, occupational use of this product's solutions in the manner specified by the manufacturer's instructions. The potential health effects of this product's solutions, via route of exposure, are described below.

INHALATION:

Tagmentation Buffe: Inhalation of vapors, mists, or sprays of this component will irritate the nose, throat, and lungs and may cause and adverse reproductive effects. Symptoms may include nausea, vomiting, colic, high blood pressure, and flushing.

All Other Solutions: Inhalation of vapors, mists, or sprays of these solutions may slightly irritate the nose, throat, and lungs. Symptoms are generally alleviated upon breathing fresh air.

SKIN CONTACT:

Tagmentation Buffe: Depending on the duration and concentration of overexposure, skin contact can irritate contaminated tissue. Symptoms of skin overexposure may include redness and discomfort. Prolonged or repeated skin exposure may cause dermatitis (dry, red skin)

All Other Solutions: Skin contact may cause mild irritation, which is alleviated upon rinsing.

EYE CONTACT:

Tagmentation Buffe: Depending on the duration and concentration of overexposure, eye contact can irritate contaminated tissue. Symptoms of eye overexposure may include redness, tearing, and pain.

All Other Solutions: Eye contact may cause mild irritation, which is alleviated upon rinsing.

SKIN ABSORPTION:

Tagmentation Buffe: The Aliphatic Amide constituent of this component can be absorbed through the skin and may cause symptoms described in "Inhalation" and adverse reproductive effects.

All Other Solutions: No constituents in these components are known to be absorbed via intact skin.

INGESTION: Ingestion is not anticipated to be a significant route of exposure for the product's components.

Tagmentation Buffe: Ingestion may cause symptoms described in "Inhalation" and adverse reproductive effects.

All Other Solutions: If these solutions are swallowed they may cause gastric distress. Large doses may cause nausea, vomiting, and diarrhea.

INJECTION: Accidental injection of this product's solutions, via laceration or puncture by a contaminated object, may cause local reddening, tissue swelling, and discomfort in addition to the wound.

HEALTH EFFECTS OR RISKS FROM EXPOSURE:

An Explanation in Lay Terms.

Acute:

Tagmentation Buffe: Inhalation, skin absorption, and ingestion of this component may cause nausea, vomiting, colic, high blood pressure, flushing, adverse reproductive effects, and kidney and heart damage. Depending on the duration and concentration of overexposure, skin and eye contact can irritate contaminated tissue.

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

Chronic:

Tagmentation Buffe: Prolonged or repeated skin exposure may cause dermatitis (dry, red skin).

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

TARGET ORGANS:

Acute:

Tagmentation Buffe: Eyes, skin, reproductive system, liver, kidneys, cardiovascular system.

All Other Solutions: Eyes, gastrointestinal tract.

Chronic:

Tagmentation Buffe: Skin.

All Other Solutions: None known.

TOXICITY DATA:

The following information is available for the constituents in components of this product present in greater than 1 percent concentration and listed in Section (Composition and Information on Ingredients).

CARCINOGENIC POTENTIAL OF COMPONENTS:

Components of this product are listed by agencies tracking the carcinogenic potential of chemical compounds, as follows:

ALIPHATIC AMIDE:

ACGIH-TLV-A4, Not Classifiable as Human Carcinogen; IARC-3, Unclassifiable as to Carcinogenicity in Humans. The other 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.

IRRITANCY OF PRODUCT:

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

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

SENSITIZATION TO THE PRODUCT:

These solutions are not known to cause skin or respiratory sensitization in humans.

REPRODUCTIVE TOXICITY INFORMATION:

The components of these products are not reported to cause mutagenic, embryotoxic, teratogenic, or adverse reproductive effects in humans.

Embryotoxicity: Clinical studies on test animals exposed to relatively high doses of the Aliphatic Amide, component of these products indicate extra-embryonic structures.

Teratogenicity: Clinical studies on test animals exposed to relatively high doses of the Aliphatic Amide component of these products indicate developmental abnormalities of the musculoskeletal system, central nervous system, gastrointestinal system, body wall, and craniofacial area.

Reproductive Toxicity: Clinical studies on test animals exposed to relatively high doses of the Aliphatic Amide component of this product indicate adverse reproductive effects such as stunted fetus, pre-implantation mortality, post-implantation mortality, changes in female fertility index, effects on menstrual cycle, effects on spermatogenesis, and fetal death.

ACGIH BIOLOGICAL EXPOSURE INDICES:

Currently, there are ACGIH Biological Exposure Indices (BEIs) applicable to components of this product, as follows:

CHEMICAL DETERMINANT	SAMPLING TIME	BEI
ALIPHATIC AMIDE •N-Methylformamide in urine	•End of sift	40 mg/g creatinine

Ecological Information

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

MOBILITY:

This product has not been tested for mobility in soil. The following information is available for some constituents:

Aliphatic amide:

The Koc of this compound is estimated as 7, using a measured log Kow of -1.01 and a regression-derived equation. According to a classification scheme, this estimated Koc value suggests that this material is expected to have very high mobility in soil.

Aliphatic triol:

Based on an experimental log octanol/water partition coefficient of -1.76 and its water solubility, 1,220,000 mg/L at 5°C, soil adsorption coefficients for Aliphatic Triol can be estimated at 3 and 2, respectively, using regression-derived equations. The magnitude of these values indicate that Aliphatic Triol will display very high mobility in soil.

Aliphatic diol:

The Koc of Aliphatic Diol is estimated as 8, using a log Kow of -0.92 and a regression-derived equation. According to a classification scheme, this estimated Koc value suggests that Aliphatic Diol is expected to have very high 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 some constituents of this product are available as follows:

Aliphatic Amide:

If released to air, a vapor pressure of 3.9 mm Hg at 25°C indicates this compound will exist solely as a vapor in the ambient atmosphere. Vapor-phase material 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 hours. If released to soil, this compound is expected to have very high mobility based upon an estimated Koc of 7. Volatilization from moist soil surfaces is not expected to be an important fate process based upon a Henry's Law constant of 7.4×10^{-8} atm-cu m/mole. This compound may volatilize from dry soil surfaces based upon its vapor pressure. If released into water, this material is not expected to adsorb to suspended solids and sediment based upon the estimated Koc. An aerobic unacclimated and acclimated river die-away test showed that Aliphatic Amide at an initial concentration of 30 mg/L completely disappeared within 6 and 3 days, respectively. Thus, this compound is expected to rapidly degrade in the environment. Volatilization from water surfaces is not expected to be an important fate process based upon this compound's Henry's Law constant. Hydrolysis is not expected to occur due to the slow rate of reaction for amide functional groups.

Aliphatic triol:

If released to soil, this compound is expected to undergo rapid biodegradation under aerobic conditions. It is expected to display very high mobility in soil and it is not expected to significantly volatilize to the atmosphere. If released to water, this material is expected to rapidly degrade under aerobic conditions. Biodeg-

radation in seawater and under anaerobic conditions is also expected. This compound is not expected to bioconcentrate in fish and aquatic organisms nor is it expected to adsorb to sediment and suspended organic matter. Volatilization to the atmosphere is expected to be slower than for water itself. If released to the atmosphere, this material may undergo a gas-phase oxidation with photochemically produced hydroxyl radicals with a half-life of 33 hrs. It may also undergo atmospheric removal by wet deposition processes.

Polyethylene glycol:

This compound is readily soluble in water. This compound is chemically identical to the natural amino acid L-Serine and can therefore be degraded microbiologically.

Aliphatic diol:

Based on a classification scheme, an estimated Koc value of 8, determined from a log Kow of -0.92 and a regression-derived equation, indicates that this compound is expected to have very high mobility in soil. Volatilization of this material from moist soil surfaces is not expected to be an important fate process given an estimated Henry's Law constant of 1.3×10^{-8} atm-cu m/mole, derived from its vapor pressure, 0.13 mmHg, and water solubility, 1×10^6 mg/liter. This compound is not expected to volatilize from dry soil surfaces based upon its vapor pressure. Laboratory experiments using agricultural soils from South Carolina conducted at 22 deg C and a fortification of 1,000 ppm this material, yielded 73-78% mineralization during a 51 day incubation period, suggesting that biodegradation will be an important fate process in soils. Based on a classification scheme, an estimated Koc value of 8, determined from a log Kow of -0.92 and a regression-derived equation, indicates that this compound is not expected to adsorb to suspended solids and sediment. Volatilization from water surfaces is not expected based upon an estimated Henry's Law constant of 1.3×10^{-8} atm-cu m/mole, derived from its vapor pressure, 0.13 mmHg, and water solubility, 1×10^6 mg/L. Numerous screening studies using wastewater or sewage inoculum as seed, suggests that Aliphatic Diol will be degraded readily under aqueous environments. According to a model of gas/particle partitioning of semi-volatile organic compounds in the atmosphere, this compound, which has a vapor pressure of 0.13 mmHg at 25°C, is expected to exist solely as a vapor in the ambient atmosphere. Vapor-phase material is degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals; the half-life for this reaction in air is estimated to be 32 hours, calculated from its rate constant of 1.2×10^{-11} cu cm/molecule-sec at 25°C

BIO-ACCUMULATION POTENTIAL:

This product has not been tested for bio-accumulation potential. The following information is available for some constituents.

Aliphatic amide:

An estimated BCF of 3 was calculated for this material, using a log Kow of -1.01 and a regression-derived equation. According to a classification scheme, this BCF suggests the potential for bioconcentration in aquatic organisms is low.

Aliphatic triol:

Based on an experimental log octanol/water partition coefficient of -1.76 and its water solubility, 1,220,000 mg/L at 5°C, bioconcentration factors for this compound can be estimated at 3 and 0.2, respectively, using regression-derived equations. The magnitude of these values indicate that bioconcentration of this material in fish and aquatic organisms will not be significant. Log KOW = -1.76.

Aliphatic diol:

An estimated BCF of 3 was calculated for this compound, using a log Kow of -0.92 and a regression-derived equation. According to a classification scheme, this BCF suggests the potential for bioconcentration in aquatic organisms is low.

ECOTOXICITY:

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

RESULTS OF PBT AND vPvB ASSESSMENT:

No data available. PBT and vPvB assessments are part of the chemical safety report required for some substances in European Union Regulation (EC) 1907/2006, Article 14.

OTHER ADVERSE EFFECTS:

This product does not contain any constituents with known ozone depletion potential.

ENVIRONMENTAL EXPOSURE CONTROLS:

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

Disposal Considerations

WASTE TREATMENT/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 international, national, 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

Transportation Information

This product is not classified under any jurisdiction as Dangerous Goods and has no UN Number, Hazard Class or Packing Group or Special Precautions for User.

U.S. DEPARTMENT OF TRANSPORTATION:

This product is NOT classified as dangerous goods, per U.S. DOT regulations, under 49 CFR 172.101.

TRANSPORT CANADA:

This product is NOT classified as Dangerous Goods, per the Transportation of Dangerous Goods regulations.

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.

UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE (UNECE):

This product is NOT classified as dangerous goods, per the European Agreement Concerning the International Carriage of Dangerous Goods by Road (ADR).

AUSTRALIAN FEDERAL OFFICE OF ROAD SAFETY:

This product is NOT dangerous goods, per the Code for the Transportation of Dangerous Goods by Road or Rail.

TRANSPORT IN BULK ACCORDING TO THE IBC CODE:

See the information under the individual jurisdiction listings for IBC information.

ENVIRONMENTAL HAZARDS:

This product is neither environmentally hazardous according to the criteria of the UN Model Regulations (as reflected in the IMDG Code, ADR, RID, and ADN) nor a marine pollutant according to the IMDG Code.

Regulatory Information

ADDITIONAL U.S. REGULATIONS:

U.S. SARA REPORTING REQUIREMENTS:

The constituents in this product's solutions are subject to Sections 302, 304, and 313 reporting requirements under the Superfund Amendment and Reauthorization Act, as follows:

CHEMICAL NAME	SARA 302 (40 CFR 355, Appendix A)	SARA 304 (40 CFR Table 302.4)	SARA 313 (40 CFR 372.65)
Aliphatic Amide	No	No	Yes

U.S. SARA THRESHOLD PLANNING QUANTITY:

There are no specific Threshold Planning Quantities for the constituents in this product's solutions. The default Federal MSDS submission and inventory requirement filing threshold of 10,000 lb (4,540 kg) may apply, per 40 CFR 370.20.

U.S. CERCLA REPORTABLE QUANTITY (RQ):

Aliphatic Amide = 100 lb (45.4 kg).

U.S. TSCA INVENTORY STATUS:

The constituents in the solutions of this product listed in Section 3 (Composition and Information on Ingredients) are on the TSCA Inventory.

OTHER U.S. FEDERAL REGULATIONS:

Aliphatic Amide is listed as a hazardous air pollutant (HAP) generally known or suspected to cause serious health problems. The Clean Air Act, as amended in 1990, directs EPA to set standards requiring major sources to sharply reduce routine emissions of toxic pollutants. EPA is required to establish and phase in specific performance based standards for all air emission sources that emit one or more of the listed pollutants. Aliphatic Amide is included on this list.

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65):

No constituent in the solutions of this product is on the California Proposition 65 lists.

ADDITIONAL CANADIAN REGULATIONS:

CANADIAN DSL/NDL INVENTORY STATUS:

The constituents in this product's solutions are listed on the DSL Inventory or are exempt.

OTHER CANADIAN REGULATIONS:

Not applicable.

CANADIAN WHMIS CLASSIFICATION AND SYMBOLS:

Tagmentation Buffe: Class D2A: Poisonous and Infectious Material, Other Effects, Very Toxic; Reproductive Toxicity

All Other Solutions: Not applicable.

ADDITIONAL EUROPEAN UNION REGULATIONS:

SAFETY, HEALTH, AND ENVIRONMENTAL REGULATIONS/LEGISLATION SPECIFIC FOR THE PRODUCT:

Currently, there is no specific legislation pertaining to this product.

CHEMICAL SAFETY ASSESSMENT:

No data available. The chemical safety assessment is required for some substances according to European Union Regulation (EC) 1907/2006, Article 14.

ADDITIONAL AUSTRALIAN REGULATIONS:

AUSTRALIAN INVENTORY OF CHEMICAL SUBSTANCES (AICS) STATUS:

The constituents in the solutions of this product are on the AICS. 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 Aliphatic Amide component of this product is listed in the HSIS.

STANDARD FOR THE UNIFORM SCHEDULING OF MEDICINES AND POISONS:

Tagmentation Bufo: Schedule 6 All Other Solutions: Not applicable.

ADDITIONAL LABELING:

Tagmentation Bufo: For advice, contact a Poisons Information Centre (Phone e.g. Australia 131 126; New Zealand 03 4747 000) or a doctor (at once). Avoid contact with eyes. Avoid contact with skin. Avoid breathing vapour or spray mist.

All Other Solutions: Not applicable.

ADDITIONAL JAPANESE REGULATIONS:**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).

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: Aliphatic Amide. There is Mutagenicity information from tests conducted according to the Industrial Safety and Health Law on the following components: Aliphatic Amide.

Other Information

FOR RESEARCH USE ONLY. The above information was acquired by diligent search and/or investigation and the recommendations are based on prudent application of professional judgment. The information shall not be taken as being all inclusive and is to be used only as a guide. All materials and mixtures may present unknown hazards and should be used with caution. Since the Company cannot control the actual methods, volumes, or conditions of use, the Company shall not be held liable for any damages or losses resulting from the handling or from contact with the product as described herein. THE INFORMATION IN THIS MSDS DOES NOT CONSTITUTE A WARRANTY, EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.

Product Name

MCNext™ Index Kit

Hazards Identification

GLOBAL HARMONIZATION AND EU CLP REGULATION (EC) 1272/2008 LABELING AND CLASSIFICATION:

This product has been classified per CLP Regulation (EC) 1272/2008 and Japanese Industrial Standard Z 7251:2006.

Classification: Not applicable.

Signal Word: Not applicable.

Hazard Statement Codes: Not applicable.

Precautionary Statement Codes: Not applicable.

Hazard Symbol/Pictogram: Not applicable.

EU 67/548/EEC /AUSTRALIAN LABELING AND CLASSIFICATION:

This product has been classified per European Union Council Directive 67/548/EEC and subsequent Directives and Australian National Occupational Health and Safety Commission [NOHSC(1008:2004)].

Classification: Not applicable.

Risk Phrases: Not applicable.

Symbol: Not applicable.

EMERGENCY OVERVIEW:

Product Description: These solutions are clear, colorless, odorless liquids. Health

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

Flammability Hazards: These solutions present no significant fire hazards.

Reactivity Hazards: These solutions are not reactive.

Environmental Hazards: Negligible.

Emergency Recommendations: Emergency responders must wear personal protective equipment suitable for the situation to which they are responding.

First-Aid Measures

PROTECTION OF FIRST AID RESPONDERS:

Rescuers should be taken for medical attention if necessary. Remove or cover gross contamination to avoid exposure to rescuers.

DESCRIPTION OF FIRST AID MEASURES:

Contaminated individuals must seek medical attention if any adverse effect occurs. 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. 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 CUR-

RENT 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.

IMPORTANT SYMPTOMS AND EFFECTS:

See Sections (Hazard Identification) and (Toxicological Information).

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:

Pre-existing dermatitis and other skin conditions may be aggravated by overexposure to components of this product.

IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED:

Treat symptoms and eliminate overexposure.

Fire-Fighting Measures

FLASH POINT:

Not flammable.

AUTOIGNITION TEMPERATURE:

Not applicable.

FLAMMABLE LIMITS (in air by volume, %):

Not applicable

FIRE EXTINGUISHING MEDIA: I

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

UNSUITABLE EXTINGUISHING MEDIA:

None known.

SPECIAL FIRE AND EXPLOSION HAZARDS:

When involved in a fire, this product's components will decompose and produce trace amounts of irritating vapors and toxic gases (including carbon oxides).

Explosion Sensitivity to Mechanical Impact: Not sensitive.

Explosion Sensitivity to Static Discharge: Not sensitive.

ADVICE FOR FIREFIGHTERS:

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.

Accidental Release Measures

PERSONAL PRECAUTIONS:

In the event of a spill, clear the area and protect people. Trained personnel using pre-planned procedures should respond to uncontrolled releases. Avoid generating airborne mists or sprays. The atmosphere must have levels of components lower than those listed in Section (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). Monitor area and confirm levels are below exposure limits given in Section Exposure Controls-Personal Protection, if applicable, before non-response personnel are allowed into the spill area.

PROTECTIVE EQUIPMENT:

Small Spills: For incidental spills (e.g., 1 bottle), wear lightweight gloves, a lab coat, and eye protection.

Large Spills: For large spills (e.g., a case of bottles), protective apparel should be Level C: triple-gloves (rubber gloves and nitrile gloves over latex gloves), chemical resistant suit and boots, hardhat, and Air-Purifying respirator with organic vapor cartridge. Self-Contained Breathing Apparatus must be selected if release occurs in confined or poorly ventilated areas or in situations in which the level of oxygen is below 19.5%.

METHODS FOR CLEANUP AND CONTAINMENT:

Small Spills: Absorb spilled liquid with polypads or other suitable absorbent material.

Large Spills: 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.

All Spills: Decontaminate the area of the spill thoroughly using detergent and water. Place all spill residue in an appropriate container and seal. Do not mix with wastes from other materials. If necessary, discard contaminated response equipment or rinse with soapy water before returning such equipment to service. Dispose of in accordance with applicable international, national, state, and local procedures (see Section Disposal Considerations).

ENVIRONMENTAL PRECAUTIONS:

Prevent material from entering sewer or confined spaces, waterways, soil or public waters. Do not flush to sewer. For spills on water, contain, minimize dispersion and collect.

Handling And Storage

PRECAUTIONS FOR SAFE HANDLING:

All employees who handle this material should be trained to handle it safely. As with all chemicals, avoid getting this product's components ON YOU or IN YOU. Open containers slowly on a stable surface. Avoid splashing or spraying this product's components. Avoid breathing vapors, mists, or sprays generated by this product's components. Do not eat or drink while handling this product's components. Wash thoroughly after handling this product's components.

CONDITIONS FOR SAFE STORAGE:

Ensure containers of this product's components are properly labeled. Store vials as directed in the product insert. Store away from incompatible materials. Material should be stored in secondary containers, as appropriate. Storage areas should be made of fire resistant materials. Post warning and "NO SMOKING" signs in storage and use areas, as appropriate. Have appropriate extinguishing equipment in the storage area (i.e., sprinkler system, portable fire extinguishers). Keep vials tightly closed when not in use. Inspect vials containing this product's components for leaks or damage. Read instructions provided with the product prior to use.

SPECIFIC END USE(S):

This product is for use in laboratory biological research. Follow industry standards for use.

PROTECTIVE PRACTICES DURING MAINTENANCE OF CONTAMINATED EQUIPMENT:

Follow practices indicated in Section (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 Federal, State, and local procedures standards.

Exposure Controls - Personal Protection

EXPOSURE LIMITS/CONTROL PARAMETERS:

Workplace/Occupational Exposure Limits: All solutions in this product are primarily water and trace constituents; no exposure limits are applicable.

International Occupational Exposure Limits: All solutions in this product are primarily water and trace constituents; no exposure limits are applicable.

ENGINEERING CONTROLS:

Ventilation: 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.

PERSONAL PROTECTIVE EQUIPMENT:

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 above. In instances where inhalable mists or sprays of product may be generated and respiratory protection is necessary, use only respiratory protection authorized per regulatory authorities. 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, appropriate country regulations for eye protective equipment.

Hand Protection: Wear butyl rubber, neoprene, or nitrile rubber or latex gloves for routine use. If necessary, refer to appropriate country regulations for hand protection.

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 to U.S. OSHA Technical Manual (Section VII: Personal Protective Equipment), appropriate individual country standards. 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 and appropriate individual country standards.

Physical And Chemical Properties

MOLECULAR WEIGHT (single entity only):	Not applicable.
COLOR:	Colorless.
APPEARANCE:	Clear.
pH:	6–10
BOILING POINT:	Not established.
RELATIVE VAPOR DENSITY (air = 1):	Not established.
FLASH POINT:	Not established.
UPPER EXPLOSIVE LIMIT:	Not established.
AUTOIGNITION TEMPERATURE:	Not established.

EXPLOSIVE PROPERTIES:	Not established.
EVAPORATION RATE (n-BuAc = 1):	Not established.
DENSITY/SPECIFIC GRAVITY:	Not established.
SOLUBILITY:	
PARTITION COEFFICIENT (n-octanol/water):	Not established.
VISCOSITY:	Not established.
PHYSICAL STATE:	Liquid.
ODOR:	Odorless.
MELTING/FREEZING POINT:	Not established.
VAPOR PRESSURE:	Not established.
FLAMMABILITY:	Not flammable.
LOWER EXPLOSIVE LIMIT:	Not established.
DECOMPOSITION TEMPERATURE:	Not established.
OXIDIZING PROPERTIES:	Not applicable.
% VOLATILITY:	Not established.
ODOR THRESHOLD:	Not established.
SOLUBILITY IN WATER:	Completely soluble.

Stability And Reactivity

REACTIVITY/CHEMICAL STABILITY:

Stable at room temperature in sealed containers. This product is not expected to be reactive.

POSSIBILITY OF HAZARDOUS POLYMERIZATION:

Will not occur.

CONDITIONS TO AVOID:

Mixing with incompatible chemicals.

INCOMPATIBLE MATERIALS:

Strong oxidizers, strong acids, some metals and substances that are incompatible with water.

HAZARDOUS DECOMPOSITION PRODUCTS:

Combustion: Carbon oxides.

Hydrolysis: None known.

Toxicological Information

SYMPTOMS OF OVEREXPOSURE BY ROUTE OF EXPOSURE:

No adverse health effects should occur from routine, occupational use of this product's solutions in the manner specified by the manufacturer's instructions. The potential health effects of this product's solutions, via route of exposure, are described below.

INHALATION:

Inhalation of vapors, mists, or sprays of these solutions may slightly irritate the nose, throat, and lungs. Symptoms are generally alleviated upon breathing fresh air.

SKIN CONTACT:

Skin contact may cause mild irritation, which is alleviated upon rinsing.

EYE CONTACT:

Eye contact may cause mild irritation, which is alleviated upon rinsing.

SKIN ABSORPTION:

No constituents in these components are known to be absorbed via intact skin.

INGESTION:

Ingestion is not anticipated to be a significant route of exposure for the product's components. If these solutions are swallowed they may cause gastric distress. Large doses may cause nausea, vomiting, and diarrhea.

INJECTION:

Accidental injection of this product's solutions, via laceration or puncture by a contaminated object, may cause local reddening, tissue swelling, and discomfort in addition to the wound.

HEALTH EFFECTS OR RISKS FROM EXPOSURE:

An Explanation in Lay Terms.

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

Chronic: These components are not known to cause any significant chronic health effects.

TARGET ORGANS:

Acute: Eyes, gastrointestinal tract.

Chronic: None known.

TOXICITY DATA:

There are no constituents in components of this product present in greater than 1 percent concentration.

CARCINOGENIC POTENTIAL OF COMPONENTS:

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.

IRRITANCY OF PRODUCT:

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

SENSITIZATION TO THE PRODUCT:

These solutions are not known to cause skin or respiratory sensitization in humans.

REPRODUCTIVE TOXICITY INFORMATION:

The constituents in the solutions in this product are not reported to produce mutagenic, embryotoxic, teratogenic, and adverse reproductive effects in humans.

BIOLOGICAL EXPOSURE INDICES:

Currently, there are no Biological Exposure Indices (BEIs) determined for the constituents in this product's solutions.

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.

BIO-ACCUMULATION POTENTIAL:

This product has not been tested for bio-accumulation potential.

ECOTOXICITY:

This product has not been tested for aquatic or animal toxicity. All releases to terrestrial, atmospheric and

aquatic environments should be avoided.

RESULTS OF PBT AND vPvB ASSESSMENT:

No data available. PBT and vPvB assessments are part of the chemical safety report required for some substances in European Union Regulation (EC) 1907/2006, Article 14.

OTHER ADVERSE EFFECTS:

This product does not contain any constituents with known ozone depletion potential.

ENVIRONMENTAL EXPOSURE CONTROLS:

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

Disposal Considerations

WASTE TREATMENT/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 international, national, 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

Transportation Information

This product is not classified under any jurisdiction as Dangerous Goods and has no UN Number, Hazard Class or Packing Group or Special Precautions for User.

U.S. DEPARTMENT OF TRANSPORTATION:

This product is NOT classified as dangerous goods, per U.S. DOT regulations, under 49 CFR 172.101.

TRANSPORT CANADA:

This product is NOT classified as Dangerous Goods, per the Transportation of Dangerous Goods regulations.

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.

UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE (UNECE):

This product is NOT classified as dangerous goods, per the European Agreement Concerning the International Carriage of Dangerous Goods by Road (ADR).

AUSTRALIAN FEDERAL OFFICE OF ROAD SAFETY:

This product is NOT dangerous goods, per the Code for the Transportation of Dangerous Goods by Road or

Rail.

TRANSPORT IN BULK ACCORDING TO THE IBC CODE:

See the information under the individual jurisdiction listings for IBC information.

ENVIRONMENTAL HAZARDS:

This product is neither environmentally hazardous according to the criteria of the UN Model Regulations (as reflected in the IMDG Code, ADR, RID, and ADN) nor a marine pollutant according to the IMDG Code.

Regulatory Information

ADDITIONAL U.S. REGULATIONS:

U.S. SARA REPORTING REQUIREMENTS:

The constituents in this product's solutions 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 this product's solutions. The default Federal MSDS submission and inventory requirement filing threshold of 10,000 lb (4,540 kg) may apply, per 40 CFR 370.20.

U.S. CERCLA REPORTABLE QUANTITY (RQ):

Not applicable.

U.S. TSCA INVENTORY STATUS:

The constituents in the solutions of this product are on the TSCA Inventory.

OTHER U.S. FEDERAL REGULATIONS:

Not applicable.

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65):

No constituent in the solutions of this product is on the California Proposition 65 lists.

ADDITIONAL CANADIAN REGULATIONS:

CANADIAN DSL/NDL INVENTORY STATUS:

The constituents in this product's solutions are listed on the DSL Inventory or are exempt.

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA):

The constituents in this product's solutions are not on the CEPA Priority Substances Lists.

CANADIAN WHMIS CLASSIFICATION AND SYMBOLS:

Not applicable.

ADDITIONAL EUROPEAN UNION REGULATIONS:

SAFETY, HEALTH, AND ENVIRONMENTAL REGULATIONS/LEGISLATION SPECIFIC FOR THE PRODUCT:

Currently, there is no specific legislation pertaining to this product.

CHEMICAL SAFETY ASSESSMENT:

No data available. The chemical safety assessment is required for some substances according to European Union Regulation (EC) 1907/2006, Article 14.

ADDITIONAL AUSTRALIAN REGULATIONS:

AUSTRALIAN INVENTORY OF CHEMICAL SUBSTANCES (AICS) STATUS:

The constituents in the solutions of this product are on the AICS. 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.

STANDARD FOR THE UNIFORM SCHEDULING OF MEDICINES AND POISONS:

Not applicable.

ADDITIONAL LABELING:

Not applicable.

ADDITIONAL JAPANESE REGULATIONS:

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:

The constituents in this product's solutions are not listed as a Deleterious Substance under the Poisonous and Deleterious Substances Control Law.

Other Information

FOR RESEARCH USE ONLY. The above information was acquired by diligent search and/or investigation and the recommendations are based on prudent application of professional judgment. The information shall not be taken as being all inclusive and is to be used only as a guide. All materials and mixtures may present unknown hazards and should be used with caution. Since the Company cannot control the actual methods, volumes, or conditions of use, the Company shall not be held liable for any damages or losses resulting from the handling or from contact with the product as described herein. THE INFORMATION IN THIS MSDS DOES NOT CONSTITUTE A WARRANTY, EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.