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Emergency Telephone No: 800-535-5053MATERIAL SAFETY DATA SHEET – DELTA 8050I. OSHA HAZARD CLASSIFICATIONS

DANGER! Keep out of reach of children. Corrosive. CAUSES IRREVERSIBLE EYE DAMAGE. Causes skin burns. Harmful if inhaled. May be fatal if swallowed. Harmful if absorbed through skin. Prolonged or frequently repeated skin contact may cause allergic skin reactions in some individuals. Causes asthmatic signs and symptoms in hyper-reactive individuals. Aspiration hazard. Can enter lungs and cause damage. Causes respiratory tract irritation. May cause central nervous system effects; can cause death if too much is breathed.

II. HAZARDOUS COMPONENTS

<u>Chemical Name(s)</u>	<u>CAS Number</u>	<u>% Wt</u>	<u>TLV</u>
Glutaraldehyde	111-30-8	50	ACGIH (United States). CEIL: 0.2 mg/m ³ CEIL: 0.05 ppm

While some substances are claimed as trade secret in accordance the provision of OSHA 29 CFR 1910.1200(i), all known hazards are clearly communicated within this document.

III. FIRST AID INFORMATION

Eye Exposure: Wash immediately and continuously with flowing water for at least 30 minutes. Remove contact lenses after the first 5 minutes and continue washing. Obtain prompt medical consultation, preferably from an ophthalmologist.

Skin Exposure: Take off contaminated clothing. Wash skin with soap and plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice. Wash clothing before reuse. Shoes and other leather items which cannot be decontaminated should be disposed of properly. First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection)

Inhalation: Move person to fresh air. If person is not breathing, call an emergency responder or ambulance, and then give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask etc). Call a poison control center or doctor for treatment advice. If breathing is difficult, oxygen should be administered by qualified personnel.

Ingestion: Immediately call a poison control center or doctor. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give any liquid to the person. Do not give anything by mouth to an unconscious person. Seek medical attention immediately.

Notes to Physician: Probable mucosal damage may contraindicate the use of gastric lavage. Due to irritant properties, swallowing may result in burns/ulceration of mouth, stomach and lower gastrointestinal tract with subsequent stricture. Aspiration of vomit may cause lung injury. Suggest endotracheal/esophageal control if lavage is done. May cause asthma-like (reactive airways) symptoms. Bronchodilators, expectorants and antitussives may be of help. Glutaraldehyde may transiently worsen reversible airways obstruction including asthma or reactive airways disease. Maintain adequate ventilation and oxygenation of the patient. Treat bronchospasm with inhaled beta2 agonist and oral or parenteral corticosteroids. Chemical eye burns may require extended irrigation. Obtain prompt consultation, preferably from an ophthalmologist. Inhalation of vapors may result in skin sensitization. In sensitized individuals, re-exposure to very small amounts of vapor, mist, or liquid may cause a severe allergic skin reaction. If burn is present, treat as any thermal burn, after decontamination. First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical

resistant gloves, splash protection). No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

Medical Conditions Aggravated by Exposure: Excessive exposure may aggravate preexisting asthma and other respiratory disorders (e.g. emphysema, bronchitis, reactive airways dysfunction syndrome).

IV. PRIMARY ROUTES OF EXPOSURE

1. Effects from Acute Exposure:

- Eye Exposure:** May cause severe irritation with corneal injury which may result in permanent impairment of vision, even blindness. Chemical burns may occur. Vapor may cause eye irritation experienced as mild discomfort and redness.
- Skin Exposure:** Brief contact may cause skin irritation with local redness. Prolonged contact may cause severe skin burns. Symptoms may include pain, severe local redness, swelling, and tissue damage.
May stain skin. May cause itching.
Skin Absorption: Harmful if absorbed through skin.
Skin Sensitization: Skin contact may cause an allergic skin reaction in a small proportion of individuals. Has caused allergic skin reactions when tested in guinea pigs. Has caused allergic skin reactions when tested in mice. Inhalation of vapors may result in skin sensitization. In sensitized individuals, re-exposure to very small amounts of vapor, mist, or liquid may cause a severe allergic skin reaction.
- Inhalation:** Vapor may cause severe irritation of the upper respiratory tract (nose and throat). Vapor from heated material may cause serious adverse effects, even death. Case reports and medical surveys link asthma and respiratory irritation to glutaraldehyde exposure, primarily in medical personnel. Asthma-like symptoms may occur in people prone to respiratory disorders or other allergies. Asthma-like symptoms may include coughing, difficult breathing and a feeling of tightness in the chest. Occasionally, breathing difficulties may be life threatening.
- Ingestion:** May be fatal if swallowed. Oral toxicity of glutaraldehyde increases with dilution. Drinking water following ingestion of concentrated glutaraldehyde solutions can enhance the toxicity of glutaraldehyde. Swallowing may result in irritation or burns of the mouth, throat, and gastrointestinal tract. Swallowing may result in gastrointestinal irritation or ulceration. Excessive exposure may cause headache, dizziness, anesthesia, drowsiness, unconsciousness and other central nervous system effects, including death. Aspiration into lungs may occur during ingestion or vomiting, causing tissue damage or lung injury.

2. Effects from Chronic Exposure:

In a NTP chronic 2-year inhalation study on glutaraldehyde, no carcinogenicity was seen in rats or in mice. An increase in large granular lymphocytes in Fischer rats dosed with glutaraldehyde for two years was random or secondary carcinogenic effect due to a modifying influence on the occurrence of this common neoplasm in this rat strain.

Effects of Repeated Exposure: Repeated skin contact may result in absorption of amounts which could cause death. May cause nausea and vomiting.

V. TOXICOLOGICAL INFORMATION

Acute Effects:

- Acute Oral (LD50) = 1468 mg/kg Rat
- Acute Dermal (LD50) = 1432 mg/kg Rabbit
- Acute Inhalation (LC50) = >27 ppm (4 hours) Rat

Irritant/Sensitization Effects:

May cause severe irritation with corneal injury which may result in permanent impairment of vision, even blindness. Chemical burns may occur. Vapor may cause eye irritation experienced as mild discomfort and redness.

Brief contact may cause skin irritation with local redness. Prolonged contact may cause severe skin burns. Symptoms may include pain, severe local redness, swelling, and tissue damage. May stain skin. May cause itching.

Skin Absorption: Harmful if absorbed through skin.

Skin Sensitization: Skin contact may cause an allergic skin reaction in a small proportion of individuals. Has caused allergic skin reactions when tested in guinea pigs. Has caused allergic skin reactions when tested in mice. Inhalation of vapors may result in skin sensitization. In sensitized individuals, re-exposure to very small amounts of vapor, mist, or liquid may cause a severe allergic skin reaction.

Vapor may cause severe irritation of the upper respiratory tract (nose and throat). Vapor from heated material may cause serious adverse effects, even death. Case reports and medical surveys link asthma and respiratory irritation to glutaraldehyde exposure, primarily in medical personnel. Asthma-like symptoms may occur in people prone to respiratory disorders or other allergies. Asthma-like symptoms may include coughing, difficult breathing and a feeling of tightness in the chest. Occasionally, breathing difficulties may be life threatening.

Target Organs Effects:

May cause damage to the following organs: gastrointestinal tract, upper respiratory tract, skin, eyes.

Other Health Effects:

Developmental Toxicity: Has been toxic to the fetus in lab animals at doses toxic to the mother. Did not cause birth defects in laboratory animals.

Reproductive Toxicity: In animals studies, did not interfere with reproduction.

Genetic Toxicology: In vitro genetic toxicity studies were negative in some cases and positive in other cases. Animal genetic toxicity studies were predominantly negative.

This product contains 0.5% Methanol: Methanol causes narcotic effects. Symptoms of exposure include blurring of vision, photophobia, and conjunctivitis. There may be a headache, dizziness, and a feeling of intoxication. Permanent damage to the eye can result from continuous or severe exposure. May be fatal if swallowed. Mutagenicity tests have reported both positive and negative results.

VI. ENVIRONMENTAL TOXICOLOGICAL INFORMATION

Material is highly toxic to aquatic organisms on an acute basis (LC50/EC50 between 0.1 and 1 mg/L in the most sensitive species tested). Material is moderately toxic to birds on an acute basis (LD50 between 51 and 500 mg/kg).

Material is practically non-toxic to birds on a dietary basis (LC50 > 5000 ppm).

LC50 = 5.4 mg/l Fathead minnow (*Pimephales promelas*)

LC50 = 5 mg/l *Daphnia magna*

LC50 = 0.11 mg/l *Acartia tonsa*

EC50 = 0.81 mg/l 120 hours *Selenastrum capricornutum*

EC50 = >50 mg/l activated sludge, respiration inhibition

EC50 = 17 mg/l 16 hours Bacteria, growth inhibition (cell density reduction)

VII. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Clear liquid
Odor	Fruity
Density	1.129
Flash Point.....	none
Melting/Freezing Point.....	18°C (-0.4°F)
Boiling Point.....	100.5°C (212.9°F)
Solubility	Easily soluble in cold water. Easily soluble in hot water.
pH (Neat)	3.1 to 4.5 (acidic)
pH (100 ppm in water)	N/A
Vapor Pressure.....	0.2 mm of Hg (@ 20°C)
o/w Partition Coefficient.....	N/A
Oxidizing/Reducing Properties	N/A

Viscosity.....Dynamic: 15.4 cps @ 25°C (Brookfield viscosity - @ 100 rpm, #0 spindle)

Additional pH informationN/A

NOTE: The physical data presented above are typical values and should not be construed as specifications.

VIII. FIRE AND EXPLOSION INFORMATION

Flammable LimitsN/A

Extinguishing MediaWater fog, carbon dioxide, foam, dry chemical.

Special Firefighting Procedures.....Keep people away. Isolate fire and deny unnecessary entry. To extinguish combustible residues of this product use water fog, carbon dioxide, dry chemical or foam. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage. Review the "Accidental Release Measures" and the "Ecological Information" sections of this MSDS.

Special Protective Equipment for Firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

Unusual Fire and Explosion Hazards: This material will not burn until the water has evaporated. Residue can burn.

IX. REACTIVITY INFORMATION

StabilityThermally stable at typical use temperatures. Conditions to Avoid: Active ingredient decomposes at elevated temperatures.

IncompatibilityAvoid contact with: Amines. Ammonia. Strong acids. Strong bases. Strong oxidizers. Avoid contact with metals such as: Aluminum. Carbon steel. Copper. Iron. Mild Steel.

Hazardous

Decomposition Products...Decomposition products depend upon temperature, air supply and the presence of other materials.

X. HANDLING PRECAUTIONS

Eye/Face Protection: Use slash proof monogoggles or safety glasses with shields in conjunction with a face shield. Eye wash fountain should be located in immediate work area. If exposed causes eye discomfort, use a full-face respirator.

Skin Protection: Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task. Safety shower should be located in immediate work area. Use chemical protective clothing resistant to this material, when there is any possibility of skin contact. Remove contaminated clothing immediately, wash skin area with soap and water, and launder clothing before reuse or dispose of properly. Items which cannot be decontaminated, such as shoes, belts, and watchbands, should be removed and disposed of properly.

Hand protection: Use gloves, chemically resistant to this material, at all times. Examples of preferred glove barrier materials include: Butyl rubber. Examples of acceptable glove barrier materials include: Nitrite/butadiene rubber ("nitrile" or "NBR"). NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Respiratory Protection: Atmospheric levels should be maintained below the exposure guideline. When atmospheric levels may exceed the exposure guideline, use an approved air purifying respirator. The respirator should contain an organic vapor sorbent. For emergency and other conditions where the exposure guideline may be exceeded, use an approved positive-pressure self-contained breathing apparatus or positive-pressure air line with auxiliary self-contained air supply. If vapors are strong enough to be irritating to the nose, or eyes, the TLV is probably being exceeded. Special ventilation or respiratory protection may be required. The following should be effective types of air-purifying respirators: Organic vapor cartridge with a particulate pre-filter. **Ingestion:** Avoid ingestion of even very small amounts; do not consume or store food or tobacco in the work area; wash hand and face before smoking or eating. **General Handling:** Do not get in eyes, on skin, on clothing. Avoid breathing vapor. Do not swallow. Wear goggles, protective clothing and butyl or nitrile gloves. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse. **Other Precautions:** This product in its undiluted form must be used in a spray or aerosol application. If dilutions or mixtures of this product are used in a spray application, full personal protective equipment is strongly recommended to prevent exposure.

Storage: Do not store in: Aluminum. Carbon steel. Copper. Mild Steel. Iron.

Shelf life: Use within 12 Months

XI. SATISFACTORY MATERIALS OF CONSTRUCTION

304 stainless steel

Fiberglass-reinforced plastics: Polyester (e.g. "Atlac" 382)

Vinyl ester (e.g. "Derakane" 411 or 470) 316 stainless steel

Polyethylene – high density

Nickel

NOTE: With respect to all other materials not listed above, user should be aware that use of such materials with this product may be hazardous and result in damages to such materials and other property and personal injuries. No data concerning such materials not listed above should be implied by the user.

XII. SPILL, LEAK AND DISPOSAL PROCEDURES

SPILL AND LEAK RESPONSE GUIDELINES:

Steps to be Taken if Material is Released or Spilled: Contain spilled material if possible. Collect in suitable and properly labeled containers. Very low concentrations (5 ppm or less of glutaraldehyde) can be degraded in a biological wastewater treatment system. Thus, small spills can be flushed with large quantities of water. Large quantities or 'slugs' can be harmful to the treatment system. Thus, large spills should be collected for disposal. It may be also possible to decontaminate spilled material by careful application of sodium hydroxide or sodium bisulfite. Depending on conditions, considerable heat and fumes can be liberated by the decontamination reaction.

Personal Precautions: Use appropriate safety equipment. For additional information, refer to Section 10, Handling Precautions. Evacuate area. Keep upwind of spill. Ventilate area of leak or spill. Only trained and properly protected personnel must be involved in clean-up operations.

Environmental Precautions: Spills or discharge to natural waterways is likely to kill aquatic organisms. Prevent from entering into soil, ditches, sewers, waterways and/or groundwater.

DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. All disposal practices must be in compliance with all Federal, State/Provincial and local laws and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator. DELTA WATER HAS NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN MSDS SECTION.

Composition Information. FOR UNUSED & UNCONTAMINATED PRODUCT, the preferred option is to contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

XIII. TRANSPORTATION AND SHIPPING INFORMATION

DOT Shipping Information:

UN3265, CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S., (Glutaraldehyde), Class 8, P.G. II, (ERG Guide 153)

IMO/IMDG Shipping Information:

UN3265, CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S., (Glutaraldehyde), Class 8, P.G. II, MARINE POLLUTANT, (EmS No. F-A, S-B, ERG Guide 153, HazMat Code 4931466)

IATA Shipping Information:

UN3265, CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S., (Glutaraldehyde), Class 8, P.G. II, (ERG Guide 153, ERG Code 8L)

DOT "RQ": NONE (Material does not meet concentration requirements for hazardous substances as defined in 49 CFR 171.8)

Unless otherwise stated, the shipping information provided above applies only to non-bulk containers of this product. Proper shipping name and general shipping information may vary depending on packaging and mode of shipment. All products shipped from Delta Water have been properly packaged and labeled according to appropriate hazardous materials shipping regulations. If any alteration of packaging, product, or mode of transportation is further intended, different shipping information, including but not limited to proper shipping name, RQ designation, and labeling may apply.

XIV. REGULATORY INFORMATION

The following Regulations are known to apply to the use and disposal of this product. Additional Federal, State and Local regulations may also be applicable.

SARA (Superfund Amendments and Reauthorization Act)

SARA 302 Extremely Hazardous Substances List...

No components of this product are listed.

SARA 312 Hazard Category...

Immediate (Acute) Health Hazard, Delayed (Chronic) Health Hazard

SARA 313 Toxic Chemicals List...

No components of this product are present above the *de minimus* levels.

CERCLA (Comprehensive Environmental Response, Compensation and Liability Act)

No components of this product are present above the *de minimus* levels.

RCRA (Resource Conservation and Recovery Act) Listed Hazardous Waste

No components of this product are listed.

CWA (Clean Water Act) Listed Substances

No components of this product are listed.

FDA (Food and Drug Administration)

This product is allowed under the following FDA (21 CFR) sections :173.320, 175.105, 176.170, 176.180, 176.300
Limitations 176.170, 176.180: For use only as an antimicrobial agent in pigment and filler slurries used in the manufacture of paper and paperboard at levels not to exceed 300 parts per million by weight of the slurry solids. For 173.320: For use as a single additive for beet-sugar mills not more than 250 ppm.

Bundesinstitut für Risikobewertung (BfR) (The Federal Institute for Risk Assessment)

XXXVI

TSCA (Toxic Substances Control Act) Applicability

All components are listed on the TSCA Inventory. Registered pesticides are exempt from the requirements of TSCA.

FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act)

This product is a registered pesticide. EPA Reg. No. 1448-354

HMIS/NPCA Rating Health **3** Flammability **1** Reactivity **0**

NFPA Ratings Health **3** Flammability **1** Reactivity **0**

State RegulationsVarious State Right to Know Acts...

Non-proprietary hazardous chemicals are listed in Section 2 of this MSDS. Should you require further information on specific proprietary or inert ingredients please contact Buckman Laboratories' Regulatory Affairs Department.

The information on this Material Safety Data Sheet reflects the latest information and data that we have on hazards, properties, and handling of this product under the recommended conditions of use. Any use of this product or method of application which is not described in the Data Sheet is the responsibility of the user. This Material Data Safety Sheet was prepared to comply with the OSHA Hazard Communication regulations. While some components are claimed Trade Secret under OSHA Hazard Communication regulations, all known OSHA hazards associated with the Trade Secret component(s), if contained in this product, are fully disclosed.

Delta Water Mgmt Group Inc. warrants that this product conforms to its chemical description and is reasonably fit for the purpose referred to in the directions for use when used in accordance with the directions under normal conditions. Buyer assumes the risk of any use contrary to such directions.

Seller makes no other warranty or representation of any kind, express or implied, concerning the product, including NO IMPLIED WARRANTY OF MERCHANT ABILITY OR FITNESS OF THE GOODS FOR ANY OTHER PARTICULAR PURPOSE. No such warranties shall be implied by law and no agent of seller is authorized to alter this warranty in any way except in writing with a specific reference to this warranty.

The exclusive remedy against seller shall be claim for damages not to exceed the purchase price of the product, without regard to whether such a claim is based upon breach of warranty or tort.

Any controversy or claim arising out or relating to this contract, or breach thereof, shall be settle by arbitration in accordance with the commercial arbitration rules of the American Arbitration Association, and judgment upon the rendered by the Arbitrator(s) may be entered in any court having jurisdiction thereof.

N/A = Not Available

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