

MATERIAL SAFETY DATA SHEET

Prepared to U.S. OSHA, CMA, ANSI and Canadian WHMIS Standards

PART I *What is the material and what do I need to know in an emergency?*

1. PRODUCT IDENTIFICATION

TRADE NAME (AS LABELED): **STARBRITE HULL CLEANER**
PRODUCT #: **81708, 81732PW, 81700N**
SYNONYMS:
CHEMICAL NAME/CLASS: Oxalic Acid Solution
PRODUCT USE: Boat Hull Cleaning Compound
MANUFACTURER'S NAME: **STAR BRITE**
ADDRESS: 4041 S. W. 47 Avenue
Ft. Lauderdale, FL 33314
EMERGENCY PHONE: Chemtrec
(800) 424-9300
BUSINESS PHONE: (800) 327-8583
DATE OF PREPARATION: June 18, 2005

2. COMPOSITION and INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS #	% v/v	EXPOSURE LIMITS IN AIR					
			ACGIH-TLV		OSHA-PEL		IDLH mg/m ³	OTHER mg/m ³
			TWA mg/m ³	STEL mg/m ³	TWA mg/m ³	STEL mg/m ³		
Oxalic Acid	144-62-7	5-10%	1	2	1	2 (Vacated 1989 PEL)	500	NIOSH RELS: TWA = 1 STEL = 2
Ethylene Glycol <i>n</i> -Butyl Ether (2-Butoxyethanol)	111-76-2	1-5%	97 (skin)	NE	240 (skin) 120 (Vacated 1989 PEL)	NE	700 ppm	NIOSH REL: TWA = 24 (skin) DFG MAKs: TWA = 98 (skin) PEAK = 2•MAK 30 min., average value DFG MAK Pregnancy Risk Classification: C
Water	7732-18-5	Balance	NE	NE	NE	NE	NE	NE

NE = Not Established.

See Section 16 for Definitions of Terms Used.

NOTE: ALL WHMIS required information is included in appropriate sections based on the ANSI Z400.1-1998 format. This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

3. HAZARD IDENTIFICATION

EMERGENCY OVERVIEW: This product is a clear, combustible liquid with a sweet, pleasant odor. The main hazard associated with over exposure to this product is the potential for moderate to severe irritation of eyes, skin, and other contaminated tissue. This solution is combustible, but must be moderately pre-heated for ignition to occur. If involved in a fire, this product will produce oxides of carbon and formic acid. This product is not reactive. Emergency responders must wear the personal protective equipment suitable for the situation to which they are responding.

SYMPTOMS OF OVEREXPOSURE BY ROUTE OF EXPOSURE: The most significant routes of occupational overexposure are inhalation and contact with skin and eyes. The symptoms of overexposure to this product are as follows:

INHALATION: Inhalation of vapors, mists, or sprays of this product can be moderately irritating to the respiratory system. Depending on the concentration and duration of contact, symptoms of inhalation overexposure can include coughing, sore throat, nasal congestion, and breathing difficulty. The Oxalic Acid component of this component is considered a systemic toxin and can be readily absorbed into the system after inhalation exposure, resulting in headache and nausea. Animal data suggest that adverse effects on the blood (red blood cell fragility, hemoglobinuria) may result from inhalation exposure to the 2-Butoxyethanol component of this product. Chronic inhalation of this product can result in chronic inflammation of upper respiratory tract and permanent damage to lung tissue, resulting in bronchitis or pulmonary edema.

3. HAZARD IDENTIFICATION (Continued)

CONTACT WITH SKIN or EYES: Skin contact can cause moderate to severe irritation, depending on the duration and concentration of exposure. Symptoms of such overexposure may result in redness and pain. Repeated contact with this product may produce delayed pain in the area of contamination, discoloration of the skin and may cause the fingernails to become brittle. The 2-Butoxyethanol and Oxalic Acid components are both considered severe eye irritants; contact of this product with the eyes can be moderately to severely irritating to contaminated eyes. Symptoms of eye contact can include pain, redness, and watering. Prolonged eye contact may result in tissue damage and blindness.

SKIN ABSORPTION: The 2-Butoxyethanol component of this product can be absorbed via intact skin. Symptoms of exposure via this route may include adverse central nervous system effects and other symptoms as described under "Inhalation".

INGESTION: Ingestion is not anticipated to be a significant route of exposure for any component of this product. If this product is swallowed, symptoms of such exposure may include nausea, vomiting, diarrhea, and a burning sensation in the mouth, throat, and in other tissues of the digestive system. Other symptoms of ingestion may include headache, pain and twitching in muscles or cramps. Severe ingestion exposures may result in bloody vomiting, weak and irregular heart beat, drop in blood pressure, signs of heart failure, shock, convulsions, kidney damage or renal failure, coma and may possibly be fatal.

INJECTION: Injection of this product (as may occur if skin is punctured by a contaminated object) can result in pain, redness, and local swelling.



OTHER HEALTH EFFECTS: Due to the presence of Oxalic Acid, chronic exposure to this product via ingestion, skin absorption and inhalation may cause formation of stones (calculi) in kidneys and urinary tract, painful abdominal spasms, and painful urination, weight loss.

HEALTH EFFECTS OR RISKS FROM EXPOSURE: An Explanation in **Lay Terms**. In the event of overexposure, the following symptoms may be observed:

ACUTE: The primary acute health effect associated with this product is the potential for moderate to severe irritation of contaminated eyes, skin, or other contaminated tissue. Severe ingestion exposures can be fatal.

CHRONIC: Repeated skin contact can result in dermatitis (inflammation of the outer layer of the skin). Chronic exposure via inhalation may cause damage to respiratory system, bronchitis, or pulmonary edema. Chronic exposure via ingestion, inhalation or skin absorption may cause kidney stones and other kidney damage. See Section 11 (Toxicology Information) for additional data.

TARGET ORGANS: ACUTE: Skin, eyes, respiratory system, blood system (based on animal evidence). CHRONIC: Skin, respiratory system, kidneys.

HAZARDOUS MATERIAL IDENTIFICATION SYSTEM			
HEALTH		(BLUE)	2
FLAMMABILITY		(RED)	1
REACTIVITY		(YELLOW)	0
PROTECTIVE EQUIPMENT			C
EYES	RESPIRATORY	HANDS	BODY
	SEE SECTION 8		SEE SECTION 8
For routine applications of solution.			

See Section 16 for Definition of Ratings

PART II *What should I do if a hazardous situation occurs?*

4. FIRST-AID MEASURES

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

SKIN EXPOSURE: If this product contaminates the skin, immediately begin decontamination with running water. Minimum flushing is for 15 minutes. Remove exposed or contaminated clothing, taking care not to contaminate eyes. The contaminated individual must seek immediate medical attention if any adverse health effect occurs.

EYE EXPOSURE: If this product's liquid or vapors enter the eyes, open the contaminated individual'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 immediate medical attention.

INHALATION: If vapors, mists, or sprays of this product are inhaled, remove the contaminated individual to fresh air. If necessary, use artificial respiration to support vital functions. Remove or cover gross contamination to avoid exposure to rescuers.

INGESTION: If this product is swallowed, CALL PHYSICIAN OR POISON CONTROL CENTER FOR MOST CURRENT INFORMATION. If professional advice is not available, do not induce vomiting. Have victim rinse mouth with water or drink several cupfuls of water, if conscious. Never induce vomiting or give a diluent (e.g., 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.

4. FIRST-AID MEASURES (Continued)

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Preexisting respiratory problems, dermatitis, and other skin disorders can be aggravated by exposure to this product.

RECOMMENDATIONS TO PHYSICIANS: Treat symptoms and eliminate overexposure.

5. FIRE-FIGHTING MEASURES

FLASH POINT: 67.7°C (154°F)

AUTOIGNITION TEMPERATURE: Not determined.

FLAMMABLE LIMITS (in air by volume, %):

Lower (LEL): Not applicable.

Upper (UEL): Not applicable.

FIRE EXTINGUISHING MATERIALS:

Water Spray: YES

Foam: YES

Halon: YES

Carbon Dioxide: YES

Dry Chemical: YES

Other: Any "ABC" Class.

UNUSUAL FIRE AND EXPLOSION HAZARDS: This solution is a primary irritant and presents a contact hazard to firefighters. When involved in a fire, this material may decompose and produce irritating vapors and toxic gases (e.g., carbon monoxides, formic acid).

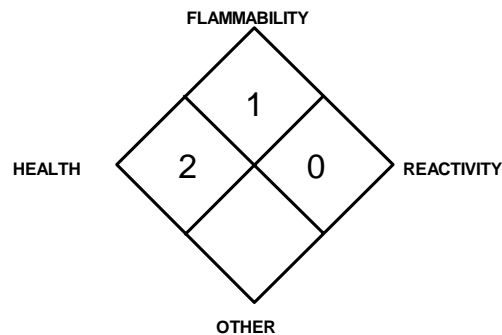
Explosion Sensitivity to Mechanical Impact: Not sensitive.

Explosion Sensitivity to Static Discharge: Not sensitive.

SPECIAL FIRE-FIGHTING PROCEDURES: Incipient fire responders should wear eye protection. Structural firefighters must wear Self-Contained

Breathing Apparatus and full protective equipment. If possible, prevent runoff water from entering storm drains, bodies of water, or other environmentally sensitive areas. If necessary, clean contaminated fire response equipment with an acid neutralizing agent (e.g., sodium bicarbonate) and rinse thoroughly with water before returning such equipment to service.

NFPA RATING



See Section 16 for Definition of Ratings

6. ACCIDENTAL RELEASE MEASURES

RELEASE RESPONSE: In case of a release, clear the affected area and protect people. Uncontrolled releases should be responded to by appropriately trained personnel in proper personal protective equipment, using pre-planned procedures. The proper personal protective equipment for incidental releases (e.g., 32-ounce container) should be rubber gloves and goggles. In the event that a clean up will generate excessive splashes, a face-shield, boots, and chemically-resistant body protection should also be worn. In the event of a non-incidental release (e.g., several 1-gallon containers released in a poorly ventilated area), minimum Personal Protective Equipment should be Level B: triple-gloves (rubber gloves and nitrile gloves over latex gloves), chemical resistant suit and boots, hard-hat, and Self-Contained Breathing Apparatus. Absorb spilled liquid with polypads or other suitable absorbent materials. Neutralize contaminate area, equipment, and all residue with sodium bicarbonate, soda ash, or other agents suitable for neutralization of acidic materials. Triple-rinse with water. Decontaminate the area thoroughly. Test area with litmus paper to confirm neutralization is complete. Place all spill residue in an appropriate container and seal. Dispose of in accordance with Federal, State, and local hazardous waste disposal regulations (see Section 13, Disposal Considerations).

PART III *How can I prevent hazardous situations from occurring?*

7. HANDLING and STORAGE

WORK PRACTICES AND HYGIENE PRACTICES: As with all chemicals, avoid getting this product ON YOU or IN YOU. Wash thoroughly after handling this product. Do not eat, drink, smoke, or apply cosmetics while handling this product. Avoid breathing vapors or mists generated by this product. Use in a well-ventilated location. Remove contaminated clothing immediately.

STORAGE AND HANDLING PRACTICES: All employees who handle this material should be trained to handle it safely. Open containers slowly on a stable surface. Empty containers may contain residual amounts of this product; therefore, empty containers should be handled with care. Store containers in a cool, dry location, away from direct sunlight, sources of intense heat, or where freezing is possible. Store away from incompatible materials (see Section 10, Stability and Reactivity). Material should be stored in secondary containers. Keep container tightly closed when not in use. Storage areas should be made of corrosion-resistant materials. Inspect all incoming containers before storage to ensure containers are properly labeled and not damaged.

7. HANDLING and STORAGE (Continued)

PROTECTIVE PRACTICES DURING MAINTENANCE OF CONTAMINATED EQUIPMENT: Follow practices indicated in Section 6 (Accidental Release Measures). Make certain that application equipment is locked and tagged-out safely, if necessary. Collect all rinsates and dispose of according to applicable Federal, State, or local procedures.

8. EXPOSURE CONTROLS - PERSONAL PROTECTION

VENTILATION AND ENGINEERING CONTROLS: Use with adequate ventilation to ensure exposure levels are maintained below the limits provided in Section 2 (Composition and Information on Ingredients), if applicable. Ensure eyewash/safety shower stations are available near areas where this product is used.

RESPIRATORY PROTECTION: None needed under normal circumstances of use. Maintain airborne contaminant concentrations below exposure limits listed in Section 2 (Composition and Information on Ingredients), if applicable. If respiratory protection is needed, use only protection authorized in 29 CFR 1910.134 or applicable State regulations. Use supplied air respiration protection if oxygen levels are below 19.5% or are unknown. The following NIOSH respiratory protection recommendations for 2-Butoxyethanol and Oxalic Acid are provided for additional information.

2-BUTOXYETHANOL

CONCENTRATION

RESPIRATORY EQUIPMENT

Up to 50 ppm:

Chemical cartridge respirator with an organic vapor cartridge.

Up to 125 ppm:

Supplied Air Respirator (SAR) operated in a continuous-flow mode, or a Powered Air Purifying Respirator (PAPR) with an organic vapor cartridge.

Up to 250 ppm:

Full-face chemical cartridge respirator with organic vapor cartridge(s), or gas mask with organic vapor canister, or PAPR with a tight-fitting facepiece and organic vapor cartridge(s), or full-face Self Contained Breathing Apparatus (SCBA), or full-facepiece SAR.

Up to 700 ppm:

Positive pressure, full-facepiece SAR.

Emergency or Planned Entry into Unknown Concentration or IDLH Conditions: SCBA or positive pressure, full-faced SAR with an auxiliary SCBA.

Escape:

Gas mask with organic vapor canister or escape-type SCBA

OXALIC ACID

CONCENTRATION

RESPIRATORY EQUIPMENT

Up to 25 mg/m³:

Powered Air-Purifying Respirator (PAPR) with dust and mist filter(s), or Supplied Air Respirator (SAR) operated in a continuous-flow mode.

Up to 50 mg/m³:

Full-Facepiece Respirator with high-efficiency particulate filter(s), or Full-Facepiece, Self Contained Breathing Apparatus (SCBA), or Full-Facepiece SAR.

Up to 500 mg/m³:

Positive pressure, full-facepiece SAR.

Emergency or Planned Entry into Unknown Concentration or IDLH Conditions: Positive-pressure, full-facepiece SCBA or positive-pressure, full-facepiece SAR with an auxiliary positive-pressure.

Escape:

Full-Facepiece, Air-Purifying Respirator with high-efficiency particulate filter(s), or escape-type SCBA.

EYE PROTECTION: Splash goggles or safety glasses. Face-shields should be worn if operations will generate splashes or sprays.

HAND PROTECTION: Wear butyl rubber, Viton™ or Saranex™ gloves for routine industrial use. Natural rubber, and polyvinyl chloride gloves are not recommended due to the presence of 2-Butoxyethanol. Use triple gloves for spill response, as stated in Section 6 (Accidental Release Measures) of this MSDS.

BODY PROTECTION: If operations will generate splashes or sprays, use body protection appropriate for task (e.g., coveralls or apron).

9. PHYSICAL and CHEMICAL PROPERTIES

RELATIVE VAPOR DENSITY (air = 1): Not determined.

EVAPORATION RATE (n-BuAc = 1): Similar to water.

SPECIFIC GRAVITY (water = 1): 1.01

MELTING/FREEZING POINT: Not determined.

SOLUBILITY IN WATER: Completely soluble.

BOILING POINT: ~100°C (~212°F)

VAPOR PRESSURE, mm Hg @ 20°C (68°F): Not determined.

pH: ~1

ODOR THRESHOLD: 0.1-0.48 ppm (for 2-Butoxyethanol).

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

APPEARANCE, ODOR AND COLOR: This product is a clear liquid with a sweet, pleasant odor.

HOW TO DETECT THIS SUBSTANCE (warning properties): Litmus paper will turn red when in contact with this solution. The odor may also be distinguishing characteristics.

10. STABILITY and REACTIVITY

STABILITY: Normally stable.

DECOMPOSITION PRODUCTS: Carbon oxides and formic acid.

MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: This product is not compatible with the following substances: strong bases, strong oxidizers, silver oxalate, alkali metals, iron and iron compounds and acid chlorides.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: Avoid exposure or contact to extreme temperatures and incompatible chemicals.

PART IV *Is there any other useful information about this material?*

11. TOXICOLOGICAL INFORMATION

TOXICITY DATA: The specific toxicology data available for components greater than 1% in concentration are as follows.

2-BUTOXYETHANOL:

Skin Irritancy (rabbit) = 500 mg/open; mild

Eye Irritancy (rabbit) = 100 mg; severe

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

Mutation in Microorganisms (bacteria, *Salmonella typhimurium*) = 19 μ mol/plate

TDLo (oral, rat) = 139 gm/kg/90 days/continuous; Liver: changes in liver weight; Kidney, Urethra, Bladder: changes in bladder weight; Nutritional and Gross Metabolic: weight loss or decreased weight gain

TDLo (oral, rat) = 9324 mg/m³/21 days/continuous; Behavioral: fluid intake; Nutritional and Gross Metabolic: weight loss or decreased weight gain

TDLo (oral, rat) = 1500 mg/kg/12 days/intermittent; Blood: pigmented or nucleated red blood cells, changes in erythrocyte (RBC) count

TDLo (oral, rat) = 13290 mg/kg/6 weeks/intermittent; Liver: changes in liver weight; Blood: changes in erythrocyte (RBC) count; Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels phosphatases

TDLo (oral, rat) = 6279 mg/kg/male 13 weeks pre-mating; Reproductive: Paternal Effects: spermatogenesis (incl. genetic material, sperm morphology, motility, and count)

TCLo (oral, rat) = 9440 mg/kg/female 7–14 days after conception; Reproductive: Fertility: post-implantation mortality (e.g. dead and/or resorbed implants per total number of implants)

TCLo (inhalation, rat) = 200 ppm/6 hours/female 6–15 days after conception; Reproductive: Maternal Effects: uterus, cervix, vagina; post-implantation mortality (e.g. dead and/or resorbed implants per total number of implants); litter size (e.g. # fetuses per litter; measured before birth)

TCLo (inhalation, rat) = 25 ppm/6 hours/female 6–15 days after conception; Reproductive: Specific Developmental Abnormalities: musculoskeletal system

TCLo (inhalation, rat) = 12 mg/kg/4 hours/female 1–19 days after conception; Reproductive: Fertility" post-implantation mortality (e.g. dead and/or resorbed implants per total number of implants)

TCLo (inhalation, rat) = 10 mg/m³/24 hours/13 weeks/intermittent; Endocrine: hypoglycemia; Blood: changes in erythrocyte (RBC) count; Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels transaminases

2-BUTOXYETHANOL (continued):

TCLo (inhalation, rat) = 1540 mg/m³/7 hours/5 weeks/intermittent; Blood: changes in erythrocyte (RBC) count

TCLo (inhalation, rat) = 432 ppm/7 hours/30 days/intermittent; Kidney, Urethra, Bladder: hematuria; Blood: other changes; Related to Chronic Data: death

TCLo (inhalation, rat) = 245 ppm/6 hours/9 days/intermittent; Liver: changes in liver weight; Blood: pigmented or nucleated red blood cells; Blood: changes in erythrocyte (RBC) count

TDLo (oral, mouse) = 5180 mg/kg/2 weeks/continuous; Endocrine: changes in thymus weight

TDLo (oral, mouse) = 7 gm/kg/female 8–14 days after conception; Reproductive: Fertility: post-implantation mortality (e.g. dead and/or resorbed implants per total number of implants)

TDLo (oral, mouse) = 9440 mg/kg/female 6–13 days after conception; Reproductive: Fertility: litter size (e.g. # fetuses per litter; measured before birth)

TCLo (inhalation, mouse) = 396 ppm/7 hours/30 days/intermittent; Liver: changes in liver weight; Kidney, Urethra, Bladder: hematuria; Blood: other changes

TCLo (inhalation, mouse) = 401 ppm/7 hours/90 days/intermittent; Liver: changes in liver weight; Kidney, Urethra, Bladder: hematuria; Blood: other changes

TCLo (inhalation, dog) = 415 ppm/7 hours/12 weeks/intermittent; Blood: microcytosis with or without anemia; Kidney, Urethra, Bladder: other changes in urine composition

TCLo (inhalation, dog) = 385 ppm/7 hours/28 days/intermittent; Blood: other changes erythrocyte (RBC) count; Related to Chronic Data: death

TCLo (inhalation, rabbit) = 200 ppm/6 hours/female 6–18 days after conception; Reproductive: Maternal Effects: uterus, cervix, vagina; pre-implantation mortality (e.g. reduction in number of implants per female; total number of implants per corpora lutea)

TCLo (inhalation, rabbit) = 100 ppm/6 hours/female 6–18 days after conception; Reproductive: Specific Developmental Abnormalities: cardiovascular (circulatory) system

TDLo (skin, rabbit) = 4500 μ L/kg/9 days/intermittent; Liver: changes in liver weight; Blood: pigmented or nucleated red blood cells; changes in erythrocyte (RBC) count

2-BUTOXYETHANOL (continued):

TCLo (inhalation, guinea pig) = 376 ppm/7 hours/30 days/intermittent; Lungs, Thorax, or Respiration: chronic pulmonary edema; Kidney, Urethra, Bladder: changes in bladder weight; Nutritional and Gross Metabolic: weight loss or decreased weight gain

TDLo (oral, woman) = 600 mg/kg

TDLo (oral, woman) = 7813 μ L/kg; Behavioral: coma; Vascular: BP lowering not characterized in autonomic section; Nutritional and Gross Metabolic: metabolic acidosis

TCLo (inhalation, human) = 195 ppm/8 hours; Gastrointestinal tract

TCLo (inhalation, human) = 100 ppm; Nose, Eye, Central nervous system

LD₅₀ (oral, rat) = 470 mg/kg

LD₅₀ (oral, mouse) = 1230 mg/kg; Behavioral: altered sleep time (including change in righting reflex), somnolence (general depressed activity); Skin and Appendages: hair

LD₅₀ (oral, rabbit) = 300 mg/kg

LD₅₀ (oral, guinea pig) = 1200 mg/kg; Behavioral: general anesthetic; Gastrointestinal: other changes; Kidney, Urethra, Bladder: other changes

LD₅₀ (intraperitoneal, rat) = 220 mg/kg

LD₅₀ (intraperitoneal, mouse) = 536 mg/kg

LD₅₀ (intravenous, rat) = 340 mg/kg

LD₅₀ (intravenous, rat) = 307 mg/kg

LD₅₀ (intravenous, mouse) = 1130 mg/kg

LD₅₀ (intravenous, rabbit) = 252 mg/kg

LD₅₀ (unreported, mouse) = 1050 mg/kg; Behavioral: somnolence (general depressed activity), excitement; Lungs, Thorax, or Respiration: other changes

LD₅₀ (skin, rabbit) = 220 mg/kg

LD₅₀ (skin, guinea pig) = 230 μ g/kg

LC₅₀ (inhalation, rat) = 2900 mg/m³

LC₅₀ (inhalation, rat) = 450 ppm/4 hours; Behavioral: ataxia; Nutritional and Gross Metabolic: weight loss or decreased weight gain

LC₅₀ (inhalation, mouse) = 700 ppm/7 hours

LDLo (subcutaneous, mouse) = 500 mg/kg

OXALIC ACID:

Standard Draize Test (Skin-Rabbit, adult) 500 mg/24 hours Mild irritation effects

Standard Irritation Test (Eye effects-Rabbit, adult) 250 mg/24 hours Severe irritation effects

Standard Irritation Test (Eye effects-Rabbit, adult) 100 mg/4 seconds: rns Severe irritation effects

LD₅₀ (Oral-Rat) 7500 mg/kg

11. TOXICOLOGICAL INFORMATION (Continued)

TOXICITY DATA (continued):

OXALIC ACID (continued):

LD₅₀ (Intraperitoneal-Mouse) 270 mg/kg
LD₅₀ (Unreported-Rat) 1400 mg/kg
LDLo (Oral-woman) 600 mg/kg: Gastrointestinal: changes in structure or function of esophagus, hypermotility, diarrhea, other changes
LDLo (Oral-Dog) 1 gm/kg
LDLo (Subcutaneous-Cat, adult) 112 mg/kg

OXALIC ACID (continued):

LDLo (Subcutaneous-Frog, adult) 757 mg/kg
TDLo (Oral-Mouse) 8400 mg/kg: male 7 day(s) pre-mating female 7 day(s) pre-mating: 21 day(s) after conception: Reproductive: Fertility: other measures of fertility, Effects on Embryo or Fetus: fetotoxicity (except death, e.g., stunted fetus)

OXALIC ACID (continued):

TDLo (Oral-Mouse) 8400 mg/kg (male 7 days pre): Reproductive effects
TDLo (Oral-Rat) 175 gm/kg/70 days-continuous: Endocrine: changes in thyroid weight; Musculoskeletal: other changes; Nutritional and Gross Metabolic: weight loss or decreased weight gain

SUSPECTED CANCER AGENT: The components of this product are not found on the following lists: FEDERAL OSHA Z LIST, NTP, IARC (Groups 1 or 2), and CAL/OSHA and therefore are neither considered to be nor suspected to be cancer-causing agents by these agencies.

IRRITANCY OF PRODUCT: This product can be moderately to severely irritating to eyes, skin, and other contaminated tissue.

SENSITIZATION TO THE PRODUCT: The components of this product are not known to be skin or respiratory sensitizers.

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

Mutagenicity: This product is not expected to cause mutagenic effects in humans.

Embryotoxicity: This product is not expected to cause embryotoxic effects in humans.

Teratogenicity: This product is not expected to cause teratogenic effects in humans.

Reproductive Toxicity: This product is not expected to cause adverse reproductive effects in humans. There are data on the adverse effects on fertility observed in female mice in a continuous breeding study involving high levels of the 2-Butoxyethanol component of this product. Testicular atrophy and seminiferous tubule degeneration has been observed in rats and mice during studies of the 2-Butoxyethanol component of this product. Data also exist that demonstrate adverse reproductive effects in both females and embryos, from studies involving high levels of Oxalic Acid in mice.

A *mutagen* is a chemical which causes permanent changes to genetic material (DNA) such that the changes will propagate through generational lines. An *embryotoxin* is a chemical which 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 which causes damage to a developing fetus, but the damage does not propagate across generational lines. A *reproductive toxin* is any substance which interferes in any way with the reproductive process.

BIOLOGICAL EXPOSURE INDICES: Currently, there are no Biological Exposure Indices (BEIs) determined for the components of this product.

12. ECOLOGICAL INFORMATION

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

ENVIRONMENTAL STABILITY: The components of this product are relatively stable under ambient, environmental conditions.

EFFECT OF MATERIAL ON PLANTS or ANIMALS: This product may be harmful or fatal to contaminated plant and animal life (especially if large quantities are released).

EFFECT OF CHEMICAL ON AQUATIC LIFE: This solution is designed to be toxic to certain forms of marine life; High concentrations of this solution may be detrimental to any aquatic environment. The following ecotoxicity data are available for the components of this product.

2-BUTOXYETHANOL:

EC₀ (bacteria, *Pseudomonas putida*) = 700 mg/L/16 hours
EC₀ (algae, *Microcystis aeruginosa*) = 35 mg/L/8 days
EC₀ (green algae, *Scenedesmus quadricauda*) = 900 g/L/7 days
EC₀ (protozoa, *Entosiphon sulcatum*) = 91 mg/L/72 hours
EC₀ (protozoa, *Uronema parduczi* Chatton-Lwoff) = 463 mg/L
LC₅₀ (brown shrimp, *Crangon crangon*) = 600–1000 mg/L/48 hours
LC₅₀ (brown shrimp, *Crangon crangon*) = 550–950 mg/L/96 hours
LC₅₀ (goldfish) = 1650 mg/L/24 hours
LC₅₀ (guppy, *Poecilia reticulata*) = 983 mg/L/7 days

OXALIC ACID:

EC₀ (*Pseudomonas putida*) 16 hours = 1,550 mg/L

OXALIC ACID (continued):

EC₀ (*Microcystis aeruginosa* algae) 8 hours = 80 mg/L
EC₀ (*Scenedesmus quadricauda* green algae) 7 days = 790 mg/L
EC₀ (*Entosiphon sulcatum* protozoa) 72 hours = 222 mg/L
Perturbation Level (*Gammarus pulex*) = 25 mg/L
Perturbation Level (*Vorticella campanula*) = 50 mg/L
Perturbation Level (*Paramecium caudatum*) = 50 mg/L
Perturbation Level (*Tubifex tubifex*) = 80 mg/L
Perturbation Level (*Limnaea ovata*) = 60 mg/L
Perturbation Level (*Sialis flavilatera*) = 1,000 mg/L
Period of Survival (goldfish) 0.40–0.5 hour = 1,000 ppm, pH: 2.6
Period of Survival (goldfish) 4 days = 200 ppm, pH: 5.3

13. DISPOSAL CONSIDERATIONS

PREPARING WASTES FOR DISPOSAL: 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.

EPA WASTE NUMBER: Wastes of this product should be tested to see if they are wastes as defined under EPA criteria for D002 listed wastes (Waste Characteristic-Corrosivity).

14. TRANSPORTATION INFORMATION

Call for information

15. REGULATORY INFORMATION

ADDITIONAL U.S. REGULATIONS:

U.S. SARA REPORTING REQUIREMENTS: The components of this product are not subject to the reporting requirements of Sections 302, 304, and 313 of Title III of the Superfund Amendments and Reauthorization Act.

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

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

U.S. TSCA INVENTORY STATUS: The components of this product are listed on the TSCA Inventory.

OTHER U.S. FEDERAL REGULATIONS: Not applicable.

U.S. STATE REGULATORY INFORMATION: Components of this product are covered under specific State regulations, as denoted below:

Alaska - Designated Toxic and Hazardous Substances: 2-Butoxyethanol, Oxalic Acid.

California - Permissible Exposure Limits for Chemical Contaminants: 2-Butoxyethanol, Oxalic Acid.

Florida - Substance List: 2-Butoxyethanol

Illinois - Toxic Substance List: 2-Butoxyethanol, Oxalic Acid.

Kansas - Section 302/313 List: None

Massachusetts - Substance List: 2-Butoxyethanol.

Michigan - Critical Materials Register: No.

Minnesota - List of Hazardous Substances: 2-Butoxyethanol, Oxalic Acid.

Missouri - Employer Information/Toxic Substance List: 2-Butoxyethanol, Oxalic Acid.

New Jersey - Right to Know Hazardous Substance List: 2-Butoxyethanol, Oxalic Acid.

North Dakota - List of Hazardous Chemicals, Reportable Quantities: No.

Pennsylvania - Hazardous Substance List: 2-Butoxyethanol, Oxalic Acid.

Rhode Island - Hazardous Substance List: 2-Butoxyethanol, Oxalic Acid.

Texas - Hazardous Substance List: 2-Butoxyethanol, Oxalic Acid.

West Virginia - Hazardous Substance List: 2-Butoxyethanol, Oxalic Acid.

Wisconsin - Toxic and Hazardous Substances: 2-Butoxyethanol, Oxalic Acid.

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

LABELING (Precautionary Statements) ANSI LABELING (Z129.1): **WARNING!** CAUSES MODERATE TO SEVERE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT. MAY BE HARMFUL OR FATAL IF SWALLOWED. Avoid contact with skin or eyes. Avoid breathing vapors or mists. Do not taste or swallow. Wash thoroughly after handling. Wear gloves and goggles. Wear appropriate body protection and face-shield if operations will involve splashes or sprays. **FIRST-AID:** In case of contact with skin or eyes, flush immediately with plenty of water for at least 15 minutes. If inhaled, remove to fresh air. If ingested, do not induce vomiting. Get medical attention. **IN CASE OF FIRE:** Use water fog, dry chemical, CO₂, or "alcohol" foam. **IN CASE OF SPILL:** Absorb spill with sodium bicarbonate or other acid-neutralizing material and place in suitable container. Consult Material Safety Data Sheet for additional information.

ADDITIONAL CANADIAN REGULATIONS:

CANADIAN DSL/NDL INVENTORY STATUS: The components of this product are listed on the DSL Inventory.

OTHER CANADIAN REGULATIONS: Not applicable.

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

CANADIAN WHMIS SYMBOLS: **Class D2B:** Chronic Toxic Effects-skin and respiratory irritation.



16. OTHER INFORMATION

PREPARED BY:

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The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof. Star brite assumes no responsibility for injury to the vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, Star brite assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in his use of the material.

DEFINITIONS OF TERMS

A large number of abbreviations and acronyms appear on a MSDS. Some of these which are commonly used include the following:

CAS #: This is the Chemical Abstract Service Number which uniquely identifies each constituent.

EXPOSURE LIMITS IN AIR:

ACGIH - American Conference of Governmental Industrial Hygienists, a professional association which establishes exposure limits. **TLV** - Threshold Limit Value - an airborne concentration of a substance which represents conditions under which it is generally believed that nearly all workers may be repeatedly exposed without adverse effect. The duration must be considered, including the 8-hour Time Weighted Average (**TWA**), the 15-minute Short Term Exposure Limit, and the instantaneous Ceiling Level (**C**). Skin absorption effects must also be considered.

OSHA - U.S. Occupational Safety and Health Administration.

PEL - Permissible Exposure Limit - This exposure value means exactly the same as a TLV, except that it is enforceable by OSHA. The OSHA Permissible Exposure Limits are based in the 1989 PELs and the June, 1993 Air Contaminants Rule (Federal Register: 58: 35338-35351 and 58: 40191). Both the current PELs and the vacated PELs are indicated. The phrase, "Vacated 1989 PEL," is placed next to the PEL which was vacated by Court Order. **IDLH** - Immediately Dangerous to Life and Health - This level represents a concentration from which one can escape within 30-minutes without suffering escape-preventing or permanent injury. **The DFG - MAK** is the Republic of Germany's Maximum Exposure Level, similar to the U.S. PEL. **NIOSH** is the National Institute of Occupational Safety and Health, which is the research arm of the U.S. Occupational Safety and Health Administration (**OSHA**). NIOSH issues exposure guidelines called **Recommended Exposure Levels (RELs)**. When no exposure guidelines are established, an entry of **NE** is made for reference.

HAZARD RATINGS:

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM: Health Hazard: **0** (minimal acute or chronic exposure hazard); **1** (slight acute or chronic exposure hazard); **2** (moderate acute or significant chronic exposure hazard); **3** (severe acute exposure hazard; onetime overexposure can result in permanent injury and may be fatal); **4** (extreme acute exposure hazard; onetime overexposure can be fatal). Flammability Hazard: **0** (minimal hazard); **1** (materials that require substantial pre-heating before burning); **2** (combustible liquid or solids; liquids with a flash point of 38-93°C [100-200°F]); **3** (Class IB and IC flammable liquids with flash points below 38°C [100°F]); **4** (Class IA flammable liquids with flash points below 23°C [73°F] and boiling points below 38°C [100°F]). Reactivity Hazard: **0** (normally stable); **1** (material that can become unstable at elevated temperatures or which can react slightly with water); **2** (materials that are unstable but do not detonate or which can react violently with water); **3** (materials that can detonate when initiated or which can react explosively with water); **4** (materials that can detonate at normal temperatures or pressures).

NATIONAL FIRE PROTECTION ASSOCIATION: Health Hazard: **0** (material that on exposure under fire conditions would offer no hazard beyond that of ordinary combustible materials); **1** (materials that on exposure under fire conditions could cause irritation or minor residual injury); **2** (materials that on intense or continued exposure under fire conditions could cause temporary incapacitation or possible residual injury); **3** (materials that can on short exposure could cause serious temporary or residual injury); **4** (materials that under very short exposure causes death or major residual injury). Flammability Hazard and Reactivity Hazard: Refer to definitions for "Hazardous Materials Identification System".

FLAMMABILITY LIMITS IN AIR:

Much of the information related to fire and explosion is derived from the National Fire Protection Association (**NFPA**). Flash Point - Minimum temperature at which a liquid gives off sufficient vapors to form an ignitable mixture with air. Autoignition Temperature: The minimum temperature required to initiate combustion in air with no other source of ignition. LEL - the lowest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source. UEL - the highest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source.

TOXICOLOGICAL INFORMATION:

Possible health hazards as derived from human data, animal studies, or from the results of studies with similar compounds are presented. Definitions of some terms used in this section are: **LD₅₀** - Lethal Dose (solids & liquids) which kills 50% of the exposed animals; **LC₅₀** - Lethal Concentration (gases) which kills 50% of the exposed animals; **ppm** concentration expressed in parts of material per million parts of air or water; **mg/m³** concentration expressed in weight of substance per volume of air; **mg/kg** quantity of material, by weight, administered to a test subject, based on their body weight in kg. Data from several sources are used to evaluate the cancer-causing potential of the material. The sources are: **IARC** - the International Agency for Research on Cancer; **NTP** - the National Toxicology Program, **RTECS** - the Registry of Toxic Effects of Chemical Substances, **OSHA** and **CAL/OSHA**. IARC and NTP rate chemicals on a scale of decreasing potential to cause human cancer with rankings from 1 to 4. Subrankings (2A, 2B, etc.) are also used. Other measures of toxicity include **TDL₀**, the lowest dose to cause a symptom and **TCL₀** the lowest concentration to cause a symptom; **TDo**, **LDLo**, and **LDo**, or **TC**, **TCo**, **LCLo**, and **LCo**, the lowest dose (or concentration) to cause lethal or toxic effects. **BEI** - Biological Exposure Indices, represent the levels of determinants which are most likely to be observed in specimens collected from a healthy worker who has been exposed to chemicals to the same extent as a worker with inhalation exposure to the TLV. Ecological Information: EC is the effect concentration in water.

REGULATORY INFORMATION:

This section explains the impact of various laws and regulations on the material. **EPA** is the U.S. Environmental Protection Agency. **WHMIS** is the Canadian Workplace Hazardous Materials Information System. **DOT** and **TC** are the U.S. Department of Transportation and the Transport Canada, respectively. Superfund Amendments and Reauthorization Act (**SARA**); the Canadian Domestic/Non-Domestic Substances List (**DSL/NDL**); the U.S. Toxic Substance Control Act (**TSCA**); Marine Pollutant status according to the **DOT**; the Comprehensive Environmental Response, Compensation, and Liability Act (**CERCLA** or **Superfund**); and various state regulations.