SAFETY DATA SHEET

Section 1- Product Identification and Use

Product Name: Esma-Ortho
Product Identification Number: E273
Product Use: Electropolishing Solution
Manufacturer's Name: Esma, Inc.
450 W. Taft Drive
South Holland, IL 60473
1-800-276-2466
Emergency Telephone Numbers— US/North America: Chemtrec 800-262-8200 24 hrs everyday
International: 800-276-2466

Section 2 - Hazardous Identification

Form : Liquid Color : Light amber to light brown
Emergency Overview : Solutions are eye and skin irritants, and prolonged or repeated contact may cause irritation. Mists are irritating to the skin, mucous membranes, and upper respiratory tract. Read the entire SDS for a more thorough evaluation of the hazards.
OSHA Hazard Communication Standard : This product has been evaluated and classified as defined by OSHA Hazard Communication Standard, 29CFR 1910.1200.
GHS Classification :
Eye Irritation (Category 2A Irritant)
Skin Irritation (Category 2 Irritant)
Label Elements :
Signal Word : Warning
GHS Hazard Pictograms : Exclamation Mark

Hazard Statements :
H303 May be harmful if swallowed
H315 Causes skin irritation
H319 Causes serious eye irritation
H335 May cause respiratory irritation
Precautionary Statements :
P102 Keep out of reach of children.
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P281 Use personal protective equipment as required.
P301+ 312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
P304 + 312 IF INHALED: Call a POISON CENTER or doctor/physician if you feel unwell.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes.
Remove contact lenses, if present and easy to do. Continue rinsing. IF eye irritation persists: Get medical advice/attention.
P302 + 351 IF ON SKIN Rinse cautiously with water for several minutes.
P333 + P313 IF SKIN irritation or rash occurs: Get medical advice/attention.
Other hazards which do not result in classification :
None known. See Section 11 for Potential Health HazardsSection 2 - Hazardous Components

Section 3 - Hazardous Ingredients

Common name: Ethylene glycol < 50 % by weight
OSHA PEL: 50 ppm 8-hour TWA (vacated 1989 Final Rule limit)
ACGIH TLV: Ceiling: 100 mg/m3 8-hour TWA (40 ppm)
C A S #: 107-21-1

Common name: 2-Hydroxyethyl hydrogen sulfate< 50 % by weight
OSHA PEL: Not established
ACGIH TLV: Not established
C A S #: None

Section 4 - First Aid Measures

Eye Contact: Immediately flush contacted area repeatedly with water for at least 15 minutes, holding eyelids open. Contact a physician for treatment.
Skin Contact: Immediately flush contacted area repeatedly with water for at least 15 minutes. If irritation persists, contact a physician for treatment. Clean contaminated clothing before reuse.
Inhalation: Inhalation is not an expected route of exposure. If respiratory irritation or distress occurs, remove victim to fresh air. If irritation persists, seek medical attention.
Ingestion: Never give anything by mouth to an unconscious person. If swallowed, do not induce vomiting. Give 1-2 glasses of water to drink, if conscious and alert.
Notes to physician : treat symptomatically. No specific antidote available. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.

Section 5 - Firefighting Measures

Flash point:	232° F / 111° C (Closed cup)
Autoignition temperature:	748° F / 398° C
Flammability limits:	LEL - 3.2 % UEL – 15.3 %
Extinguishing media:	Water spray or fog for large fires; CO2 or dry chemical for smaller fires

Special firefighting procedures: Wear self-contained breathing apparatus. Containers may explode in heat of fire. If safe, remove containers from fire area; otherwise, try to cool containers with water spray or fog.
Fire/explosion hazards: This product contains an OSHA Class III B flammable solvent. It is also volatile; high temperatures give off flammable vapors. Explosion hazard when vapors are exposed to fire, flame, spark, or other ignition sources.

Section 6 - Accidental Release Measures

Spill/leak clean-up procedures: Dike area of spill for containment and prevent access to drains. Remove all uninvolved personnel. Provide sufficient ventilation to prevent build-up of fumes to explosive concentration. DO NOT use any metal or spark-producing equipment during clean-up. Absorb spill with vermiculite or other absorbent material. Collect residues and place into a flammables waste container. Dispose of wastes in accordance with all applicable federal, state, and local regulations.

EPA hazardous substance reportable quantity: Not applicable

Section 7 - Handling And Storage

Proper storage: Store in a properly identified flammables storage area that is cool, dry, and properly ventilated. Store away from heat, flame, sparks, and other ignition sources. Store separately from oxidizing and other incompatible materials.
Precautionary methods: Avoid contact with skin or inhalation of fumes. Wash thoroughly after handling. Wear NIOSH-approved mask and suitable protective equipment during handling and usage.
Disposal: Dispose of with flammable liquid waste in accordance with all federal, state, and local regulations.

Section 8 - Exposure Controls/Personal Protection

Special precautions: Irritating and dizzying fumes may be released when product is used. This product may be used in tandem with other hazardous chemicals. Exposure controls must consider all of the potential hazards of the operation.
Ventilation: Use only with ventilation that maintains airborne concentrations below the OSHA PEL. Ventilation must also be sufficient for other chemicals present in the plant.
Respiratory protection: Wear NIOSH-approved respirator when handling or working with. Fumes from this product contain hazardous chemicals and can be highly irritating.
Skin protection: Chemical-resistant rubber gloves and suitable protective clothing should be worn. Butyl or natural rubber or neoprene are recommended.
Eye protection: Face mask or safety goggles should be worn when handling and when working with this product or its prepared solutions.
Personal hygiene: Wash thoroughly after any handling or usage. Because mists from working area may be on skin and clothes, removal of clothing and showering after extended use are recommended.
Protective measures during repair and maintenance of equipment: Esma-Brite E272 and the products it is used with are corrosive and flammable and may cause various physical effects. This and related products should be removed to a suitable storage area and working area thoroughly cleaned and ventilated before any repair or maintenance.

Section 9 - Physical And Chemical Properties

Appearance:	Clear liquid	**Odor:**	Slight alcoholic odor
Boiling point:	388°F/198° C	**Vapor pressure**:	0.06 mm Hg at 68°F/20°C
Vapor density (Air = 1): 2.14		**Solubility in water:**	Completely miscible
Specific gravity (Water = 1): 1.24		**pH of solution:**	Approximately 1.00, neat

Section 10 - Stability And Reactivity

Stability: Stable
Hazardous polymerization: Will not occur
Conditions to avoid: Elevated temperatures; enclosed areas; flame and spark sources
Incompatible materials: Oxidizers, strong acids and alkalis, halogenated solvents
Hazardous decomposition products: Various carbon and sulfur oxides

SECTION 11 - TOXICOLOGY

Carcinogenicity: Not listed by any agency.
Mutagenicity: Not found to be a mutagenic.
Reproductive: No data available.
Sensitization: Not considered a sensitizer

Stability: Stable
Hazardous polymerization: Will not occur
Conditions to avoid: Avoid contact with hot solutions; splashing solutions, prolonged skin contact
Incompatible materials: Strong bases, Oxidizers
Hazardous decomposition products: None

Section 12 - Ecological Information

Ethylene Glycol 107-21-1
Ecotoxicity (aquatic and terrestrial, where available):
Acute Fish Toxicity (ETHYLENE GLYCOL): LC50 / 96 hours Rainbow Trout - 18,500 mg/L
Toxicity to Daphnia (ETHYLENE GLYCOL): LC50 /48 hours Water flea - 41,000 mg/L
Persistence and degradability: No data available
Bioaccumulative potential: Bioaccumulation: Other fish - 61 days Bioconcentration factor (BCF) - 0.60
Other adverse effects: no data available

Section 13 - Disposal Considerations

Waste Disposal Method: Under RCRA, it is the responsibility of the user of the product to determine at the time of disposal, whether the product meets RCRA criteria for hazardous waste. Whatever cannot be salvaged or recycled should be handled a hazardous waste and sent to a RCRA approved incinerator or disposed in a RCRA approver waste facility.
Follow local, state and federal regulations for disposal

Section 14 - Transportation Information

D O T Shipping name: Corrosive liquid, acidic, organic n.o.s. (contains ethylene glycol and sulfuric acid) ERG # 153
Hazard Class: 8
I D Number: U N 3265
Packing Group: I I I
Label(s) required: Corrosive

Section 15 - Regulatory Information

EPA Regulations:
RCRA Hazardous Waste (40 CFR 261.24): Not listed
CERCLA Hazardous substance (40 CFR 302.4) listed per CAA, Section 112
CERCLA Reportable Quantity (RQ) for ethylene glycol is 5,000 pounds.
SARA Toxic Chemical (40 CFR 372.65): Listed for ethylene glycol
SARA Extremely Hazardous Substance (40 CFR 355): Not listed

OSHA Regulations:
Ethylene glycol is listed as an air contaminant (29 CFR 1910.1000, Table Z-1-A) (vacated 1989 Final Rule limit)

Section 16 - Other Information

The NFPA Rating : HEALTH: 2 FLAMMABILITY: 0 REACTIVITY: 0
NFPA hazard degree designation 704: 4 = extreme, 3 = high, 2 = moderate, 1 = slight, 0 = none.

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The information contained on this Material Safety Data Sheet is considered accurate as of the date of publication. It is not necessarily all inclusive nor fully adequate in every circumstance. The suggestions should not be confused with, nor followed in violation of applicable laws, regulations, rules or insurance requirements. No warranty, express or implied, of merchantability, fitness, accuracy of data, or the results to be obtained from the use thereof is made. The vendor assumes no responsibility for injury or damages resulting from the inappropriate use of this product.