

MATERIAL SAFETY DATA SHEET

Cyclosporine Injection (50mg/mL; 5mL/ampoule)

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SECTION 1: PRODUCT IDENTIFICATION

PRODUCT NAME: Cyclosporine Injection
COMMON NAME: Cyclosporine Injection (50mg/mL; 5mL/ampule)
CHEMICAL NAME: [R-[R*,R*-(E)]]-cyclic(L-alanyl-D-alanyl-N-methyl-L-leucyl-N-methyl-L-leucyl-N-methyl-L-valyl-3-hydroxy-N,4-dimethyl-L-2-amino-6-octenoyl-L- α -aminobutyryl-N-methylglycyl-N-methyl-L-leucyl-L-valyl-N-methyl-L-leucyl)
SYNONYMS: Sandimmune® Injection, Cyclosporine
CHEMICAL FORMULA: C₆₂H₁₁₁N₁₁O₁₂
CHEMICAL FAMILY: Immunosuppressive Agents

SECTION 2: COMPOSITION AND INGREDIENTS

| CHEMICAL NAME | CAS# | % | OSHA PEL | ACGIH TLV | IDLH |
|--------------------------------------------|------------|------|----------|-----------|-----------------------|
| Cyclosporine, USP | 59865-13-3 | 5 | NE | NE | 0.02mg/m ³ |
| Ethyl Alcohol, EP/BP (%v/v) | 64-17-5 | 26.4 | 1000ppm | 1000ppm | NE |
| Cremophor®, (polyoxy-ethylated castor oil) | 61791-12-6 | 65 | NE | NE | NE |
| Water for Injection | 7732-18-5 | 3.6 | NE | NE | NE |

NE = Not Established,

SECTION 3: HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: Cyclosporine is a sterile injectable liquid drug provided in a 5 mL ampoule. Product is an immunosuppressive and may be absorbed via skin, inhalation, or ingestion. Product is intended for intradermal administration for the prevention of rejection following organ (kidney, liver and heart) transplantation.

Symptoms of Overexposure by Route of Exposure: Irritation to eyes, skin, and respiratory tract or possible allergic reaction. Kidney toxicity, bleeding, tender/swollen gums, increased hair growth, trembling hands, headache, leg cramps, nausea or vomiting, fever, chills, and the urge to urinate. Cyclosporine has been found excreted in human milk.

Health Effects or Risks from Exposure (Acute and Chronic): Product affects the immune system, kidneys, liver, central nervous system, pancreas, and cardiovascular system. Product is a human carcinogen and may be a reproductive health hazard and mutagen.

Pre-Existing Medical Conditions Aggravated by Exposure: Allergic reaction to Cyclosporine and/or Cremophor EL®.

SECTION 4: FIRST AID MEASURES

Skin Exposure: Wash skin with cool, soapy water.

Eye Exposure: Flush eyes with large volumes of water for 15 or more minutes.

Inhalation: If difficulty breathing, administer oxygen. Seek attention of a physician immediately. If necessary, provide artificial respiration. Overdose should be treated symptomatically.

Ingestion: If ingestion occurs, flush mouth out with water and seek medical attention immediately. If person is conscious, induce vomiting. Never induce vomiting on an unconscious person.

SECTION 5: FIRE / EXPLOSION HAZARDS & FIRE-FIGHTING MEASURES

Flash Point (Method Used): 80°F (Closed-cup)

Flammable Limits : NE Lower: NE Upper: NE

Fire Extinguishing Equipment: Use multi-purpose ABC fire extinguisher or extinguishing agent suitable for type of surrounding fire.

Unusual Fire and Explosion Hazards: Ethyl alcohol is flammable. Keep this product away from ignition sources.

Explosion Sensitivity to Mechanical Impact: Not sensitive.

Explosion Sensitivity to Static Discharge: Not sensitive.

Special Fire Fighting Procedures: For fires beyond the incipient stage, emergency responders in the immediate hazard area should wear bunker gear. When the potential chemical hazard is unknown, in enclosed or confined spaces, or when explicitly required by the DOT *Emergency Response Guidebook*, a self-contained breathing apparatus should be worn. In addition, wear other appropriate protective equipment as conditions warrant (see Section 8). Isolate immediate hazard area and keep unauthorized personnel out. Contain spill if it can be done with minimal risk. Move undamaged containers from immediate hazard area if it can be done with minimal risk. Cool equipment exposed to fire with water, if it can be done with minimal risk.

NE = Not Established

SECTION 6: ACCIDENTAL RELEASE MEASURES

Spill and Leak Response:

Release to Land: Since Cyclosporine is a flammable solution, remove all sources of ignition. Absorb Cyclosporine with activated charcoal or sorbent pads and dispose of according to local, state, and federal guidelines.

Release to Air: If aerosolized, reduce exposures by ventilating area; clean up spills immediately to prevent evaporation.

Release to Water: Refer to local water authority. Do not dispose of down the drain.

SECTION 7: HANDLING AND STORAGE

Work and Hygiene Practices: As with all chemicals, avoid getting this product ON YOU or IN YOU. Do not eat, drink, smoke or apply cosmetics while handling the product. Wash hands thoroughly after handling. Wear nitrile gloves and safety glasses. If vapors are generated, an appropriate air purifying respirator with an organic vapor cartridge and HEPA Filter (P100) must be worn. For larger spills, additional PPE and respiratory protection may be needed such as chemical protective coveralls, boots, double gloves (neoprene/nitrile), and self-contained breathing apparatus (SCBA).

Waste Disposal Method: Incinerate in an approved incinerator for flammable liquids according to local guidelines.

Precautions to be taken in handling and storing: Wash hands following use. No eating, drinking, or smoking while handling this product.

Other precautions: Store below 86°F (30°C). Protect from light. Do not freeze.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Ventilation and Engineering Controls: Handle in a chemical safety hood or a well-ventilated area.

Respiratory Protection: Under normal use, respirators are not required. If aerosols/vapors are generated, an air purifying respirator with organic vapor and HEPA cartridges (P100) may be necessary. For large spills, SCBA may be required. Personnel wearing respirators should be fit tested and approved for respirator use under the OSHA Respiratory Protection Standard 29 CFR 1910.134.

Eye Protection: Approved eye protection to safeguard against potential eye contact, irritation or injury is recommended. Depending on conditions of use, a face shield may be necessary.

Hand Protection: Nitrile gloves. Wash hands before and after using gloves.

Body Protection: No special body protection required for routine, medical administration of this product. Wear a lab coat, gown or smock, as appropriate for procedure.

Product Preparation Instructions for Medical Personnel: Follow standard procedure for handling pharmaceutical materials and recommendations presented on the Package Insert.

SECTION 9: PHYSICAL / CHEMICAL PROPERTIES

| | | | |
|-------------------------|-----------------------|----------------------|----|
| Boiling Point: | ND | Vapor Pressure: | ND |
| Vapor Density: | ND | Evaporation Rate : | ND |
| Physical State: | Liquid | Solubility in Water: | ND |
| Melting/Freezing Point: | ND / ND | pH: | ND |
| Specific Gravity : | ND | | ND |
| Appearance/Odor: | Clear with mild odor. | | |

ND = No Data

SECTION 10: STABILITY AND REACTIVITY

| | |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| Stability: | Stable under normal conditions of storage and handling. |
| Incompatible Materials: | Strong bases and oxidizers. |
| Hazardous Polymerization: | Will not occur. |
| Conditions to Avoid: | Do not store with strong bases and oxidizers. |
| Hazardous Decomposition or Byproducts: | Decomposition of this product may include potentially hazardous byproducts of combustion such as nitrogen oxides, carbon monoxide, and carbon dioxide. |

SECTION 11: TOXICOLOGICAL INFORMATION

Toxicity Data: The following information is for Cyclosporine.

| | | |
|----------------------------------------|------------------------------------------------|--------------------------------------------------|
| Oral LD ₅₀ Rat = 1480 mg/kg | Oral LD ₅₀ Mouse = 2329 mg/kg | Oral LD ₅₀ Rabbit = >1000 mg/kg |
| | Intravenous LD ₅₀ Mouse = 148 mg/kg | Intramuscular LD ₅₀ Mouse = 145 mg/kg |

Additional reproductive health and toxicity data is available from the National Institute for Occupational Safety and Health (NIOSH) Registry of Toxic Effects of Chemical Substances (RTECS).

SECTION 12: ECOLOGICAL INFORMATION

Information is currently not available on the environmental impact of Cyclosporine. Handle in a manner to prevent spills or releases to the environment.

SECTION 13: WASTE DISPOSAL

Preparing Wastes for Disposal: Dispose of by hazardous waste incineration at an approved/permitted facility according to local, state, and federal guidelines. Cyclosporine is flammable EPA code: D001. Follow local, state, and federal regulations.

SECTION 14: TRANSPORTATION INFORMATION

Cyclosporine bulk solutions must be shipped as DOT Hazardous Material due to flammability.

Proper Shipping Name: Flammable liquid N.O.S., (ethanol, Cyclosporine solution)

Hazard Class Number: 3

UN Identification Number: 1993

Packing Group: II

DOT Label(s) Required: Flammable Liquid

Final product in vial can be shipped as a consumer commodity: ORM-D.

Cyclosporine is not classified as a DOT Marine Pollutant.

SECTION 15: REGULATORY INFORMATION**U.S. REGULATIONS:**

SARA 313 listed?: NO

CERCLA listed?: NO

RCRA listed: YES, D001 – Cyclosporine is a characteristic Flammable Waste D001.

SECTION 16: OTHER INFORMATION

Use of this product should be through or under the direction of a physician. This MSDS does not address the therapeutic use of this material.

Persons administering this drug to patients must be careful to avoid needle sticks to syringes and other sharps used in the administration. All needle sticks must be reported to your company management.

DEFINITIONS OF ABBREVIATIONS USED:

| | |
|--------------------|---------------------------------------------------------|
| ACGIH: | American Conference of Governmental Industry Hygienists |
| CAS: | Chemical Abstract Service |
| IARC: | International Agency for Research on Cancer |
| IDLH: | Immediately Dangerous to Life or Health Level |
| LC ₅₀ : | Medial Lethal Concentration |
| LD ₅₀ : | Medial Lethal Dose |
| MSHA: | Mine Safety and Health Administration |
| N/A: | Not Available |
| NIOSH: | National Institute for Occupational Safety and Health |
| NTP: | National Toxicology Program |
| OSHA: | Occupational Safety and Health Administration |
| PEL: | Permissible Exposure Limit |
| STEL: | Short Term Exposure Limit |
| TLV: | Threshold Limit Value |
| TWA: | Time Weighted Average |

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