



MATERIAL SAFETY DATA SHEET

IDENTITY (As Used on Label and List)
MIOX Mixed-Oxidant Solution (Anode)

Note: Blank spaces are not permitted if any item is not applicable, or no information is available. The space must be marked to indicate that.

Section I

Manufacturer's Name

MIOX Corporation

Emergency Telephone Number

1-505-343-0090

Address (Number, Street, City, State, and Zip Code)

5500 Midway Park Place, NE

Albuquerque, NM 87109

Telephone Number for Information

1-505-343-0090

Date Prepared

December 23, 1996

(505)343-0090

Signature of Preparer (Optional)

Section II - Hazardous Ingredients/Identity Information

Hazardous Components (Source Chemical Identity: Common Name(s))

| | Concentrations in mg/L | | | | | OSHA PEL | ACGIH TLV | Other Names Recommended |
|---|------------------------|-----|-----|-----|------|-----------------------|-----------|-------------------------|
| | C5 | C20 | C30 | C40 | C80 | | | |
| Cl ₂ /OCl ⁻ Chlorine gas/Hypochlorite Ion | 300 | 350 | 625 | 775 | 2200 | 0.5 mg/m ³ | N/A | N/A |
| O ₃ Ozone | <10 | <10 | <18 | <23 | <53 | 0.2 mg/m ³ | N/A | N/A |
| ClO ₂ Chlorine Dioxide | 5 | 5 | 9 | 12 | 32 | .3 mg/m ³ | N/A | N/A |

*Gas phase limits

The MIOX mixed-oxidant solution is generated electrolytically from a sodium chloride brine. The solution contains several chemical components which are either dissolved completely or are in dynamic equilibrium with the overlying gas phase. Since the operational pH of the anode product is maintained operationally above 4, the chlorine occurs as HOCl and OCl⁻ in the aqueous phase with negligible Cl₂ in the gas phase. Any hazards that may occur are associated largely with the gases that may evolve from the solution.

Section III - Physical/Chemical Characteristics

| | | | |
|-------------------------|--------|--|------|
| Boiling Point | 100° C | Specific Gravity (H ₂ O= 1) | 1.03 |
| Vapor Pressure (mm Hg) | N/A | Melting Point | 0° C |
| Vapor Density (AIR = 1) | N/A | Evaporation Rate (Butyl Acetate =1) | N/A |

Solubility in Water: **Completely Soluble**

Appearance and Odor

Clear Liquid. Pungent, biting odor may occur at pH less than 4 due to HCl gas evolution. However, under normal operating conditions, the pH is maintained above 4.

Section IV - Fire and Explosive Hazard Data

| | | | | |
|----------------------------------|-------------|------------------|------------|------------|
| Flash Point (Method Used) | None | Flammable Limits | LEL | UEL |
| | | None | N/A | N/A |
| Extinguishing Media | N/A | | | |
| Special Fire Fighting Procedures | None | | | |

Unusual Fire and Explosion Hazards

Explosive gases may be produced in production of mixed-oxidant solution. Smoking and other ignition sources should be avoided when MIOX system is operating.

| | | | | |
|--|---|-----------------------------|------------------------|---------------------|
| MIOX Mixed-Oxidant Solution (Anode) Continued... | | | | |
| Section V - Reactivity Data | | | | |
| Stability | Unstable Stable | X | Conditions to Avoid | |
| Incompatibility (Materials to Avoid) | | | | |
| Vapor incompatibilities: Fuel vapors, ammonia, hydrogen, metallic dusts (violent reactions with Cl₂) | | | | |
| Hazardous Decomposition or By-Products | | None | | |
| Hazardous Polymerization | | May Occur Will Not Occur | X | Conditions to Avoid |
| Section VI - Health Hazard Data | | | | |
| Route(s) of Entry: | Inhalation? | Skin? | Ingestions? | |
| | X | X | X | |
| Health Hazards (Acute and Chronic) | | | | |
| Prolonged inhalation of chlorine gas, hydrogen chloride gas, and ozone cause chronic respiratory distress. | | | | |
| Exposure to mixed-oxidant solution causes minor skin or eye irritation. Ingestion causes vomiting and gastric distress. | | | | |
| Carcinogenicity | NTP? | IARC Monographs? | OSHA Regulated | |
| None- No components are known carcinogens. | | | | |
| Signs and Symptoms of Exposure | | | | |
| Symptoms of exposure to evolved gases are burning of eyes and nose, coughing, choking, nausea, and dizziness. Exposure to skin causes mild irritation. Ingestion causes vomiting. | | | | |
| Medical Conditions Generally Aggravated by Exposure. | | | | |
| Respiratory problems (asthma); dermatitis. | | | | |
| Emergency and First Aid Procedures | | | | |
| Provide fresh air. Wash immediately if exposed to solution. Induce vomiting if solution is ingested. | | | | |
| Section VII - Precautions for Safe Handling and Use | | | | |
| Steps to be taken in case material is released or spilled. | | | | |
| Flush spill area with clean water | | | | |
| Waste Disposal Method: | Sanitary or storm sewer. | | | |
| Precautions to be taken for handling and storing: | No special precautions required. | | | |
| Other Precautions | | | | |
| None | | | | |
| Section VIII - Control Measures | | | | |
| Respiratory Protection (Specify Type) | | | | |
| None required in normally ventilated area; otherwise CCRS (Cl₂ HCl) | | | | |
| Ventilation | Local Exhaust | Normal room ventilation | Special | Not required |
| | Mechanical (General) | Normal room ventilation | Other | N/A |
| Protective Clothing/Gloves | | | Eye Protection | |
| | Rubber gloves advised | | Goggles Advised | |
| Other Protective Clothing or Equipment | | | | |
| None | | | | |
| Work/Hygienic Practices | | | | |
| Avoid smoking and other ignition sources in vicinity | | | | |