



MATERIAL SAFETY DATA SHEET

IDENTITY (As Used on Label and List)
MIOX Combined Anolyte and Catholyte Solutions

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 August 21, 2003
	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	Other Names
	M40		BPM40				mg/m ³	TLV	Recommended
Cl ₂ /HOCl/OCl ⁻ Chlorine gas/Hypochlorous acid/Hypochlorite Ion (as Cl ₂ equivalent)	2000		4000				0.5	N/A	N/A
H ₂ Hydrogen Gas dissolved in solution	8		8				N/A	N/A	N/A
NaOH Sodium Hydroxide (pH < 10.0)	< 5		< 5				N/A	N/A	pH<12.5 ¹
H ₂ Hydrogen Gas Rate (mL/min) at STP	487		974				N/A	N/A	N/A

*Gas phase limit for chlorine gas. Also see Section IV below. ¹RCRA characteristics of corrosivity in solution.

The MIOX anolyte and catholyte solutions are generated electrolytically from a sodium chloride brine. The mixed-oxidant solution made by combining the anolyte and catholyte solutions contains several chemical components which are either dissolved completely or are in dynamic equilibrium with the overlying gas phase.

Hazards are associated largely with the gases that may evolve from the solution. At the operational pH of the combined solution, dissolved Cl₂ gas is completely hydrolyzed to the forms HOCl and OCl⁻; thus Cl₂ gas evolution is minimal.

The pH of combined anolyte and catholyte from all cells is pH < 10.0 (usually < 9.0). The NaOH concentration in these solutions is nominally < 4 mg/L.

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. Mild Caustic Odor.**

Section IV - Fire and Explosive Hazard Data

Flash Point (Method Used) None	Flammable Limits None	LEL* 4.1% (H₂)	UEL* 74.2% (H₂)
Extinguishing Media N/A	Special Fire Fighting Procedures No special procedures required.		

*Lower and Upper Explosive Limits from N. Irving Sax, *Dangerous Properties of Industrial Materials*, 5th ed. Van Nostrand Reinhold Co., NY, 1979.

Unusual Fire and Explosion Hazards

Hydrogen buildup can occur in a tightly sealed, unventilated enclosure. Sparks, open flames, smoking, and other sources of ignition should be avoided when MIOX systems are in operation.

MIOX Combined Anolyte and Catholyte Solutions continued...

Section V - Reactivity Data

Stability	Unstable Stable	X	Conditions to Avoid
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Incompatibility (Materials to Avoid)

No Vapor incompatibilities.

Hazardous Decomposition or By-products	May Occur Will Not Occur	X	Conditions to Avoid
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Section VI - Health Hazard Data

Route(s) of Entry:	Inhalation?	Skin?	Ingestions?
	X	X	X

Health Hazards (Acute and Chronic)

Inhalation of hydrogen gas causes no symptoms (the primary hazard from hydrogen gas is explosions.) Exposure to combined 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

Exposure to skin causes mild irritation. Ingestion causes vomiting.

Medical Conditions

Generally Aggravated by Exposure. **Dermatitis**

Emergency and First Aid Procedures

Wash immediately if skin, eyes, or mouth are 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: **MIOX production area must be well-ventilated to prevent hydrogen gas accumulation.**

Section VIII - Control Measures

Respiratory Protection (Specify Type)

None required.

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 open flames, sparks, smoking and other ignition sources in the vicinity of operating MIOX systems.