

# MATERIAL SAFETY DATA SHEET

## Hydrogen Peroxide Solutions Greater Than 60%



MSDS Ref. No.: 7722-84-1-5

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Revision No.: 11

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This document has been prepared to meet the requirements of the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200 and Canada's Workplace Hazardous Materials Information System (WHMIS) requirements.

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## 1. PRODUCT AND COMPANY IDENTIFICATION

- PRODUCT NAME:** Hydrogen Peroxide Solutions Greater Than 60%
- ALTERNATE PRODUCT NAME(S):** Durox® Reg. & LR 70%, Semiconductor Reg. 70%, Standard 60 & 70%, Super D® 65%, Technical 70%, OHP 70%, HTP 70%
- GENERAL USE:**
- Durox® 70% Reg. and LR - meets food chemical codex specifications, when diluted to 50% and lower concentrations with proper quality water, for aseptic packaging and other food related applications.
- Semiconductor Reg. 70% - conforms to ACS and semi specs; for wafer etching and cleaning, and applications requiring low residues.
- Standard 60 & 70% - the grade most suitable for industrial bleaching, processing, pollution abatement and general oxidation reactions.
- Super D® 65% - meets US Pharmacopoeia specifications for 3% topical solutions when diluted with proper quality water. While manufactured to the USP standards for purity and to FMC's demanding ISO 9002 quality standards, FMC does not claim that its Hydrogen Peroxide is manufactured in accordance with all pharmaceutical cGMP conditions.
- Technical 70% - suitable for chemical synthesis (essentially free of inorganic metals).
- OHP 70% - specially formulated for OHP process (diluted to 35%), advanced oxidation, and activated peroxide application.
- HPT 70% - meets Specification MIL-PRF-1600F; for aerospace application.
- Chlorate Grade 70% - specifically formulated for use in chlorate manufacture or processing.

**MANUFACTURER**

FMC CORPORATION  
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 (215) 299-6000 (General Information)  
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FMC of Canada Ltd.  
 FMC Peroxygens  
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 (250) 561-4200 (General Information)

**EMERGENCY TELEPHONE NUMBERS**

(281) 474-8750 (Plant: Pasadena, TX, US - Call Collect)  
 (250) 561-4221 (Plant: Prince George, BC, Canada - Call Collect)  
 (303) 595-9048 (Medical - U.S. - Call Collect)

For leak, fire, spill, or accident emergencies, call:  
 (800) 424-9300 (CHEMTREC - U.S.A.)  
 (613) 996-6666 (CANUTEC - Canada)

**2. HAZARDS IDENTIFICATION****EMERGENCY OVERVIEW:**

- Clear, colorless, odorless liquid
- Oxidizer.
- Contact with combustibles may cause fire.
- Decomposes yielding oxygen that supports combustion of organic matters and can cause overpressure if confined.
- Corrosive to eyes, nose, throat, lungs and gastrointestinal tract.

**POTENTIAL HEALTH EFFECTS:** Corrosive to eyes, skin, nose, throat and lungs. May cause irreversible tissue damage to the eyes including blindness.

**3. COMPOSITION / INFORMATION ON INGREDIENTS**

Chemical Name	CAS#	Wt.%	EC No.	EC Class
Hydrogen Peroxide	7722-84-1	>60	231-765-0	O, C, Xn; R5- R8-R35-R20/22
Water	7732-18-5	<40	231-791-2	Not classified

## 4. FIRST AID MEASURES

**EYES:** Immediately flush with water for at least 15 minutes, lifting the upper and lower eyelids intermittently. See a medical doctor or ophthalmologist immediately.

**SKIN:** Immediately flush with plenty of water while removing contaminated clothing and/or shoes, and thoroughly wash with soap and water. See a medical doctor immediately.

**INGESTION:** Rinse mouth with water. Dilute by giving 1 or 2 glasses of water. Do not induce vomiting. Never give anything by mouth to an unconscious person. See a medical doctor immediately.

**INHALATION:** Remove to fresh air. If breathing difficulty or discomfort occurs and persists, contact a medical doctor.

**NOTES TO MEDICAL DOCTOR:** Hydrogen peroxide at these concentrations is a strong oxidant. Direct contact with the eye is likely to cause corneal damage especially if not washed immediately. Careful ophthalmologic evaluation is recommended and the possibility of local corticosteroid therapy should be considered. Because of the likelihood of corrosive effects on the gastrointestinal tract after ingestion, and the unlikelihood of systemic effects, attempts at evacuating the stomach via emesis induction or gastric lavage should be avoided. There is a remote possibility, however, that a nasogastric or orogastric tube may be required for the reduction of severe distension due to gas formation.

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## 5. FIRE FIGHTING MEASURES

**EXTINGUISHING MEDIA:** Flood with water.

**FIRE / EXPLOSION HAZARDS:** Product is non-combustible. On decomposition releases oxygen which may intensify fire. An explosion hazard when mixed with organics at high concentrations.

**FIRE FIGHTING PROCEDURES:** Any tank or container surrounded by fire should be flooded with water for cooling. Wear full protective clothing and self-contained breathing apparatus.

**FLAMMABLE LIMITS:** Non-combustible

**SENSITIVITY TO IMPACT:** No data available

**SENSITIVITY TO STATIC DISCHARGE:** No data available

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## 6. ACCIDENTAL RELEASE MEASURES

**RELEASE NOTES:** Dilute with a large volume of water and hold in a pond or diked area until hydrogen peroxide decomposes. Hydrogen peroxide may be decomposed by adding sodium metabisulfite or sodium sulfite after diluting to about 5%. Dispose according to methods outlined for waste disposal.

Combustible materials exposed to hydrogen peroxide should be immediately submerged in or rinsed with large amounts of water to ensure that all hydrogen peroxide is removed. Residual hydrogen peroxide that is allowed to dry (upon evaporation hydrogen peroxide can concentrate) on organic materials such as paper, fabrics, cotton, leather, wood or other combustibles can cause the material to ignite and result in a fire.

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## 7. HANDLING AND STORAGE

**HANDLING:** Wear chemical splash-type monogoggles and full-face shield, impervious clothing, such as rubber, PVC, etc., and rubber or neoprene gloves and shoes. Avoid cotton, wool and leather. Avoid excessive heat and contamination. Contamination may cause decomposition and generation of oxygen gas which could result in high pressures and possible container rupture. Hydrogen peroxide should be stored only in vented containers and transferred only in a prescribed manner (see FMC Technical Bulletins). Never return unused hydrogen peroxide to original container, empty drums should be triple rinsed with water before discarding. Utensils used for handling hydrogen peroxide should only be made of glass, stainless steel, aluminum or plastic.

**STORAGE:** Store drums in cool areas out of direct sunlight and away from combustibles. For bulk storage refer to FMC Technical Bulletins.

**COMMENTS:** VENTILATION: Provide mechanical general and/or local exhaust ventilation to prevent release of vapor or mist into the work environment.

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## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

### EXPOSURE LIMITS

Chemical Name	ACGIH	OSHA	Supplier
Hydrogen Peroxide	1 ppm (TWA)	1 ppm (PEL) 1.4 mg/m <sup>3</sup> (PEL)	

**ENGINEERING CONTROLS:** Ventilation should be provided to minimize the release of hydrogen peroxide vapors and mists into the work environment. Spills should be minimized or confined immediately to prevent release into the work area. Remove contaminated clothing immediately and wash before reuse.

## PERSONAL PROTECTIVE EQUIPMENT

**EYES AND FACE:** Use chemical splash-type monogoggles and a full-face shield made of polycarbonate, acetate, polycarbonate/acetate, PETG or thermoplastic.

**RESPIRATORY:** If concentrations in excess of 10 ppm are expected, use NIOSH/DHHS approved self-contained breathing apparatus (SCBA), or other approved atmospheric-supplied respirator (ASR) equipment (e.g., a full-face airline respirator (ALR)). DO NOT use any form of air-purifying respirator (APR) or filtering facepiece (AKA dust mask), especially those containing oxidizable sorbants such as activated carbon.

**PROTECTIVE CLOTHING:** For body protection wear impervious clothing such as an approved splash protective suit made of SBR Rubber, PVC (PVC Outershell w/Polyester Substrate), Gore-Tex (Polyester trilaminate w/Gore-Tex), or a specialized HAZMAT Splash or Protective Suite (Level A, B, or C). For foot protection, wear approved boots made of NBR, PVC, Polyurethane, or neoprene. Overboots made of Latex or PVC, as well as firefighter boots or specialized HAZMAT boots are also permitted. DO NOT wear any form of boot or overboots made of nylon or nylon blends. DO NOT use cotton, wool or leather, as these materials react RAPIDLY with higher concentrations of hydrogen peroxide. Completely submerge hydrogen peroxide contaminated clothing or other materials in water prior to drying. Residual hydrogen peroxide, if allowed to dry on materials such as paper, fabrics, cotton, leather, wood or other combustibles can cause the material to ignite and result in a fire.

**GLOVES:** For hand protection, wear approved gloves made of nitrile, PVC, or neoprene. DO NOT use cotton, wool or leather for these materials react RAPIDLY with higher concentrations of hydrogen peroxide. Thoroughly rinse the outside of gloves with water prior to removal. Inspect regularly for leaks.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>ODOR:</b>	Odorless
<b>APPEARANCE:</b>	Clear, colorless liquid
<b>AUTOIGNITION TEMPERATURE:</b>	Non-combustible
<b>BOILING POINT:</b>	119°C (246°F) (60%); 126°C (258°F) (70%)
<b>COEFFICIENT OF OIL / WATER:</b>	Not available
<b>DENSITY / WEIGHT PER VOLUME:</b>	(g/mL) Not available
<b>EVAPORATION RATE:</b>	(butyl acetate = 1) Less than water
<b>FLASH POINT:</b>	Non-combustible
<b>FREEZING POINT:</b>	-56°C (-68°F) (60%); -40°C (-40°F) (70%)
<b>ODOR THRESHOLD:</b>	Not available
<b>OXIDIZING PROPERTIES:</b>	Strong oxidizer
<b>PERCENT VOLATILE:</b>	100%
<b>pH:</b>	(as is) < / = 1.0
<b>SOLUBILITY IN WATER:</b>	(in H <sub>2</sub> O % by wt) 100%

<b>SPECIFIC GRAVITY:</b>	(H <sub>2</sub> O = 1): 1.24 @ 20°C/4°C (60%); 1.29 @ 20°C/4°C (70%)
<b>VAPOR DENSITY:</b>	(Air = 1): Not available
<b>VAPOR PRESSURE:</b>	14.5 mmHg @ 30°C (60%); 10.1 mmHg @ 30°C (70%)
<b>COMMENTS:</b>	
	pH (1% solution): 5.0 - 6.0

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## 10. STABILITY AND REACTIVITY

<b>CONDITIONS TO AVOID:</b>	Excessive heat or contamination could cause product to become unstable.
<b>STABILITY:</b>	Stable (heat and contamination could cause decomposition)
<b>POLYMERIZATION:</b>	Will not occur
<b>INCOMPATIBLE MATERIALS:</b>	Reducing agents, wood, paper and other combustibles, iron and other heavy metals, copper alloys and caustic.
<b>HAZARDOUS DECOMPOSITION PRODUCTS:</b>	Oxygen which supports combustion.
<b>COMMENTS:</b>	Materials to Avoid : Dirt, organics, cyanides and combustibles such as wood, paper, oils, etc.

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## 11. TOXICOLOGICAL INFORMATION

**EYE EFFECTS:** 70% hydrogen peroxide: Corrosive (rabbit) [FMC Study Number: ICG/T-79.027]

**SKIN EFFECTS:** 70% hydrogen peroxide: Corrosive. (rabbit) [FMC Study Number: I87-0972]

**DERMAL LD<sub>50</sub>:** 70% hydrogen peroxide: > 6.5 g/kg (rabbit) [FMC Study Number: ICG/T-79.027]

**ORAL LD<sub>50</sub>:** 70% hydrogen peroxide: 805 mg/kg (rat) [FMC Study Number: I96-2068]

**INHALATION LC<sub>50</sub>:** 50% hydrogen peroxide: > 0.17 mg/l (rat) [FMC Study Number: I89-1080]

**TARGET ORGANS:** Eye, skin, nose, throat, lungs

**ACUTE EFFECTS FROM OVEREXPOSURE:** Corrosive to eyes, skin, nose, throat, lungs and gastrointestinal tract. May cause irreversible tissue damage to the eyes including blindness.

**CHRONIC EFFECTS FROM OVEREXPOSURE:** The International Agency for Research on Cancer (IARC) has concluded that there is inadequate evidence for carcinogenicity of hydrogen peroxide in humans, but limited evidence in experimental animals (Group 3 - not classifiable as to its carcinogenicity to humans). The American Conference of Governmental Industrial Hygienists (ACGIH) has concluded that hydrogen peroxide is a 'Confirmed Animal Carcinogen with Unknown Relevance to Humans' (A3).

### CARCINOGENICITY:

Chemical Name	IARC	NTP	OSHA	Other
Hydrogen Peroxide	Not listed	Not listed	Not listed	(ACGIH) Listed (A3, Animal Carcinogen)

## 12. ECOLOGICAL INFORMATION

**ECOTOXICOLOGICAL INFORMATION:** Channel catfish 96-hour  $LC_{50}$  = 37.4 mg/L  
 Fathead minnow 96-hour  $LC_{50}$  = 16.4 mg/L  
 Daphnia magna 24-hour  $EC_{50}$  = 7.7 mg/L  
 Daphnia pulex 48-hour  $LC_{50}$  = 2.4 mg/L  
 Freshwater snail 96-hour  $LC_{50}$  = 17.7 mg/L  
 For more information refer to ECETOC "Joint Assessment of Commodity Chemicals No. 22, Hydrogen Peroxide." ISSN-0773-6339, January 1993

**CHEMICAL FATE INFORMATION:** Hydrogen peroxide in the aquatic environment is subject to various reduction or oxidation processes and decomposes into water and oxygen. Hydrogen peroxide half-life in freshwater ranged from 8 hours to 20 days, in air from 10-20 hrs. and in soils from minutes to hours depending upon microbiological activity and metal contaminants.

## 13. DISPOSAL CONSIDERATIONS

**DISPOSAL METHOD:** An acceptable method of disposal is to dilute with a large amount of water and allow the hydrogen peroxide to decompose followed by discharge into a suitable treatment system in accordance with all regulatory agencies. The appropriate regulatory agencies should be contacted prior to disposal.

## 14. TRANSPORT INFORMATION

### U.S. DEPARTMENT OF TRANSPORTATION (DOT)

**PROPER SHIPPING NAME:**

Hydrogen Peroxide, aqueous solutions, stabilized with more than 60% hydrogen peroxide.

**PRIMARY HAZARD CLASS / DIVISION:** 5.1 (Oxidizer)  
**UN/NA NUMBER:** UN 2015  
**PACKING GROUP:** I  
**LABEL(S):** Oxidizer, Corrosive  
**PLACARD(S):** 5.1 (Oxidizer)  
**ADDITIONAL INFORMATION:** DOT Marking: Hydrogen Peroxide, aqueous solutions, stabilized with more than 60 percent Hydrogen Peroxide, UN 2015  
Hazardous Substance/RQ: Not applicable  
49 STCC Number: 4918335  
DOT Spec: stainless steel/high purity aluminum cargo tanks and rail cars. UN Spec: high purity aluminum drums. Contact FMC for specific details.

### **INTERNATIONAL MARITIME DANGEROUS GOODS (IMDG)**

**PROPER SHIPPING NAME:** Hydrogen peroxide, aqueous solutions stabilized with more than 60% hydrogen peroxide.

### **INTERNATIONAL CIVIL AVIATION ORGANIZATION (ICAO) / INTERNATIONAL AIR TRANSPORT ASSOCIATION (IATA)**

**PROPER SHIPPING NAME:** Hydrogen peroxide greater than 60% is forbidden on Passenger and Cargo Aircraft, as well as Cargo Only Aircraft.

### **OTHER INFORMATION:**

Protect from physical damage. Keep drums in upright position. Drums should not be stacked in transit. Do not store drum on wooden pallets.

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## **15. REGULATORY INFORMATION**

### **UNITED STATES**

#### **SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)**

**SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355, APPENDIX A):**  
Hydrogen Peroxide > 52%, RQ: 1000 lbs. Planning Threshold: 10,000 lbs.

**SECTION 311 HAZARD CATEGORIES (40 CFR 370):**  
Fire Hazard, Immediate (Acute) Health Hazard

**SECTION 312 THRESHOLD PLANNING QUANTITY (40 CFR 370):**

The Threshold Planning Quantity (TPQ) for this product, if treated as a mixture, is 10,000 lbs; however, this product contains the following ingredients with a TPQ of less than 10,000 lbs.: (hydrogen peroxide, 1000 lbs. when conc is >52%)

**SECTION 313 REPORTABLE INGREDIENTS (40 CFR 372):**

Not listed

**CERCLA (COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY ACT)**

**CERCLA DESIGNATION & REPORTABLE QUANTITIES (RQ) (40 CFR 302.4):**

Not listed

Unlisted (Hydrogen Peroxide); RQ = 100 lbs.; Ignitability, Corrosivity

**RESOURCE CONSERVATION AND RECOVERY ACT (RCRA)**

**RCRA IDENTIFICATION OF HAZARDOUS WASTE (40 CFR 261):**

Waste Number: D001, D002

**CANADA**

**WHMIS (WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM):**

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

Hazard Classification / Division: C  
D2B  
E

Product Identification Number: 2015  
Ingredient Disclosure List: Listed  
Domestic Substance List: Listed

**INTERNATIONAL LISTINGS**

Hydrogen peroxide:  
China: Listed  
Japan (ENCS): (1)-419  
Korea: KE-20204  
Philippines (PICCS): Listed

**HAZARD AND RISK PHRASE DESCRIPTIONS:**

EC Symbols: C (Corrosive)  
O (Oxidizer)  
Xn (Harmful)

EC Risk Phrases:                    R20/22 (Harmful by inhalation and if swallowed.)  
    R35      (Causes severe burns.)  
    R5        (Heating may cause an explosion.)  
    R8        (Contact with combustible material may cause fire)

## 16. OTHER INFORMATION

### HMIS

Health	3
Flammability	0
Physical Hazard	3
Personal Protection (PPE)	H

Protection = H (Safety goggles, gloves, apron, the use of a supplied air or SCBA respirator is required in lieu of a vapor cartridge respirator)

HMIS = Hazardous Materials Identification System

Degree of Hazard Code:

4 = Severe  
 3 = Serious  
 2 = Moderate  
 1 = Slight  
 0 = Minimal

### NFPA

Health	3
Flammability	0
Reactivity	3
Special	OX

SPECIAL = OX (Oxidizer)

NFPA (National Fire Protection Association)

Degree of Hazard Code:

4 = Extreme  
 3 = High  
 2 = Moderate  
 1 = Slight  
 0 = Insignificant

### **REVISION SUMMARY:**

This MSDS replaces Revision #10, dated April 27, 2006.

Changes in information are as follows:

Section 1 (Product and Company Identification)

Section 15 (Regulatory Information)

Section 16 (Other Information)

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