

PRODUCT INFORMATION

20%-40% hydrogen peroxide concentration material safety data sheet cas no. 7722-84-1

U.S. / Canada Version - Effective July 1, 1996
WWW Replication - Effective June 4, 1997

1. Chemical Product / Company Identification

- **Product name...**
 - Durox (TM) REG & LR 35%
 - Hybrite (R) 32.5%
 - OxyPure (R) 35%
 - Semiconductor, REG & SEG 31%
 - Standard 27.5 & 35%
 - Super D (R) 25 & 35%
 - Technical 35%
 - Chlorate Grade 20%
- **Synonyms...**
 - Hydrogen peroxide solutions 20 to 40%
- **Information provided by...**

FMC Corporation	FMC of Canada Ltd.
Peroxygen Chemical Division	Peroxygen Chemical Division
1735 Market Street	PG Pulp Mill Road
Philadelphia, PA 19103	Prince George, BC Y2N2S6
(215) 299-6000	(604) 561-4200
- **Emergency phone numbers...**

Chemtrec	(800) 424-9300
Medical	(303) 595-9048 call collect
Plant/Other	(609) 924-6677 call collect in U.S.
	(613) 996-6666 CANUTEC

2. Composition / Information on Ingredients

- **CAS # and Components...**

Material / Component	Hydrogen Peroxide	Water
Percent	20 to 40%	60 to 80%
CAS #	7722-84-1	7732-18-5

3. Hazard Identification

Emergency Overview...

Oxidizer. Contact with combustibles may cause fire. Decomposes yielding oxygen that supports combustion of organic matters and can cause overpressure if confined.

- **Health Effects...**

Corrosive to eyes, nose, throat and lungs. May cause irreversible tissue damage to the eyes including blindness. May cause skin irritation.

4. First Aid Measures

- **Eyes...**

Immediately flush with large amounts of water for at least 15 minutes, lifting upper and lower lids intermittently. See a physician or ophthalmologist.

- **Skin...**

Wash with large amounts of water. If irritation persists, see a physician.

- **Inhalation...**

Remove to fresh air. If breathing difficulty or discomfort occurs, call a physician.

- **Ingestion...**

If swallowed, drink plenty of water immediately to dilute. Do not induce vomiting or give anything by mouth to an unconscious person. See a physician.

- **Notes to Physician...**

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 of gastric lavage should be avoided. There is remote possibility, however, that a nasogastric or orogastric tube may be required for the reduction of severe distension due to gas formation.

5. Fire Fighting Measures

- **Extinguishing Media...**

Preferably water or water fog. Carbon dioxide and dry chemical may also be used.

- **Special Firefighting Procedures...**

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

- **Degrees of Fire and Explosion Hazard...**

Product is noncombustible. On decomposition H₂O₂ releases oxygen which may intensify fire.

- **Hazardous Decomposition Products...**

Oxygen which supports combustion.

6. Accidental Release Measures

- **Procedure for Release Or Spill...**

Dilute with large volume of water and hold in a pond or diked area until H₂O₂ decomposes. Dispose according to methods outlined for waste disposal.

7. Handling and Storage

- **Handling...** Wear cup type chemical safety goggles and/or full face shield, polyester or acrylic full cover clothing 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 should be 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 be made only of glassy stainless steel, aluminum or plastic.
- **Ventilation...** Provide mechanical general and/or local exhaust ventilation to prevent release of vapor or mist into the work environment.
- **Storage...** Store drums in cool areas out of direct sunlight and away from combustibles. For bulk storage refer to FMC technical bulletins.

8. Exposure Controls / Personal Protection

- **Control Measures...** Ventilation should be provided to minimize the release of H₂O₂ vapors and mist into the work environment. Spills should be collected or confined immediately and diluted for disposal to prevent release into the work area. Remove contaminated clothing immediately and wash before reuse.
- **Recommended Personal Protective Equipment...**
 - Respiratory** If concentrations in excess of 10 ppm are expected use approved self-contained breathing apparatus. Do not use oxidizable sorbants such as activated carbon.
 - Eyes** Use cup type chemical goggles and/or full face shield.
 - Gloves** Liquid proof rubber or neoprene gloves.
 - Special Clothing and Equipment** Polyester or acrylic full clothing. (avoid cottony wool and leather)
 - Footwear** Rubber or neoprene footwear. (avoid leather)

9. Physical and Chemical Properties

- | Properties for... | 20% | 31% | 35% |
|--|------------------------|------------------------|------------------------|
| Melting / Freezing Point | -15°C (6°F) | -26°C (-15°F) | -33°C (-27°F) |
| Boiling Point | 103°C (218°F) | 107°C (225°F) | 108°C (226°F) |
| Vapor Pressure | 28 mm Hg @ 30°C | 24 mm Hg @ 30°C | 23 mm Hg @ 30°C |
| Vapor Density (Air=1) | No data available | No data available | No data available |
| Room Temperature (appearance and state) | Clear colorless liquid | Clear colorless liquid | Clear colorless liquid |
| Vapor Density (Air=1) | Odorless | Odorless | Odorless |
| Specific Gravity (H₂O = 1) | 1.07 @ 20 °C / 4 °C | 1.11 @ 20 °C / 4 °C | 1.13 @ 20 °C / 4 °C |
| Solubility in H₂O, % by wt | 100% | 100% | 100% |
| % Volatiles | 100% | 100% | 100% |

Evaporation Rate (butyl acetate=1)	Above 1	Above 1	Above 1
pH (as is)	2.0 - 3.5	2.0 - 3.5	2.0 - 3.5
pH (1% solution)	5.0 - 6.0	5.0 - 6.0	5.0 - 6.0
Odor Threshold	Not available	Not available	Not available
Density (g/mL)	Not available	Not available	Not available
Partition Coefficient (n-octanol/water)	Not available	Not available	Not available
Flash Point	Non-combustible	Non-combustible	Non-combustible
Autoignition Temperature	Non-combustible	Non-combustible	Non-combustible
Flammable Limits: Upper	Non-combustible	Non-combustible	Non-combustible
Flammable Limits: Lower (air)	Non-combustible	Non-combustible	Non-combustible
Explosive Properties	Not applicable	Not applicable	Not applicable
Oxidizing Properties	Strong oxidizer	Strong oxidizer	Strong oxidizer
Solubility: Fat Solubility (solvent - oil)	No data available	No data available	No data available

10. Stability and Reactivity

- **Stability...** Stable (heat and contamination could cause decomposition)
- **Hazardous Polymerization...** Will not occur
- **Conditions to Avoid...** Excessive heat or contamination could cause product to become unstable.
- **Materials to Avoid...** Dirt, organics, cyanides and combustibles such as wood, paper, oils, etc.
- **Major Contaminants that Contribute to Instability...** Iron and other heavy metals, copper alloys and caustic.
- **Incompatibility...** Reducing agents, wood, paper and other combustibles (see above)
- **Hazardous Decomposition Products...** Oxygen that supports combustion
- **Sensitivity to Mech Impact...** No data available
- **Sensitivity to Static Discharge...** No data available

11. Toxicological Information

- **Eye Contact...** Extremely irritating/corrosive (rabbit) (35% H2O2)
Ref. I83-748
- **Skin Contact...** Mildly irritating after 4 hours exposure (rabbit) (35% H2O2)
Ref. I83-747
- **Skin Absorption...** LD50 > 2000 mg/kg (rabbit) (35% H2O2)
Ref. I83-746
- **Inhalation...** LC50 > 0.17 mg/L (rat) (50% H2O2)
Ref. I89-1080
- **Ingestion...** LD50 = 1193 mg/kg (rat) (35% H2O2)
Ref. I83-745

Acute Effects from Overexposure...

Extremely irritating/corrosive to eyes and gastrointestinal tract. May cause irreversible tissue damage to the eyes, including blindness. Inhalation of mist or vapors may be severely irritating to nose, throat and lungs. May cause skin irritation.

- **Chronic Effects from Overexposure...**

There are reports of limited evidence of carcinogenicity of hydrogen peroxide to mice administered high concentrations in their drinking water (IARC Monograph 36, 1985). However, the international agency for research on cancer concluded that hydrogen peroxide could not be classified as to its carcinogenicity to humans (Group III carcinogen).

(Note: Effects considered include: Sensitivities, Carcinogenicity, Teratogenicity, Synergistic Products, and any Medical Conditions generally recognized as being aggravated by exposure.)

12. Ecological Information

- **Environmental Fate...**

H₂O₂ in the aquatic environment is subject to various reduction or oxidation processes and decomposes into water and oxygen. H₂O₂ 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.

- **Environmental Effects...**

Channel catfish: 96 hr LC₅₀ = 37.4 mg/L
Fathead minnow: 96 hr LC₅₀ = 16.4 mg/L
Daphnia magna: 24 hr EC₅₀ = 7.7 mg/L
Daphnia pule: 48 hr LC₅₀ = 2.4 mg/L
Physa sp.: 96 hr LC₅₀ = 17.7 mg/L (freshwater snail)

For more information refer to ECETOC "Joint Assessment of Commodity Chemicals, No.22, Hydrogen Peroxide." ISSN-0773-6339, January 1993

13. Disposal Considerations

- **Waste 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. Because acceptable methods of disposal may vary by location and because regulatory requirements may change, the appropriate regulatory agencies should be contacted prior to disposal.

14. Transport Information

- **DOT Proper Shipping Name...**

Hydrogen peroxide, aqueous solutions with not less than 20 percent but not more than 40 percent hydrogen peroxide.

- **IATA...**

Hydrogen peroxide, aqueous solutions with not less than 20 percent but not more than 40 percent hydrogen peroxide.

- **IMDG...**

Hydrogen peroxide, aqueous solutions with not less than 20 percent but not more than 40 percent hydrogen peroxide.

- **DOT Classification...**

5.1 (Oxidizer)

- **DOT Labels...**

Oxidizer, corrosive

DOT Marking...	Hydrogen peroxide, aqueous solutions with not less than 20 percent but not more than 40 percent hydrogen peroxide. UN 2014
• DOT Placard...	5.1 (Oxidizer)
• UN Number...	UN 2014
• Hazardous Substance / RQ...	Not applicable
• 49 STCC Number...	4918776
• Precautions to be Taken in Transportation...	Protect from physical damage. Keep drums in upright position. Drums should not be stacked in transit. Do not store drums on wooden pallets.
• Other Shipping Information...	Aluminum tanks, drum/DOT 42D, Packing group II

15. Regulatory Information

• OSHA Exposure Limits...	
Substance(s)	Hydrogen Peroxide
OSHA:	
PEL-TWA	1 ppm
STEL	Not applicable
Ceiling	Not applicable
Skin Designation	Not applicable
ACGIH:	
TLV-TWA	1 ppm
STEL	Not applicable
Ceiling	Not applicable
Skin Designation	Not applicable
• Target Organ Effects...	Sensory irritation, eyes and lungs
• Carcinogenic Potential...	Hydrogen peroxide
Regulated by OSHA	No
Listed on NTP Report	No
IARG Group 1, 2a, 2b	No
• U.S. EPA Requirements...	
Release Reporting CERCLA (40 CFR 302)	Not listed
Listed Substance(s) RQ	No
Characteristic RCRA Waste No.	Not applicable
Unlisted Substance(s) RQ	Hydrogen peroxide 20-40%
Characteristic RCRA Waste No.	100 lbs Ignitability, Corrosivity D001, D002

SARA Title III Sec. 313...

(40 CFR 372) Not listed
Listed Toxic Chemical Not listed

- **Inventory Reporting**
SARA Title III, Sec 311/312
(40 CFR 370)...

Substance(s) Hydrogen peroxide 20-40%
Hazard Category Fire hazard, Immediate (acute) health hazard
Planning Threshold Conc. < 52% (10,000 lbs)

- **Emergency Planning**
SARA Title III, Sec 302/303
(40 CFR 355)...

Listed Substance(s) Not applicable
RQ Not applicable
Planning Threshold Not applicable

- **U.S. TSCA Status...** Listed

- **Canada Ingredient Disclosure**
List...

Substance(s) Hydrogen peroxide
Controlled Product Yes
Hazard Symbols Corrosive, Oxidizing, Materials causing other toxic effects
Hazard Class & Division Class C, Class D, Div. 2, Subdiv. B, Class E
Product Ident. No. 2014
Domestic Substance List Listed
CEPA Priority List Not listed

Carcinogenicity
ACGIH Appendix A
A1 - Confirmed Human Not listed
A1 - Suspected Human Not applicable
Not applicable

IARC Group 1 or 2 No

- **Label Language**
(U.S. / Canada)...

Health Danger. Corrosive to eyes. Direct eye contact may cause reversible tissue damage including blindness. Inhalation of mist or vapor could cause irritation of lungs, nose and throat, usually subsides after exposure ceases. Do not ingest. Corrosive to gastrointestinal tract. May be fatal if swallowed.

Physical Oxidizer. Initiates combustion in other materials by causing fire through release of oxygen.

Handling and Storage Keep container in cool place (avoid excessive heat), away from

combustibles such as wood, paper, oils, etc. Store only in vented containers. Storage should conform to standards in NFPA bulletin 43a. Avoid contamination - contamination could cause decomposition and generation of oxygen which may result in high pressures and possible container rupture. Do not return unused material to the original container. Wear cup type chemical safety goggles and/or full face mask. Use only suitable protective clothing, e.g., rubber, neoprene or synthetic fibers (avoid cotton, wool and leather). Use glass, stainless steel, aluminum or plastic materials when handling hydrogen peroxide. Empty drums should be triple rinsed with water before discarding.

First Aid

In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. See a physician. Wash clothing before reuse. If swallowed, drink plenty of water to dilute. Do not induce vomiting. See a physician immediately.

- **State Regulations...**

Proposition 65 - California

Safe Drinking Water and Toxics Enforcement Act of 1986 requires The government of California to develop a list of carcinogens (a) and reproductive toxins (b). No persons doing business shall knowingly expose any individual to a chemical on this list. FMC's 70% hydrogen peroxide contains the indicated concentration(s) of Listed chemicals: cadmium (a) 0.1%; chromium (a) less than 0.2% and lead (b) less than 0.5%.

(Note: Percentages less than 70% hydrogen peroxide would contain proportionately less.)

16. Other Information

- **Product Uses...**

Durox (TM) 35% REG & LR meets food chemical codex requirements for aseptic packaging and other food related applications.

Oxypure (R) 35% certified by NSF to meet ANSI/NSF Std. 60 requirements for drinking water treatment.

Standard 27.5 & 35% grade most suitable for industrial bleaching, processing, pollution abatement and general oxidation reactions.

Semiconductor REG & SEG 31% conform to ACS and semi specs. For wafer etching and cleaning and applications requiring low residues.

Super D (R) 25 & 35% complies with pharmacopoeia specifications suitable for preparing dilute solutions for pharmaceutical and/or cosmetic applications.

Technical 35% essentially free of inorganic metals, suitable for chemical synthesis.

Hybrite (R) 32.5% used for metal treating

Chlorate grade 20% specially formulated for use in chlorate manufacture or processing.

NFPA 704...

Health	2
Flammability	0
Reactivity	1
Special Hazard	OX (where degree of hazard: 0 = no hazard and 4 = severe hazard)

- **Hazardous Materials Identification System (HMIS)...**

Health	2
Flammability	0
Reactivity	1
Personal Protection Index (PPI)	H (safety goggles, gloves, apron, and vapor respirator)

The contents and format of this MSDS are in accordance with OSHA hazard communication standard and Canada's workplace hazardous information system (WHMIS).

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