



Vopak USA Inc.
6100 Carillon Point
Kirkland, WA 98033
(425) 889-3400

For Emergency Assistance involving chemicals call - CHEMTREC (800) 424-9300

=====

The Version Date for this MSDS is : 10/30/2001

PRODUCT IDENTIFICATION

PRODUCT NAME: HYDROGEN PEROXIDE 20%-60%

MSDS#: 39247

DATE ISSUED: 05/22/01

SUPERSEDES: 09/07/00

ISSUED BY: 008350

MATERIAL SAFETY DATA SHEET

24 Hour Emergency Number: 703-527-3887
24 Hour CHEMTREC Number: 800-424-9300

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name : HYPROX(TM)200-600 HYDROGEN PEROXIDE
Synonyms : Hydrogen Peroxide 20%- 60%

Manufacturer : Degussa Corporation
379 Interpace Parkway
Building C
P.O. Box 677
Parsippany, NJ 07054-0677

2. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Ingredients	CAS Number
Hydrogen peroxide	007722-84-1

See Section 8 for Exposure Guidelines

OSHA Regulatory Status:
This material is classified as hazardous under OSHA regulations.

3. HAZARDS IDENTIFICATION

*** EMERGENCY OVERVIEW ***:

Causes skin and eye burns. Aspiration hazard if swallowed - can enter lungs and cause damage. Causes respiratory tract irritation. Causes burns if swallowed. This product is an oxidizer and contact with combustible materials may cause fire. Contact with incompatible materials (e.g. metals, alkalis, and reducing agents) will cause hazardous decomposition resulting in the release of large quantities of heat, steam, and oxygen gas. Exposure to heat may cause hazardous decomposition.

POTENTIAL HEALTH EFFECTS

Eye Contact:

Corrosive. May cause burns resulting in permanent damage. May cause severe conjunctivitis, cornea injury, or irreversible damage to the eyes. Symptoms may occur with delay.

Skin Contact:

Corrosive. May cause burns resulting in permanent damage. Prolonged exposure may cause severe irritation and white discoloration. Burning may result in localized erythema (redness) or even blistering of the skin.

Inhalation:

Inhalation of vapors or aerosols are severely irritating to the respiratory tract and may cause inflammation and pulmonary edema. Symptoms may occur with delay.

Ingestion:

Ingestion of high concentrations causes rapid release of oxygen which may expand the esophagus or stomach resulting in severe damage (bleeding, ulceration or perforation). Expected to cause burns to the gastrointestinal tract. Aspiration of material into the lungs can cause damage.

General:

Medical conditions which may be aggravated by exposure to this product include: Conjunctivitis of the eye, dermatitis of the skin, asthma and respiratory diseases.

4. FIRST AID MEASURES

FIRST AID

Eye Contact:

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes or until all material has been removed. Obtain medical attention without delay, preferably from an ophthalmologist.

Skin Contact:

Flush skin immediately with plenty of water. Remove contaminated clothing. Obtain medical attention immediately.

Inhalation:

If inhaled, remove to fresh air. If breathing is difficult, give oxygen. If unconscious, evaluate the need for artificial respiration. Get immediate medical attention.

Ingestion:

If swallowed, do NOT induce vomiting. Have victim drink 8-10 ounces of water to dilute material in stomach. Get medical attention immediately. Never give anything by mouth to an unconscious person.

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 effect 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.

5. FIRE FIGHTING MEASURES

Flash Point: Not Determined

Flash Point Method: Not determined

Lower Explosive Limit: Not determined

Upper Explosive Limit: Not determined

OSHA Flammability Classification: None

Autoignition Temperature: Not Determined

Other Flammable Properties:

Strong oxidizer. Contact with combustible materials may cause a fire. Release of oxygen may support combustion. Contact with incompatible materials (e.g. metals, alkalis, and reducing agents) will cause hazardous decomposition resulting in the release of large quantities of heat, steam, and oxygen gas. Exposure to heat may cause hazardous decomposition. Lower Explosive Limit: Hydrogen Peroxide vapors >40% by weight (or 26%mol).

The product spontaneously decomposes above 150 C. A severe detonation hazard may exist when mixed with organic liquids, e.g. kerosene or gasoline.

Extinguishing Media:

Do NOT use CO2 extinguisher on this material: use only water spray or appropriate foam. Do not use organic compounds on this material.

Fire Fighting Procedures:

Evacuate area and fight fire from a safe distance. As in any fire, wear self-contained positive-pressure breathing apparatus, (MSHA/NIOSH approved or equivalent) and full protective gear. Containers can build up pressure if exposed to heat (fire). Cool with water spray.

6. ACCIDENTAL RELEASE MEASURES

Steps To Be Taken In Case Material Is Released Or Spilled:

Never return spilled product into its original container. Never put spilled material into another container for disposal. Dilute with large amounts of water to a concentration of about 5% hydrogen peroxide; hold in diked area or pond until peroxide is completely decomposed or dispose of according to all relevant local, provincial, and federal, laws and regulations. Ventilate area. Use personal protective equipment as

described in section 8. Contact supplier for recommendations to decompose dilute peroxide (5%), if necessary.

SPONTANEOUS COMBUSTION HAZARD:

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.

7. HANDLING AND STORAGE

Handling:

Wash thoroughly after handling. Follow all MSDS/label precautions even after container is emptied because it may retain product residues. Avoid breathing vapor or mist. Avoid contact with eyes, skin and clothing. Never use pressure to empty a container.

Storage:

Do not store near combustible materials. Store in a cool, dry place. Keep container closed when not in use. Recommended container materials: Polyvinyl chloride (rigid PVC). Polyethylene. Polypropylene. Use adequate venting devices on all packages, containers and tanks and check correct operation periodically.

Do not confine product in un-vented vessels or between closed valves. Risk of overpressure and bursting due to decomposition in confined spaces and pipes. Polytetrafluoroethylene (PTFE), Vanadium Steel: 316 stainless steel, passivated, Aluminum >99.5%, passivated, Aluminum Magnesium Alloys, passivated. Consult appropriate authorities regarding the storage requirements for liquid oxidizers, e.g. NFPA 430.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits

	Value	Limit	Reference
Hydrogen peroxide	1.4 mg/m3	TWA	OSHA/ACGIH
	N.E.	STEL	OSHA/ACGIH

Engineering Controls:

Use adequate ventilation.

Respiratory Protection:

A respiratory protection program that meets OSHA 1910.134 and ANSI Z88.2 or applicable federal/provincial requirements must be followed whenever workplace conditions warrant respirator use. NIOSH's "Respirator Decision Logic" may be useful in determining the suitability of various types of respirators.

Eye Protection:

Use chemical splash goggles and face shield. Goggles should be secured independent of the face shield and or hard hat.

Skin Protection:

Use impermeable gloves to minimize skin contact (neoprene or rubber). Gore Tex, Tyvek, or PVC full chemical splash suit. Vinyl, PVC, or

rubber boots.

Other Protective Equipment:

A safety shower and eye wash fountain should be readily available. To identify additional Personal Protective Equipment (PPE) requirements, it is recommended that a hazard assessment in accordance with the OSHA PPE Standard (29CFR1910.132) be conducted before using this product. 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.

9. PHYSICAL AND CHEMICAL PROPERTIES

Vapor Pressure:	1470 Pa (30 C)
Vapor Density (Air = 1):	Is heavier than air
Specific Gravity:	1.10- 1.24
Boiling Point:	104 - 119 C
Melting Point:	- 40 C
pH:	<3 (20 C)
Viscosity:	1.90 mpa * s (0 C)
Evaporation Rate:	Is faster than Butyl Acetate

Other Properties:

Colorless. Clear. Liquid. Pungent odor. Solubility in water: Soluble.

10. STABILITY AND REACTIVITY

Stability:

This product is stable under normal storage conditions.

Hazardous Polymerization:

Will not occur under normal conditions.

Conditions To Avoid:

Avoid high temperatures. Contamination.
SPONTANEOUS COMBUSTION HAZARD: 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.

Incompatibility With Other Materials:

Metals. Reducing agents. Alkalies. Combustible materials. Organic materials. Salts of heavy metals. Impurities.

Hazardous Decomposition Products:

Oxygen. Steam.

11. TOXICOLOGICAL INFORMATION

Product Toxicological Information:

Oral LD50 (rat): 800mg/kg(70%H2O2)

Dermal LD50 (rabbit)>6500mg/kg(70%H2O2)

Supplementary Information:

PRIMARY IRRITATIVE EFFECT

Primary irritative effect to skin:

Strongly corrosive, rabbit, literature. (test substance: Hydrogen peroxide 70%)

Primary irritative effect to eyes:

Corrosive, rabbit, literature. (test substance: Hydrogen peroxide 70%)

SENSITIZATION

Sensitization: not sensitizing, guinea pig.

GENOTOXICITY

Genotoxicity, in-vitro: In-vitro experiments (micro-organisms, cell cultures) have proved mutagenic/genotoxic effects, literature.

In the presence of metabolic systems no mutagenic effects were observed.

Genotoxicity, in-vivo:

Micronucleus test, mouse, intraperitoneal (i.p.), negative, OECD 474.

Micronucleus test, mouse, oral, negative, literature.

Unscheduled DNA synthesis-test (UDS): rat, negative, literature.

SUBACUTE TO CHRONIC TOXICITY

Chronic toxicity:

Drinking water study, mouse (male and female), duration: 90 days; follow-up (recovery): 6 weeks; Effects/target organs: body weight development negative, irritation to gastrointestinal tract; OECD 408.

Carcinogenic effect:

Clues to possible carcinogenic effects in animal experiments: Up to date there is no evidence of increased tumor risk.

Hydrogen peroxide is not a carcinogenic substance according to MAK, IARC, NTP, OSHA, and ACGIH.

EXPERIENCES WITH HUMAN BEINGS

Effect on the skin:

Causes caustic burns. With increased contact length, local erythema or extreme irritation (whitening) up to blistering (caustic burn) can occur.

Effect on the eyes:

Extreme irritation up to cauterization. Can cause severe conjunctivitis, cornea damage, or irreversible eye damage. Symptoms may occur with delay.

Effect when swallowed:

Swallowing can lead to bleeding of the mucosa in the mouth, esophagus, and stomach. The rapid releasing of oxygen can cause distension and bleeding of the mucosa in the stomach and can lead to severe damage of the internal organs, especially in the event of greater intake of the product.

Effect when inhaled:

Inhalation of vapor/aerosols can lead to irritation and inflammation of the respiratory tract and can cause pulmonary edema. Symptoms may occur with delay.

12. ECOLOGICAL INFORMATION

Aquatic Toxicity Data

LC50 (Fish) : 37.4 mg/l (96h)

EC10 (Bacteria): 11 mg/l (16h)

EC50 (Daphnia) : 7.7 mg/l (24h)

Supplementary Information:

DATA ON ELIMINATION (persistence and degradability)

Hydrolysis; medium: water.

Half-life (t 1/2) hours to days.

Hydrolysis; medium: soil.

Half-life (t 1/2) minutes to hours.

Medium: air.

Photochemical degradation to 50% within approx. 20 hours.

BEHAVIOR IN ENVIRONMENTAL FIELDS

Under ambient conditions quick hydrolysis, reduction or decomposition occurs.

The following substances are formed: oxygen and water.

MOBILITY AND BIOACCUMULATION POTENTIAL

Bioaccumulation: none.

Hydrogen peroxide quickly decomposes to oxygen and water.

ECO-TOXIC EFFECTS

Aquatic toxicity

Fish toxicity:

Acute fish toxicity: LC 50 (96h) = 37.4 mg/l, *Ictalurus punctatus*, literature.

Acute fish toxicity: LC 0 (96h) = 17 mg/l, *Ictalurus punctatus*, literature.

Acute fish toxicity: LC 50 (24h) = 31.3 mg/l, *Oncorhynchus mykiss*, literature.

Toxicity to crustaceans:

Acute toxicity to crustaceans: EC 50 (24h) = 7.7 mg/l

Daphnia magna, literature.

Acute toxicity to crustaceans: EC 0 (24h) = 3.8 mg/l

Daphnia magna.

Toxicity to algae:

Chronic algae toxicity: IC 50 (72h) = 2.5 mg/l, *Chlorella vulgaris*, OECD 201.

Chronic algae toxicity: NOEC (72h) = 0.1 mg/l, *Chlorella vulgaris*, OECD 201.

Chronic algae toxicity: IC 94 (48h) = 1.7 mg/l, blue-green algae, literature.

(all data related to: Hydrogen peroxide 100%)

Behavior in water treatment plants

Hydrogen peroxide quickly decomposes to oxygen and water.

Bacterial toxicity:

Pseudomonas putida, EC 10 (16h) = 11 mg/l.

DEV, DIN 38412, T. 8

FURTHER DIRECTIONS

Toxic to mulluscs: moderate.

Mulluscs, LC 50 (96h) = 17.5 mg/l (physa spec.)

Mulluscs, LC 30 (56h) = 5 mg/l (Dreissena polymorpha)

Toxic to water plants: moderate.

water plants, EC 80 (7 days) = 34 mg/l

FURTHER ECOLOGICAL INFORMATION

AOX information

The product does not contain any organically bonded halogen.

In accordance with the regulations on preparation, contains following heavy metals and compounds from EC directive No. 76/464

(e.g. arsenic - , lead - and cadmium compounds, organic compounds, organic halogen compounds): none

13. DISPOSAL CONSIDERATIONS

Disposal Method:

The appropriate regulatory agencies should be contacted prior to disposal.

A possible method of disposal is to dilute with large amounts of water to a concentration of about 5% hydrogen peroxide; hold in diked area or pond until peroxide is completely decomposed or dispose of according to all relevant local, provincial and federal laws and regulations. Do not contaminate any lakes, streams, ponds, groundwater or soil. Use personal protective equipment as described in Section 8. Contact supplier for recommendations to decompose dilute peroxide (5%), if necessary.

14. TRANSPORT INFORMATION

U.S. DOT Transport Information

Proper Shipping Name: Hydrogen Peroxide Aqueous Solution.

Hazard Class: 5.1

Packing Group: II

RQ (lbs.): None

I.D. Number: UN2014
ERG No.: 140
Hazard Subclasses: 8

Transport Label(s) Required: OXIDIZER CORROSIVE

Additional Markings:

Shipping Restrictions: Air -Forbidden in concentrations greater than 40%.

For concentrations 40% and below:

Passenger Aircraft - 1 L max./pkg.

Cargo Aircraft only - 5 L max./pkg.

Authorized Container Type(s): Drum - UN 3H1, UN 1H1, IM 101
Portable Tanks.

15. REGULATORY INFORMATION

This product contains the following non-hazardous components:

	CAS Number
Water	007732-18-5

U.S. Federal Regulations

OSHA:

This document has been prepared in accordance with the MSDS requirements of the OSHA Hazard Communication Standard.

Clean Air Act Section 112:

This product contains the following components present at or above the OSHA de minimus level and listed as Hazardous Air Pollutants:

None

This product contains the following components present at or above the OSHA de minimus level and listed as Extremely Hazardous Air Pollutants:

None

SARA Section 302:

This product contains the following components listed as Extremely Hazardous Substances:

None

SARA Section 311/312:

Hazard Classifications: Immediate (acute)

SARA Section 313:

This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

None

TSCA:

This product or its components are listed in or exempt from the TSCA inventory requirements.

This product contains the following non-proprietary substances subject to export notification under Section 12(b) of TSCA:

None

State Regulations

New Jersey:

This product contains the following non-hazardous components subject to disclosure under New Jersey Right-To-Know legislation:

	CAS Number
Water	007732-18-5

Pennsylvania:

This product contains the following non-hazardous components subject to disclosure under Pennsylvania Right-To-Know legislation:

	CAS Number
Water	007732-18-5

California (Proposition 65):

This product contains the following substances known to the State of California to cause cancer:

None

This product contains the following substances known to the State of California to cause adverse reproductive effects:

None

International Regulations

Summary of International Chemical Inventory Status

Canada	On inventory
Europe	On inventory
South Korea	On inventory
Australia	On inventory

Additional International Regulatory Information:

Canadian Regulations

WHMIS (Workplace Hazardous Material Information System):

Hazard Classification: Class C (Oxidizer), Class D, Div. 2, Subdiv. B.

Class E (Corrosive)

Product Identification No. 2014

Ingredient Disclosure List: Listed

16. OTHER INFORMATION

Miscellaneous Information:

Additional NFPA information.

This material is an oxidizing chemical.

HMIS Ratings: Health: 2 Flammability: 0 Reactivity: 1

Ratings Key: 4 = Highest hazard, 0 = Lowest Hazard,

* = Chronic Health Hazard, N = No rating for powders

NFPA Ratings: Health: 2 Flammability: 0 Reactivity: 1

Ratings Key: 4 = Highest hazard, 0 = Lowest hazard, N = No rating for powders

Key to abbreviations used:

NA Not applicable

NAV Not available

NE Not established

NJTSR No. New Jersey Trade Secret Registry Number

(R) Registered Trademark

TM

Trademark

For Additional Information:

Contact: MSDS Coordinator - Vopak USA

During business hours, Pacific Time - (425) 889-3400

NOTICE

Vopak USA, expressly disclaims all express or implied warranties of merchantability and fitness for a particular purpose, with respect to the product or information provided herein, and shall under no circumstances be liable for incidental or consequential damages.

Do not use ingredient information and/or ingredient percentages in this MSDS as a product specification. For product specification information refer to a Product Specification Sheet and/or a Certificate of Analysis. These can be obtained from your local Vopak USA Sales Office.

All information appearing herein is based upon data obtained from the manufacturer and/or recognized technical sources. While the information is believed to be accurate, Vopak USA makes no representations as to its accuracy or sufficiency. Conditions of use are beyond Vopak USA's control and therefore users are responsible to verify this data under their own operating conditions to determine whether the product is suitable for their particular purposes and they assume all risks of their use, handling, and disposal of the product, or from the publication or use of, or reliance upon, information contained herein. This information relates only to the product designated herein, and does not relate to its use in combination with any other material or in any other process.

END OF MSDS