Material Safety Data Sheet
Hydrogen Peroxide Solution
(Hydrogen Peroxide, 30%)

Print Date: August 2004

SECTION 1 – Chemical Product and Company Identification

MSDS Name: Hydrogen Peroxide Solution MSDS Preparation Date: 08-2004

Synonyms: Dihydrogen dioxide Hydrogen dioxide Hydroperoxide Hydrogen peroxide
Chemical Name French: Peroxyde d'hydrogène, Chemical Name Spanish: Peróxido de hidrógeno
Product numbers: BA-17-0500
Canadian TDG Classification: 5.1, 8 PKG Gr II **Formula:** H_2O_2
PIN (UN# / NA#): UN2014 **Molecular Wt:** 34.01
WHMIS Classification: Class C (Oxidizing material), Class E (Corrosive material).

Supplier: Seastar Chemicals Inc, PO Box 2219, 2045 Mills Road West, Sidney, BC, Canada V8L 3S8
Tel: (250) 655-5880, **Fax:** (250) 655-5888

CANUTEC (CAN): **(613)-996-6666**

SECTION 2 – Composition/Information on Ingredients

CAS #	Chemical Name	Percent	EINECS/ELINCS	TLV
7722-84-1	Hydrogen Peroxide	30-32%	231-765-0	(TLV-TWA): 1 ppm - Carcinogenicity Designation A3 (PEL-TWA): 1 ppm (1.4 mg/m3)
7732-18-5	Water	Balance	231-791-2	None

SECTION 3 – Hazards Identification

EMERGENCY OVERVIEW

Appearance: clear, colorless liquid. Danger! Strong oxidizer. Contact with other material may cause a fire. Eye contact may result in permanent eye damage. May cause central nervous system effects. Causes eye and skin irritation and possible burns. Corrosive. May cause severe respiratory tract irritation with possible burns. May cause severe digestive tract irritation with possible burns. Light sensitive. May be harmful if swallowed. May cause blood abnormalities.
Target Organs: Blood, central nervous system.

Potential Health Effects

Eye: Contact with liquid is corrosive to the eyes and causes severe burns. Contact with the eyes may cause corneal damage.
Skin: Causes severe skin irritation and possible burns. May cause discoloration, erythema (redness), swelling, and the formation of papules and vesicles (blisters).
Ingestion: Causes gastrointestinal irritation with nausea, vomiting and diarrhea. Causes gastrointestinal tract burns. May cause vascular collapse and damage. May cause damage to the red blood cells. May cause difficulty in swallowing, stomach distension, possible cerebral swelling and death. Ingestion may result in irritation of the esophagus, bleeding of the stomach and ulcer formation.
Inhalation: Causes chemical burns to the respiratory tract. May cause ulceration of nasal tissue, insomnia, nervous tremors with numb extremities, chemical pneumonia, unconsciousness, and death. At high concentrations, respiratory effects may include acute lung damage and delayed pulmonary edema.
Chronic: Prolonged or repeated skin contact may cause dermatitis. Laboratory experiments have resulted in mutagenic effects. Repeated contact may cause corneal damage.

SECTION 4 – First Aid Measures

Eyes: Get medical aid immediately. Do NOT allow victim to rub or keep eyes closed. Extensive irrigation with water is required (at least 30 minutes).
Skin: Get medical aid immediately. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Destroy contaminated shoes.

Ingestion: Do NOT induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately. Wash mouth out with water. Vomiting may occur spontaneously. If vomiting occurs and the victim is conscious, give water to further dilute the chemical.
Inhalation: Get medical aid immediately. Remove from exposure and move to fresh air immediately. If breathing is difficult, give oxygen. Do NOT use mouth-to-mouth resuscitation. If breathing has ceased apply artificial respiration using oxygen and a suitable mechanical device such as a bag and a mask.
Notes to Physician: Treat symptomatically and supportively. Attempts at evacuating the stomach via emesis induction or gastric lavage should be avoided. In the event of severe distension of the stomach or esophagus due to gas formation, insertion of a gastric tube may be required. To treat corneal damage, careful ophthalmologic evaluation is recommended and the possibility of local corticosteroid therapy should be considered.

SECTION 5 – Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Water runoff can cause environmental damage. Dike and collect water used to fight fire. Strong oxidizer. Contact with combustible materials may cause a fire. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Use water spray to keep fire-exposed containers cool. Substance is noncombustible. Use water with caution and in flooding amounts. Vapors may be heavier than air. They can spread along the ground and collect in low or confined areas. Some oxidizers may react explosively with hydrocarbons(fuel). May decompose explosively when heated or involved in a fire. May accelerate burning if involved in a fire.
Extinguishing Media: Use water only! Do NOT use carbon dioxide. Do NOT use dry chemical. Do NOT get water inside containers. Contact professional fire-fighters immediately. Cool containers with flooding quantities of water until well after fire is out. For large fires, flood fire area with large quantities of water, while knocking down vapors with water fog.
Flash Point: Noncombustible
Autoignition Temperature: Noncombustible
Explosion Limits: Lower:40 vol %, **Upper:** 100 vol %
NFPA Rating: (estimated) Health: 3; Flammability: 0; Instability: 1; Special Hazard: OX

SECTION 6 – Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.
Spills/Leaks: Absorb spill with inert material (e.g., dry sand or earth), then place into a chemical waste container. Do not use combustible materials such as saw dust. Flush spill area with water. Do not get water inside containers. Keep combustibles (wood, paper, oil, etc.,) away from spilled material.
Steps to be taken in case material is released or spilled: Wear self-contained breathing apparatus, rubber boots and heavy rubber gloves. Add lime. Mix carefully with water to form a slurry place in a suitable container and send for disposal. Ventilate area and wash spill site after material pick-up is complete.
Waste disposal method: According to all applicable regulations. Avoid run-off.

SECTION 7 – Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use only in a well-ventilated area. Contents may develop pressure upon prolonged storage. Do not get in eyes, on skin, or on clothing. Keep container tightly closed. Avoid contact with clothing and other combustible materials. Do not ingest or inhale. Store protected from light. Discard contaminated shoes. Unused chemicals should not be returned to the container. Rinse empty drums and containers thoroughly with water before discarding.
Storage: Keep away from heat, sparks, and flame. Do not store near combustible materials. Keep container closed when not in use. Store in a cool, dry, well-ventilated area away from incompatible substances. Store protected from light. Keep away form alkalies, oxidizable materials, finely divided metals, alcohols, and permanganates. Store below 35^{0}C. Store only in light-resistant containers fitted with a safety vent.

SECTION 8 – Exposure Control/Personal Protection

Engineering Controls: Use explosion-proof ventilation equipment. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.
Exposure Limits:

Chemical Name	*ACGH*	*NIOSH*	*OSHA*
Hydrogen Peroxide	1 ppm TWA	1 ppm TWA; 1.4 mg/m3 TWA 75 ppm IDLH	1 ppm TWA; 1.4 mg/m3 TWA
Water	None listed.	None listed.	None listed.

OSHA Vacated PELs: Hydrogen Peroxide: 1 ppm TWA; 1.4 mg/m3 TWA Water: No OSHA Vacated PELs are listed for this chemical.

Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
Skin: Wear appropriate protective gloves to prevent skin exposure.
Clothing: Wear appropriate protective clothing to prevent skin exposure.
Respirators: A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant a respirator's use.
Ventilation: Use only in an explosion proof fume hood. Adequate ventilation to maintain vapour below TLV.
Other Protective Equipment: Make eye bath and emergency shower available.

SECTION 9 – Physical and Chemical Properties

Physical State: Liquid
Appearance: clear, colorless
Odor: slight acid odor
pH: 3.3 (30% solution)
Vapor Pressure: 23 mm Hg @ 30C
Vapor Density: 1.10
Evaporation Rate:>1.0 (Butyl acetate=1)
Viscosity: 1.25 cP

Boiling Point: 108 deg C @ 760 mmHg
Freezing/Melting Point: -33 deg C
Decomposition Temperature: Not available.
Solubility: Miscible in water.
Specific Gravity/Density:1.1-1.2 (30-50%)
Molecular Formula:H_2O_2
Molecular Weight:34.0128

SECTION 10 – Stability and Reactivity

Chemical Stability: Decomposes slowly to release oxygen. Unstable when heated or contaminated with heavy metals, reducing agents, rust, dirt or organic materials. Stability is reduced when pH is above 4.0.
Conditions to Avoid: Mechanical shock, incompatible materials, light, ignition sources, dust generation, excess heat, combustible materials, reducing agents, alkaline materials, strong oxidants, rust, dust, pH > 4.0.
Incompatibilities with Other Materials: Strong oxidizing agents, strong reducing agents, acetic acid, acetic anhydride, alcohols, brass, copper, copper alloys, finely powdered metals, galvanized iron, hydrazine, iron, magnesium, nitric acid, sodium carbonate, potassium permanganate, cyanides (e.g. potassium cyanide, sodium cyanide), ethers (e.g. dioxane, furfuran, tetrahydrofuran (THF)), urea, chlorosulfonic acid, alkalies, lead, nitrogen compounds, triethylamine, silver, nickel, palladium, organic matter, charcoal, sodium borate, aniline, platinum, formic acid, cyclopentadiene, activated carbon, tert-butyl alcohol, hydrogen selenide, manganese dioxide, mercurous chloride, rust, ketones, carboxylic acids, glycerine, sodium fluoride, sodium pyrophosphate, soluble fuels (acetone, ethanol, glycerol), wood, wood, asbestos, hexavalent chromium compounds, salts of iron, copper, chromium, vanadium, tungsten, molybdeum, and platinum.
Hazardous Decomposition Products: Oxygen, hydrogen gas, water, heat, steam.
Hazardous Polymerization: Will not occur.

SECTION 11 – Toxicological Information

RTECS: CAS# 7722-84-1: MX0887000; MX0888000; MX0890000; MX0899000; MX0899500; MX0900000. CAS# 7732-18-5: ZC0110000

LD50/LC50: CAS# 7722-84-1: Draize test, rabbit, eye: 1 mg Severe; Inhalation, rat: LC50 = 2 gm/m3/4H; Inhalation, rat: LC50 = 2000 mg/m3; Oral, mouse: LD50 = 2000 mg/kg; Oral, rabbit: LD50 = 820 mg/kg; Oral, rat: LD50 = 1518 mg/kg; Oral, rat: LD50 = 910 mg/kg; Oral, rat: LD50 = 376 mg/kg; Oral, rat: LD50 = 4050 mg/kg; Skin, rat: LD50 = 3 gm/kg; Skin, rat: LD50 = 4060 mg/kg;<BR.
CAS# 7732-18-5:
Oral, rat: LD50 = >90 mL/kg;<BR.

Carcinogenicity: CAS# 7722-84-1: ACGIH: A3 - Animal Carcinogen
IARC: IARC Group 3 - not classifiable CAS# 7732-18-5: Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.
Epidemiology: No information available.
Teratogenicity: No information available.
Reproductive Effects: No information available.
Neurotoxicity: No information available.
Mutagenicity: CAS#: 7722-84-1 Mutation in Microorganisms: Salmonella typhimurium = 100 ug/plate.; Hyman, embryo = 50 umol/L.; Cytogenetic Analysis: Human, embryo = 20 umol/L. Mutation in Mammalian Somatic Cells: Hamster, lung = 1mmol/L.
Other Studies: No data available.

SECTION 12 – Ecological Information

Ecotoxicity: Fish: Carp: LC50 = 42 mg/L; 48 Hr; Unspecified Fathead Minnow: LC50 = 16.4 mg/L; 96 Hr; Fresh water Fathead Minnow: NOEC = 5 mg/L; 96 Hr; Fresh water flea Daphnia: EC50 = 2.4 mg/L; 48 Hr; Fresh water Channel catfish: LC50 = 37.4 mg/L; 96 Hr; Fresh water No data available.
Environmental: Rain washout is expected due to condensation of hydrogen peroxide on contact with water droplets. In the atmosphere, indirect photooxidation is perdicted with a half-life of 10 to 20 hours. Non-significant evaporation and adsorption from water surfaces and soil/sediments is expected. Rapid and cosiderable aerobic biodegradation was determined with a half-life < 1 minute (biological treatment sludge) and 0.3 to 2 days (fresh water). Hydrogen peroxide is non-bioaccumulable.
Physical: No information available. **Other:** No information available.

SECTION 13 – Disposal Considerations

Dispose of in a manner consistent with federal, provincial/state/territorial, and local regulations.
Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.
RCRA P-Series: None listed.
RCRA U-Series: None listed.

SECTION 14 – Transport Information

CANADIAN TRANSPORTATION OF DANGEROUS GOODS (TDG) SHIPPING INFORMATION
Proper Shipping Name: HYDROGEN PEROXIDE, AQUEOUS SOLUTION with not less than 20 per cent but not more than 60 per cent hydrogen peroxide (stabilized as necessary)
Hazard Class: 5.1, 8 UN Number: UN2014 Packing Group/Risk Group: II
Special Provisions: --- Passenger Carrying Road/Rail Limit: 1 kg or L Marine Pollutant: ---
NOTE: This information incorporates the Transportation of Dangerous Goods Regulations SOR/2001-286, effective October 2003

US DEPARTMENT OF TRANSPORT (DOT) HAZARDOUS MATERIALS SHIPPING INFORMATION (49 CFR)
Shipping Name and Description: HYDROGEN PEROXIDE, AQUEOUS SOLUTIONS with not less than 20 percent but not more than 40 percent hydrogen peroxide (stabilized as necessary)
Hazard Class or Division: 5.1 Identification Number: UN2014 Packing Group:II
NOTE: This information was taken from the US Code of Federal Regulations Title 49 - Transportation and is effective October 2003.

SECTION 15 – Regulatory Information

US Federal

TSCA CAS# 7722-84-1 is listed on the TSCA inventory.
CAS# 7732-18-5 is listed on the TSCA inventory.
Health & Safety Reporting List: None of the chemicals are on the Health & Safety Reporting List.
Chemical Test Rules: None of the chemicals in this product are under a Chemical Test Rule.
Section 12b: None of the chemicals are listed under TSCA Section 12b.
TSCA Significant New Use Rule: None of the chemicals in this material have a SNUR under TSCA.
SARA: CERCLA Hazardous Substances and corresponding RQs: None of the chemicals in this material have an RQ.
SARA Section 302 Extremely Hazardous Substances
CAS# 7722-84-1: 1,000 lb TPQ (concentration > 52%)
SARA Codes: CAS # 7722-84-1: acute, flammable.
Section 313: No chemicals are reportable under Section 313.
Clean Air Act: This material does not contain any hazardous air pollutants. This material does not contain any Class 1 Ozone depletors. This material does not contain any Class 2 Ozone depletors.
Clean Water Act: None of the chemicals in this product are listed as Hazardous Substances under the CWA. None of the chemicals in this product are listed as Priority Pollutants under the CWA. None of the chemicals in this product are listed as Toxic Pollutants under the CWA.
OSHA: None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

CAS# 7722-84-1 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.
CAS# 7732-18-5 is not present on state lists from CA, PA, MN, MA, FL, or NJ.
California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives
Hazard Symbols: O C
Risk Phrases: R 34 Causes burns. R 8 Contact with combustible material may cause fire.

Safety Phrases: S 28 After contact with skin, wash immediately with...S 3 Keep in a cool place. S 36/39 Wear suitable protective clothing and eye/face protection. S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
WGK (Water Danger/Protection) CAS# 7722-84-1: 0 CAS# 7732-18-5: No information available.

Canada - DSL/NDSL: CAS# 7722-84-1 is listed on Canada's DSL List. CAS# 7732-18-5 is listed on Canada's DSL List.

Canada - WHMIS
This product has a WHMIS classification of C, E.
Canadian Ingredient Disclosure List
CAS# 7722-84-1 is listed on the Canadian Ingredient Disclosure List.

Exposure Limits: CAS# 7722-84-1
OEL-AUSTRALIA:TWA 1 ppm (1.5 mg/m3)
OEL-BELGIUM:TWA 1 ppm (1.4 mg/m3)
OEL-DENMARK:TWA 1 ppm (1.4 mg/m3)
OEL-FINLAND:TWA 1 ppm (1.4 mg/m3); STEL 3 ppm (4.2 mg/m3)
OEL-FRANCE:TWA 1 ppm (1.5 mg/m3)
OEL-GERMANY:TWA 1 ppm (1.4 mg/m3)
OEL-THE NETHERLANDS:TWA 1 ppm (1.4 mg/m3)
OEL-THE PHILIPPINES:TWA 1 ppm (1.4 mg/m3)
OEL-SWITZERLAND:TWA 1 ppm (1.4 mg/m3); STEL 2 ppm (2.8 mg/m3)
OEL-TURKEY:TWA 1 ppm (1.4 mg/m3)
OEL-UNITED KINGDOM:TWA 1 ppm (1.5 mg/m3); STEL 2 ppm (3 mg/m3)

SECTION 16 – Other Information

The statements contained herein are offered for informational purposes only and are based upon technical data. Seastar Chemicals Inc believes them to be accurate but does not purport to be all-inclusive. The above-stated product is intended for use only by persons having the necessary technical skills and facilities for handling the product at their discretion and risk. Since conditions and manner of use are outside our control, we (Seastar Chemicals Inc) make no warranty of merchantability or any such warranty, express or implied with respect to information and we assume no liability resulting from the above product or its use. Users should make their own investigations to determine suitability of information and product for their particular purposes.