CALEDON LABORATORY CHEMICALS

MATERIAL SAFETY DATA SHEET

HYDROGEN PEROXIDE

PRODUCT CODE NUMBER(S): 4060-1, 4060-4, 4065-4, 4060-6, 4061-6, CAL 0579

PRODUCT IDENTIFICATION

Chemical Name and Synonyms: *Hydrogen peroxide 3 - 35%; Hydrogen dioxide*
Chemical Family: *Inorganic peroxide*
Chemical Formula: *H_2O_2 in H_2O*
Product Use: *Laboratory chemical*
Manufacturer's Name and Address:
Caledon Laboratories Ltd.
40 Armstrong Avenue
Georgetown, Ontario L7G 4R9
Telephone No: *(905) 877-0101*
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HAZARDOUS INGREDIENTS OF MATERIALS

Ingredients	*%*	*TLV Units*	*CAS No.*
Hydrogen peroxide	*3-35*	*1 ppm*	*7722-84-1*

PHYSICAL DATA

Physical State: *Liquid*
Odour and Appearance: *Clear, colourless liquid. Slightly pungent irritating odour.*
Odour Threshold (ppm): *Not available*
Vapour Pressure (mm Hg): *23 mm Hg at 30°C*
Vapour Density (Air = 1): *1.17*
Evaporation Rate: *<1*
Boiling Point (°C): *106°C*
Freezing Point (°C): *-26°C*
pH: *2.0 - 3.5*
Specific Gravity: *1.110*
Coefficient of Water/Oil distribution: *logP (oct)=-0.70 to -1.33*

SHIPPING DESCRIPTION

UN: *2014*
T.D.G. Class: *5.1; (8)*
Pkg. Group: *II*

REACTIVITY DATA

Chemical Stability: *Unstable with heat, sunlight or if contamination by organic material. Breaks down readily, releasing oxygen, water, and heat. Pure solution, completely free of contamination, is highly stable.*
Incompatibility with other substances: *Avoid contact with reducing agents, strong oxidizers, alkalies, acids, organic materials, Decomposition is increased by contact with powdered metals or thei salts (iron, copper). Concentrated solutions (30%) may react explosively with nitric acid, sulphuric acid, strong bases, potassium permanganate. For complete list of the many substance with which hydrogen peroxide can react consult Bretherick's handbook of reactive chemical hazards. 5th edition. Volume 1, 1995. Concentrated solutions are corrosive to steel, iron, copper and its alloys, nickel, lead, and silver. Not corrosive to aluminum, some aluminum alloys, some stainless steels. May attack some forms of plastics, rubbers, and coatings.*
Reactivity: *Contamination from any source may cause rapid decomposition, oxygen gas release, and dangerous pressures may be created. May react dangerously with rust, dust, dirt, iron, galvanized iron, iron salts, copper, copper alloys, brass, zinc, nickel, lead, finely powdered metals, heavy metals, reducing agents. Spontaneous combustion and explosion may occur with some organic compounds (ketones, aldehydes, charcoal, organic dust)*
Hazardous Decomposition Products: *Oxygen*

FIRE AND EXPLOSION DATA

Flammability: *Will not burn, but releases oxygen which can increase the risk of fire or the intensity of fire.*
Extinguishing Media: *Use flooding amounts of water as spray or fog, to extinguish fire and to absorb heat, cool containers, and disperse vapours. Chemical extinguishing agents may accelerate decomposition and release of oxygen. Fight fire from upwind, from a safe distance. FIrefighters must wear protective equipment (positive-pressure, full face-piece self-contained breathing apparatus) and clothing sufficient to prevent inhalation of dust or fumes, and contact with skin and eyes (full Bunker Gear).*
Flash Point (Method Used): *Will not burn*
Autoignition Temperature: *Not applicable*
Upper Flammable Limit (% by volume): *Not applicable*
Lower Flammable Limit (% by volume): *Not applicable*
Hazardous Combustion Products: *Heat will release oxygen which accelerates burning.*
Sensitivity to Impact: *None at this strength. Concentrations greater than 90% W/W can be made to detonate under severe conditions.*
Sensitivity to Static discharge: *None identified*

TOXICOLOGICAL PROPERTIES AND HEALTH DATA

Toxicological Data:

LD_{50}: *(oral, rat) 1,193 mg/kg (H_2O_2, 35%)*
LD_{50}: *(skn, rabbit) > 2,000 mg/kg (H_2O_2, 35%)*
LC_{50}: *(rat) 2,000 mg/m^3/4h*

Effects of Acute Exposure to Product:

Inhaled: *Irritant; corrosive in high concentrations (>10%). Inhalation of mist will cause irritation of lungs, throat and nose that usually subsides after exposure is ended. Higher concentrations cause severe irritation, chemical pneumonitis, pulmonary edema, and even death. Pulmonary edema may occur 5-72 hours after exposure; symptoms are shortness of breath, foamy sputum, cyanosis, dizziness.*
In contact with skin: *Corrosive. Causes skin irritation with discomfort or rash. May cause bleaching of skin or hair. High concentrations will cause skin burns, swelling, blistering, ulceration.*

In contact with eyes: *Concentrated vapour or mist causes eye irritation with discomfort, tearing, blurring of vision and possibly severe eye injury and blindness. Solutions of 3% or less cause pain and blurred vision, but no permanent damage; more concentrated solutions may cause eye damage with corneal ulceration. Onset of symptoms may be delayed for a week or more.*

Ingested: *Causes burns of mouth, throat and esophagus. and bleeding from the throat and stomach. Large amounts of oxygen may be released quickly. The resultant distension of stomach and esophagus may be injurious. Ingestion is not a norrmal route of occupational exposure.*

Effects of Chronic Exposure to Product:

Carcinogenicity: *No human data. Reported carcinogenic in one animal test. Limited evidence of carcinogenicity in laboratory animals under conditions not considered relevant to worker exposure, Group A3 (IARC).*

Teratogenicity: *No human information available. Inconclusive animal information available. No reproductive effects expected since material readily decomposes.*

Reproductive Effects: *No human information available. Inconclusive animal information available. No reproductive effects expected since material readily decomposes.*

Mutagenicity: *No human information available. Laboratory tests have shown some mutagenic effects. Negative in animal testing.*

Synergistic Products: *Increases toxicity of ozone and sulphur dioxide.*

PREVENTIVE MEASURES

Engineering Controls: *Local exhaust required.*

Respiratory Protection: *For up to 10 ppm, NIOSH/MSHA approved supplied-air respirator; up to 25 ppm, supplied-air respirator in continuous flow mode; up to 50 ppm, full face-piece self-contained breathing apparatus or full face-piece supplied-air respirator; up to 75 ppm, positive-pressure, full face-piece supplied-air respirator; higher or unknown concnetrations, or for fire or spill conditions, positive-pressure, full face-piece self-contained breathing apparatus, or full face-piece supplied-air respirator with auxilliary positive-pressure self-contained breathing apparatus.*

Eye Protection: *Chemical goggles or face shield*

Skin Protection: *Butyl, natural, or nitrile rubber, Viton™, CPF3™, Tychem 10000™, Responder™ gloves. Other protective clothing, apron, trousers, rubber boots, as required to prevent contact. NOTE: Do not wear leather gloves or leather soled shoes, as these can ignite within minutes following contact with peroxides. Clothing can also ignite quickly.*

Other Personal Protective Equipment: *Safety shower and eye wash fountain in work area.*

Leak and Spill Procedure: *Restrict access to area. Eliminate all sources of ignition and all combustible materials. Cleanup personnel must be thoroughly trained in the handling of hazardous materials, and must wear protective equipment and clothing sufficient to prevent inhalation of mists or vapours and contact with skin, eyes and clothing. Dike or absorb with inert absorbant, or flood area with water and drain to an approved chemical sewer. May be destroyed with sodium metabisulphite or sodium sulphite after diluting to 5-10% peroxide. Flush area of spill thoroughly with plenty of water.*

Waste Disposal: *Follow all federal, provincial and local regulations. In some cases, can be diluted with a large amount of water and allowed to decompose, after which it can be discharged into a suitable treatment system.*

Handling Procedures and Equipment: *CORROSIVE, OXIDIZER. Personnel handling this material must be thoroughly trained in its hazards and its safe use, and must wear appropriate protective equipment and clothing. Avoid contamination of any kind. Avoid contact and inhalation. Use the smallest amount possible for the purpose, in designated areas with adequate ventilation. Keep work area free of combustible and organic materials; any material that is in contact with this chemical must be thoroughly washed with detergent and clean water rinse (contaminated materials can ignite spontaneously). Empty containers may contain hazardous residues; treat with caution.*

Storage Requirements: *Store in suitable, vented, labelled containers, in a dry, well-ventilated, cool (<35C) area. Protect from light. Store on flame retardant pallets. Store away from incompatible, combustible or organic materials. Storage facilities (shelves, floors) should be constructed of non-combustible materials. Keep away from all ignition sources. Keep containers tightly closed when not in use and when empty. Protect from damage, and inspect frequently for signs of leaking or bulging. Have water available for diluting.*

FIRST AID MEASURES

Specific Measures:

Eyes: *Immediately flush eyes with plenty of gently running water for at least thirty (30) minutes, holding eyelids open while flushing. Take care not to flush contaminated water into unaffected eye. Wear gloves to avoid contact during first aid procedures. Get medical attention.*

Skin: *Remove contaminated clothing (including watches, rings, belts, and shoes). Immediately flush skin with plenty of running water for twenty to thirty (20-30) minutes. Unless contact is very minor, get medical attention. Completely decontaminate clothing before reuse, or discard (contaminated clothing can ignite spontaneously).*

Inhalation: *Remove to fresh air. Give oxygen and get medical attention for any breathing difficulty. If breathing has stopped, give artificial respiration and get medical attention immediately. Pulmonary edema may occur up to 72 hours after exposure; unless exposure is minor, the victim needs to be monitored for several hours for shortness of breath, foamy sputum, cyanosis, dizziness.*

Ingestion: *Do not induce vomiting. If person is alert and NOT convulsing, give 2 to 4 glasses of water to drink to dilute material. Get medical attention immediately. If the symptoms are severe, and you suspect perforation of the stomach, do not give anything to drink until a physician has appraised the situation.*

REFERENCES USED

CCINFO disc: Cheminfo, MSDS's, February 2007

Budavari: The Merck Index, 12th ed., 1997

Sax, Lewis: Hawley's Condensed Chemcial Dictionary, 11th ed., 1987

Bretherick: Handbook of Rreactive Chemical Hazards, 5th ed. Vol 1, 1995.

Suppliers' Material Safety Data Sheets

ADDITIONAL INFORMATION

Date Issued: *November 1, 1988*

Revision: *February 2011*

MSDS: *4060-1, 4060-4, 4065-4, 4060-6, 4061-6, CAL 0579*

Proposed WHMIS Designation: *C; D2A; E*

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