

## MATERIAL SAFETY DATA SHEET

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### SECTION 1 – IDENTIFICATION

PRODUCT IDENTIFIER:	<b>SODIUM HYDROXIDE, 32% SOLUTION, MEMBRANE GRADE</b>
PRODUCT USE:	Neutralization of acids, pH control, gas scrubbing, catalyst. Used in manufacture of pulp and paper, petroleum and natural gas, soap and detergents, and cellulose. Also used in water treatment, food processing, mining, and metal processing.
MANUFACTURER:	<b>Canexus Chemicals Canada Limited Partnership</b> 100 Amherst Avenue North Vancouver, British Columbia, Canada V7H 1S4 <b>Emergency, call: (604) 929-3441</b> <b>To Request an MSDS, call: 1-800-699-6924</b>

This MSDS is available in French upon request.

*Cette fiche signalétique est disponible en français sur demande.*

### SECTION 2 – HAZARDS IDENTIFICATION

#### WHMIS CLASSIFICATION:

**E Corrosive Material**



#### EMERGENCY OVERVIEW:

Extremely corrosive. Causes skin burns. Causes severe eye burns. May be fatal if swallowed. Reactive with water and numerous commonly encountered materials, generating heat. Contact with some metals releases flammable hydrogen gas.

#### EFFECTS OF SHORT-TERM (ACUTE) EXPOSURE:

**SKIN CONTACT:** Direct contact can cause severe burns with deep ulceration, permanent scarring, and baldness. It can penetrate to deeper layers of the skin and corrosion will continue until removed. With dilute solution, the sensation of irritation may be delayed for hours.

**EYE CONTACT:** Damage can range from severe irritation and mild scarring to blistering, disintegration, ulceration, severe scarring and clouding. Glaucoma and cataracts are possible late developments. In severe cases, permanent blindness results.

**INGESTION:** Ingestion can produce severe corrosive burns to mouth, throat, and esophagus. Symptoms include severe pain, vomiting, diarrhea, collapse and possible death. Small amounts of caustic which enter the lungs during ingestion or vomiting (aspiration) can cause serious lung injury and death.

**INHALATION:** Sodium hydroxide does not readily form a vapour, so inhalation is only likely to occur if aerosol is formed. Severe irritation of the respiratory tract, and possible permanent damage and pulmonary edema may result from aerosol exposure. Symptoms of pulmonary edema may be delayed for up to 48 hours.

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### EFFECTS OF LONG-TERM (CHRONIC) EXPOSURE:

Repeated or prolonged exposure of the skin to low concentrations of liquid can cause dermatitis. There are a few reports of chronic respiratory disease from repeated and prolonged exposure to mists. There is no evidence of carcinogenicity in humans from occupational exposures. Sodium hydroxide does not accumulate in the body.

### MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:

Pre-existing skin disorders.

## SECTION 3 – COMPOSITION

HAZARDOUS INGREDIENTS	% (w/w)	CAS NUMBER
Sodium Hydroxide (Caustic Soda)	32	1310-73-2

## SECTION 4 – FIRST AID MEASURES

**SKIN CONTACT:** Obtain medical attention immediately. Under running water, remove contaminated clothing, shoes, and leather goods such as watchbands and belts. Immediately flush contaminated areas with lukewarm, gently running water for at least 15 minutes, by the clock. DO NOT INTERRUPT FLUSHING - have emergency vehicle wait if necessary. Completely decontaminate clothing. Discard leather shoes and leather goods.

**EYE CONTACT:** Obtain medical attention immediately. Immediately flush contaminated eye(s) with lukewarm, gently running water for at least 30 minutes while holding the eyelid(s) open. Take care not to rinse contaminated water into a non-affected eye. Neutral saline solution may be used for flushing if available. DO NOT INTERRUPT FLUSHING - keep emergency vehicle waiting if necessary.

**INGESTION:** Obtain medical attention immediately. DO NOT INDUCE VOMITING. Never give anything by mouth if victim is rapidly losing consciousness, or is unconscious or is convulsing. Have victim rinse mouth thoroughly with water. Have victim drink 300 mL (10 oz.) of water. If milk is available, administer AFTER the water. If vomiting occurs naturally, have the victim lean forward to reduce risk of aspiration. Repeat administration of water.

**INHALATION:** Obtain medical attention immediately. Remove source of contamination or remove victim to fresh air. If breathing is difficult, it may be beneficial for a trained person to give oxygen. Ensure victim is completely at rest - allow no physical exertion.

**GENERAL COMMENTS:** Provide general supportive measures (comfort, warmth, rest). Seek medical attention for all exposures except minor instances of inhalation. First-aid procedures should be reviewed by appropriate personnel familiar with sodium hydroxide and its conditions of use in the workplace.

## SECTION 5 - FIRE FIGHTING MEASURES

FLASH POINT:	Not applicable	LOWER FLAMMABILITY LIMITS:	Not applicable	SENSITIVITY TO MECHANICAL IMPACT:	Not sensitive
AUTOIGNITION TEMPERATURE:	Not applicable	UPPER FLAMMABILITY LIMITS:	Not applicable	SENSITIVITY TO STATIC DISCHARGE:	Not sensitive

**HAZARDOUS COMBUSTION PRODUCTS:** Sodium oxide fumes can be generated by thermal decomposition at elevated temperatures.

**EXTINGUISHING MEDIA:** Does not burn or support combustion. Use extinguishing agents suitable for the surrounding fire. Use water with caution since it can generate heat if applied directly to sodium hydroxide solutions.

**FIRE FIGHTING INSTRUCTIONS:** Evacuate area and fight fire from a safe distance. Wear adequate personal protective equipment. Approach fire from upwind. Remove or isolate materials not involved in the fire if it can be done without risk. At high temperatures, fuming may occur, giving off a strong corrosive gas. Chemical resistant clothing and positive pressure SCBA may be required. Water may be used to keep fire-exposed containers cool to prevent rupture. Do not direct water at source of leak. Contact with some common metals (aluminum, zinc) produces hydrogen gas which may form explosive mixtures in air.

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### NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) HAZARD INDEX:

HEALTH: 3 - Corrosive or toxic. Avoid skin contact or inhalation

FLAMMABILITY: 0 - Not combustible

REACTIVITY: 1 - May react if heated or mixed with water but not violently

### SECTION 6 - ACCIDENTAL RELEASE MEASURES

**PERSONAL PROTECTION:** Evacuate unnecessary personnel from spill area. Wear appropriate personal protective equipment. Ventilate area. Remove chemicals which can react with the spilled material if it can be done without risk. Do not touch spilled caustic.

**ENVIRONMENTAL PRECAUTIONS:** Implement spill control plan. Stop or reduce leak if safe to do so. Prevent from entering sanitary or storm sewers, waterways, or confined spaces by diking with inert materials such as earth or sand.

**REMEDIATION MEASURES:** Restrict access to area until completion of cleanup. Ensure cleanup is conducted by trained personnel only. Use all appropriate personal protective equipment. Contain and absorb spill with inert materials. Neutralization with sodium bicarbonate is recommended. Alternate methods include dilution and neutralization with water and acetic or hydrochloric acid. Ventilate and flush cleaned area with water. Notify government occupational health and safety and environmental authorities as per applicable regulations. In the United States, releases over 1,000 pounds must be reported to the National Response Center at 1-800-424-8802.

### SECTION 7 - HANDLING AND STORAGE

**HANDLING:** Prevent release of highly corrosive and reactive liquid. Avoid generation of mists. Ensure adequate ventilation. Have emergency equipment readily available. When diluting, slowly add caustic to cold water to avoid boiling or spattering. Keep containers closed when not in use.

**STORAGE:** Store in a cool, dry, and well ventilated area. Store away from incompatible materials such as strong acids. Keep storage area separate from populated work areas. Drums may need to be vented periodically by trained personnel. If drums are swollen, contact manufacturer for advice on special procedures and equipment.

### SECTION 8 - EXPOSURE CONTROLS AND PERSONAL PROTECTION

#### **EXPOSURE LIMITS:**

ACGIH TLV-C: 2 mg/m<sup>3</sup>

OSHA PEL-TWA: 2 mg/m<sup>3</sup> (vacated 1989 OSHA PEL Ceiling limit 2mg/m<sup>3</sup> still enforced in some states)

**ENGINEERING CONTROLS:** Use general or local exhaust ventilation to maintain exposure below the exposure limits. These controls may need to be augmented by the use of process or personnel enclosures, control of process conditions, or by process modification.

**RESPIRATORY PROTECTION:** Not normally required for most uses. NIOSH recommendations for sodium hydroxide in air:

Up to 100 mg/m<sup>3</sup>: Supplied air respirator with a full facepiece, helmet or hood; or a full-facepiece respirator with high-efficiency particulate filter(s); or a powered air-purifying respirator with dust and mist filter(s); or a full face-piece SCBA or full face-piece SAR.

NIOSH IDLH Conditions (10 mg/m<sup>3</sup>) or Planned Entry in Unknown Concentrations: Positive pressure, full face-piece SCBA, or positive pressure full face-piece SAR with an auxiliary positive pressure SCBA.

Escape: Full face-piece respirator with high-efficiency particulate filter(s), or escape type SCBA.

NOTE: Air purifying respirators do not protect against oxygen deficient atmospheres.

In Brazil, use equipment with certificate of approval emitted by Ministry of Labour

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**SKIN PROTECTION:** Wear impervious gloves (natural rubber, neoprene, nitrile or PVC) and boots and/or other protective clothing according to circumstances. Avoid leather and wool. Some operations may require the use of an impervious full-body encapsulating suit.

**EYE AND FACE PROTECTION:** Eye protection is required. Chemical safety goggles are recommended. A full face shield may also be necessary. The wearing of contact lenses is not recommended.

**OTHER:** Have a safety shower and eye wash station readily available in the immediate work area.

### SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	White, non-volatile, clear to turbid solution.	MELTING POINT:	6 °C
ODOUR:	Odourless.	BOILING POINT:	119 °C
pH:	14, strongly alkaline	CRITICAL TEMPERATURE:	Not applicable.
VAPOUR PRESSURE:	2.0 kPa (1.5 mm Hg) at 20 °C	DENSITY:	1.35 @ 15 °C
SOLUBILITY:	Soluble in water in all proportions. Very soluble in alcohols.	PARTION COEFFICIENT: n-OCTANOL/WATER	Essentially zero.
VAPOUR DENSITY:	Not applicable.	EVAPORATION RATE:	Essentially zero.

### SECTION 10 - STABILITY AND REACTIVITY

**CHEMICAL STABILITY:** Normally stable. Sodium hydroxide rapidly absorbs carbon dioxide from the air forming sodium carbonate.

**INCOMPATIBILITY:** Reacts vigorously and violently with many organic and inorganic chemicals, such as strong acids, nitroaromatic, nitroparaffin and organohalogen compounds, glycols, and organic peroxides. Produces flammable and explosive hydrogen gas when reacted with sodium tetrahydroborate or metals such as aluminium, tin, or zinc. Can produce toxic carbon monoxide on contact with sugars. Corrosive to aluminium, tin, zinc, copper, brass, and bronze. Corrosive to steel above 40 degrees Celsius. Not corrosive to nickel. Slowly attacks glass at room temperature.

**HAZARDOUS DECOMPOSITION PRODUCTS:** Sodium oxide

**HAZARDOUS POLYMERIZATION:** Sodium hydroxide does not polymerize itself, but will violently polymerize acetaldehyde, acrolein, or acrylonitrile.

### SECTION 11 - TOXICOLOGICAL INFORMATION

#### **ACUTE EFFECTS:**

Application of a 1% solution is reported to cause necrosis of the cornea in a rabbit. Application of 0.5 mL of a 5% solution for 4 hours is reported to cause corrosive burns to rabbit skin.

**CARCINOGENICITY:** Not listed by ACGIH, IARC, NTP or OSHA

**SENSITIZATION:** Not a sensitizer

**TERATOGENICITY:** No information available

**REPRODUCTIVE EFFECTS:** No information available

**MUTAGENICITY:** No information available

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### SECTION 12 - ECOLOGICAL INFORMATION

#### ECOTOXICOLOGICAL INFORMATION:

Sodium hydroxide can be acutely toxic to aquatic life through increase of aqueous pH to toxic levels.

#### ECOLOGICAL FATE INFORMATION:

Does not accumulate in the body. Dissociates in water. Reacts to produce less alkaline sodium carbonate on exposure to air. May be neutralized by naturally occurring buffering agents if present.

### SECTION 13 - DISPOSAL CONSIDERATIONS

Following neutralization either at the spill site or at a waste management facility, the resultant sludge can be disposed of in a secure landfill. However, prior to implementing the disposal of waste residue, consult with environmental regulatory agencies for guidance on acceptable disposal practices.

### SECTION 14 - TRANSPORT INFORMATION

#### CANADIAN TRANSPORTATION OF DANGEROUS GOODS REGULATIONS:

Sodium hydroxide solution, Class 8, UN1824, PG II

#### US DOT HAZARDOUS MATERIALS REGULATIONS:

Sodium hydroxide solution, Class 8, UN1824, PG II and III

Reportable Quantity, RQ = 1,000 lbs.

#### BRAZILIAN TRANSPORTATION REQUIREMENTS:

Decreto Lei no 96.044 de 18.05.88: Regulamentação do Transporte Rodoviário de Produtos Perigosos.

|| Resolução 420 12.02.2004: Instrução Complementar aos Regulamentos do Transporte Terrestre de Produtos Perigosos.

NBR 7500: Símbolos de riscos e manuseio para o transporte e armazenagem de materiais.

NBR 7501: Terminologia: Transporte de produtos perigosos.

NBR 7503: Ficha de emergência para o transporte de produto perigoso - Características e dimensões e preenchimento

NBR 9735: Conjunto de equipamentos para emergência no transporte rodoviário de produtos perigosos

|| NBR 15481: Transporte rodoviário de produtos perigosos - Requisitos mínimos de segurança.

#### ADDITIONAL REGULATIONS

|| IATA: International Air Transport Association - Dangerous Goods Regulations,

### SECTION 15 – REGULATORY INFORMATION

**CANADIAN FEDERAL REGULATIONS:** (not a comprehensive list)

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA): Sodium hydroxide is on the Domestic Substances List (DSL).

WHMIS CLASSIFICATION: E - Corrosive material

WHMIS INGREDIENT DISCLOSURE LIST: Yes, 1%

**CPR COMPLIANCE**

This product has been classified with the hazard criteria of the CPR, and the MSDS contains all the information required by CPR.

**UNITED STATES FEDERAL REGULATIONS:** (not a comprehensive list)

TOXIC SUBSTANCES CONTROL ACT (TSCA) INVENTORY: Sodium hydroxide is listed on the inventory.

OSHA: Hazardous Substance under 29 CFR Section 1910, Subpart Z.

CERCLA: Hazardous Substance under 40 CFR Part 302, RQ = 1,000 lbs.

SARA 313: No ingredients subject to the reporting requirements of 40 CFR Part 372

SARA 311/312 EPA HAZARD CATEGORIES: Immediate (Acute) Health, Reactive Hazard

SARA 302: No ingredients subject to 40 CFR Part 355

**SECTION 16 – OTHER INFORMATION**

VERSION: 4.0

PREPARED BY: Canexus Chemicals Responsible Care Department. If you have any questions, contact Canexus at:  
1-800-699-6924

REVISIONS: Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.