CALEDON LABORATORY CHEMICALS

# MATERIAL SAFETY DATA SHEET

# FORMAMIDE

PRODUCT CODE NUMBER(S): 3810-5, 3811-5

## PRODUCT IDENTIFICATION

**Chemical Name and Synonyms:** *Formamide; Methanamide; Carbamaldehyde*
**Chemical Family:** *Aliphatic amide*
**Chemical Formula:** *$HCONH_2$*
**Product Use:** *Laboratory reagent*
**Manufacturer's Name and Address:**
*Caledon Laboratories Ltd.*
*40 Armstrong Avenue*
*Georgetown, Ontario L7G 4R9*
**Telephone No:** *(905) 877-0101*
**Fax No:** *(905) 877-6666*
**Emergency Telephone No:** *CANUTEC (613) 996-6666*

## HAZARDOUS INGREDIENTS OF MATERIALS

| *Ingredients* | *%* | *TLV Units* | *CAS No.* |
|---|---|---|---|
| *Formamide* | *>99* | *10 ppm (including skin exposure)* | *75-12-7* |

## PHYSICAL DATA

**Physical State:** *Liquid*
**Odour and Appearance:** *Colourless, oily liquid, aromatic odour*
**Odour Threshold (ppm):** *Not available*
**Vapour Pressure (mm Hg):** *0.1 mm Hg at 30°C*
**Vapour Density (Air = 1):** *1.56*
**Evaporation Rate:** *Not available*
**Boiling Point (degrees C):** *210.7°C (some decomposition above 180°C)*
**Freezing Point (degrees C):** *2.6°C*
**pH:** *7.1 (0.5M aqueous solution)*
**Specific Gravity:** *1.134*
**Coefficient of Water/Oil distribution:** *log P=3.12*

## SHIPPING DESCRIPTION

**UN:** *Not regulated*
**T.D.G. Class:** *Not regulated*
**Pkg. Group:** *Not regulated*

## REACTIVITY DATA

**Chemical Stability:** *Stable, hygroscopic.*
**Incompatibility with other substances:** *Strong oxidizers, acids, bases, moisture, copper, brass, bronze. Contact with strong oxidizers may cause fire or explosion. May explode if placed in a closed container with Karl Fischer Reagent, iodine, pyridine, or $SO_2$.*
**Reactivity:** *Protect from moisture. Keep away from heat, sparks and flame, all incompatible materials. Avoid generation of mist.*
**Hazardous Decomposition Products:** *$NO_x$, CO, $NH_3$, hydrogen cyanide*

## FIRE AND EXPLOSION DATA

**Flammability:** *Combustible. Must be strongly heated to burn; vapours will burn in air at temperatures above 150°C*
**Extinguishing Media:** *Dry chemical, carbon dioxide. Water spray or fog may be used to absorb heat, cool containers, disperse vapours, but will not be effective for extinguishing fire. In direct contqact with the chemical water or foam may cause frothing which can splatter dangerously. Fight fire from upwind, from a safe distance. Firefighters must wear protective equipment (positive-pressure, full face-piece self-contained breathing apparatus) and clothing (chemical splash suit) sufficient to prevent inhalation of mists or fumes, and contact with skin and eyes.*
**Flash Point (Method Used):** *154°C (CC)*
**Autoignition Temperature:** *Not available*
**Upper Explosion Limit (% by volume):** *Not available*
**Lower Explosion Limit (% by volume):** *Not available*
**Hazardous Combustion Products:** *$NO_x$, CO, $NH_3$, hydrogen cyanide*
**Sensitivity to Impact:** *None identified*
**Sensitivity to Static discharge:** *Liquid not likely to be ignited by static discharge, however, vapours in the flammable range heated to the flash point may be ignited by a static discharge of sufficient energy.*

## TOXICOLOGICAL PROPERTIES AND HEALTH DATA

***Toxicological Data:***

**$LD_{50}$:** *(oral, rat) 5,577 mg/kg; (dermal, rabbit) 17g/kg*
**$LD_{LO}$:** *(skin, rabbit) 6 mg/kg*
**$LC_{50}$:** *(rat) 3,900 ppm/6h*

***Effects of Acute Exposure to Product:***

**Inhaled:** *Moderately irritating to tissue of upper respiratory tract, causing coughing choking, shortness of breath. Readily absorbed causing harmful systemic effects. Acute symptoms include headache, nausea, vomiting, dizziness. Can cause teratogenic and reproductive effects.*
**In contact with skin:** *May cause mild to moderate irritation, redness, itching, pain. Readily absorbed causing systemic effects as in "Inhaled", although skin exposure needs to be high tp produce toxic effects.*
**In contact with eyes:** *No human information available. May cause mild to moderate irritation, redness, tearing, blurred vision, pain, based on animal evidence.*
**Ingested:** *No information available. Assumed to be harmful. May cause gastrointestinal irritation, nausea and vomiting, and systemic effects as in "Inhaled".*

***Effects of Chronic Exposure to Product:***

*Danger of cumulative effects. Prolonged or repeated inhalation, ingestion or skin contact may cause liver and/or kidney damage, reproductive and fetal effects.*
**Carcinogenicity:** *Studies inconclusive (NTP).*

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**Teratogenicity:** *Embryotoxic in animal testing (RTECS No. LQ0525000). No human information available.*

**Reproductive Effects:** *Reproductive effects cited in animal testing, dermal and by inhalation. No human information available.*

**Mutagenicity:** *Insufficient information available.*

**Synergistic Products:** *None known*

## PREVENTIVE MEASURES

**Engineering Controls:** *Local exhaust ventilation required*

**Respiratory Protection:** *Dust/mist mask. >10 ppm: NIOSH/MSHA approved chemical cartridge respirator with organic vapour cartridges or powered air-purifying respirator with organic vapour cartridges. Higher or unknown concentrations, as in fire or spill conditions: positive pressure, full facepiece self-contained breathing apparatus, or positive pressure, full face-piece air-supplied respirator with an auxiliary positive pressure self-contained breathing apparatus.*

**Eye Protection:** *Chemical safety goggles/ face shield.*

**Skin Protection:** *Butyl rubber, Chemrel™, Responder™ or Teflon™ gloves. Other protective clothing, apron, sleeves, coveralls, boots sufficient to prevent contact.*

**Other Personal Protective Equipment:** *An eyewash and safety shower should be nearby and ready for use.*

**Leak and Spill Procedure:** *Shut off all sources of ignition. Evacuate area. Ventilate area. 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 fumes, and contact with skin and eyes. Dike spills with inert absorbent. Do not touch spilled material. Prevent from entering sewers or waterways. Collect contaminated absorbent and transfer to steel drums for recovery or disposal. Contaminated absorbent may present the same hazards as the spilled product; treat with caution. Wash area of spill thoroughly with copious amounts of running water.*

**Waste Disposal:** *Follow all federal, provincial and local regulations for disposal.*

**Handling Procedures and Equipment:** *TERATOGENIC; REPRODUCTIVE HAZARD. Workers using this substance must be thoroughly trained in its hazards and its safe use, and must wear appropriate protective equipment and clothing. Follow routine safe handling procedures. Use the smallest amount possible for the purpose in an area with appropriate ventilation. Avoid all contact with skin, eyes, or clothing, and all inhalation. Avoid generating vapour or mist. Keep away from all sources of ignition. Pregnant women should not have any contact with this substance. Empty containers may retain hazardous residues; handle with caution.*

**Storage Requirements:** *Store under refrigeration (2-8°C), in suitable, labelled containers, in a dry, well-ventilated place away from all sources of ignition and incompatible materials. Keep air out of container. Keep containers tightly closed. Protect from damage. Inspect frequently for signs of damage or leaking.*

## FIRST AID MEASURES

***Specific Measures:***

**Eyes:** *IMMEDIATELY flush eyes with warm running water for at least fifteen (15) minutes, holding eyelids open during flushing. Take care not to flush contaminated water into unaffected eye. Wear protective gloves to avoid contact during first aid procedures. Get medical attention.*

**Skin:** *Remove contaminated clothing (including rings, watches, belts, and shoes). Flush exposed area with large amounts of warm running water and non-abrasive soap for ten to fifteen (10 to 15) minutes, or until no trace of chemical remains. Wear protective gloves to avoid contact. Get medical attention. Decontaminate clothing before reuse, or discard.*

**Inhalation:** *Remove to fresh air (caution must be used by rescuers to avoid exposure to contaminating fumes). Give oxygen for breathing difficulty. If breathing has STOPPED give artificial respiration. If breathing and pulse are ABSENT give CPR and immediately obtain medical attention. Stay with casualty until medical assistance is reached.*

**Ingestion:** *DO NOT INDUCE VOMITING. If the casualty is alert and not convulsing, give2 to 4 glasses of water to drink to dilute the material. Get medical attention. If spontaneous vomiting occurs, have casualty lean forward to avoid breathing in of emesis. Rinse mouth and administer more water.*

## REFERENCES USED


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

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

*Sax: Dangerous Properties of Industrial Materials, 5th ed., 1979*

*Suppliers' Material Safety Data Sheets*


## ADDITIONAL INFORMATION

**Date Issued:** *May 4, 1991*

**Revision:** *May 2010*

**MSDS:** *3810-5, 3811-5*

**Proposed WHMIS Designation:** *D2A*


*Prepared by: Caledon Laboratories Ltd. (905) 877-0101*