CALEDON LABORATORY CHEMICALS

# MATERIAL SAFETY DATA SHEET

# TRIETHANOLAMINE

PRODUCT CODE NUMBER(S): 9330-5

## PRODUCT IDENTIFICATION

**Chemical Name and Synonyms:** *Triethanolamine; 2-Hydroxyethylamine; Triethylalamine*
**Chemical Family:** *Aliphatic amino alcohol/alkanolamine*
**Chemical Formula:** *$N(CH_2CH_2OH)_3$*
**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.* |
|---|---|---|---|
| *Triethanolamine, 2-hydroxyethylamine* | *>98* | *5 mg/m$^3$* | *102-71-6* |

## PHYSICAL DATA

**Physical State:** *Liquid*
**Odour and Appearance:** *Viscous liquid, colourless or white, with slight ammonical odour*
**Odour Threshold (ppm):** *Not available*
**Vapour Pressure (mm Hg):** *< 0.01 mm Hg @ 20°C*
**Vapour Density (Air = 1):** *5.14*
**Evaporation Rate:** *Very low*
**Boiling Point (degrees C):** *190- 193°C (decomposes at 335°C)*
**Freezing Point (degrees C):** *21.6°C*
**pH:** *10.5 (0.1 N aqueous solution)*
**Specific Gravity:** *1.1242*
**Coefficient of Water/Oil distribution:** *logP (oct): -1.32 (calculated)*

## SHIPPING DESCRIPTION

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

## REACTIVITY DATA

**Chemical Stability:** *Stable at normal temperatures and pressures, but unstable at elevated temperatures and pressures. Very hygroscopic. Turns brown on exposure to air and light.*
**Incompatibility with other substances:** *May react violently or explosively with oxidizing agents or acids. Will attack copper and copper alloys, zinc, galvanized iron.*
**Reactivity:** *Avoid temperatures >179°C, ignition sources, exposure to moisture, air and light, incompatible materials, generation of mist.*
**Hazardous Decomposition Products:** *CO, $CO_2$, $NO_x$*

## FIRE AND EXPLOSION DATA

**Flammability:** *Probably combustible if strongly heated. Low fire hazard.*
**Extinguishing Media:** *Water spray, dry chemical, alcohol foam, $CO_2$. Water spray or alcohol foam will cause frothing which will blanket and smother the fire. Water spray or fog may also be used to cool containers, disperse vapours. Fight fire from upwind, from a safe distance. FIrefighters must wear NIOSH approved positive-pressure, full face-piece self-contained breathing apparatus,and chemcial splash suit (Bunker gear will not be adequate).*
**Flash Point (Method Used):** *179°C (CC)*
**Autoignition Temperature:** *Not available*
**Upper Flammable Limit (% by volume):** *Not available*
**Lower Flammable Limit (% by volume):** *Not available*
**Hazardous Combustion Products:** *$CO_2$, CO, $NO_x$*
**Sensitivity to Impact:** *None identified*
**Sensitivity to Static discharge:** *Probably not sensitive to static discharge - high flash point.*

## TOXICOLOGICAL PROPERTIES AND HEALTH DATA

***Toxicological Data:***

**$LD_{50}$:** *(oral, rat) 5 to 9 g/kg*
**$LC_{50}$:** *Not available*

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

**Inhaled:** *Mists are irritating to upper respiratory tract. May cause coughing. Low vapour pressure; vapour not expected to be a hazard, unless liquid is heated.*
**In contact with skin:** *Probably not irritating to skin, based on animal information. Can cause allergic skin reaction.*
**In contact with eyes:** *Probably not irritating or may cause mild, temporary irritation to eyes, based on animal information.*
**Ingested:** *Low oral toxicity, based on animal information. May cause abdominal pain, nausea and vomiting, diarrhea. Ingestion is not a typical route of industrial exposure.*

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

*Repeated or prolonged exposure may cause allergic skin reaction which may be enhanced by simultaneous exposure to materials such as synthetic detergents.*
**Carcinogenicity:** *No human information available; negative results in animal testing. Not expected to be carcinogenic.*
**Teratogenicity:** *No human information available. No developmental effects in studies with rats.*

**Reproductive Effects:** *No human nformation available. No effects in animal testing.*

**Mutagenicity:** *No human information available. No effects in tests with bacterial or mammalian cells.*

**Synergistic Products:** *Nitrites, nitrous acid, other nitrosating substances can combine with this chemical to form carcinogenic nitrosodiethanolamine. Not known whether or not this occurs within the body.*

## PREVENTIVE MEASURES

**Engineering Controls:** *Local exhaust ventilation required. Use a non-sparking grounded ventilation system separate from other exhaust ventilation systems. Exhaust directly to the outside.*

**Respiratory Protection:** *Dust/mist mask. Up to 10x TLV, or the maximum use specified by the respirator supplier, whichever is lowest, NIOSH approved half- face dust/mist filter respirator. Up to 50x TLV, or the maximum use specified by the respirator supplier, whichever is lowest, NIOSH approved full face-piece dust/mist filter respirator. Higher or unknown concentrations, or for fire or spill conditions, self-contained breathing apparatus, or full face-piece, positive-pressure supplied-air respirator.*

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

**Skin Protection:** *Butyl rubber or Viton gloves. Other protective clothing, sleeves, coveralls, boots, sufficient to prevent contact.*

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

**Leak and Spill Procedure:** *Evacuate area. Shut off all sources of ignition. Cleanup personnel must be trained in the hazards of this material and in its safe handling, and must wear protective equipment and clothing sufficient to prevent inhalation of mists or vapours and contact with skin and eyes. Keep from entering sewers or waterways. Absorb on sand or vermiculite and transfer carefully into container and arrange removal by disposal company. Wash site of spillage thoroughly with water and detergent. Contaminated absorbent may pose the same hazards as the chemical; treat with caution.*

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

**Handling Procedures and Equipment:** *SKIN SENSITIZER. Workers must be thoroughly trained in the hazards fo this material and its safe use, and must wear appropriate protective clothing and equipment. Avoid sparks, flames and other ignition sources. Use the smallest amount possible for the purpose in a designated area with adequate ventilation. Keep work area free of extraneous mateirals. Do not generate mist. Prevent all eye and skin contact. Avoid inhalation of mist or vapours. Empty containers may contain hazardous residues; treat with extremem caution.*

**Storage Requirements:** *Store in suitable, labelled containers, in a cool, dry, well-ventilated area, out of direct sunlight and away from incompatible materials and sources of ignition. Keep containers tightly closed when not in use and when empty. Protect from damage and inspect frequently for signs of damage or leaking.*

## FIRST AID MEASURES

***Specific Measures:***

**Eyes:** *Flush eyes thoroughly with gently running water, holding eyelids open while flushing, for five to ten (5-10) minutes, or until no trace of chemical remains. Take care not to flush contaminated watyer into unaffected eye. Get medical attention.*

**Skin:** *Remove contaminated clothing (including shoes, belts, watches and rings). Immediately flush the exposed area with large amounts of running water for five to ten (5-10) minutes or until no evidence of chemical remains . Obtain medical attention, if irritation persists, or if exposrue was extensive. Decontaminate clothing before reuse, or discard.*

**Inhalation:** *Move victim to fresh air. Give oxygen and get medical attention for breathing difficuty.*

**Ingestion:** *If victim is alert and not convulsing, give 1 to 2 glasses of water to drink to dilute material. DO NOT induce vomiting. If spontaneous vomiting occurs, have victim lean forward with head down to avoid breathing in of vomitus, rinse mouth and administer more water. Obtain medical attention.*

## REFERENCES USED

*CCINFO disc: Cheminfo*

*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:** *July 15, 1991*

**Revision:** *December 2010*

**MSDS:** *9330-5*

**Proposed WHMIS Designation:** *D2B (skin sensitization)*

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