

MATERIAL SAFETY DATA SHEET**ANILINE**

PRODUCT CODE NUMBER(S): 1710-5

PRODUCT IDENTIFICATION**Chemical Name and Synonyms:** *Aniline; Aniline oil; Aminobenzene; Benzenamine; Phenylamine***Chemical Family:** *Aromatic primary amine***Chemical Formula:** $C_6H_5NH_2$ **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.
<i>Aniline</i>	<i>~99</i>	<i>2 ppm (includes skin exp.)</i>	<i>62-53-3</i>

PHYSICAL DATA**Physical State:** *Liquid***Odour and Appearance:** *Colourless, oily liquid with a characteristic musty, fishy odour***Odour Threshold (ppm):** *0.58 to 10 ppm. Warning properties not reliable, odour threshold about the same as TLV.***Vapour Pressure (mm Hg):** *0.3 mm Hg @ 20°C***Vapour Density (Air = 1):** *3.22 @ 164°C***Evaporation Rate:** *<1 (butyl acetate = 1)***Boiling Point (degrees C):** *184°C***Freezing Point (degrees C):** *-6.5°C***pH:** *8.1 (0.2M, aqueous)***Specific Gravity:** *1.022 @ 20°C***Coefficient of Water/Oil distribution:** *LogP(oct)=0.9***SHIPPING DESCRIPTION****UN:** *1547***T.D.G. Class:** *6.1***Pkg. Group:** *II***REACTIVITY DATA****Chemical Stability:** *Moderately stable. Rapidly oxidizes and darkens on exposure to air and light.***Incompatibility with other substances:** *Reacts violently with risk of fire or explosion with oxidizers, e.g. nitric acid, perchloric acid, performic acid, perchromates. Reacts vigorously or violently with acids, trichloronitromethane, hexachloromelamine, trichloromelamine, boron trichloride; in confined conditions, mixtures will explode or catch fire. May ignite with nitromethane; may ignite spontaneously with tetranitromethane. Reaction with alkali and alkaline earth metals produces flammable hydrogen gas. Forms shock-sensitive salts with silver perchlorate. Slightly corro-**sive to some metals; attacks copper, brass, other copper alloys.***Reactivity:** *Avoid excessive heat, sparks, flames, all ignition sources, all incompatible materials, exposure to light, generation of dust.***Hazardous Decomposition Products:** *NO_x, CO_x, quinones, quinoneimines, unknown polymers.***FIRE AND EXPLOSION DATA****Flammability:** *Combustible liquid and vapour. Can form explosive mixtures with air at or above 70°C. Reacts with alkali or alkaline earth metals to form flammable/explosive hydrogen gas. Closed containers may explode in heat of fire.***Extinguishing Media:** *Alcohol or polymer foam, dry chemical, CO₂, water spray or fog. Water spray or fog may be useful to cool containers, disperse vapours, flush material away from fire. Fight fire from a safe distance, from upwind. Firefighters must wear protective equipment and clothing (encapsulating chemical resistant suit) sufficient to prevent inhalation of fumes or vapours and contact with skin and eyes. Bunker gear will not be adequate. Closed containers may rupture violently during fire; withdraw immediately in case of rising sound from vent or discoloration of container.***Flash Point (Method Used):** *70°C (CC)***Autoignition Temperature:** *615°C***Upper Flammable Limit (% by volume):** *11.0***Lower Flammable Limit (% by volume):** *1.3***Hazardous Combustion Products:** *NO_x, CO_x, flammable hydrogen gas, quinones, quinoneimines, unknown polymers.***Sensitivity to Impact:** *None identified***Sensitivity to Static discharge:** *Will not accumulate static charge by flow or agitation. Mixtures with air probably will not be ignited by static discharge (high flash point).***TOXICOLOGICAL PROPERTIES AND HEALTH DATA****Toxicological Data:****LD₅₀:** *(oral, rat) 250 mg/kg; (dermal, rat) 1,440 mg/kg***LC₅₀:** *(rat) 250 ppm/4h; (mouse) 175 ppm/7h***Effects of Acute Exposure to Product:****Very toxic. May be fatal if inhaled, ingested or absorbed through skin.****Inhaled:** *Very toxic. Readily absorbed causing methemoglobinemia, with cyanosis, nausea and vomiting. May progress to cause blood and central nervous system effects, anemia, reticulocytosis, hematuria, weakness, depression, headache, respiratory distress, irregular heart rate, eventual coma and death. Symptoms may be delayed for two to four (2-4) hours or longer. Exposure to 7-53 ppm for several hours caused slight methemoglobinemia; exposure to 100-160 ppm for 1 hour caused more serious effects, shortness of breath, headache, dizziness. Effects are reversible when exposure stops. However, severe overexposure can be fatal.***In contact with skin:** *Very toxic. Moderately irritating in animal testing. Readily absorbed through skin, producing*

CODE: 1710-5

systemic effects as in "Inhaled". May cause skin sensitization.

In contact with eyes: Causes severe eye irritation. Causes tearing, blurred vision, and photophobia. May cause chemical conjunctivitis and permanent corneal damage.

Ingested: Very toxic. Expected to produce the same effects as for inhalation.

Effects of Chronic Exposure to Product:

May cause liver and kidney damage. May cause skin sensitization. Causes hemolysis of red blood cells and methemoglobinemia with symptoms as in "Inhaled".

Carcinogenicity: A3; animal carcinogen (ACGIH). Not classifiable as carcinogenic in humans (IARC).

Teratogenicity: No human information available. Not found to be teratogenic in animals.

Reproductive Effects: No human or animal information available.

Mutagenicity: Increased chromosome aberrations in human fibroblasts and lymphocytes in vitro. Mutagenic in test with live animals.

Synergistic Products: None known

PREVENTIVE MEASURES

Engineering Controls: Non-sparking, grounded ventilation separate from other exhaust ventilation systems.

Respiratory Protection: At any detectable concentration: positive-pressure, full face-piece self-contained breathing apparatus or positive-pressure, full face-piece supplied-air respirator with an auxiliary positive-pressure self-contained breathing apparatus.

Eye Protection: Chemical safety goggles and/or face shield.

Skin Protection: Butyl rubber, polyvinyl alcohol, Viton™/butyl rubber, Barrier (PE/PA/PE), Silver Shield/4H™ (polyethylene/ethylene vinyl alcohol), Trechem HPS™, Responder™, Tychem™BR/LV, Tychem™ TKgloves. Other impervious protective clothing, apron, 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. Eliminate all sources of ignition. Ventilate area. Clean-up personnel must be thoroughly trained in the handling of hazardous material and must wear protective equipment and clothing sufficient to prevent any inhalation of mist or vapour and any contact with skin and eyes. DO NOT TOUCH SPILLED MATERIAL. Prevent from entering sewers or waterways. Dike with inert substance to prevent spread of material. Absorb spills with vermiculite, dry sand, or earth and collect in labelled, closed containers for disposal in an approved facility. Contaminated absorbent may pose the same hazards as the spilled product - treat with caution. Flush area of spill with large amounts of running water.

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

Handling Procedures and Equipment: VERY TOXIC, COMBUSTIBLE, POSSIBLE MUTAGEN. Personnel working with this material must be thoroughly trained in its hazards, and must be trained in the handling of hazardous materials in general, and must wear appropriate protective clothing and equipment. Do not work alone with this material. Avoid all contact with this material. Avoid inhalation of mists or vapours. Avoid all sources of heat and ignition. Post "No Smoking" signs. Use non-sparking tools. Keep away from all incompatible materials (some reactions produce flammable/explosive gases). Keep work area free of incompatible substances and extraneous materials, particularly those which can burn. Do not return contaminated material to the original containers. Use the smallest amount possible for the purpose, in a designated area with appropriate ventilation. Keep

containers tightly closed. Treat empty containers with caution - they will contain hazardous residues.

Storage Requirements: Store in suitable, labelled containers, in a cool, dry, well-ventilated place, out of direct sunlight, and away from ignition sources and incompatible, organic or combustible materials. Keep container tightly closed when not in use and when empty. Protect from damage, and inspect frequently for signs of leaking. Storage facilities should be made of fire-resistant materials, and should have raised sills and trenches to drain to a safe area.

FIRST AID MEASURES

Specific Measures:

Eyes: Immediately flush eyes with running water for at least twenty (20) 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. Obtain medical attention IMMEDIATELY.

Skin: Remove contaminated clothing (including rings, watches, belts, and shoes). Wear protective gloves to avoid contact during first aid procedures. Flush affected areas with soap and copious amounts of running water for at least twenty (20) minutes. Obtain medical advice immediately. If symptoms of methemoglobinemia are present (bluish lips and skin), administer oxygen. Decontaminate clothing before reuse, or discard.

Inhalation: Immediately move victim to fresh air (caution must be used by rescuers to avoid exposure to contaminating fumes). Give oxygen and get medical attention immediately for any breathing difficulty, or for any indication of cyanosis (blueness in skin). If breathing has stopped, begin artificial respiration immediately. Effects of methemoglobinemia may be delayed for two to four (2-4) hours or longer; continue to monitor for at least that long. If symptoms develop, get medical attention immediately.

Ingestion: If victim is alert and not convulsing, give 2 to 4 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. If signs of methemoglobinemia are present (bluish lips and skin), give oxygen. Obtain medical attention IMMEDIATELY.

REFERENCES USED

- CCINFO disc: Cheminfo
- Budavari: The Merck Index, 12th ed., 1997
- Royal Society of Chemistry: Chemical Safety Data Sheets, Vol 4, 1991
- Sax, Lewis: Hawley's Condensed Chemical Dictionary, 11th ed., 1987
- Suppliers' Material Safety Data Sheets

ADDITIONAL INFORMATION

Date Issued: May 6, 1991

Revision : June 2009

MSDS: 1710-5

Proposed WHMIS Designation: B3; D1B; D2A; D2B

Prepared by: Caledon Laboratories Ltd. (905) 877-0101
Caledon Laboratories Ltd. believes the information contained herein is reliable and accurate. Caledon makes no warranty with respect thereto and expressly disclaims all liability for reliance thereon. Such information is solely for your consideration, investigation, and verification.