

Material Safety Data Sheet

HAZARD WARNINGS	RISK PHRASES	PROTECTIVE CLOTHING
	<p>Flammable material; avoid heat and sources of ignition. Corrosive to eyes and skin on contact. Harmful compound, minimize exposure. CARCINOGEN. MINIMIZE EXPOSURE. Possible reproductive effector. Environmental hazard. This material is very toxic to aquatic organisms and may cause long term adverse effects to the aquatic environment. May develop pressure. Air sensitive material. Store under argon. Refrigerate.</p>	

Section I. Chemical Product and Company Identification

Chemical Name	Ammonia (ca. 4% in Isopropyl Alcohol, ca. 2.0mol/L)		
Catalog Number	A2237	Supplier	TCI America 9211 N. Harborsgate St. Portland OR 1-800-423-8616
Synonym	Not available.		
Chemical Formula	NH ₃		
CAS Number	7664-41-7 67-63-0 (Isopropyl alcohol)	In case of Emergency Call	Chemtrec® (800) 424-9300 (U.S.) (703) 527-3887 (International)

Section II. Composition and Information on Ingredients

Chemical Name	CAS Number	Percent (%)	TLV/PEL	Toxicology Data
Ammonia (ca. 4% in Isopropyl Alcohol, ca. 2.0mol/L)	7664-41-7 67-63-0 (Isopropyl alcohol)	ca. 4.0 ca. 96.0	This chemical is classified as a carcinogen. There is no acceptable exposure limit for a carcinogen.	Rat LD ₅₀ (inhalation) 2000 ppm/4H Rat LD ₅₀ (inhalation) 9500 ppm/1H Mouse LD ₅₀ (inhalation) 4230 ppm/1H (Isopropyl alcohol:) Rat LD ₅₀ (oral) 5000 mg/kg Rabbit LD ₅₀ (dermal) 12800 mg/kg Rat LD ₅₀ (inhalation) 16000 ppm/8H

Section III. Hazards Identification

Acute Health Effects	Corrosive to skin, eyes, and respiratory system. Liquid or spray mist may produce tissue damage, particularly in mucous membranes of the eyes, mouth and respiratory tract. Skin contact may produce burns. Eye contact can result in corneal damage or blindness. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Corrosive materials may cause serious injury if ingested. Harmful if ingested or inhaled. Minimize exposure to this material. Severe overexposure can result in injury or death. Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.
Chronic Health Effects	<p>CARCINOGENIC EFFECTS : Carcinogenic by RTECS criteria. MUTAGENIC EFFECTS : Not available. TERATOGENIC EFFECTS : Tumorigenic effects. Rat TDLo Oral 1680 mg/kg for 24 weeks continuous Toxic Effects: Tumorigenic - Carcinogenic by RTECS criteria Gastrointestinal - Tumors DEVELOPMENTAL TOXICITY: Reproductive effects. (Isopropyl alcohol) Rat TCLo Inhalation 10000 ppm/7H, female 1-19 days of pregnancy TOXIC EFFECTS: Effects on Fertility – Pre-implantation mortality Effects on Fertility – Post-implantation mortality Effects on Embryo or Fetus – Fetal death Rat TDLo Oral 11340 mg/kg, female 45 days prior to mating TOXIC EFFECTS: Maternal Effects – Menstrual cycle changes or disorders Rat TDLo Oral 3276 mg/kg, female 182 days prior to mating TOXIC EFFECTS: Specific Developmental Abnormalities – Other developmental abnormalities Effects on Newborn – Viability index Effects on Newborn – Growth statistics</p>

(ca. 4% in Isopropyl Alcohol, ca. 2.0mol/L)

Section IV. First Aid Measures

Eye Contact	Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.
Skin Contact	In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.
Inhalation	If the victim is not breathing, perform mouth-to-mouth resuscitation. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, oxygen can be administered. Seek medical attention if respiration problems do not improve.
Ingestion	DO NOT INDUCE VOMITING. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Examine the lips and mouth to ascertain whether the tissues are damaged, a possible indication that the toxic material was ingested; the absence of such signs, however, is not conclusive.

Section V. Fire and Explosion Data

Flammability	Flammable.	Auto-Ignition	651 °C (1203.8 °F) 456 °C (852.8 °F) (Isopropyl alcohol)
Flash Points	132 °C (269.6 °F) 12 °C (53.6 °F) (Isopropyl alcohol)	Flammable Limits	LOWER: 15% UPPER: 25% LOWER: 2% UPPER: 12% (Isopropyl alcohol)
Combustion Products	These products are toxic carbon oxides (CO, CO ₂), nitrogen oxides (NO, NO ₂).		
Fire Hazards	Not available.		
Explosion Hazards	Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.		
Fire Fighting Media and Instructions	Flammable liquid. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water spray or fog. Cool containing vessels with water jet in order to prevent pressure build-up, autoignition or explosion. Consult with local fire authorities before attempting large scale fire-fighting operations.		

Section VI. Accidental Release Measures

Spill Cleanup Instructions	Flammable material. Corrosive material. Harmful material. Carcinogenic material. This material is a possible reproductive effector. Environmentally hazardous material. Air sensitive material. Keep away from heat. Mechanical exhaust required. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. DO NOT get water inside container. DO NOT touch spilled material. Use water spray curtain to divert vapor drift. Prevent entry into sewers, basements or confined areas; dike if needed. Consult federal, state, and/or local authorities for assistance on disposal.
----------------------------	--

Section VII. Handling and Storage

Handling and Storage Information	FLAMMABLE. CORROSIVE. HARMFUL. CARCINOGEN. POSSIBLE REPRODUCTIVE EFFECTOR. ENVIRONMENTAL HAZARD. MAY DEVELOP PRESSURE. AIR SENSITIVE. STORE UNDER ARGON. REFRIGERATE. Keep container dry. Keep away from heat. Mechanical exhaust required. Avoid excessive heat and light. Do not breathe gas/fumes/vapor/spray. Never add water to this product. Wear suitable protective clothing. If you feel unwell, seek medical attention and show the label when possible. Treat symptomatically and supportively. Always store away from incompatible compounds such as oxidizing agents, metals, acids.
----------------------------------	--

Section VIII. Exposure Controls/Personal Protection

Engineering Controls	Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash station and safety shower is proximal to the work-station location.
Personal Protection	Face shield. Lab coat. Vapor respirator. Boots. Gloves. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product. Be sure to use a MSHA/NIOSH approved respirator or equivalent.
	
Exposure Limits	This chemical is classified as a carcinogen. There is no acceptable exposure limit for a carcinogen.

Section IX. Physical and Chemical Properties

Physical state @ 20 °C	Liquid. (Clear, colorless.)	Solubility	Not available.
Specific Gravity	0.78 (water=1)		
Molecular Weight	NH ₃ = 17.03 C ₃ H ₈ O = 60.10 (Isopropyl alcohol)	Partition Coefficient	LOG P _{ow} : 0.05 (Isopropyl alcohol)
Boiling Point	-33 °C (-27.4 °F) 82 °C (179.6 °F) (Isopropyl alcohol)	Vapor Pressure	886.4 kPa (@ 21 °C) 4.4 kPa (@ 20 °C) (Isopropyl alcohol)
Melting Point	-78 °C (-108.4 °F) -90 °C (-130 °F) (Isopropyl alcohol)	Vapor Density	0.59 (Air = 1) 2.1 (Air = 1) (Isopropyl alcohol)
Refractive Index	1.38 (Isopropyl alcohol)	Volatility	Not available.
Critical Temperature	Not available.	Odor	Not available.
Viscosity	Not available.	Taste	Not available.

Continued on Next Page

Emergency phone number (800) 424-9300

(ca. 4% in Isopropyl Alcohol, ca. 2.0mol/L)

Section X. Stability and Reactivity Data

Stability	This material is stable if stored under proper conditions. (See Section VII for instructions)
Conditions of Instability	Avoid excessive heat and light. Air sensitive.
Incompatibilities	Reactive with oxidizing agents, metals, acids, alcohols, aldehydes, halogens.

Section XI. Toxicological Information

RTECS Number	BO0875000 NT8050000 (Isopropyl alcohol)
Routes of Exposure	Eye Contact. Ingestion. Inhalation. Skin contact.
Toxicity Data	Rat LD ₅₀ (inhalation) 2000 ppm/4H Rat LD ₅₀ (inhalation) 9500 ppm/1H Mouse LD ₅₀ (inhalation) 4230 ppm/1H (Isopropyl alcohol): Rat LD ₅₀ (oral) 5000 mg/kg Rabbit LD ₅₀ (dermal) 12800 mg/kg Rat LD ₅₀ (inhalation) 16000 ppm/8H
Chronic Toxic Effects	CARCINOGENIC EFFECTS : Carcinogenic by RTECS criteria. MUTAGENIC EFFECTS : Not available. TERATOGENIC EFFECTS : Tumorigenic effects. Rat TDLo Oral 1680 mg/kg for 24 weeks continuous Toxic Effects: Tumorigenic - Carcinogenic by RTECS criteria Gastrointestinal - Tumors DEVELOPMENTAL TOXICITY : Reproductive effects. (Isopropyl alcohol) Rat TCLo Inhalation 10000 ppm/7H, female 1-19 days of pregnancy TOXIC EFFECTS: Effects on Fertility – Pre-implantation mortality Effects on Fertility – Post-implantation mortality Effects on Embryo or Fetus – Fetal death Rat TDLo Oral 11340 mg/kg, female 45 days prior to mating TOXIC EFFECTS: Maternal Effects – Menstrual cycle changes or disorders Rat TDLo Oral 3276 mg/kg, female 182 days prior to mating TOXIC EFFECTS: Specific Developmental Abnormalities – Other developmental abnormalities Effects on Newborn – Viability index Effects on Newborn – Growth statistics
Acute Toxic Effects	Corrosive to skin, eyes, and respiratory system. Liquid or spray mist may produce tissue damage, particularly in mucous membranes of the eyes, mouth and respiratory tract. Skin contact may produce burns. Eye contact can result in corneal damage or blindness. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Corrosive materials may cause serious injury if ingested. Harmful if ingested or inhaled. Minimize exposure to this material. Severe overexposure can result in injury or death. Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.

Section XII. Ecological Information

Ecotoxicity	Not available.
Environmental Fate	(Isopropyl alcohol) Isopropanol's production and use in the production of chemicals, as a solvent, and in medicinal applications may result in its release to the environment through various waste streams. Isopropanol has been identified as a metabolic product of aerobic microorganisms, anaerobic microorganisms, fungi, and yeast. If released to air, a vapor pressure of 45.4 mm Hg at 25 deg C indicates isopropanol will exist solely as a vapor in the ambient atmosphere. Vapor-phase isopropanol will be degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals; the half-life for this reaction in air is estimated to be 3.2 days. If released to soil, isopropanol is expected to have very high mobility based upon an estimated Koc of 25. Volatilization from moist soil surfaces is expected to be an important fate process based upon a Henry's Law constant of 8.10X10 ⁻⁶ atm-cu m/mole. Isopropanol may volatilize from dry soil surfaces based upon its vapor pressure. If released into water, isopropanol is not expected to adsorb to suspended solids and sediment based upon the estimated Koc. Isopropanol is readily degraded in aerobic aqueous systems.

Section XIII. Disposal Considerations

Waste Disposal	Recycle to process, if possible. Consult your local regional authorities. You may be able to dissolve or mix material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber system. Observe all federal, state and local regulations when disposing of the substance.
----------------	---

Section XIV. Transport Information

DOT Classification	DOT CLASS 3: Flammable liquid
PIN Number	UN1219
Proper Shipping Name	Isopropyl alcohol solution
Packing Group (PG)	II

Continued on Next Page

Emergency phone number (800) 424-9300

(ca. 4% in Isopropyl Alcohol, ca. 2.0mol/L)

DOT Pictograms



Section XV. Other Regulatory Information and Pictograms

TSCA Chemical Inventory (EPA)	This compound is ON the EPA Toxic Substances Control Act (TSCA) inventory list.
WHMIS Classification (Canada)	CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F). CLASS D-2B: Material causing other toxic effects (TOXIC). CLASS E: Corrosive liquid. On DSL.
EINECS Number (EEC)	231-635-3 200-661-7 (Isopropyl alcohol)
EEC Risk Statements	R11- Highly flammable. R18- In use, may form flammable/explosive vapor-air mixture. R20/21/22- Harmful by inhalation, in contact with skin and if swallowed. R34- Causes burns. R45- May cause cancer. R50- Very toxic to aquatic organisms. R53- May cause long-term adverse effects in the aquatic environment.
Japanese Regulatory Data	ENCS No. 1-314; 1-391 ENCS No. 2-207 (Isopropyl alcohol)

Section XVI. Other Information

Version 1.0
Validated on 3/3/2011.
Printed 3/3/2011.

Notice to Reader

TCI laboratory chemicals are for research purposes only and are NOT intended for use as drugs, food additives, households, or pesticides. The information herein is believed to be correct, but does not claim to be all inclusive and should be used only as a guide. Neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All chemical reagents must be handled with the recognition that their chemical, physiological, toxicological, and hazardous properties have not been fully investigated or determined. All chemical reagents should be handled only by individuals who are familiar with their potential hazards and who have been fully trained in proper safety, laboratory, and chemical handling procedures. Although certain hazards are described herein, we can not guarantee that these are the only hazards which exist. Our MSDS sheets are based only on data available at the time of shipping and are subject to change without notice as new information is obtained. Avoid long storage periods since the product is subject to degradation with age and may become more dangerous or hazardous. It is the responsibility of the user to request updated MSDS sheets for products that are stored for extended periods. Disposal of unused product must be undertaken by qualified personnel who are knowledgeable in all applicable regulations and follow all pertinent safety precautions including the use of appropriate protective equipment (e.g. protective goggles, protective clothing, breathing equipment, facial mask, fume hood). For proper handling and disposal, always comply with federal, state, and local regulations.