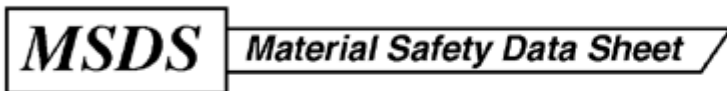


REAGENT ALCOHOL

MSDS Number: **A2028** * * * * * Effective Date: **05/07/03** * * * * * Supersedes: **01/14/02**



From: Mallinckrodt Baker, Inc.
222 Red School Lane
Phillipsburg, NJ 08865



24 Hour Emergency Telephone: 908-859-2151
CHEMTREC: 1-800-424-9300

National Response in Canada
CANUTEC: 613-996-6666

Outside U.S. and Canada
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

REAGENT ALCOHOL

1. Product Identification

Synonyms: Doubly denatured ethanol; modified 3A alcohol; alcohol, anhydrous

CAS No.: Not applicable to mixtures.

Molecular Weight: Not applicable to mixtures.

Chemical Formula: Mixture [CH₃CH₂OH, CH₃OH, CH₃CHOHCH₃]

Product Codes:

J.T. Baker: 2986, 9229, 9400, 9401, 9404, A478

Mallinckrodt: 5911, 6183, 7006, 7019

2. Composition/Information on Ingredients

| Ingredient | CAS No | Percent | Hazardous |
|-------------------|---------|----------|-----------|
| Ethyl Alcohol | 64-17-5 | 90 - 95% | Yes |
| Methyl Alcohol | 67-56-1 | 1 - 5% | Yes |
| Isopropyl Alcohol | 67-63-0 | 1 - 5% | Yes |

3. Hazards Identification

Emergency Overview

POISON! DANGER! MAY BE FATAL IF SWALLOWED. HARMFUL IF INHALED OR ABSORBED THROUGH SKIN. VAPOR HARMFUL. FLAMMABLE! AFFECTS CENTRAL NERVOUS SYSTEM. MAY CAUSE BLINDNESS. CANNOT BE MADE NONPOISONOUS. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. MAY AFFECT LIVER, BLOOD, REPRODUCTIVE SYSTEM.

SAF-T-DATA^(tm) Ratings (Provided here for your convenience)

Health Rating: 3 - Severe (Poison)

Flammability Rating: 3 - Severe (Flammable)

Reactivity Rating: 1 - Slight

Contact Rating: 3 - Severe (Life)

Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES; CLASS B EXTINGUISHER

ADVANCED THERMOELECTRIC • PO Box 7091 • Nashua, NH 03060

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Toll free: 1 (866) 665-5434 • (603) 888-2467 • fax: (603) 724-6740 • e-mail: sales@americool.com

Storage Color Code: Red (Flammable)

Potential Health Effects

Inhalation:

Exposure may cause irritation to the mucous membranes of the upper respiratory tract. Prolonged exposures to high concentrations may cause drowsiness, loss of appetite and inability to concentrate.

Ingestion:

Cause headaches, gastritis, intoxication, blindness and, in acute cases, death.

Skin Contact:

Causes skin irritation, cracking or flaking due to dehydration and defatting action.

Eye Contact:

Can cause eye irritation. Splashes may cause temporary pain and blurred vision.

Chronic Exposure:

Prolonged skin contact causes drying and cracking of skin. May affect the nervous system. May affect liver, blood, reproductive system. Continued ingestion of small amounts could result in blindness.

Aggravation of Pre-existing Conditions:

Persons with pre-existing skin disorders or eye problems or impaired liver or kidney function may be more susceptible to the effects of the substance.

4. First Aid Measures

Inhalation:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

Ingestion:

Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person.

Skin Contact:

Remove any contaminated clothing. Wash skin with soap or mild detergent and water for at least 15 minutes. Get medical attention if irritation develops or persists.

Eye Contact:

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

5. Fire Fighting Measures

Fire:

Flash point: 13C (55F) CC

Autoignition temperature: 422C (792F)

Flammable limits in air % by volume:

l_{el}: 3.3; u_{el}: 19

Flammable liquid and vapor!

Dangerous fire hazard when exposed to heat or flame.

Explosion:

Above flash point, vapor-air mixtures are explosive within flammable limits noted above. Vapors can flow along surfaces to distant ignition source and flash back. Sealed containers may rupture when heated.

Sensitive to static discharge.

Fire Extinguishing Media:

Water spray, dry chemical, alcohol foam, or carbon dioxide. Water may be ineffective.

Special Information:

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. Water spray can be used to extinguish fires and cool fire-exposed containers. Water may be used to flush spills away from exposures and to dilute spills to non-flammable mixtures.

6. Accidental Release Measures

Ventilate area of leak or spill. Remove all sources of ignition. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Use non-sparking tools and equipment. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer! US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

J. T. Baker SOLUSORB® solvent adsorbent is recommended for spills of this product.

7. Handling and Storage

Protect against physical damage. Store in a cool, dry well-ventilated location, away from any area where the fire hazard may be acute. Outside or detached storage is preferred. Separate from incompatibles. Containers should be bonded and grounded for transfers to avoid static sparks. Storage and use areas should be No Smoking areas. Use non-sparking type tools and equipment, including explosion proof ventilation. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:

- OSHA Permissible Exposure Limit (PEL):

1000 ppm (TWA) for ethyl alcohol

400 ppm (TWA) for isopropyl alcohol

200 ppm (TWA) for methyl alcohol

- ACGIH Threshold Limit Value (TLV):

1000 ppm (TWA), A4 - not classifiable as a human carcinogen for ethyl alcohol

200 ppm (TWA), 400 ppm (STEL), A4 - not classifiable as a human carcinogen for isopropyl alcohol

200 ppm (TWA), 250 ppm (STEL) skin, for methyl alcohol

Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Personal Respirators (NIOSH Approved):

If the exposure limit is exceeded, wear a supplied air, full-facepiece respirator, airlined hood, or full-facepiece self-contained breathing apparatus.

Skin Protection:

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye Protection:

Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance:

Clear, colorless liquid.

Odor:

Mild pleasant whiskey-like odor.

Solubility:

Miscible in water.

Density:

0.79 @ 20C/4C

pH:

No information found.

% Volatiles by volume @ 21C (70F):

100

Boiling Point:

78C (172F) (ethanol)

Melting Point:

-114C (-173F) (ethanol)

Vapor Density (Air=1):

1.6 (ethanol)

Vapor Pressure (mm Hg):

40 @ 19C (66F) (ethanol)

Evaporation Rate (BuAc=1):

ca. 1.4 (CCl4=1) (ethanol)

10. Stability and Reactivity

Stability:

Stable under ordinary conditions of use and storage.

Hazardous Decomposition Products:

Carbon dioxide and carbon monoxide may form when heated to decomposition.

Hazardous Polymerization:

Will not occur.

Incompatibilities:

Strong oxidants, silver salts, acid chlorides, alkali metals, metal hydrides, hydrazine, and many other substances.

Conditions to Avoid:

Heat, flames, ignition sources and incompatibles.

11. Toxicological Information

Toxicological Data:

Ethyl alcohol: oral rat LD50: 7060 mg/kg; inhalation rat LC50: 20,000 ppm/10H; Irritation data, eye, rabbit: 500 mg/24H moderate; Investigated as a tumorigen, mutagen, reproductive effector. Methyl alcohol: oral rat LD50: 5628 mg/kg; inhalation rat LC50: 64000 ppm/4H; skin rabbit LD50: 15800 mg/kg; Irritation data,skin,rabbit: 20 mg/24H, Moderate; Investigated as a tumorigen, mutagen, reproductive effector. Isopropyl alcohol: oral rat LD50: 5045 mg/kg; skin rabbit LD50: 12.8 gm/kg; inhalation, rat: 16,000 ppm 8 hr. Investigated as a mutagen, tumorigen, reproductive effector.

Reproductive Toxicity:

Ethanol has been linked to birth defects in humans.

Carcinogenicity:

Ethanol has been linked to cancer in humans. Chronic ethanol ingestion is associated with liver cancer. Most industrial ethanol contains denaturants that render it undesirable to drink.

-----\Cancer Lists\-----

---NTP Carcinogen---

| Ingredient | Known | Anticipated | IARC Category |
|-----------------------------|-------|-------------|---------------|
| Ethyl Alcohol (64-17-5) | No | No | None |
| Methyl Alcohol (67-56-1) | No | No | None |
| Isopropyl Alcohol (67-63-0) | No | No | 3 |

12. Ecological Information

Environmental Fate:

Following data for ethanol: When released into the soil, this material is expected to readily biodegrade. When released into the soil, this material is expected to leach into groundwater. When released into the soil, this material is expected to quickly evaporate. When released into water, this material is expected to readily biodegrade. When released into water, this material may evaporate to a moderate extent. This material is not expected to significantly bioaccumulate. When released into the air, this material is expected to be readily degraded by reaction with photochemically produced hydroxyl radicals. When released into the air, this material is expected to be readily removed from the atmosphere by dry and wet deposition. When released into the air, this material is expected to have a half-life between 1 and 10 days.

Environmental Toxicity:

This material is not expected to be toxic to aquatic life. The LC50/96-hour values for fish are over 100 mg/l.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved incinerator or disposed in a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information**Domestic (Land, D.O.T.)**

Proper Shipping Name: ALCOHOLS, N.O.S. (ETHANOL, METHANOL, ISOPROPANOL)

Hazard Class: 3

UN/NA: UN1987

Packing Group: II

Information reported for product/size: 350LB

International (Water, I.M.O.)

Proper Shipping Name: ALCOHOLS, N.O.S. (ETHANOL, METHANOL, ISOPROPANOL)

Hazard Class: 3

UN/NA: UN1987

Packing Group: II

Information reported for product/size: 350LB

15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----

| Ingredient | TSCA | EC | Japan | Australia |
|-----------------------------|------|-----|-------|-----------|
| Ethyl Alcohol (64-17-5) | Yes | Yes | Yes | Yes |
| Methyl Alcohol (67-56-1) | Yes | Yes | Yes | Yes |
| Isopropyl Alcohol (67-63-0) | Yes | Yes | Yes | Yes |

-----\Chemical Inventory Status - Part 2\-----

| Ingredient | --Canada-- | | | |
|-----------------------------|------------|-----|------|-------|
| | Korea | DSL | NDSL | Phil. |
| Ethyl Alcohol (64-17-5) | Yes | Yes | No | Yes |
| Methyl Alcohol (67-56-1) | Yes | Yes | No | Yes |
| Isopropyl Alcohol (67-63-0) | Yes | Yes | No | Yes |

-----\Federal, State & International Regulations - Part 1\-----

| Ingredient | -SARA 302- | | -----SARA 313----- | |
|-----------------------------|------------|-----|--------------------|----------------|
| | RQ | TPQ | List | Chemical Catg. |
| Ethyl Alcohol (64-17-5) | No | No | No | No |
| Methyl Alcohol (67-56-1) | No | No | Yes | No |
| Isopropyl Alcohol (67-63-0) | No | No | Yes | No |

-----\Federal, State & International Regulations - Part 2\-----

| Ingredient | -RCRA- | | -TSCA- |
|-------------------------|--------|--------|--------|
| | CERCLA | 261.33 | 8(d) |
| Ethyl Alcohol (64-17-5) | No | No | No |

Methyl Alcohol (67-56-1) 5000 U154 No
Isopropyl Alcohol (67-63-0) No No No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: Yes
SARA 311/312: Acute: Yes Chronic: Yes Fire: Yes Pressure: No
Reactivity: No (Mixture / Liquid)

Australian Hazchem Code: 2[S]E

Poison Schedule: S5

WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

NFPA Ratings: Health: 1 Flammability: 3 Reactivity: 0

Label Hazard Warning:

POISON! DANGER! MAY BE FATAL IF SWALLOWED. HARMFUL IF INHALED OR ABSORBED THROUGH SKIN. VAPOR HARMFUL. FLAMMABLE! AFFECTS CENTRAL NERVOUS SYSTEM. MAY CAUSE BLINDNESS. CANNOT BE MADE NONPOISONOUS. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. MAY AFFECT LIVER, BLOOD, REPRODUCTIVE SYSTEM.

Label Precautions:

Keep away from heat, sparks and flame.
Do not breathe vapor.
Avoid contact with eyes, skin and clothing.
Keep container closed.
Use only with adequate ventilation.
Wash thoroughly after handling.

Label First Aid:

If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. In all cases call a physician.

Product Use:

Laboratory Reagent.

Revision Information:

MSDS Section(s) changed since last revision of document include: 8.

Disclaimer:

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Prepared by: Environmental Health & Safety

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