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MATERIAL SAFETY DATA SHEET

No. 121

PRODUCT NAME Ethanol; Ethyl Alcohol	CAS # 64 - 1 7 - 5
TRADE NAME AND SYNONYMS Ethanol; Ethyl alcohol (D.O.T.); Grain alcohol	DOT I.D. No.: U N 1 17 0
	DOT Hazard Class: Class 3, Pkg. Group II
CHEMICAL NAME AND SYNONYMS Ethyl Alcohol; Ethanol	Formula C ₂ H ₅ OH
	Chemical Family: Alcohol
ISSUE DATES AND REVISIONS Revised April 1998	

HEALTH HAZARD DATA

<p>TIME WEIGHTED AVERAGE EXPOSURE LIMIT TWA= 1,000 Molar PPM with an A4 (Not Classifiable as a Human Carcinogen) carcinogen rating (ACHIH 1997). OSHA 1995 PEL (8 Hr. TWA) = 1,000 Mol ar PPM.</p>
<p>SYMPTOMS OF EXPOSURE <u>Inhalation:</u> Irritant to upper respiratory tract and eyes. High concentrations cause symptoms similar to ingestion . Skin: Continuous contact causes defatting and dermatitis. (Continued on Page 4)</p>
<p>TOXICOLOGICAL PROPERTIES Effects the central nervous system (CNS) causing those effects as shown in <u>Inhalation</u> and <u>Ingestion</u> above. Ethyl alcohol is not listed in the IARC, NTP or by OSHA as a carcinogen or a potential carcinogen. Persons in ill health where such illness would be aggravated by exposure to ethyl alcohol should not be allowed to work with or handle this product.</p>
<p>RECOMMENDED FIRST AID TREATMENT PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE OR INGESTION OF ETHYL ALCOHOL. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF- CONTAINED BREATHING APPARATUS AND BE COGNIZANT OF EXTREME FIRE AND EXPLOSION HAZARD. <u>Inhalation:</u> Conscious persons should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminated area is most important. Unconscious persons should be moved to an uncontaminated area, given assisted respiration and supplemental oxygen. Further treatment should be symptomatic and supportive. (Continued on Page 4)</p>

Information contained in this material safety data sheet is offered without charge for use by technically qualified personnel at their discretion and risk. All statements, technical information and recommendations contained herein are based on tests and data which we believe to be reliable, but the accuracy or completeness thereof is not guaranteed and no warranty of any kind is made with respect thereto. This information is not intended as a license to operate under or a recommendation to practice or infringe any patent of this Company or others covering any process, composition of matter or use. Since the Company shall have no control of the use of the product described herein, the Company assumes no liability for loss or damage incurred from the proper or improper use of such product.

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES

Ethyl alcohol vapors are flammable in air.

PHYSICAL DATA

BOILING POINT 172.5°F (78.1°C)	LIQUID DENSITY AT BOILING POINT Sp. Gravity = .7893 (20°/4°C)
VAPOR PRESSURE @ 70°F (21.1°C) = 0.93 psia (6.4 kPa)	GAS DENSITY AT 70°F, 1 atm .120 lb/ft ³ (1.92 kg/m ³)
SOLUBILITY IN WATER Soluble	FREEZING POINT -173.4°F (-114.1°C)
EVAPORATION RATE Unknown	SPECIFIC GRAVITY (AIR=1) @ 70°F (21.1°C) = 1.6
APPEARANCE AND ODOR Colorless, volatile, limpid liquid with ethereal odor and pungent taste.	

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) 57°F (13.8°C) C.C.	AUTO IGNITION TEMPERATURE Unknown	FLAMMABLE LIMITS % BY VOLUME (See Page 4) LE 3.3 UEL 19
EXTINGUISHING MEDIA Water spray, carbon dioxide, dry chemical		ELECTRICAL CLASSIFICATION Class 1, Group not specified
SPECIAL FIRE FIGHTING PROCEDURES Attempt to stop flow of burning liquid. Do not use water stream from a hose as it will scatter burning liquid. Use water spray to cool surrounding containers. Vapors may travel a considerable distance to a source of ignition.		
UNUSUAL FIRE AND EXPLOSION HAZARDS Mixtures of ethyl alcohol vapors in air will burn or explode. Vapors are heavier than air and may collect in low spots. Fire fighters should wear self-contained breathing apparatus.		

REACTIVITY DATA

STABILITY Unstable		CONDITIONS TO AVOID None
Stable	X	
INCOMPATIBILITY (Materials to avoid) Oxidizers, alkali metals		
HAZARDOUS DECOMPOSITION PRODUCTS None		
HAZARDOUS POLYMERIZATION May Occur		CONDITIONS TO AVOID None
Will Not Occur	X	

SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Evacuate all personnel from affected area. Use appropriate protective equipment. If leak is in user's equipment, be certain to purge piping with an inert gas prior to attempting repairs. If leak is in container, contact your closest supplier location or call the emergency telephone number listed herein.
WASTE DISPOSAL METHOD Do not attempt to dispose of waste or unused quantities. Return in the shipping container <u>properly labeled</u> to your supplier. For emergency disposal assistance, contact your closest supplier location or call the emergency telephone number listed herein.

SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)	Positive pressure air line with mask or self-contained breathing apparatus should be available for emergency use.		
VENTILATION See Local Exhaust	LOCAL EXHAUST To prevent accumulation above the TWA	SPECIAL	N/A
	MECHANICAL (Gen.) In accordance with electrical codes	OTHER	N/A
PROTECTIVE GLOVES Plastic or rubber			
EYE PROTECTION Safety goggles or glasses			
OTHER PROTECTIVE EQUIPMENT Safety shoes, safety shower, eyewash "fountain," face shield			

SPECIAL PRECAUTIONS*

SPECIAL LABELING INFORMATION DOT Shipping Name: Ethanol or Ethyl alcohol DOT Hazard Class: Class 3, Pkg. Group II Dot Shipping Label: Flammable Liquid I.D. No.: UN1170
SPECIAL HANDLING RECOMMENDATIONS Use only in well-ventilated areas. Do not drag, slide or roll containers. Use a suitable hand truck for container movement. Do not heat container by any means to increase the discharge rate of product from the container. Use a check valve or trap in the discharge line to prevent hazardous back flow into the container.
SPECIAL STORAGE RECOMMENDATIONS Store only in DOT approved container in which it was received and in cool, dry, well ventilated area of noncombustible construction away from all sources of ignition. Post "No Smoking or Open Flames" signs. Avoid all contact with the liquid or vapor. Close container after each use and when empty.
SPECIAL PACKAGING RECOMMENDATIONS Ethyl Alcohol is noncorrosive to most metals. The use of lead, aluminum and zinc coated (galvanized) metals should be avoided.
OTHER RECOMMENDATIONS OR PRECAUTIONS Earth-ground and bond all lines and equipment associated with the ethyl alcohol system. Electric equipment should be non-sparking or explosion proof. Reporting under SARA, Title III, Section 313 not required. NFPA 704 No. for ethyl alcohol = 1 3 0 None

*Various Government Agencies (i.e. Department of Transportation, Occupational Safety and Health Administration, Food and Drug Administration and others) may have specific regulations concerning the transportation, handling, storage or use of this product which will not be reflected in this data sheet. The customer should review these regulations to ensure that he is in full compliance.

Ethyl Alcohol

HEALTH HAZARD DATA

SYMPTOMS OF EXPOSURE: (Continued)

Ingestion: Volume dependent; from stimulant to mental excitement, depression, drowsiness, impaired vision, ataxia to stupor.

RECOMMENDED FIRST AID TREATMENT: (Continued)

Skin: Flush with copious quantities of water. Part eyelids with fingers to assure complete flushing.

Ingestion: Induce vomiting or gastric lavage for large intake. Keep warm and at rest. Further treatment should be symptomatic and supportive.