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ETHANOL- MATERIAL SAFETY DATA SHEET

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24 Hour EMERGENCY CONTACT

U.S- CHEMTREC 1-800-424-9300

CANADA- CANUTEC 613-996-6666

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

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Matheson Tri-Gas, Inc.

The telephone numbers listed below are emergency numbers, please contact your local branch for routine inquiries.

USA

959 Route 46 East
Parsippany, New Jersey
07054-0624 USA
Phone: 973-257-1100

CANADA

530 Watson Street
Whitby, Ontario
L1N 5R9 Canada
Phone: 905-668-3570

SUBSTANCE: ETHANOL

SYMBOL: C₂H₆O

TRADE NAMES/SYNONYMS:

ETHANOL; ETHYL ALCOHOL; /4; ALCOHOL; ALCOHOL ANHYDROUS; ALGRAIN;
ANHYDROL; ETHYL HYDRATE; ETHYL HYDROXIDE; JAYSOL; TECSOL; STCC 4909159; UN
1170; C₂H₆O; MAT08700; RTECS KQ6300000

CHEMICAL FAMILY: hydroxyls, aliphatic, alcohols, aliphatic

CREATION DATE: Jan 24 1989

REVISION DATE: Mar 16 1999

2. COMPOSITION, INFORMATION ON INGREDIENTS

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COMPONENT: ETHANOL

CAS NUMBER: 64-17-5

EC NUMBER (EINECS): 200-578-6

EC INDEX NUMBER: 603-002-00-5

PERCENTAGE: 100.0

3. HAZARDS IDENTIFICATION

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NFPA RATINGS (SCALE 0-4): HEALTH=2 FIRE=3 REACTIVITY=0

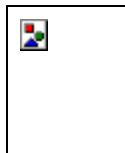
WHMIS CLASSIFICATION: BD2

EC CLASSIFICATION (ASSIGNED):

F Highly Flammable

R 11

EC Classification may be inconsistent with independently-researched data.



EMERGENCY OVERVIEW:

Color: colorless

Physical Form: volatile liquid

Odor: pleasant odor

Major Health Hazards: respiratory tract irritation, skin irritation, eye irritation, liver damage, central nervous system depression

Physical Hazards: Flammable liquid and vapor. Vapor may cause flash fire.

POTENTIAL HEALTH EFFECTS:

INHALATION:

Short Term Exposure: irritation, difficulty breathing, headache, drowsiness, symptoms of drunkenness

Long Term Exposure: nausea

SKIN CONTACT:

Short Term Exposure: irritation, rash

Long Term Exposure: same as effects reported in short term exposure

EYE CONTACT:

Short Term Exposure: irritation, tearing

Long Term Exposure: no information on significant adverse effects

INGESTION:

Short Term Exposure: rash, low body temperature, vomiting, digestive disorders, irregular heartbeat, headache, drowsiness, symptoms of drunkenness, disorientation, dilated pupils, lung congestion, liver damage, convulsions, coma

Long Term Exposure: diarrhea

CARCINOGEN STATUS:

OSHA: N

NTP: N

IARC: N

4. FIRST AID MEASURES

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INHALATION:

Remove from exposure immediately. Use a bag valve mask or similar device to perform artificial respiration (rescue breathing) if needed. Get medical attention.

SKIN CONTACT:

Remove contaminated clothing, jewelry, and shoes immediately. Wash with soap or mild detergent and large amounts of water until no evidence of chemical remains (at least 15-20 minutes). Get medical attention, if needed.

EYE CONTACT:

Wash eyes immediately with large amounts of water or normal saline, occasionally lifting upper and lower lids, until no evidence of chemical remains. Get medical attention immediately.

INGESTION:

Contact local poison control center or physician immediately. Never make an unconscious person vomit or drink fluids. When vomiting occurs, keep head lower than hips to help prevent aspiration. If person is unconscious, turn head to side. Get medical attention immediately.

NOTE TO PHYSICIAN:

For ingestion, consider gastric lavage.

5. FIRE FIGHTING MEASURES

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FIRE AND EXPLOSION HAZARDS:

Severe fire hazard. The vapor is heavier than air. Vapors or gases may ignite at distant ignition sources and flash back. Vapor/air mixtures are explosive.

EXTINGUISHING MEDIA:

alcohol resistant foam, carbon dioxide, regular dry chemical, water, alcohol resistant foam

Large fires: Use alcohol-resistant foam or flood with fine water spray.

FIRE FIGHTING:

Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out. Stay away from the ends of tanks. For fires in cargo or storage area: Cool containers with water from unmanned hose holder or monitor nozzles until well after fire is out. If this is impossible then take the following precautions: Keep unnecessary people away, isolate hazard area and deny entry. Let the fire burn. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. For tank, rail car or tank truck: Evacuation radius: 800 meters (1/2 mile). Water may be ineffective.

FLASH POINT:

55 F (13 C) (CC)

LOWER FLAMMABLE LIMIT:

3.3%

UPPER FLAMMABLE LIMIT:

19%

AUTOIGNITION:

685 F (363 C)

FLAMMABILITY CLASS (OSHA):

IB

6. ACCIDENTAL RELEASE MEASURES

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OCCUPATIONAL RELEASE:

Avoid heat, flames, sparks and other sources of ignition. Remove sources of ignition. Stop leak if possible without personal risk. Reduce vapors with water spray. Small spills: Absorb with sand or other non-combustible material. Collect spilled material in appropriate container for disposal. Large spills: Dike for later disposal. Keep unnecessary people away, isolate hazard area and deny entry. Stay upwind and keep out of low areas.

7. HANDLING AND STORAGE

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Store and handle in accordance with all current regulations and standards. Subject to storage regulations: U.S. OSHA 29 CFR 1910.106. Grounding and bonding required. Keep separated from incompatible substances.

8. EXPOSURE CONTROLS, PERSONAL PROTECTION

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EXPOSURE LIMITS:

ETHYL ALCOHOL, 100%:

ETHYL ALCOHOL (ETHANOL):

1000 ppm (1880 mg/m³) OSHA TWA

1000 ppm (1880 mg/m³) ACGIH TWA

1000 ppm (1880 mg/m³) NIOSH recommended TWA 10 hour(s)

VENTILATION: Ventilation equipment should be explosion-resistant if explosive concentrations of material are present. Ensure compliance with applicable exposure limits.

EYE PROTECTION: Wear splash resistant safety goggles. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

CLOTHING: Wear appropriate chemical resistant clothing.

GLOVES: Wear appropriate chemical resistant gloves.

RESPIRATOR: Under conditions of frequent use or heavy exposure, respiratory protection may be needed. Respiratory protection is ranked in order from minimum to maximum. Consider warning properties before use.

Any chemical cartridge respirator with organic vapor cartridge(s).

Any chemical cartridge respirator with a full facepiece and organic vapor cartridge(s).

Any air-purifying respirator with a full facepiece and an organic vapor canister.

For Unknown Concentrations or Immediately Dangerous to Life or Health -

Any supplied-air respirator with full facepiece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply.

Any self-contained breathing apparatus with a full facepiece.

9. PHYSICAL AND CHEMICAL PROPERTIES

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PHYSICAL STATE: liquid

APPEARANCE: clear

COLOR: colorless

PHYSICAL FORM: volatile liquid

ODOR: pleasant odor

MOLECULAR WEIGHT: 46.07

MOLECULAR FORMULA: C-H₃-C-H₂-O-H

BOILING POINT: 172 F (78 C)

FREEZING POINT: -179 F (-117 C)

VAPOR PRESSURE: 40 mmHg @ 19 C

VAPOR DENSITY (air=1): 1.59

SPECIFIC GRAVITY (water=1): 0.7893

WATER SOLUBILITY: soluble

PH: Not available

VOLATILITY: 100%

ODOR THRESHOLD: 5-10 ppm

EVAPORATION RATE: 1.4 (carbon tetrachloride=1)

COEFFICIENT OF WATER/OIL DISTRIBUTION: Not available

SOLVENT SOLUBILITY:

Soluble: benzene, ether, acetone, chloroform, methanol, organic solvents

10. STABILITY AND REACTIVITY

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REACTIVITY:

Stable at normal temperatures and pressure.

CONDITIONS TO AVOID:

Avoid heat, flames, sparks and other sources of ignition. Containers may rupture or explode if exposed to heat.

INCOMPATIBILITIES:

halo carbons, metals, metal salts, oxidizing materials, halogens, peroxides, acids, metal oxides, bases, combustible materials

HAZARDOUS DECOMPOSITION:

Thermal decomposition products: oxides of carbon

POLYMERIZATION:

Will not polymerize.

11. TOXICOLOGICAL INFORMATION

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ETHYL ALCOHOL, 100%:

IRRITATION DATA:

400 mg open skin-rabbit mild; 20 mg/24 hour(s) skin-rabbit moderate; 500 mg eyes-rabbit severe; 500 mg/24 hour(s) eyes-rabbit mild; 100 mg/4 second(s) rinsed eyes-rabbit moderate

TOXICITY DATA:

20000 ppm/10 hour(s) inhalation-rat LC50; 7060 mg/kg oral-rat LD50

CARCINOGEN STATUS:

IARC: Human Sufficient Evidence, Group 1 (Alcoholic beverages), Animal Inadequate Evidence; ACGIH: A4 -Not Classifiable as a Human Carcinogen

LOCAL EFFECTS:

Irritant: inhalation, skin, eye

ACUTE TOXICITY LEVEL:

Slightly Toxic: inhalation, ingestion

TARGET ORGANS:

central nervous system, liver

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:

central nervous system disorders, kidney disorders, liver disorders

TUMORIGENIC DATA:

Available.

MUTAGENIC DATA:

Available.

REPRODUCTIVE EFFECTS DATA:

Available.

ADDITIONAL DATA:

May cross the placenta. May be excreted in breast milk.

12. ECOLOGICAL INFORMATION

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ECOTOXICITY DATA:**FISH TOXICITY:**

93 ug/L 96 hour(s) LC50 (Mortality) Bluegill (*Lepomis macrochirus*)

INVERTEBRATE TOXICITY:

24 ug/L 48 hour(s) EC50 (Immobilization) Water flea (*Daphnia pulex*)

ALGAL TOXICITY:

10000-25000 ug/L 1-2 hour(s) (Photosynthesis) Green algae (*Acrosiphonia sonderi*)

OTHER TOXICITY:

0.89-187.40 ug/L 3 hour(s) (Hatchability) Moorfrog (*Rana arvalis*)

FATE AND TRANSPORT:**BIOCONCENTRATION:**

2230 ug/L 72 hour(s) BCF (Residue) Mayfly (*Ephemera danica*) 0.761 ug/L

ENVIRONMENTAL SUMMARY:

Highly toxic to aquatic life.

13. DISPOSAL CONSIDERATIONS

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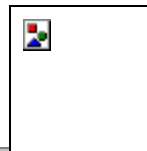
Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001.
Dispose in accordance with all applicable regulations.

14. TRANSPORT INFORMATION

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**U.S. DOT 49 CFR 172.101. SHIPPING NAME-UN NUMBER; HAZARD CLASS;
PACKING GROUP; LABEL:**

Ethanol-UN1170; 3; II; Flammable liquid



15. REGULATORY INFORMATION

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U.S. REGULATIONS:

TSCA INVENTORY STATUS: Y

TSCA 12(b) EXPORT NOTIFICATION: Not listed.

CERCLA SECTION 103 (40CFR302.4): N

SARA SECTION 302 (40CFR355.30): N

SARA SECTION 304 (40CFR355.40): N

SARA SECTION 313 (40CFR372.65): N

SARA HAZARD CATEGORIES, SARA SECTIONS 311/312 (40CFR370.21):

ACUTE: Y

CHRONIC: Y

FIRE: Y

REACTIVE: N

SUDDEN RELEASE: N

OSHA PROCESS SAFETY (29CFR1910.119): N

STATE REGULATIONS:

California Proposition 65: N

EUROPEAN REGULATIONS:

EC NUMBER (EINECS): 200-578-6

EC RISK AND SAFETY PHRASES:

R 11	Highly flammable.
S 2	Keep out of reach of children.
S 7	Keep container tightly closed.
S 16	Keep away from sources of ignition - No smoking.

16. OTHER INFORMATION

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