1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MATHESON TRI-GAS, INC.
150 Allen Road Suite 302
Basking Ridge, New Jersey 07920
Information: 1-800-416-2505

Emergency Contact:
CHEMTREC 1-800-424-9300
Calls Originating Outside the US: 703-527-3887 (Collect Calls Accepted)

SUBSTANCE: ETHYL ALCOHOL, 100%

TRADE NAMES/SYNONYMS:
MTG MSDS 115; 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: Dec 11 2008

2. COMPOSITION, INFORMATION ON INGREDIENTS

COMPONENT: ETHYL ALCOHOL, 100%
CAS NUMBER: 64-17-5
PERCENTAGE: 100.0

3. HAZARDS IDENTIFICATION

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

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

4. FIRST AID MEASURES

INHALATION: If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. Get immediate medical attention.

SKIN CONTACT: Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.

EYE CONTACT: Flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

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

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

**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

**STORAGE:** 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

**EXPOSURE LIMITS:**
**ETHYL ALCOHOL, 100%:**
**ETHYL ALCOHOL (ETHANOL):**
1000 ppm (1900 mg/m3) OSHA TWA
1000 ppm ACGIH TWA
1000 ppm (1900 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:** The following respirators and maximum use concentrations are drawn from NIOSH and/or OSHA.

**3300 ppm**
- Any supplied-air respirator.
- Any self-contained breathing apparatus with a full facepiece.
- Emergency or planned entry into unknown concentrations or IDLH conditions - Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.
- Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.
- **Escape** - Any appropriate escape-type, self-contained breathing apparatus.

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**9. PHYSICAL AND CHEMICAL PROPERTIES**

**PHYSICAL STATE:** liquid  
**APPEARANCE:** clear  
**COLOR:** colorless  
**PHYSICAL FORM:** volatile liquid  
**ODOR:** pleasant odor  
**TASTE:** burning taste  
**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)  
**VISCOSITY:** 1.22 cP @ 20 C  
**COEFFICIENT OF WATER/OIL DISTRIBUTION:** Not available  
**SOLVENT SOLUBILITY:** Soluble: benzene, ether, acetone, chloroform, methanol, organic solvents
10. STABILITY AND REACTIVITY

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

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; 7 gm/kg oral-rat LD50

CARCINOGEN STATUS: NTP: Known Human Carcinogen (Alcoholic beverages); IARC: Human Sufficient Evidence, Animal Sufficient Evidence, Group 1 (Alcoholic beverages), (Ethanol in alcoholic beverages); 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

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

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

U.S. DOT 49 CFR 172.101:
PROPER SHIPPING NAME: Ethanol
ID NUMBER: UN1170
HAZARD CLASS OR DIVISION: 3
PACKING GROUP: II
LABELING REQUIREMENTS: 3

CANADIAN TRANSPORTATION OF DANGEROUS GOODS:
SHIPPING NAME: Ethanol
UN NUMBER: UN1170
CLASS: 3
PACKING GROUP/CATEGORY: II

15. REGULATORY INFORMATION

U.S. REGULATIONS:
CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4): Not regulated.


SARA TITLE III SARA SECTIONS 311/312 HAZARDOUS CATEGORIES (40 CFR 370 Subparts B and C):
ACUTE: Yes
CHRONIC: Yes  
FIRE: Yes  
REACTIVE: No  
SUDDEN RELEASE: No


STATE REGULATIONS:
California Proposition 65: Not regulated.

CANADIAN REGULATIONS:
WHMIS CLASSIFICATION: BD2

NATIONAL INVENTORY STATUS:  
U.S. INVENTORY (TSCA): Listed on inventory.

TSCA 12(b) EXPORT NOTIFICATION: Not listed.

CANADA INVENTORY (DSL/NDSL): Not determined.

16. OTHER INFORMATION

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