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1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

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: METHYL ETHYL KETONE
SYMBOL: \( \text{C}_4\text{H}_8\text{O} \)

TRADE NAMES/SYNONYMS:
BUTANONE; 2-BUTANONE; ETHYL METHYL ETHYLETHYLETHYL; METHYL ACETONE; 3-BUTANONE; MEK; RCRA U159; STCC 4909243; UN 1193; M-209; C4H8O; MAT14460; RTECS EL6475000

CHEMICAL FAMILY: ketones, aliphatic

CREATION DATE: Jan 24 1989
REVISION DATE: Mar 16 1999

2. COMPOSITION, INFORMATION ON INGREDIENTS

COMPONENT: METHYL ETHYL KETONE

CAS NUMBER: 78-93-3
EC NUMBER (EINECS): 201-159-0
EC INDEX NUMBER: 606-002-00-3
PERCENTAGE: 100.0

3. HAZARDS IDENTIFICATION

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

WHMIS CLASSIFICATION: BD2

EC CLASSIFICATION (ASSIGNED):
F Highly Flammable
Xi Irritant
R 11-36/37

EC Classification may be inconsistent with independently-researched data.

EMERGENCY OVERVIEW:

Color: colorless
Physical Form: liquid
Odor: minty, sweet odor

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

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

POTENTIAL HEALTH EFFECTS:

INHALATION:
Short Term Exposure: irritation, nausea, vomiting, difficulty breathing, headache, drowsiness, symptoms of drunkenness, lung damage
Long Term Exposure: convulsions

SKIN CONTACT:
Short Term Exposure: irritation
Long Term Exposure: same as effects reported in short term inhalation

EYE CONTACT:
Short Term Exposure: irritation, eye damage
Long Term Exposure: same as effects reported in short term exposure

INGESTION:
Short Term Exposure: vomiting, digestive disorders, difficulty breathing, irregular heartbeat, headache, symptoms of drunkenness, coma
Long Term Exposure: no information on significant adverse effects

CARCINOGEN STATUS:
OSHA: N
NTP: N
IARC: N

4. FIRST AID MEASURES

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 and activated charcoal slurry.

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 above flash point.

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:
16 F (-9 C) (CC)

LOWER FLAMMABLE LIMIT:
1.4% @ 93.3 C

UPPER FLAMMABLE LIMIT:
11.4% @ 93.3 C

AUTOIGNITION:
759 F (404 C)

FLAMMABILITY CLASS (OSHA):
IB

6. ACCIDENTAL RELEASE MEASURES

AIR RELEASE:
Reduce vapors with water spray.

SOIL RELEASE:
Dig holding area such as lagoon, pond or pit for containment. Absorb with sand or other non-combustible material.

WATER RELEASE:
Cover with absorbent sheets, spill-control pads or pillows. Remove trapped material with suction hoses.

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. Reportable Quantity (RQ): Notify Local
Emergency Planning Committee and State Emergency Response Commission for release
greater than or equal to RQ (U.S. SARA Section 304). If release occurs in the U.S. and is
reportable under CERCLA Section 103, notify the National Response Center at (800)424-8802
(USA) or (202)426-2675 (USA).

7. HANDLING AND STORAGE

Store and handle in accordance with all current regulations and standards. Subject to storage
from incompatible substances.

8. EXPOSURE CONTROLS, PERSONAL PROTECTION

EXPOSURE LIMITS:

METHYL ETHYL KETONE:
200 ppm (590 mg/m3) OSHA TWA
300 ppm (885 mg/m3) OSHA STEL (vacated by 58 FR 35338, June 30, 1993)
200 ppm (590 mg/m3) ACGIH TWA
300 ppm (885 mg/m3) ACGIH STEL
200 ppm (590 mg/m3) NIOSH recommended TWA
300 ppm (885 mg/m3) NIOSH recommended STEL

VENTILATION: Provide local exhaust ventilation system. 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.

3000 ppm
Any supplied-air respirator.
Any powered, air-purifying 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.
Any self-contained breathing apparatus with a full facepiece.
Any supplied-air respirator with a full facepiece.

Escape -
Any air-purifying respirator with a full facepiece and an organic vapor canister.
Any appropriate escape-type, self-contained breathing apparatus.

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

**PHYSICAL STATE:** liquid

**COLOR:** colorless

**ODOR:** minty, sweet odor

**MOLECULAR WEIGHT:** 72.12

**MOLECULAR FORMULA:** C-H3-C-H2-C-O-C-H3

**BOILING POINT:** 176 F (80 C)

**FREEZING POINT:** -123 F (-86 C)

**VAPOR PRESSURE:** 100 mmHg @ 25 C

**VAPOR DENSITY (air=1):** 2.5

**SPECIFIC GRAVITY (water=1):** 0.8054

**WATER SOLUBILITY:** 27.5%

**PH:** Not available

**VOLATILITY:** Not available

**ODOR THRESHOLD:** 10 ppm

**EVAPORATION RATE:** 2.7 (ether=1)

**VISCOSITY:** 0.40 cP @ 25 C

**COEFFICIENT OF WATER/OIL DISTRIBUTION:** Not available

**SOLVENT SOLUBILITY:**
Soluble: alcohol, ether, benzene, acetone, oils

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, acids, combustible materials, oxidizing materials, peroxides, bases
HAZARDOUS DECOMPOSITION:
Thermal decomposition products: oxides of carbon

POLYMERIZATION:
Will not polymerize.

11. TOXICOLOGICAL INFORMATION

METHYL ETHYL KETONE:

IRRITATION DATA:
350 ppm eyes-human; 500 mg/24 hour(s) skin-rabbit moderate; 402 mg/24 hour(s) skin-rabbit mild; 13780 gm/24 hour(s) open skin-rabbit; 80 mg eyes-rabbit

TOXICITY DATA:
23500 mg/m3/8 hour(s) inhalation-rat LC50; 6480 mg/kg skin-rabbit LD50; 2737 mg/kg oral-rat LD50

LOCAL EFFECTS:
Irritant: inhalation, skin, eye

ACUTE TOXICITY LEVEL:
Moderately Toxic: ingestion
Slightly Toxic: inhalation, dermal absorption

TARGET ORGANS:
central nervous system

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:
nervous system disorders, respiratory disorders, skin disorders and allergies

MUTAGENIC DATA:
Available.

REPRODUCTIVE EFFECTS DATA:
Available.

12. ECOLOGICAL INFORMATION

ECOTOXICITY DATA:

FISH TOXICITY:
>400000 ug/L 96 hour(s) LC50 (Mortality) Sheepshead minnow (Cyprinodon variegatus)

INVERTEBRATE TOXICITY:
5091000 ug/L 48 hour(s) EC50 (Immobilization) Water flea (Daphnia magna)

ALGAL TOXICITY:
>500000 ug/L 96 hour(s) EC50 (Photosynthesis) Diatom (Skeletonema costatum)

ENVIRONMENTAL SUMMARY:
Harmful to aquatic life.
13. **DISPOSAL CONSIDERATIONS**

Dispose in accordance with all applicable regulations. Hazardous Waste Number(s): D035. Dispose of in accordance with U.S. EPA 40 CFR 262 for concentrations at or above the Regulatory level. Regulatory level - 200.0 mg/L. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): U159.

14. **TRANSPORT INFORMATION**

U.S. DOT 49 CFR 172.101. SHIPPING NAME-UN NUMBER; HAZARD CLASS; PACKING GROUP; LABEL:
Methyl ethyl ketone-UN1193; 3; II; Flammable liquid

15. **REGULATORY INFORMATION**

U.S. REGULATIONS:
TSCA INVENTORY STATUS: Y

TSCA 12(b) EXPORT NOTIFICATION: Not listed.

CERCLA SECTION 103 (40CFR302.4): Y
Methyl Ethyl Ketone: 5000 LBS RQ

SARA SECTION 302 (40CFR355.30): N

SARA SECTION 304 (40CFR355.40): N

SARA SECTION 313 (40CFR372.65): Y
Methyl Ethyl Ketone

SARA HAZARD CATEGORIES, SARA SECTIONS 311/312 (40CFR370.21):
ACUTE: Y
CHRONIC: N
FIRE: Y
REACTIVE: N
SUDDEN RELEASE: N


STATE REGULATIONS:
California Proposition 65: N

EUROPEAN REGULATIONS:
EC NUMBER (EINECS): 201-159-0

EC RISK AND SAFETY PHRASES:

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
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<tbody>
<tr>
<td>R 11</td>
<td>Highly flammable.</td>
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<tr>
<td>R 36/37</td>
<td>Irritating to eyes and respiratory system.</td>
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<tr>
<td>S 2</td>
<td>Keep out of reach of children.</td>
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<tr>
<td>S 9</td>
<td>Keep container in a well-ventilated place.</td>
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<td>------------------------------------------</td>
</tr>
<tr>
<td>S 16</td>
<td>Keep away from sources of ignition - No smoking.</td>
</tr>
<tr>
<td>S 25</td>
<td>Avoid contact with eyes.</td>
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<tr>
<td>S 33</td>
<td>Take precautionary measures against static discharges.</td>
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16. OTHER INFORMATION

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