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: METHYLAL

TRADE NAMES/SYNONYMS:
DIMETHOXYMETHANE; DIMETHYLFORMAL; METHYL FORMAL; FORMAL; FORMALDEHYDE
DIMETHYLACETAL; METHYLENE DIMETHYL ETHER; ANESTHENYL; DIMETHYL FORMAL;
METHOXYMETHYL METHYL ETHER; STCC 4908222; UN 1234; M-222; MAT14800; RTECS
PA8750000

CHEMICAL FAMILY: ethers, aliphatic

CREATION DATE: Jan 24 1989
REVISION DATE: Dec 11 2008

2. COMPOSITION, INFORMATION ON INGREDIENTS

COMPONENT: METHYLAL
CAS NUMBER: 109-87-5
PERCENTAGE: 100.0

3. HAZARDS IDENTIFICATION

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

EMERGENCY OVERVIEW:
COLOR: colorless
PHYSICAL FORM: volatile liquid
ODOR: 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. May form peroxides
during prolonged storage.
POTENTIAL HEALTH EFFECTS:

INHALATION:
SHORT TERM EXPOSURE: irritation, tearing, vomiting, headache, drowsiness, symptoms of drunkenness, coma
LONG TERM EXPOSURE: same as effects reported in short term exposure

SKIN CONTACT:
SHORT TERM EXPOSURE: irritation
LONG TERM EXPOSURE: same as effects reported in short term exposure

EYE CONTACT:
SHORT TERM EXPOSURE: irritation
LONG TERM EXPOSURE: no information is available

INGESTION:
SHORT TERM EXPOSURE: nausea, stomach pain, drowsiness
LONG TERM EXPOSURE: no information is available

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: If a large amount is swallowed, get medical attention.

5. FIRE FIGHTING MEASURES

FIRE AND EXPLOSION HAZARDS: Severe fire hazard. Moderate explosion 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:** 0 F (-18 C) (CC)
**LOWER FLAMMABLE LIMIT:** 2.2%
**UPPER FLAMMABLE LIMIT:** 13.8%
**AUTOIGNITION:** 459 F (237 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
incompatible substances.

### 8. EXPOSURE CONTROLS, PERSONAL PROTECTION

**EXPOSURE LIMITS:**
**METHYLAL:**
**METHYLAL (DIMETHOXYMETHANE):**
1000 ppm (3100 mg/m3) OSHA TWA
1000 ppm ACGIH TWA
1000 ppm (3100 mg/m3) NIOSH recommended TWA 10 hour(s)

**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.

2200 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 air-purifying full-facepiece respirator (gas mask) with a chin-style, front-mounted or back-mounted organic vapor canister.
Any appropriate escape-type, self-contained breathing apparatus.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: liquid
COLOR: colorless
PHYSICAL FORM: volatile liquid
ODOR: sweet odor
TASTE: pungent taste
MOLECULAR WEIGHT: 76.11
MOLECULAR FORMULA: C3-H8-O2
BOILING POINT: 111 F (44 C)
FREEZING POINT: -157 F (-105 C)
VAPOR PRESSURE: 330 mmHg @ 20 C
VAPOR DENSITY (air=1): 2.63
SPECIFIC GRAVITY (water=1): 0.8669
WATER SOLUBILITY: 33% @ 20 C
PH: Not available
VOLATILITY: Not available
ODOR THRESHOLD: Not available
EVAPORATION RATE: Not available
COEFFICIENT OF WATER/OIL DISTRIBUTION: Not available
SOLVENT SOLUBILITY:
Soluble: alcohol, ether, hydrocarbons

10. STABILITY AND REACTIVITY
REACTIVITY: May form explosive peroxides. Avoid prolonged storage or contact with air, light or storage and use above room temperature.

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

INCOMPATIBILITIES: acids, halo carbons, oxidizing materials

HAZARDOUS DECOMPOSITION:
Thermal decomposition products: miscellaneous decomposition products

POLYMERIZATION: Will not polymerize.

11. TOXICOLOGICAL INFORMATION

METHYLAL:
IRRITATION DATA: 100 ul eyes-rabbit moderate
TOXICITY DATA: 15000 ppm inhalation-rat LC50; 6653 mg/kg oral-rat LD50
LOCAL EFFECTS:
Irritant: inhalation, skin, eye
ACUTE TOXICITY LEVEL:
Slightly Toxic: inhalation, ingestion
TARGET ORGANS: central nervous system
MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: respiratory disorders, skin disorders and allergies

12. ECOLOGICAL INFORMATION

ECOTOXICITY DATA:
FISH TOXICITY: 6990000 ug/L 96 hour(s) LC50 (Mortality) Fathead minnow (Pimephales promelas)

ENVIRONMENTAL SUMMARY: Relatively non-toxic to aquatic life.

13. DISPOSAL CONSIDERATIONS

Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001. D003.

14. TRANSPORT INFORMATION

U.S. DOT 49 CFR 172.101:
PROPER SHIPPING NAME: Methylal
ID NUMBER: UN1234
HAZARD CLASS OR DIVISION: 3
PACKING GROUP: II
LABELING REQUIREMENTS: 3

CANADIAN TRANSPORTATION OF DANGEROUS GOODS:
SHIPPING NAME: Methylal
UN NUMBER: UN1234
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: No
FIRE: Yes
REACTIVE: Yes
SUDDEN RELEASE: No


STATE REGULATIONS:
California Proposition 65: Not regulated.

CANADIAN REGULATIONS:
WHMIS CLASSIFICATION: B

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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