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**SECTION 1: PRODUCT AND COMPANY IDENTIFICATION**

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**Product Name:**

Methyltetrahydrofuran

**Manufacturer's Name and Address:**

Penn A Kem  
3324 Chelsea Avenue  
Memphis, TN 38108  
Hazard Information Services\*\* 800 228 5635  
Chemtrec Emergency Number US: 800 424 9300  
Product information and other calls: (877) 895 7366  
\*\* Emergency medical information

**Synonyms:** METHF

Furan, 2methyltetrahydro

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**SECTION 2: Composition/Information on Ingredients**

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**CAS NO.:** 96-47-9  
**EINECS/ELINCS:** 202-507-4  
**Chemical Name:** methyltetrahydrofuran  
**Molecular Weight:** 86.  
**Chemical Formula:** C<sub>5</sub>H<sub>10</sub>O  
**Percent:** 100.%

**Note:** This material is normally stabilized with an antioxidant, less than 0.04 wt%.

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**SECTION 3: Hazards Identification**

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**Emergency Overview:** This material is HAZARDOUS by OSHA Communication definition.  
**Signal Word:** Danger.  
**NFPA Rating:** Health: 2; Flammability: 3; Reactivity: 1  
**NHIS Rating:** Health: 2; Flammability: 3; Reactivity: 1

**Hazards:** Clear, colorless liquid, ether-like odor.  
Highly flammable. Avoid oxidizing agents. May be reactive if not inhibited. Avoid prolonged or repeated breathing of gases, vapors or mists. Skin absorption hazard. Eye irritant. Central nervous system effects. Mucous membrane irritant. Irritating to gastrointestinal tract. Mildly irritating odor.

**Potential Health Effects:**

**Eye:** Eye irritant.  
**Skin:** Skin irritant - defatting. Not expected to be a sensitizer.  
**Ingestion:** Moderate ingestion hazard. May cause irritation of the digestive tract.  
**Inhalation:** Causes narcotic effect in high concentration. May cause respiratory tract and mucous membrane irritation. May cause unconsciousness or respiratory arrest.  
**Chronic:** Repeated or prolonged exposure may result in liver damage or may cause dermatitis by defatting the skin.  
**Target Organs:** Skin, eye, central nervous system and liver.  
**Note:** May aggravate pulmonary/bronchial disease and/or cause breathing difficulties.

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**SECTION 4: First Aid Measures**

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**Eyes:** Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.  
**Skin:** Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash skin thoroughly with mild soap and water. Wash clothing before reuse. Get medical aid if ill effects or irritation develops.  
**Ingestion:** Do not induce vomiting. Never give anything by mouth to an unconscious person. If conscious and alert, rinse mouth and drink water. Get medical aid.  
**Inhalation:** Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid if breathing difficulty persists.

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**SECTION 5: Fire Fighting Measures**

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# Material Safety Data Sheet

Methyltetrahydrofuran

MSDS Date: 10/1/2010

**General Information:** As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Vapors may be heavier than air. They can spread along the ground and collect in low or confined areas. Cool containers with flooding quantities of water.

**Extinguishing Media:** Small fire use water spray, dry chemical, carbon dioxide. Large fire use water spray, water fog dry chemical, carbon dioxide, or alcohol resistant foam. **DO NOT USE SOLID WATER STREAM.** Water spray may spread fire.

**Flash Point:** 12°F, -11°C

**Auto ignition Temperature:** 518°F, 270°C.

**Explosion limits, Lower:** 1.5

**Upper:** 8.9

**NFPA Rating:** Health: 2; Flammability: 3; Reactivity: 1  
**NHIS Rating:** Health: 2; Flammability: 3; Reactivity: 1

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## SECTION 6: Accidental Release Measures

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**General Information:** Eliminate all sources of ignition. Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks:** Absorb spill with inert non-combustible material (e.g. vermiculite, sand or earth), then place in a suitable container. Clean up spills immediately using non-sparking tools. Provide ventilation.

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## SECTION 7: Handling and Storage

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**Handling:** Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation. Handle empty containers with care. Vapor/residues may be flammable.

**Storage:** Keep container closed when not in use. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

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## SECTION 8: Exposure Controls, Personal Protection

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**Engineering Controls:** Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation and exhaust to keep airborne concentrations low.

**Exposure Limits:**

<b>Chemical name:</b>	methyltetrahydrofuran
<b>ACGIH:</b>	None reported
<b>OSHA</b>	None reported

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**SECTION 8: Exposure Controls, Personal Protection Cont'd**

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**Personal Protective Equipment:**

- Eyes:** Wear appropriate protective eyeglasses or chemical safety goggles and face shield as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
- Hands:** Wear appropriate protective gloves to prevent skin exposure. Polyvinyl alcohol, Teflon, or 4H and Silver Shield brand. Butyl or natural rubber may offer only short term protection and should be removed and discarded when material is spilled on them.
- Clothing:** Wear appropriate protective clothing to prevent skin exposure.
- Respirators:** A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.

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**SECTION 9: Physical and Chemical Properties**

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- Physical State:** Liquid
- Appearance:** Clear, colorless.
- Odor:** Ether-like odor. Mildly irritating.
- pH:** ~ 7.
- Vapor Pressure:** 155 mm Hg @ 25 °C (77 °F)
- Vapor Density:** 2.5
- Evaporation Rate:** Not available.
- Viscosity:**
- Boiling Point:** 80 °C (176° F) at 760. mm Hg
- Freezing/Melting Point:** - 136. °C (-212 °F)
- Autoignition Temperature:** 270 C
- Solubility: water** 13 g/100 g at 25°C.
- Specific Gravity/Density:** 0.86 g/cc.
- Molecular Formula:** C<sub>5</sub>H<sub>10</sub>O
- Molecular Weight:** 86

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**SECTION 10: Stability and Reactivity**

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- Chemical Stability:** Stable under normal temperatures and pressures so long as it is inhibited.
- Conditions to Avoid:** Incompatible materials, excess heat, strong oxidants. If unstabilized, avoid air and oxygen. Forms unstable peroxides with oxygen. Do not distill to dryness unless the material is tested for peroxides.
- Incompatibilities with other Materials:** Strong oxidizing agents.
- Hazardous Decomposition Products:** Carbon monoxide, irritating and toxic fumes and gases, carbon dioxide.
- Hazardous Polymerization:** Polymerization has not been reported.

**SECTION 11: Toxicological Information**

**LD50** Oral rat > 2000 mg/kg  
**LC50:** Not available  
**Carcinogenicity:** Not listed by IARC, NTP, OSHA or EPA.  
**Epidemiology:** No information available.

**Sensitization** Not expected to be a skin sensitizer.

**Eye** Liquid and vapor is irritating to eyes.  
**Skin** May be a skin irritant.

**Teratogenicity:** No information available.  
**Reproductive Effects:** No information available.  
**Genetic toxicity:** No information available.  
**Neurotoxicity:** No information available.  
**Other Studies:** No information available.

**SECTION 12: Ecological Information**

**Acute toxicity fish** No data available.  
**Invertebrates** Acute toxicity for Daphnia, 48 hr EC50 >139 mg/Liter  
**Aquatic plants** Algal inhibition test, 72 NOECr and 72 hr ErC50 > 104 mg /Liter  
**Microorganisms** No data available.  
**Other Studies:** Biodegradation under aerobic conditions. Degrades abiotically in air. Per OECD 301D, closed bottle test, Not readily Biodegradable. Per OECD 209 "Activated Sludge Respiration Inhibition Test" EC50 > 1000 mg/Liter

**SECTION 13: Disposal Considerations**

Contaminated products, oil or water may be a US RCRA or OSHA hazardous waste due to a potentially low flash point. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

**SECTION 14: Transport Information**

<b>US DOT</b>	
<b>Shipping Name:</b>	Methyltetrahydrofuran
<b>Hazard Class:</b>	Flammable liquid
<b>UN Number:</b>	UN2536
<b>Packing Group:</b>	II

<b>International</b>	
<b>Shipping Name:</b>	Methyltetrahydrofuran
<b>Hazard Class:</b>	Flammable liquid
<b>UN Number:</b>	UN2536
<b>Packing Group:</b>	II

**SECTION 15: Regulatory Information**

**US FEDERAL:**

**TSCA (Toxic Substance Control Act):** Methyltetrahydrofuran is listed on the TSCA inventory.

**TSCA Section 12b:** Methyltetrahydrofuran is not listed under TSCA Section 12b.

**CERLA Hazardous Substances and Corresponding RQs:** None Listed

**SARA Section 302 (Superfund Amendments and Reauthorizations Act):**

**SARA 311/312** Based on available information, methyltetrahydrofuran is classified as follows: Fire Hazard

**313 Reportable Ingredients:** None of the chemicals are reportable under Section 313.

**Clean Air Act:** This material does not contain any Class 1 Ozone depleters, or Class 2 Ozone depleters.

**Clean Water Act:** None of the chemicals in this product are listed as Hazardous Substances, Priority Pollutants, or Toxic Pollutants under the CWA.

**STATE:**

**California Prop 65:**

**California No Significant Risk Level:** None of the chemicals in this product are listed.

**European/International Regulations**

**European Labeling in Accordance with EC Directives:**

**Hazard Symbols:** .

**Risk Phrases:** R11– Highly Flammable.  
R19 – May form explosive peroxides.  
R36/37 – Irritating to eyes and respiratory system.

**Safety Phrases:**

- S 24/25, Avoid contact with skin and eyes.
- S 37, Wear suitable gloves.
- S 45, In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
- S 28A, In case of skin contact, wash immediately with plenty of water.

**WGK (Water Danger/Protection):**

**Canada – DSL/NDSL:** This chemical is listed on the NDSL list.

**Canadian Ingredient Disclosure List:** None.

**SECTION 16: Additional Information**

**MSDS Creation Date:** 03/1/2009

**Revision #1 Date:** 10/01/2010 Add eco tox information. Correct Canada listing.

The data contained herein is based on information currently available to Penn A Kem, and believed to be factual and the opinions expressed to be those of qualified experts; however, this data is not to be taken as a warranty or representation for which Penn A Kem assumes legal responsibility.