

Material Safety Data Sheet

May be use to comply with OSHA's Hazard Communication Standard,
29CFR 1910.1200. Standard must be consulted for specific requirements.

Furfuryl Alcohol

MSDS Date: 10/01/2009

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

Product Name:

Furfuryl alcohol

Manufacturer's Name and Address:

Penn A Kem LLC

3324 Chelsea Avenue

Memphis, TN 38108

Synonyms: FA® furfuryl alcohol,

QO FA® furfuryl alcohol,

High purity furfuryl alcohol

Emergency Number, if inside US:

(901) 320 4103

Emergency Number, if outside US:

(877) 895 7366

SECTION 2: Composition/Information on Ingredients

CAS NO.: 98-00-0
EINECS/ELINCS: 202-626-1
Chemical Name: Furfuryl alcohol
Molecular Weight: 98.10
Chemical Formula: C₅H₆O₂
Percent: 97-100%

Note:

SECTION 3: Hazards Identification

Hazardous Component(s) Chemical Name(s)	OSHA PEL	ACGIH TLV	%
Furfuryl alcohol	50 ppm (skin)	10 ppm (skin)	100
OSHA 10 ppm limit was not enacted, 1998.			

Emergency Overview: Clear, colorless to light yellow to orange color, liquid.

Potential Health Effects:

Eye: May cause eye irritation.
Skin: Harmful if absorbed through the skin. May cause skin irritation.
Ingestion: Toxic if swallowed. May cause irritation of the digestive tract.
Inhalation: Toxic if inhaled. May cause respiratory tract irritation.
Chronic: Two year study by NTP, inhalation rat.
Target Organs: Causes damage to: Respiratory tract, skin, central nervous system, eye, lens or cornea.

Note:

SECTION 4: First Aid Measures

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 clothing before reuse. Get medical aid.

Ingestion: Never give anything by mouth to an unconscious person. Get medical aid. Do NOT induce vomiting. If conscious and alert, rinse mouth and drink 2-4 cupfuls of milk or water.

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.

Note to Physician: Treat symptomatically and supportively. No specific antidote.

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SECTION 5: Fire Fighting Measures

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.
Extinguishing Media:	Use agent most appropriate to extinguish fire. Use water spray, dry chemical, carbon dioxide, or appropriate foam.
Flash Point:	170°F, 77°C (TCC)
Auto ignition Temperature:	736°F, 391°C (also reported 915°F, 490°C Merck Index)
Explosion limits, Lower:	1.8
Upper:	16.3
NFPA Rating:	(estimated) Health: 2; Flammability: 2; Instability: 1

SECTION 6: Accidental Release Measures

General Information:	Use proper personal protective equipment as indicated in Section 8.
Spills/Leaks:	Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Clean up spills immediately, observing precautions in the Protective Equipment section. Provide ventilation.

SECTION 7: Handling and Storage

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.
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.

SECTION 8: Exposure Controls, Personal Protection

Engineering Controls:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.
Exposure Limits:	
Chemical name:	Furfuryl alcohol
ACGIH: Skin	STEL 15 ppm, 15 minutes TWA 10 ppm (8 hours)
NIOSH: Skin	STEL 15 ppm, 15 minutes TWA 10 ppm (10 hours)
OSHA – Final PELs	50 ppm (8 hours)

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SECTION 8: Exposure Controls, Personal Protection Cont'd

Personal Protective Equipment:

- Eyes:** Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
- Skin:** Wear appropriate protective gloves (Nitrile rubber gloves) to prevent skin exposure.
- 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.

SECTION 9: Physical and Chemical Properties

- Physical State:** Liquid
- Appearance:** Clear, colorless to yellow to orange color.
- Odor:** Mild odor.
- pH:** Mixed with water, pH of 4 to 7.
- Vapor Pressure:** 0.4 mm Hg at 20°C.
- Vapor Density:** 3.4
- Evaporation Rate:** 0.04 compared to butyl acetate
- Viscosity:** 5 cps at 25 °C
- Boiling Point:** 338°F, 170°C
- Freezing/Melting Point:** 6°F, -14°C.
- Decomposition Temperature:** Not available.
- Solubility:** Completely soluble in water, acetone, alcohols.
- Specific Gravity/Density:** 1.14 g/cc.
- Molecular Formula:** C₅H₆O₂
- Molecular Weight:** 98.10

SECTION 10: Stability and Reactivity

- Chemical Stability:** Stable under normal temperatures and pressures.
- Conditions to Avoid:** Incompatible materials, strong acids, excess heat, strong oxidants.
- Incompatibilities with other Materials:** Strong acids and oxidizing agents.
- Hazardous Decomposition Products:** Carbon monoxide, irritating and toxic fumes and gases, carbon dioxide.
- Hazardous Polymerization:** Has been reported when furfuryl alcohol is exposed to strong acids or high heat.

SECTION 11: Toxicological Information

- RTECS#:**
- CAS#:** 98-00-0
- LD50/LC50:** Rat, oral LD50, 177 mg/kg.
Rat, dermal LD50 3825 mg/kg

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Muskrat, oral LD50 160 mg/kg

Chemical Listed as Carcinogen or Potential Carcinogen

National Toxicology		IARC Monographs		OSHA Regulated	
Yes		Yes		Yes	
No	X*	No	X	No	X

- NTP Draft Technical Report TR-482 (2-year inhalation studies rats and mice). Some evidence of carcinogenic activity in male rats, nasal neoplasms; equivocal evidence of carcinogenic activity in female rats, nasal and kidney neoplasms. Some evidence of carcinogenic activity in male mice, kidney neoplasms. No evidence of carcinogenic activity in female mice.
- EU proposed classification, provisionally Carc. Cat 3.

Epidemiology: No information available.

SECTION 11: Toxicological Information Cont'd

Teratogenicity:	No information available.
Reproductive Effects:	No information available.
Mutagenicity:	Not mutagenic, 4 Salmonella strains with and without S9. In vivo, male mice bone marrow cells, negative.
Neurotoxicity:	No information available.
Other Studies:	See RTECS reports.

SECTION 12: Ecological Information

No information available.

SECTION 13: Disposal Considerations

Furfuryl alcohol is not an EPA hazardous waste. Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. 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.

RCRA P-Series: None listed.
RCRA U-Series: None listed.

SECTION 14: Transport Information

US DOT	
Shipping Name:	Furfuryl alcohol,
Hazard Class:	6.1
UN Number:	UN2874
Packing Group:	III

International	
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Hazard Class:	6.1
UN Number:	UN2874
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SECTION 15: Regulatory Information

US FEDERAL:

TSCA (Toxic Substance Control Act):

Listed on the TSCA inventory. Furfuryl alcohol

TSCA Significant New Use Rule: None of the chemicals in this product have SNUR under TSCA.

Section 12b: None of the chemicals in this product are listed under TSCA Section 12b.

CERLA Hazardous Substances and Corresponding RQs:

None of the chemicals in this product have an RQ.

SARA Section 302 (Superfund Amendments and Reauthorizations Act):

None of the chemicals in this product have a TPQ.

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

Health & Safety Reporting List: None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules: None of the chemicals are under a Chemical Test Rule.

US FEDERAL CONT'D:

Clean Act: This material does not contain any hazardous air pollutants, 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.

OSHA: OSHA considers none of the chemicals in this product highly hazardous.

STATE:

Furfuryl alcohol is present on state lists CA, PA, MA, NJ.

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: Xn;

Risk Phrases: R20/21/22: Harmful by inhalation, in contact with skin and if swallowed

Safety Phrases:

WGK (Water Danger/Protection): Furfuryl alcohol.

Canada – DSL/NDSL: DSL list.

Canada – WHMIS: This product has a WHMIS classification of B-3, combustible liquid with flash point between 110 F and 200 F
D-1A: material causing immediate and serious toxic effects.
D2B.: Material causing other toxic effects

Canadian Ingredient Disclosure List: Furfuryl alcohol

SECTION 16: Additional Information

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MSDS Creation Date: 05/1/2009

Revision #2 Date: 10/1/2009 (corrected CAS No.)

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