Material Safety Data Sheet
Furfuryl alcohol, 98%

ACC# 97190

Section 1 - Chemical Product and Company Identification

MSDS Name: Furfuryl alcohol, 98%
Catalog Numbers: AC119790000, AC119790010, AC119790025
Synonyms: 2-Furancarbinol; 2-Furanmethanol; Furfural alcohol; Furfuralcohol; Furyl alcohol;alpha-Furylcarbinol; 2-Furylcarbinol; 2-Furylmethanol; 2-Hydroxymethylfuran; Methanol, (2-furyl)-
Company Identification:

Acros Organics N.V.
One Reagent Lane
Fair Lawn, NJ 07410

For information in North America, call: 800-ACROS-01
For emergencies in the US, call CHEMTREC: 800-424-9300

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
98-00-0	Furfuryl alcohol	98.0	202-626-1

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: clear, colorless to pale yellow liquid. Flash Point: 75 deg C.
Danger! Causes eye irritation and possible injury. Harmful if swallowed, inhaled, or absorbed through the skin. **Combustible liquid and vapor.** Causes skin irritation. Causes digestive and respiratory tract irritation. May cause central nervous system depression. Air sensitive.
Target Organs: Kidneys, central nervous system.

Potential Health Effects

Eye: Vapors cause eye irritation.
Skin: Causes skin irritation. Harmful if absorbed through the skin.
Ingestion: Harmful if swallowed. Causes gastrointestinal irritation with nausea, vomiting and diarrhea. May cause central nervous system depression, characterized by excitement, followed by headache, dizziness, drowsiness, and nausea. Advanced stages may cause collapse, unconsciousness, coma and possible death due to respiratory failure. Effects may be delayed 2 to 4 hours.
Inhalation: Harmful if inhaled. Effects of inhalation may be delayed. Vapor or mist is irritating to the mucous membranes and upper respiratory tract. Inhalation may produce severe bronchitis with spasms, coughing, and chest pain.
Chronic: Overexposure may cause delayed kidney injury. Prolonged or repeated skin contact may cause dermatitis. Prolonged exposure to high vapor concentrations may cause eye injury.

Section 4 - First Aid Measures

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid imme diately.
Skin: Get medical aid immediately. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
Ingestion: Do not induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.
Inhalation: Get medical aid immediately. Remove from exposure and move to fresh air immediately. If breathing is difficult, give oxygen. Do NOT use mouth-to-mouth resuscitation. If breathing has ceased apply artificial respiration using oxygen and a suitable mechanical device such as a bag and a mask.
Notes to Physician: Effects may be delayed. Persons with pre-existing skin disorders or eye problems, or impaired liver, kidney, or respiratory function may be more susceptible to the effects of this substance.

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. Vapors can travel to a source of ignition and flash back. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Combustible liquid. Vapors may be heavier than air. They can spread along the ground and collect in low or confined areas. Containers may explode when heated. Forms explosive mixtures with air.
Extinguishing Media: Use water spray to cool fire-exposed containers. Use foam, dry chemical, or carbon dioxide. Cool containers with flooding quantities of water until well after fire is out.
Flash Point: 75 deg C (167.00 deg F)
Autoignition Temperature: 491 deg C (915.80 deg F)
Explosion Limits, Lower:1.80 vol %
Upper: 16.30 vol %
NFPA Rating: (estimated) Health: 1; 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. Wash area with soap and water. Clean up spills immediately, observing precautions in the Protective Equipment section. Remove all sources of ignition. Use a spark-proof tool. Provide ventilation. Place under an inert atmosphere.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Do not breathe dust, vapor, mist, or gas. Do not get in eyes, on skin, or on clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep away from heat, sparks and flame. Do not ingest or inhale. Handle under an inert atmosphere. Store protected from air. Use only in a chemical fume hood. Store and handle protected from air. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames.
Storage: Keep away from sources of ignition. Do not store in direct sunlight. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Do not expose to air. Storage under a nitrogen blanket has been recommended. Store under an inert atmosphere. Keep away from organic acids.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Use explosion-proof ventilation equipment. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use only under a chemical fume hood.
Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Furfuryl alcohol	10 ppm TWA; 15 ppm STEL; Skin - potential significant contribution to overall exposure by the cutaneous r oute	10 ppm TWA; 40 mg/m3 TWA 75 ppm IDLH	50 ppm TWA; 200 mg/m3 TWA

OSHA Vacated PELs: Furfuryl alcohol: 10 ppm TWA; 40 mg/m3 TWA
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 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 pale yellow
Odor: faint, burning
pH: Not available.
Vapor Pressure: 0.5 mm Hg @ 20C
Vapor Density: 3.37 (Air=1)
Evaporation Rate: Not available.
Viscosity: Not available.
Boiling Point: 171 deg C
Freezing/Melting Point:-31 deg C
Decomposition Temperature: Not available.
Solubility: miscible
Specific Gravity/Density:1.129
Molecular Formula:C5H6O2
Molecular Weight:98.10

Section 10 - Stability and Reactivity

Chemical Stability: Stable under normal temperatures and pressures. Substance undergoes color change upon exposure to air. May undergo polymerization in contact with organic acids. May undergo a color change due to autoxidation and intermolecular dehydration during storage.
Conditions to Avoid: Incompatible materials, ignition sources, exposure to air, excess heat.
Incompatibilities with Other Materials: Acids, strong oxidizing agents, air, acid chlorides, organic acids, oxygen, fuming nitric acid.
Hazardous Decomposition Products: Carbon monoxide, irritating and toxic fumes and gases, carbon dioxide.
Hazardous Polymerization: May occur.

Section 11 - Toxicological Information

RTECS#:
CAS# 98-00-0: LU9100000
LD50/LC50:
CAS# 98-00-0:

Draize test, rabbit, eye: 100 mg/24H Moderate;
Inhalation, rat: LC50 = 233 ppm/4H;
Oral, mouse: LD50 = 160 mg/kg;
Oral, rat: LD50 = 177 mg/kg;
Skin, rabbit: LD50 = 400 mg/kg;
Skin, rat: LD50 = 3825 mg/kg;
.

Carcinogenicity:
CAS# 98-00-0: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: No information found
Teratogenicity: No information found
Reproductive Effects: No information found
Mutagenicity: DNA Repair: Bacillus subtilis = 2 mg/disc.; Cytogenetic Analysis: Hamster, Ovary = 2500 umol/L.
Neurotoxicity: No information found
Other Studies:

Section 12 - Ecological Information

Ecotoxicity: Fish: Fathead Minnow: LC50 = 32 mg/l; 96 Hr; Static bioassay at 18-22 CFish: Mosquito Fish: TLm = 44 - 24 mg/l; 24-96 Hr; Unspecified If released to soil, it will be expected to exhibit very high mobility, based upon the reported infinite solubility of the compound in water and an estimated Koc of 34. It may, therefore, leach through soil to groundwater if it does not biodegrade or otherwise decompose first. It may be subject to biodegradation in soil based upon results observed in a laboratory aqueous aerobic biodegradation screening test. Volatilization from moist near surface soil is not expected. However, it may volatilize from dry near surface soil and other dry surfaces based upon its vapor pressure.
Environmental: If released to water, it will not be expected to adsorb to sediment or suspended particulate matter or to bioconcentrate in aquatic organisms. It may directly photolyze in surface water. It may be subject to biodegradation in natural waters. Furfuryl alcohol is expected to exist mainly in the vapor-phase in the ambient atmosphere. The estimated atmospheric half-life for vapor-phase reaction with photochemically produced hydroxyl radical with a half-life of 3.7hours.
Physical: No information available.
Other: No information available.

Section 13 - Disposal Considerations

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	Canada TDG
Shipping Name:	FURFURYL ALCOHOL	FURFURYL ALCOHOL
Hazard Class:	6.1	6.1
UN Number:	UN2874	UN2874
Packing Group:	III	III

Section 15 - Regulatory Information

US FEDERAL

TSCA
CAS# 98-00-0 is listed on the TSCA inventory.
Health & Safety Reporting List
None of the chemicals are on the Health & Safety Reporting List.
Chemical Test Rules
None of the chemicals in this product are under a Chemical Test Rule.
Section 12b
None of the chemicals are listed under TSCA Section 12b.
TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.
CERCLA Hazardous Substances and corresponding RQs
None of the chemicals in this material have an RQ.
SARA Section 302 Extremely Hazardous Substances
None of the chemicals in this product have a TPQ.
SARA Codes
CAS # 98-00-0: immediate, fire, reactive.
Section 313 No chemicals are reportable under Section 313.
Clean Air Act:
This material does not contain any hazardous air pollutants.
This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.
Clean Water Act:
None of the chemicals in this product are listed as Hazardous Substances under the CWA.
None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

CAS# 98-00-0 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

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:

R 20/21/22 Harmful by inhalation, in contact with skin and if swallowed.

Safety Phrases:

S 16 Keep away from sources of ignition - No smoking.
S 23 Do not inhale gas/fumes/vapour/spray.
S 24/25 Avoid contact with skin and eyes.
S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S 36/37/39 Wear suitable protective clothing, gloves and eye/face protection.

WGK (Water Danger/Protection)

CAS# 98-00-0: 1

Canada - DSL/NDSL

CAS# 98-00-0 is listed on Canada's DSL List.

Canada - WHMIS

This product has a WHMIS classification of B3, D1A, D2B.
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

CAS# 98-00-0 is listed on the Canadian Ingredient Disclosure List.

Section 16 - Additional Information

MSDS Creation Date: 5/20/1999
Revision #4 Date: 10/03/2005