

FURFURYL ALCOHOL

FAL

CAUTIONARY RESPONSE INFORMATION

Common Synonyms 2-Furancarbinol Furfuralcohol 2-Furylcarbinol 2-Hydroxymethylfuran	Liquid Colorless to light yellow Mild irritating Mixes with water.
<p>Keep people away. Avoid inhalation. Call fire department. Notify local health and pollution control agencies. Protect water intakes.</p>	
Fire	Combustible. Extinguish with water, dry chemicals, foam, or carbon dioxide.
Exposure	Call for medical aid. LIQUID Irritating to skin and eyes. Harmful if swallowed. Remove contaminated clothing and shoes. Flush affected areas with plenty of water. IF IN EYES, hold eyelids open and flush with plenty of water. IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk and have victim induce vomiting. IF SWALLOWED and victim is UNCONSCIOUS OR HAVING CONVULSIONS, do nothing except keep victim warm.
Water Pollution	Effect of low concentrations on aquatic life is unknown. May be dangerous if it enters water intakes. Notify local health and wildlife officials. Notify operators of nearby water intakes.

1. CORRECTIVE RESPONSE ACTIONS Dilute and disperse Stop discharge	2. CHEMICAL DESIGNATIONS 2.1 CG Compatibility Group: 20; Alcohol, glycol 2.2 Formula: C ₈ H ₈ O ₂ 2.3 IMO/UN Designation: Not listed 2.4 DOT ID No.: 2874 2.5 CAS Registry No.: 98-00-0 2.6 NAERG Guide No.: 153 2.7 Standard Industrial Trade Classification: 51231
3. HEALTH HAZARDS	
<p>3.1 Personal Protective Equipment: Goggles or face shield; rubber gloves.</p> <p>3.2 Symptoms Following Exposure: Inhalation causes headache, nausea, and irritation of nose and throat. Vapor irritates eyes; liquid causes inflammation and corneal opacity. Contact of skin with liquid causes dryness and irritation. Ingestion causes headache, nausea, and irritation of mouth and stomach.</p> <p>3.3 Treatment of Exposure: INHALATION: remove victim to fresh air, if breathing is difficult, call a physician. EYES: immediately flush with water for 15 min.; get medical attention. SKIN: wash promptly with soap and water. INGESTION: give large amount of water, and induce vomiting; follow with gastric lavage and saline cathartics; get medical attention.</p> <p>3.4 TLV-TWA: 10 ppm 3.5 TLV-STEL: Not listed. 3.6 TLV-Ceiling: 15 ppm 3.7 Toxicity by Ingestion: Grade 3; oral LD₅₀ = 132 mg/kg (rat) 3.8 Toxicity by Inhalation: Currently not available. 3.9 Chronic Toxicity: Currently not available 3.10 Vapor (Gas) Irritant Characteristics: Vapors cause moderate irritation such that personnel will find high concentrations unpleasant. The effect is temporary. 3.11 Liquid or Solid Characteristics: Minimum hazard. If spilled on clothing and allowed to remain, may cause smarting and reddening of the skin. 3.12 Odor Threshold: 8 ppm 3.13 IDLH Value: 75 ppm 3.14 OSHA PEL-TWA: 50 ppm 3.15 OSHA PEL-STEL: Not listed. 3.16 OSHA PEL-Ceiling: Not listed. 3.17 EPA AEGL: Not listed</p>	

4. FIRE HAZARDS

- 4.1 **Flash Point:** 167°F O.C. 149°F C.C.
4.2 **Flammable Limits in Air:** 1.8%-16.3%
4.3 **Fire Extinguishing Agents:** Water, dry chemical, foam, carbon dioxide
4.4 **Fire Extinguishing Agents Not to Be Used:** Not pertinent
4.5 **Special Hazards of Combustion Products:** Not pertinent
4.6 **Behavior in Fire:** Not pertinent
4.7 **Auto Ignition Temperature:** 736°F
4.8 **Electrical Hazards:** Currently not available
4.9 **Burning Rate:** 2.3 mm/min.
4.10 **Adiabatic Flame Temperature:** Currently not available
4.11 **Stoichiometric Air to Fuel Ratio:** 26.2 (calc.)
4.12 **Flame Temperature:** Currently not available
4.13 **Combustion Molar Ratio (Reactant to Product):** 8.0 (calc.)
4.14 **Minimum Oxygen Concentration for Combustion (MOCC):** Not listed

5. CHEMICAL REACTIVITY

- 5.1 **Reactivity with Water:** No reaction
5.2 **Reactivity with Common Materials:** No reaction
5.3 **Stability During Transport:** Darkens and forms water-insoluble material on exposure to air or acids, particularly when hot.
5.4 **Neutralizing Agents for Acids and Caustics:** Not pertinent
5.5 **Polymerization:** Not pertinent
5.6 **Inhibitor of Polymerization:** Not pertinent

6. WATER POLLUTION

- 6.1 **Aquatic Toxicity:** Currently not available
6.2 **Waterfowl Toxicity:** Currently not available
6.3 **Biological Oxygen Demand (BOD):** Currently not available
6.4 **Food Chain Concentration Potential:** None
6.5 **GESAMP Hazard Profile:**
Bioaccumulation: -
Damage to living resources: -
Human Oral hazard: 2
Human Contact hazard: -
Reduction of amenities: -

7. SHIPPING INFORMATION

- 7.1 **Grades of Purity:** Technical
7.2 **Storage Temperature:** Ambient
7.3 **Inert Atmosphere:** No requirement
7.4 **Venting:** Open (flame arrester)
7.5 **IMO Pollution Category:** C
7.6 **Ship Type:** 3
7.7 **Barge Hull Type:** Currently not available

8. HAZARD CLASSIFICATIONS

- 8.1 **49 CFR Category:** Keep Away From Food
8.2 **49 CFR Class:** 6.1
8.3 **49 CFR Package Group:** III
8.4 **Marine Pollutant:** No
8.5 **NFPA Hazard Classification:**
- | | |
|---------------------------|----------------|
| Category | Classification |
| Health Hazard (Blue)..... | 1 |
| Flammability (Red)..... | 2 |
| Instability (Yellow)..... | 1 |
- 8.6 **EPA Reportable Quantity:** Not listed.
8.7 **EPA Pollution Category:** Not listed.
8.8 **RCRA Waste Number:** Not listed
8.9 **EPA FWPCA List:** Not listed

9. PHYSICAL & CHEMICAL PROPERTIES

- 9.1 **Physical State at 15° C and 1 atm:** Liquid
9.2 **Molecular Weight:** 98.1
9.3 **Boiling Point at 1 atm:** 338°F = 170°C = 443°K
9.4 **Freezing Point:** 5°F = -15°C = 258°K
9.5 **Critical Temperature:** Not pertinent
9.6 **Critical Pressure:** Not pertinent
9.7 **Specific Gravity:** 1.13 at 20°C (liquid)
9.8 **Liquid Surface Tension:** 38 dynes/cm = 0.038 N/m at 20°C
9.9 **Liquid Water Interfacial Tension:** Not pertinent
9.10 **Vapor (Gas) Specific Gravity:** 3.4
9.11 **Ratio of Specific Heats of Vapor (Gas):** Not pertinent
9.12 **Latent Heat of Vaporization:** 230 Btu/lb = 130 cal/g = 5.4 X 10⁵ J/kg
9.13 **Heat of Combustion:** -11,200 Btu/lb = -6,200 cal/g = -260 X 10⁵ J/kg
9.14 **Heat of Decomposition:** Not pertinent
9.15 **Heat of Solution:** Not pertinent
9.16 **Heat of Polymerization:** Not pertinent
9.17 **Heat of Fusion:** Currently not available
9.18 **Limiting Value:** Currently not available
9.19 **Reid Vapor Pressure:** 0.07 psia

NOTES

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9.20 SATURATED LIQUID DENSITY		9.21 LIQUID HEAT CAPACITY		9.22 LIQUID THERMAL CONDUCTIVITY		9.23 LIQUID VISCOSITY	
Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F	Temperature (degrees F)	British thermal unit inch per hour-square foot-F	Temperature (degrees F)	Centipoise
34	71.719	35	0.472	34	1.248	35	14.230
36	71.650	40	0.475	36	1.248	40	12.300
38	71.580	45	0.479	38	1.248	45	10.660
40	71.509	50	0.482	40	1.248	50	9.271
42	71.440	55	0.485	42	1.248	55	8.082
44	71.370	60	0.489	44	1.248	60	7.064
46	71.299	65	0.492	46	1.248	65	6.190
48	71.230	70	0.495	48	1.248	70	5.438
50	71.160	75	0.499	50	1.248	75	4.789
52	71.089	80	0.502	52	1.248	80	4.227
54	71.020	85	0.505	54	1.248	85	3.740
56	70.950	90	0.509	56	1.248	90	3.316
58	70.879	95	0.512	58	1.248	95	2.947
60	70.809			60	1.248	100	2.624
62	70.750			62	1.248		
64	70.679			64	1.248		
66	70.610			66	1.248		
68	70.540			68	1.248		
70	70.469			70	1.248		
72	70.400			72	1.248		
74	70.330			74	1.248		
76	70.259			76	1.248		
78	70.190			78	1.248		
80	70.120			80	1.248		
82	70.049			82	1.248		
84	69.980			84	1.248		

9.24 SOLUBILITY IN WATER		9.25 SATURATED VAPOR PRESSURE		9.26 SATURATED VAPOR DENSITY		9.27 IDEAL GAS HEAT CAPACITY	
Temperature (degrees F)	Pounds per 100 pounds of water	Temperature (degrees F)	Pounds per square inch	Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F
	M	80	0.014	80	0.00024		N
	I	90	0.021	90	0.00035		O
	S	100	0.030	100	0.00050		T
	C	110	0.044	110	0.00070		
	I	120	0.062	120	0.00098		P
	B	130	0.087	130	0.00135		E
	L	140	0.121	140	0.00184		R
	E	150	0.166	150	0.00248		T
		160	0.225	160	0.00332		I
		170	0.303	170	0.00440		N
		180	0.404	180	0.00577		E
		190	0.534	190	0.00751		N
		200	0.699	200	0.00969		N
		210	0.909	210	0.01241		T
		220	1.172	220	0.01577		
		230	1.501	230	0.01989		
		240	1.908	240	0.02492		
		250	2.410	250	0.03103		
		260	3.023	260	0.03838		
		270	3.769	270	0.04720		
		280	4.671	280	0.05771		
		290	5.755	290	0.07016		
		300	7.053	300	0.08485		
		310	8.598	310	0.10210		
		320	10.430	320	0.12220		
		330	12.590	330	0.14570		