

Furfuryl alcohol

Tel: 905-685-8560 www.ifc-northamerica.com

1 . Product and company identification

Common name	: Furfuryl alcohol
Synonym	: 2-hydroxymethylfuran; 2-furylmethanol; 2-furancarbinol; furfuralcohol; 2-furyl carbinol; 2-hydroxymethyl furan; a-furyl carbinol; a-furancarbinol; a-hydroxymethylfuran;
Material uses	: Applications in resins, foundry, colour, lac, synthetic and electro industry. Further applications in pharmaceutical products.
Supplier	: IFC NORTH AMERICA inc. 63 Church Street, Suite 403, St. Catharines, ON Canada L2R 3C4 Tel: 905.685.8560 Fax: 905.685.8712 E-mail: alex@ifc-northamerica.com
Manufacturer	: TRANS FURANS CHEMICALS bvba, Industriepark Leukaard 2, 2440 Geel, Belgium Tel: +32.1457.8747 Fax: +32.1457.8767 Email: info@transfurans.be
In case of emergency	: CANUTEC (613) 996-6666 CHEMTREC, U.S. : (800) 424-9300 International: (703) 527-3887
MSDS authored by:	: Kemika XXI Inc. + 1-450-435-7475 12/01/2006

2 . Hazards identification

Physical state	: Liquid.
Odor	: Mild.
Color	: Colorless to light yellow.
Hazard status	: This material is classified hazardous under OSHA regulations in the United States, the WHMIS Controlled Product Regulation in Canada and the NOM-018-STPS-2000 in Mexico.
Emergency overview	: DANGER! MAY BE FATAL IF SWALLOWED. HARMFUL IF ABSORBED THROUGH SKIN. CAUSES EYE AND SKIN IRRITATION. CAUSES DAMAGE TO THE FOLLOWING ORGANS: RESPIRATORY TRACT, SKIN, CENTRAL NERVOUS SYSTEM, EYE, LENS OR CORNEA. COMBUSTIBLE LIQUID AND VAPOR. VAPOR MAY CAUSE FIRE. Do not ingest. Avoid contact with eyes, skin and clothing. Keep away from heat, sparks and flame. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling.
Routes of entry	: Dermal contact. Eye contact. Inhalation. Ingestion.
Potential acute health effects	
Eyes	: Irritating to eyes.
Skin	: Toxic in contact with skin. Irritating to skin.
Inhalation	: No known significant effects or critical hazards.
Ingestion	: Very toxic if swallowed.
Potential chronic health effects	: Carcinogenic effects: Not classified or listed by IARC, NTP, OSHA, EU and ACGIH. Mutagenic effects: Not available. Teratogenic effects: Not available.
Medical conditions aggravated by over-exposure	: Repeated skin exposure can produce local skin destruction or dermatitis. Repeated or prolonged contact with spray or mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to the substance can produce target organ damage.

See toxicological information (section 11)

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3. Composition/information on ingredients

United States

Name	CAS number	%
Furfuryl alcoho	98-00-0	60 - 100

Canada

Name	CAS number	%
Furfuryl alcohol	98-00-0	60 - 100

Mexico

Name	UN number	IDLH	Classification				CAS number	%
			H	F	R	Special		
Furfuryl alcohol	UN2874	75 ppm	2	2	0	98-00-0	60 - 100	

4. First aid measures

- Eye contact** : Check for and remove any contact lenses. In case of contact with eyes, rinse immediately with plenty of water. Get medical attention.
- Skin contact** : In case of contact, immediately flush skin with plenty of water for at least 20 minutes. Get medical attention.
- Inhalation** : If inhaled, remove to fresh air. If not breathing, give artificial respiration. Get medical attention.
- Ingestion** : Do not induce vomiting. Never give anything by mouth to an unconscious person. Get medical attention.
- Notes to physician** : No specific antidote. Medical staff must contact Poison Control Center.

5. Fire-fighting measures

- Flammability of the product** : Combustible.
- Products of combustion** : These products are carbon oxides.
- Extinguishing media**
- Suitable** : Use dry chemical, carbon dioxide, water spray (fog) or foam.
 - Not suitable** : Do not use water jet.
- Special exposure hazards** : Combustible liquid and vapor. Vapor may cause flash fire. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard.
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6. Accidental release measures

- Personal precautions** : Immediately contact emergency personnel. Eliminate all ignition sources. Keep unnecessary personnel away. Use suitable protective equipment. Do not touch or walk through spilled material.
- Environmental precautions** : Avoid dispersal of spilled material, runoff and contact with soil, waterways, drains and sewers.
- Methods for cleaning up** : If emergency personnel are unavailable, contain spilled material. For small spills, add absorbent (soil may be used in the absence of other suitable materials) and use a non-sparking or explosion-proof means to transfer material to a sealable, appropriate container for disposal. For large spills, dike spilled material or otherwise contain material to ensure runoff does not reach a waterway. Place spilled material in an appropriate container for disposal.

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7. Handling and storage

- Handling** : Do not ingest. Avoid contact with eyes, skin and clothing. Keep container closed. Use only with adequate ventilation. Keep away from heat, sparks and flame. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Wash thoroughly after handling.
- Storage** : Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

8. Exposure controls/personal protection

United States

Product name

Furfuryl alcohol

Exposure limits

ACGIH TLV (United States, 1/2005). Skin

STEL: 60 mg/m³ 15 minute(s).

STEL: 15 ppm 15 minute(s).

TWA: 40 mg/m³ 8 hour(s).

TWA: 10 ppm 8 hour(s).

NIOSH REL (United States, 12/2001). Skin

STEL: 60 mg/m³ 15 minute(s).

STEL: 15 ppm 15 minute(s).

TWA: 40 mg/m³ 10 hour(s).

TWA: 10 ppm 10 hour(s).

OSHA PEL (United States, 8/1997).

TWA: 200 mg/m³ 8 hour(s).

TWA: 50 ppm 8 hour(s).

Canada

Product name

Furfuryl alcohol

Exposure limits

ACGIH TLV (United States, 1/2005). Skin

STEL: 60 mg/m³ 15 minute(s).

STEL: 15 ppm 15 minute(s).

TWA: 40 mg/m³ 8 hour(s).

TWA: 10 ppm 8 hour(s).

Mexico

Product name

Furfuryl alcohol

Exposure limits

NOM-010-STPS (Mexico, 9/2000). Skin

CCT: 60 mg/m³ 15 minute(s).

CCT: 15 ppm 15 minute(s).

CPT: 40 mg/m³ 8 hour(s).

CPT: 10 ppm 8 hour(s).

- Engineering measures** : Use only with adequate ventilation. If user operations generate dust, fumes, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limit. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Personal protection

Eyes

- : Splash goggles.

Skin

- : Lab coat.

Respiratory

- : Vapor respirator.

Hands

- : Natural rubber (latex).



HMIS Code/Personal protective equipment

- : G

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Personal protection in case of a large spill : Safety glasses, goggles or face shield. Impervious gloves. Full suit. Boots. Wear NIOSH-approved self-contained breathing apparatus or equivalent and full protective gear.

Hygiene measures : Wash hands, forearms and face thoroughly after handling compounds and before eating, smoking and using the lavatory and at the end of the day. Follow good industrial hygiene practice.

9 . Physical and chemical properties

Physical state : Liquid.

Flash point : Open cup: 74.85°C (166.7°F) (Cleveland.)

Auto-ignition temperature : 490.55°C (915°F)

Color : Colorless to light yellow.

Odor : Mild.

Molecular weight : 98.11 g/mole

Molecular formula : C₅H₆O₂

Boiling/condensation point : 171°C (339.8°F)

Melting/freezing point : -14.44°C (6°F)

Relative density : 1.13 (Water = 1)

Vapor density : 3.4 (Air = 1)

Evaporation rate : 0.04 compared with Butyl acetate.

10 . Stability and reactivity

Stability and reactivity : The product is stable.

Incompatibility with various substances : Reactive with oxidizing materials.

Hazardous polymerization : Yes. Exothermic polymerization with explosive violence in presence of acids.

Conditions of reactivity : Flammable in the presence of the following materials or conditions: open flames, sparks and static discharge.
Slightly flammable in the presence of the following materials or conditions: heat.

11 . Toxicological information

Product/ingredient name	Toxicity data		Route	Species
	Test	Result		
Furfuryl alcohol	LD50	177 mg/kg	Oral	Rat
	LD50	160 mg/kg	Oral	Mouse
	LD50	360 mg/kg	Oral	Mammal
	LD50	400 mg/kg	Dermal	Rabbit

IDLH : 75 ppm

Acute Effects

Eyes : Irritating to eyes.

Skin : Toxic in contact with skin. Irritating to skin.

Inhalation : No known significant effects or critical hazards.

Ingestion : Very toxic if swallowed.

Potential chronic health effects : Carcinogenic effects: Not classified or listed by IARC, NTP, OSHA, EU and ACGIH.
Mutagenic effects: Not available.
Teratogenic effects: Not available.

Target organs : Causes damage to the following organs: upper respiratory tract, skin, central nervous system (CNS), eye, lens or cornea.

12 . Ecological information

Environmental precautions : No known significant effects or critical hazards.

Products of degradation : These products are carbon oxides and water.

Toxicity of the products of biodegradation : The products of degradation are less toxic than the product itself.




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13 . Disposal considerations

Waste disposal : The generation of waste should be avoided or minimized wherever possible. Avoid dispersal of spilled material, runoff and contact with soil, waterways, drains and sewers. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional and local authority requirements.

14 . Transport information

NAERG : 153

Regulatory information	Proper shipping name	Class	UN number	PG	Label
UN / IMDG / IATA Classification	FURFURYL ALCOHOL	6.1	UN2874	III	
DOT Classification	FURFURYL ALCOHOL	6.1	UN2874	III	
TDG Classification	FURFURYL ALCOHOL	6.1	UN2874	III	

Additional information	UN	IMDG	IATA	DOT	TDG
	-	-	Passenger and Cargo Aircraft Quantity limitation: 60 L Cargo Aircraft Only Quantity limitation: 220 L Limited Quantities - Passenger Aircraft Quantity limitation: 2 L	Limited quantity Yes. Packaging instruction Passenger aircraft Quantity limitation: 60 L Cargo aircraft Quantity limitation: 220 L Special provisions IB3, T4, TP1	-

15 . Regulatory information

United States

HCS Classification : Combustible liquid
 Highly toxic material
 Irritating material
 Target organ effects

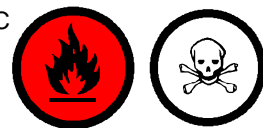
U.S. Federal regulations : TSCA 8(b) inventory: Furfuryl alcohol
 SARA 302/304/311/312 extremely hazardous substances: No products were found.
 SARA 302/304 emergency planning and notification: No products were found.
 SARA 302/304/311/312 hazardous chemicals: Furfuryl alcohol
 SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Furfuryl alcohol: Fire hazard, reactive, Immediate (acute) health hazard, Delayed (chronic) health hazard
 Clean Water Act (CWA) 307: No products were found.
 Clean Water Act (CWA) 311: No products were found.
 Clean Air Act (CAA) 112 accidental release prevention: No products were found.
 Clean Air Act (CAA) 112 regulated flammable substances: No products were found.
 Clean Air Act (CAA) 112 regulated toxic substances: No products were found.

State regulations : Pennsylvania RTK: Furfuryl alcohol: (generic environmental hazard)
 Massachusetts RTK: Furfuryl alcohol
 New Jersey: Furfuryl alcohol
 California prop. 65: No products were found.

Canada

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WHMIS (Canada) : Class B-3: Combustible liquid with a flash point between 37.8°C (100°F) and 93.3°C (200°F).
Class D-1A: Material causing immediate and serious toxic effects (Very toxic).
Class D-2B: Material causing other toxic effects (Toxic).



CEPA DSL: Furfuryl alcohol

This product has been classified in accordance with the hazard criteria of the Canadian CPR, the United States OSHA and the Mexican NOM -018-STPS-2000. This MSDS contains all the information required by the CPR, OSHA, the American National Standard Institute (ANSI) Z400.1 and NOM -018-STPS-2000.

Mexico

Classification :



HAZARD RATINGS

4- Extreme
3- Serious
2- Moderate
1- Slight
0- Minimal

International regulations

International lists

: This product, (and its ingredients) is (are) listed on national inventories, or is (are) exempted from being listed, in Australia (AICS), in Europe (EINECS/ELINCS), in Korea (TCCL), in Japan (METI), in the Philippines (RA6969).

16 . Other information

Label requirements (U.S.A.) : MAY BE FATAL IF SWALLOWED.
HARMFUL IF ABSORBED THROUGH SKIN.
CAUSES EYE AND SKIN IRRITATION.
CAUSES DAMAGE TO THE FOLLOWING ORGANS: RESPIRATORY TRACT, SKIN, CENTRAL NERVOUS SYSTEM, EYE, LENS OR CORNEA.
COMBUSTIBLE LIQUID AND VAPOR.
VAPOR MAY CAUSE FIRE.

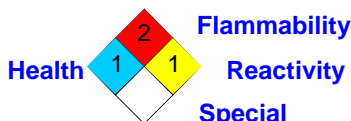
Hazardous Material Information System (U.S.A.) :

HMIS RATING	
Health	2*
Fire hazard	2
Physical Hazard	1
Personal protection	G

HAZARD RATINGS

4- Extreme
3- Serious
2- Moderate
1- Slight
0- Minimal
See section 8 for more detailed information on personal protection.

National Fire Protection Association (U.S.A.) :



References

: ANSI Z400.1, MSDS Standard, 2004. - Manufacturer's Material Safety Data Sheet. - 29CFR Part1910.1200 OSHA MSDS Requirements. - 49CFR Table List of Hazardous Materials, UN#, Proper Shipping Names, PG. - Canada Gazette Part II, Vol. 122, No. 2. Registration SOR/88-64, 31 December 1987. Hazardous Products Act "Ingredient Disclosure List" - Canadian Transport of Dangerous Goods, Regulations and Schedules, Clear Language version 2005. - Official Mexican Standards NOM-018-STPS-2000 and NOM-004-SCT2-1994.

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Notice to reader

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