

**FURFURYL ALCOHOL**

**CODE :  
MSDS 107 - E**



Xn : Harmful

Based on Regulation (EC) N° 1907/2006 (REACH) Article 31 Annex II

**1. Chemical Product and Company Identification**

**1.1. Identification of the substance or preparation :**

**Product name :** FURFURYL ALCOHOL

**Synonyms :** 2-furanecarbinol ; 2 hydroxymethylfuran ; 2-furanemethanol

**CAS No.:** 98-00-0

**EC index No.:** 603-018-00-2

**EINECS No.:** 202-626-1

**RETCS No.:** LU9100000

**NFPA code:** 1-2-1

**Molecular weight:** 98.10

**Formula:** C<sub>5</sub>H<sub>6</sub>O<sub>2</sub>

**1.2. Use of the substance or the preparation :**

Raw material for chemistry

Application in resins

Application in foundry, colour, lac, synthetic and electro industry

Application in cover materials

Application in pharmaceutical products

**1.3. Company/undertaking identification :**

International Furan Chemicals B.V.

Rotterdam Airportplein 7

3045 AP Rotterdam

(Nederland)

Tel.: +31 10 238 05 55

Fax: +31 10 238 05 50

**1.4. Telephone number for emergency :**

+32 14 58 45 45 (24h/ 24 h)

Information centre on dangerous goods (BIG)

Technische Schoolstraat 43 A, B-2440 Geel, Belgium

**2. Hazards Identification**

Harmful by inhalation, in contact with skin and if swallowed

Acute overexposure: irritating to eyes, skin and/or respiratory tract.

**3. Composition, Information on Ingredients**

Hazardous ingredients	CAS No. EINECS No.	Conc. %	Hazards (R - phrases)	Hazard symbol
furfuryl alcohol	98-00-0 202-626-1	>98	20/21/22 (1)	Xn

(1) For R-phrases in full: see heading 16

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#### **4. First Aid Measures**

##### **4.1 After inhalation:**

- Remove the victim into fresh air
- Respiratory problems: consult a doctor/ medical service

##### **4.2 Skin contact:**

- Wash immediately with lots of water
- Soap may be used
- Remove clothing before washing
- Take victim to a doctor if irritation persists

##### **4.3 Eye contact:**

- Rinse immediately with water
- Do not apply neutralizing agents
- Take victim to an ophthalmologist if irritation persists

##### **4.4 After ingestion:**

- Rinse mouth with water
- Immediately give lots of water to drink
- Never give water to an unconscious person
- Do not induce vomiting
- Give activated charcoal
- Consult a doctor/medical service if you feel unwell

#### **5. Fire Fighting Measures**

##### **5.1 Suitable extinguishing media:**

- Water
- Water spray
- Alcohol - resistant foam
- BC powder
- Carbon dioxide

##### **5.2 Unsuitable extinguishing media:**

- No data available

##### **5.3 Special exposure hazards:**

- Material presenting a fire hazard
- On burning: CO and CO<sub>2</sub> are formed

##### **5.4 Instructions:**

- Cool tanks/drums with water spray/remove them into safety

##### **5.5 Special protective equipment for firefighters:**

- Heat/fire exposure: compressed air/oxygen apparatus
- Protective clothing for exposure to chemicals

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**6. Accidental Release Measures**

**6.1 Personal precautions:**

See heading 8.2/13

**6.2 Environmental precautions:**

- Contain released substance, pump into suitable containers
- Plug the leak, cut off the supply

**6.3 Methods of cleaning up:**

- Take up liquid spill into absorbent material e.g.: sand, earth, vermiculite or kieselguhr
- Scoop absorbed substance into closing containers
- Clean contaminated surfaces with an excess of water
- Wash clothing and equipment after handling

**7. Handling and Storage**

**7.1 Handling:**

- Observe normal hygiene standards
- Use earthed equipment
- Remove contaminated clothing immediately
- Clean contaminated clothing

**7.2 Storage:**

- Keep container tightly closed
- Store in a dry area
- Store in a dark area
- Ventilation at floor level
- Keep away from: heat sources, oxidizing agents, acids, peroxides

**Storage temperature:** 20 °C  
**Quantity limit:** N.D. kg  
**Storage life:** N.D. days

**Materials for packaging**

- suitable: steel, aluminium, glass, polypropylene
- to avoid: No data available

**7.3 Specific use(s):**

- See information supplied by the manufacturer for the identified use(s)

**8. Exposure Controls, Personal Protection**

**8.1 Exposure limit values:**

**8.1.1 Occupational exposure:**

furfuryl alcohol

<b>TLV-TWA</b>	<b>mg/m<sup>3</sup></b>	<b>10</b>	<b>ppm</b>
<b>TLV-STEL</b>	<b>mg/m<sup>3</sup></b>	<b>15</b>	<b>ppm</b>

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TVL-Ceiling		mg/m <sup>3</sup>		ppm
WELL-LTEL		mg/m <sup>3</sup>		ppm
WELL-STEL		mg/m <sup>3</sup>		ppm
TRGS 900	41	mg/m <sup>3</sup>	10	ppm
MAK	41	mg/m <sup>3</sup>	10	ppm
MAC-TGG 8 h	20	mg/m <sup>3</sup>		ppm
MAC-TGG 15 min.	200	mg/m <sup>3</sup>		ppm
MAC Ceiling		mg/m <sup>3</sup>		ppm
VME-8 h	40	mg/m <sup>3</sup>	10	ppm
VLE-15 min.	-	mg/m <sup>3</sup>	-	ppm
GWBB-8 h	41	mg/m <sup>3</sup>	10	ppm
GWK-15 min.	61	mg/m <sup>3</sup>	15	ppm
Momentary value		mg/m <sup>3</sup>		ppm
EC		mg/m <sup>3</sup>		ppm
EC-STEL		mg/m <sup>3</sup>		ppm

The Health and Safety Executive (HSE) of Great Britain recommends an interim exposure limit of 0.5 ppm (8-hour) TWA until a new exposure limit is set.

**8.1.2 Sampling methods:**

- Furfuryl Alcohol      NIOSH 2505
- Furfuryl Alcohol      OSHA CSI

**8.2 Exposure controls:**

**8.2.1 Occupational exposure controls:**

- Measure the concentration in the air regularly
- Work under local exhaust/ventilation

**Personal protective equipment:**

**a) Respiratory protection:**

- Wear gas mask with filter type A if concentration in air > exposure limit
- High vapour concentration: gas mask with filter type A

**b) Hand protection:**

- Gloves  
    Suitable materials: Natural rubber  
                                  Neoprene  
                                  Butyl rubber

- Breakthrough time:   N.D.

**c) Eye protection:**

- Face shield

**d) Skin protection:**

- Protective clothing

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Suitable materials: Natural rubber  
Neoprene  
Butyl rubber

**8.2.2 Environmental exposure controls :** See headings 6.2, 6.3 and 13

**9. Physical and Chemical Properties**

**9.1 General information:**

Appearance (at 20°C)	Liquid
Odour	Characteristic
Colour	Colourless to Light-yellow

**9.2 Important health, safety and environmental information:**

pH value	4 - 6 (30 %)	
Boiling point/boiling range	170	°C
Flashpoint	83	°C
Explosion limits	1,8 / 16,3	Vol %

**Oxidising properties**

Vapour pressure (at 20°C) 0.53 hPa

Vapour pressure (at 50°C) 4.5 hPa

Relative density (at 20°C) 1.13

Water solubility completely

Soluble in ethanol, ether, chloroform, methanol,  
1-propanol, iso-amylalcohol,  
ethylacetate

Relative vapour density 3.4

Viscosity (at 25°C) 0.0046 Pa.s

Partition coefficient n-octanol/water 0.28

Evaporation rate

ratio to butyl acetate N.D.

ratio to ether 443

**9.3 Other information:**

Melting point/melting range - 29 °C

Auto-ignition temperature 390 °C

Saturation concentration 2.1 g/m<sup>3</sup>

Specific conductivity N.D. pS/m

**10. Stability and Reactivity**

**10.1 Conditions to avoid/reactivity:**

- Unstable on exposure to air
- Discolours on exposure to light

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- Stable under normal conditions

**10.2 Materials to avoid:**

- Keep away from: heat sources, oxidizing agents, acids, peroxides

**10.3 Hazardous decomposition products:**

- Oxidizes slowly on exposure to air
- This reaction is accelerated on exposure to temperature rise
- Upon combustion CO and CO<sub>2</sub> are formed
- Polymerizes on exposure to. (strong) acids: heat release resulting in increased fire or explosion risk
- Violent to explosive reaction with (strong) oxidizers

**11. Toxicological Information**

**11.1 Acute toxicity:**

furfuryl alcohol

<b>LD50 oral rat</b>	<b>275</b>	<b>mg/kg</b>
<b>LD50 dermal rat</b>	<b>N.D</b>	<b>mg/kg</b>
<b>LD50 dermal rabbit</b>	<b>657</b>	<b>mg/kg</b>
<b>LC50 inhalation rat</b>	<b>0,934</b>	<b>mg/l/4 h</b>
<b>LC50 inhalation rat</b>	<b>233</b>	<b>ppm/4 h</b>

**11.2 Chronic toxicity:**

Furfuryl alcohol

<b>EC carc. cat.</b>	<b>not listed</b>
<b>EC muta. cat.</b>	<b>not listed</b>
<b>EC repr. cat.</b>	<b>not listed</b>
<b>Carcinogenicity (TLV)</b>	<b>not listed</b>
<b>Carcinogenicity (MAC)</b>	<b>not listed</b>
<b>Carcinogenicity (VME)</b>	<b>not listed</b>
<b>Carcinogenicity (GWBB)</b>	<b>not listed</b>
<b>Carcinogenicity (MAK)</b>	<b>not listed</b>
<b>Mutagenicity (MAK)</b>	<b>not listed</b>
<b>Teratogenicity (MAK)</b>	<b>not listed</b>
<b>IARC classification</b>	<b>not listed</b>

Furfuryl alcohol does not possess genotoxic potential (in vivo). An NTP study (1999) concluded that there was some evidence of carcinogenic activity of furfuryl alcohol in male rats and male mice.

**11.3 Routes of exposure:** ingestion, inhalation, eye and skin  
Warning! Substance is absorbed through the skin

**11.4 Acute effects/symptoms:**

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**AFTER INHALATION**

- Slight irritation
- Irritation of the nasal mucous membranes

**EXPOSURE TO HIGH CONCENTRATIONS:**

- CNS depression
- Dizziness
- Coordination disorders

**AFTER INGESTION**

**AFTER ABSORPTION OF HIGH QUANTITIES:**

- Rapid respiration
- Nausea
- Diarrhoea
- Dizziness
- Change in urine output
- Symptoms similar to those listed under inhalation

**AFTER SKIN CONTACT**

- Slight irritation
- Dry skin

**AFTER EYE CONTACT**

- Irritation of the eye tissue

**ON CONTINUOUS EXPOSURE/CONTACT:**

- Inflammation/damage of the eye tissue

**11.5 Chronic effects:**

- No cumulative effect
- Not listed in carcinogenicity class (IARC,EC,TLV,MAK)
- Not listed in mutagenicity class (EC,MAK)
- Not classified as toxic to reproduction (EC)

**ON CONTINUOUS/ REPEATED EXPOSURE/CONTACT:**

- Red skin
- Dry skin

**12. Ecological Information**

**12.1 Ecotoxicity:**

**Furfuryl alcohol:**

- LC50 (96 h) 32 mg/l (PIMEPHALES PROMELAS)
- EC50 (24 h) 115 mg/l (DAPHNIA MAGNA)
- EC50 (24 h) 100 mg/l (SCENEDESMUS QUADRICAUDA)

- Effect on waste water purification no date available

**12.2 Mobility:**

- **Volatile organic compounds (VOC):** 100%

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- Soluble in water
- For other physicochemical properties see heading 9

**12.3 Persistence and degradability:**

- **Biodegradation BOD<sub>5</sub>:** 30 % ThOD
- **Water:**
  - Readily biodegradable in water
  - test: 75%, 14d., mitil
- **Soil:** T ½ N.D. days

**12.4 Bioaccumulative potential:**

- **log P<sub>ow</sub>** 0.28
- **BCF** N.D.
- Slightly or not bioaccumulative

**12.5 Other adverse effects:**

- **WGK :** 1 (classification in compliance with Verwaltungsvorschrift wassergefährdender Stoffe (VwVwS) of 27 july 2005)
- **Effect on the ozone layer:** Not dangerous for the ozone layer (Council Regulation (EC) No 2037/2000, O.J. L244 of 29/09/2000)
- **Greenhouse effect:** No data available
- **Effect on waste water purification:** No data available

**13. Disposal Considerations**

**13.1 Provisions relating to waste:**

- Waste material code (91/689/EEC, Council Decision 2001/118/EC, O.J. L47 of 16/2/2001): 07 01 04 (other organic solvents, washing liquids and mother liquors )
- LWCA ( the Netherlands): KGA category 03
- Hazardous waste (91/689/EEC)

**13.2 Disposal methods:**

- Recycle by distillation
- Remove to an authorized waste incinerator for solvents
- Obtain the consent of pollution control authorities before discharging to wastewater treatment plants
- Do not discharge into surface water

**13.3 Packaging:**

- Waste material code packaging (91/689/EEC, Council Decision 2001/118/EC, O.J. L47 of 16/2/2001): 15 01 10 (packaging containing residues of or contaminated by dangerous substances)

**14. Transport Information**

**14.1 Classification of the substance in compliance with UN Recommendations**

<b>UN number</b>	2874
<b>CLASS</b>	6.1
<b>SUB RISKS</b>	-
<b>PACKING</b>	III

**14.2 ADR (transport by road)**

<b>CLASS</b>	6.1
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**PACKING** III  
**CLASSIFICATION CODE** T1  
**DANGER LABEL TANKS** 6.1  
**DANGER LABEL PACKAGES** 6.1  
**PROPER SHIPPING NAME**  
 Furfuryl alcohol

**14.3 RID (transport by rail)**

**CLASS** 6.1  
**PACKING** III  
**CLASSIFICATION CODE** T1  
**DANGER LABEL TANKS:** 6.1  
**DANGER LABEL PACKAGES:** 6.1  
**PROPER SHIPPING NAME**  
 Furfuryl alcohol

**14.4 ADNR (transport by inland waterways)**

**CLASS** 6.1  
**PACKING** III  
**CLASSIFICATION CODE** T1  
**DANGER LABEL TANKS** 6.1  
**DANGER LABEL PACKAGES** 6.1

**14.5 IMDG (maritime transport)**

**CLASS** 6.1  
**SUB RISKS** -  
**PACKING** III  
**MFAG:** -  
**EMS:** F-A, S-A  
**MARINE POLLUTANT:** -

**14.6 ICAO (air transport)**

**CLASS** 6.1  
**SUB RISKS** -  
**PACKING** III  
**PACKING INSTRUCTIONS PASSENGER AIRCRAFT** 611/Y611  
**PACKING INSTRUCTIONS CARGO AIRCRAFT** 618

**14.7 Special precautions** None

**14.8 Limited quantities (LQ)**

When substances and their packaging meet the conditions established by ADR/RID/ADNR in chapter 3.4, **only** the following prescriptions shall be complied with:  
 each package shall display a diamond-shaped figure with the following inscription:  
 - 'UN 2874'  
 or, in the case of different goods with different identification numbers within a single package:  
 - the letters 'LQ'

**15. Regulatory Information**

**15.1 EU legislation**

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Enumerated in substance list Annex I of directive 67/548/EEE and sequens



Xn : Harmful

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

S (02): (Keep out of reach of children)

### 15.2 National provisions

WGK : 1 (Classification in compliance with Verwaltungsvorschrift wassergefährrender Stoffe (VwVwS) of 27 July 2005)

## 16. Other Information

The information provided on this MSDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

**N.A.** = NOT APPLICABLE  
**N.D.** = NOT DETERMINED  
**(\*)** = INTERNAL CLASSIFICATION

**PBT - substances** = persistent, bioaccumulative and toxic substances

#### Exposure limits:

**TLV:** Threshold Limit Value - ACGIH US  
**WEL:** Workplace Exposure Limits - United Kingdom  
**MAK:** Maximale Arbeitsplatzkonzentrationen - Germany  
**MAC:** Maximale aanvaarde concentratie - the Netherlands  
**VME:** Valeurs limites de Moyenne d'Exposition - France  
**VLE:** Valeurs limites d'Exposition à court terme - France  
**GWBB:** Grenswaarde beroepsmatige blootstelling - Belgium  
**GWK:** Grenswaarde kortstondige blootstelling - Belgium  
**EC:** Indicative occupational exposure limit values - directive 2000/39/EC

#### Chronic toxicity:

**K:**List of the carcinogenic substances and processes - The Netherlands

#### Full text of any R-phrases referred to under heading 2:

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