SECTION 1: Identification of the substance / mixture and of the company / undertaking

1.1 Product identifier

Chemical name: 2-Furanmethanol
Formula: C₅H₆O₂
Molecular mass: 98.10
CAS-No.: 98-00-0
EC-No.: 202-626-1
Registration number: 13.019

1.2 Relevant identified uses of the substance or mixture and uses advised against

Exposure scenario
- Manufacturing of blends / formulation
- Manufacturing of polymers
- Manufacturing of moulds using formulations containing the substance (foundry)
- Manufacturing of refractories, abrasive wheels, friction (brake pads, clutch facing), carbon impregnation using formulations containing the substance
- Wood impregnation / modification
- Professional end-use of acid resistant coating
- Use at industrial site as paint stripper

Uses advised against: None

1.3 Details of the supplier of the safety data sheet

Importer: International Furan Chemicals B.V.
Address: Rotterdam Airportplein 33
3045 AP ROTTERDAM
The Netherlands
Telephone number: +31 10 238 05 55
E-mail address: sales@furan.com

1.4 Emergency telephone numbers

Emergency: +32 14 58 45 45 (24 h /24 h)
Information centre of dangerous goods (BIG)
Medical information: United Kingdom 844 892 0111 National Poisons Information Service

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

According to Regulation (EC) No. 1272/2008 (EU-GHS / CLP)
Hazard Classes / Hazard Class- and Category- and -Statement Codes

- Acute toxicity: H301 + H311 + H331
- Eye irritation: H319
- Skin irritation: H315
- Carcinogenicity: H351
- Specific target organ toxicity – single exposure: STOT SE 3, H335
- Specific target organ toxicity – repeated exposure: STOT RE 2, H373

For full text of Hazard statements: see subsection 2.2.

2.2 Label elements

Hazard pictograms

Signal word: Danger
Hazard statements:
- H301 + H311 + H331: Toxic if swallowed, in contact with skin or if inhaled.
- H319: Causes serious eye irritation.
- H315: Causes skin irritation.
Furfuryl alcohol

H335 May cause respiratory irritation.
H351 Suspected of causing cancer.
H373 May cause damage to respiratory - nasal tissue through prolonged or repeated exposure by inhalation.

Precautionary statements
P201 Obtain special instructions before use.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves / protective clothing / eye protection.
P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER / doctor / physician.
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308 + P313 IF exposed or concerned: Get medical advice / attention.
P501 Dispose of contents / container to a specialised processing facility for disposal in accordance with local / regional regulations.

* on label

2.3 Other hazards
Furfuryl alcohol does not meet the criteria for PBT or vPvB according to Regulation 1907/2006.

SECTION 3: Composition / information on ingredients
3.1 Substances
Main constituent
Furfuryl alcohol
Identity
CAS-No. 98-00-0
EC-No. 202-626-1
Percentage
≥ 97.0 - ≤ 100.0 %

Classified impurities or stabilizers
None

SECTION 4: First aid measures
4.1 Description of first aid measures
Inhalation Fresh air, rest, half upright position. Get medical advice / attention if you feel unwell.
Skin contact Remove contaminated clothes, rinse skin with water or shower. If skin irritation occurs: get medical advice / attention.
Eye contact First rinse with plenty of water (remove lenses if possible). If eye irritation persists: get medical advice / attention.
Ingestion Rinse mouth. Immediately call a doctor / physician if you feel unwell.

4.2 Most important symptoms and effects, both acute and delayed
Respiratory irritation (nose and upper respiratory tract). Eye and skin irritation.

4.3 Indication of any immediate medical attention and special treatment needed
Information on medical attendance
Not necessary.

Special means to provide treatment at the workplace
Not necessary.

SECTION 5: Firefighting measures
5.1 Extinguishing media
Suitable extinguishing media
Powder, water spray, alcohol-resistant foam, carbon dioxide.

Unsuitable extinguishing media
Alcohol unstable foam.

5.2 Special hazards arising from the substance or mixture
Hazardous combustion products
May produce toxic fumes of carbon monoxide if burning.

Additional hazards
Extreme generation of heat in the case of larger fires.

5.3 Advice for fire-fighters
Protective actions
In case of fire: keep containers cool by spraying with water.
Retain contaminated extinguishing water; do not allow entering into the sewage system.
In the case of larger fires: Cordon affected area.

Special protective equipment
Self-contained respiratory protective device.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Information for non-emergency personnel
In the case of large quantities: Use filter respirator for organic vapours (filter type A).
Use personal protective equipment to avoid any contamination of skin, eyes and personal clothes. Remove potential sources of ignition. Do not smoke.
Assure sufficient ventilation.

Information for emergency responders
If available, observe corporate hazard-control and emergency plans.

6.2 Environmental precautions
In the case of spills: Avoid penetration into the sewage canal, surface water and ground water.
In the case of accidental release: Do not discharge in surface water, sewers or soil.

6.3 Methods and material for containment and cleaning up

Advice on spillage containment
Take up small amounts spilled product with an inert absorbent. Dispose of as hazardous waste.
Dam spilled substance in and suck carefully; recycle if possible.

Appropriate clean-up procedures
Collect remainder in inert absorbent and dispose of as hazardous waste. Wash away remainder with water.

Inappropriate containment or clean-up techniques
None known.

6.4 Reference to other sections
See also the sections 8 and 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Recommendations for safe handling
Use only in well ventilated areas.
Only transfer into suited and resistant containers. Containers have to be properly labelled.
Above 65 °C: use in a closed system.

Advice on general occupational hygiene
The usual precautionary measures when handling chemicals have to be observed.
Do not eat, drink and smoke in work areas. Wash hands thoroughly with water and soap.

7.2 Conditions for safe storage, including any incompatibilities

Protection against incompatible substances
Keep away from oxidants and strong acids. The substance affects many synthetic materials; store only in original packing.
Keep container tightly closed.

Protection against ambient influences
Protect against heat and solar radiation. Recommended storage temperature: 20 °C.
Store in a dark area.

Maintenance of the integrity of the substance
Not required.

7.3 Specific end uses
If used in food: comply with food safety regulation (HACCP).

SECTION 8 Exposure controls / personal protection

8.1 Control parameters
## Furfuryl alcohol

### Safety Data Sheet

according to Regulation (EC) No 1907/2006

### Furan Chemicals B.V.

<table>
<thead>
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<th>Country</th>
<th>TWA-8 hours</th>
<th>TWA-15 min.</th>
<th>Notation</th>
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<td>2</td>
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</tbody>
</table>

n.d. not determined

The exposure limits may be exceeded before the odour is perceived.

### DNEL / DMEL

#### Workers short term exposition
- DNEL worker (acute, inhalation - systemic) 143 mg/m³
- DNEL worker (acute, inhalation - local) 8 mg/m³

#### Workers long term exposition
- DNEL worker (long-term, inhalation - systemic) 31 mg/m³
- DNEL worker (long-term, inhalation - local) 8 mg/m³
- DNEL worker (long-term, dermal - systemic) 4 mg/kg bw/day

#### Consumers short term exposition
- DNEL general population (acute, inhalation - systemic) 128.5 mg/m³
- DNEL general population (acute, inhalation - local) 8 mg/m³
- DNEL general population (acute, oral - systemic) 2.4 mg/kg

#### Consumers long term exposition
- DNEL general population (long-term, inhalation - systemic) 9.3 mg/m³
- DNEL general population (long-term, inhalation - local) 8 mg/m³
- DNEL general population (long-term, oral - systemic) 2.4 mg/kg bw/day
- DNEL general population (long-term, dermal - systemic) 2.4 mg/kg bw/day

### PNEC

#### Aquatic
- fresh water PNEC aquatic (freshwater) 0.17 mg/L
- marine water PNEC aquatic (marine water) 0.017 mg/L
- intermittent release PNEC aquatic (intermittent release) 1.7 mg/L

#### Sedimentary
- fresh water sediment PNEC sediment 0.861 mg/kg sediment dw
- marine water sediment PNEC marine-sediment 0.0861 mg/kg sediment dw

#### Terrestrial
- soil PNEC soil 0.0724 mg/kg soil dw

#### Secondary poisoning
- food chain PNEC oral 35.3 mg/kg food

Potential to bioaccumulate in the food chain is not applicable (log Kow <3).
8.2 Exposure controls
8.2.1 Appropriate engineering controls
Ventilation and local exhaust.

8.2.2 Individual protection measures, such as personal protective measures
a) Eye/face protection
Safety goggles (EN 166).

b) Skin protection
Hand protection
Full contact:
- Gloves butyl rubber 0.7 mm - Breakthrough time > 8 hours (EN374)
- Gloves neoprene 0.75 mm - Breakthrough time > 4 hours (EN374)

Splash contact:
- Gloves natural rubber/latex 1.2 mm - Breakthrough time < 10 min. (EN374)

Other protective clothing (EN 340/EN 14605).

c) Respiratory protection
In case of insufficient local exhaust: filter respirator with filter type A for organic vapours (EN 14387).

d) Thermal hazards
Not applicable.

8.2.3 Environmental exposure controls
Direct polluted air of the local exhaust ventilation out of the plant in a manner in accordance with environmental regulations.

SECTION 9: Physical and chemical properties
9.1 Information on basic physical and chemical properties
Appearance
Clear colourless liquid that turns from yellow and brown to dark red on exposure to light and air.

Odour
Characteristic: slightly pungent.

Odour threshold (mg/m3)
33

pH (30% solution)
4 - 6

Melting point / freezing point (°C)
- 14.6

Boiling point (°C) at 1013 hPa
171

Flash point (°C)
65 (closed cup)

Evaporation rate (ether=1)
443

Upper / lower explosive limits (vol%)
1.8 - 16.3

Vapour pressure at 20 °C (hPa)
0.53

Vapour density (air=1)
3.38

Relative density (water=1)
1.13

Solubility(ies)
- Solubility in water at 20 °C (g/l) Miscible
- Solubility in fat Good

Partition coefficient (log K octanol/water)
0.3

Auto-ignition temperature (°C)
490

Decomposition temperature Not available

Viscosity at 25 °C (mPa.s)
4.62

Explosive properties Non explosive

Oxidising properties None

9.2 Other information
Miscibility with Solvents (ethanol, benzene, chloroform, ether)
- Conductivity (pS/m) Not available.

Heat of combustion (kJ/kg)
26 000

Surface tension at 25 °C (mN/m)
38

SECTION 10: Stability and reactivity
10.1 Reactivity
Risk of polymerization.

10.2 Chemical stability
Discolours on exposure to light. Unstable in water.

10.3 Possibility of hazardous reactions
Exothermic polymerization with explosive violence in the presence of (strong) acids. Reacts violently with oxidants.

10.4 Conditions to avoid
Contact with direct sunlight, heat sources and air. Temperatures in storage > 40 °C should be avoided.

10.5 Incompatible materials
Oxidants (violent reaction) and strong acids (polymerization).

10.6 Hazardous decomposition products
Upon decomposition emits carbon monoxide, carbon dioxide and/or low molecular weight hydrocarbons.

SECTION 11: Toxicological information

11.1 Information on toxicological effects
a) Acute Toxicity
   - Oral LD50 (rat) 132 - 275 mg/kg
   - Dermal LD50 (rabbit) 400 - 657 mg/kg
   - Inhalation LC50 (rat, 4 hours) 1.17 mg/L (aerosol)

b) Skin corrosion/irritation
   The substance is irritating to skin.

c) Serious eye damage/irritation
   The substance is irritating to eyes.

d) Respiratory or skin sensitisation
   No adverse effect observed (not sensitising).

e) Germ cell mutagenicity
   No adverse effect observed (negative).

f) Carcinogenicity
   NOAEL (oral) 53 mg/kg bw/day
   Target organ(s): digestive: liver.
   LOAEC (inhalation) 8 mg/m³
   Target organ(s): respiratory: nose.
   Suspected of causing cancer. Two-year inhalation carcinogenicity studies provide limited evidence of carcinogenicity at dose levels associated with systemic toxicity and only in tissues which exhibit significant tissue damage (i.e. nose and kidney).


g) Reproductive toxicity
   - Fertility/developmental
   No effect of furfuryl alcohol on estrous cyclicity or on sperm parameters in rats or mice at exposure concentrations of up to 128 mg/m³. Not warranted to be a reprotoxin.

h) Specific target organ toxicity – single exposure
   - Respiratory tract
     The substance may cause respiratory irritation.

i) Specific target organ toxicity – repeated exposure
   - Respiratory tract
     Signs of respiratory tract (specifically nasal) irritation were seen in rats after repeated exposure.

j) Aspiration hazard
   Based on available data, the classification criteria for this hazard class are not met.

11.2 Likely routes of exposure
Furfuryl alcohol can be absorbed via the oral route and via the dermal and inhalation routes. Furfuryl alcohol is extensively and rapidly oxidised to furfural.

SECTION 12: Ecological information

12.1 Toxicity
   Aquatic compartment and sediment
   - Fish
     LC50 (fresh water, 96 h) 362 mg/L
Furfuryl alcohol

12.2 Persistence and degradability
Biodegradability
- Biodegradability in water
  Readily biodegradable.
- Biochemical oxygen demand
  BOD (14 days) 77.7% degradation

12.3 Bioaccumulation potential
Aquatic bioaccumulation
No remarkable bioaccumulation potential (log $K_{ow}$ 0.3).

12.4 Mobility in soil
Adsorption/desorption
Highly mobile ($K_{oc}$ 34)
Volatilisation
Henry’s Law constant at 20 °C 0.0079 (in Pa m$^3$/mol)

12.5 Results of PBT and vPvB assessment
The substance does not meet the PBT and vPvB criteria according to annex XIII of Regulation (EC) No 1907/2006.

12.6 Other adverse effects
Slightly hazardous to water (Water hazard class 1, WGK Germany)

SECTION 13: Disposal considerations
13.1 Waste treatment methods
Product disposal
Recycling by distillation.
Removal to an authorized waste incinerator for solvents or as chemical waste in accordance with local regulations. Do not discharge wastewater into sewer.

Packaging disposal
Uncleaned empty package have to be treated like the content. The labelling of uncleaned containers must not be removed.

Waste treatment-relevant information
European waste list (EURAL) 07 01 04

SECTION 14: Transport information
14.1 UN No. 2874
14.2 UN proper shipping name FURFURYL ALCOHOL
14.3 Transport hazard class(es) 6.1
14.4 Packinggroup III
14.5 Environmental hazards
Marine pollutant (IMO/IMDG) No
Hazards for tank vessels (ADN) 6.1+N3

14.6 Specials precautions for user
Classification code (ADR/RID/ADN) T1
Label (ADR/RID/ADN/IMDG/IATA) 6.1
Tunnel restriction code (ADR/RID) (E)
Hazard Identification Number (ADR/RID) 60
Furfuryl alcohol

Limited quantity (ADR/RID/ADN/IMDG/IATA) 5 L
Excepted quantity (ADR/RID/ADN/IMDG/IATA) E1
ERICard (ADR) 6-03
Emergency Schedules (IMDG)
- Fire schedule Alfa (F - A)
- Spillage schedule Alfa (S - A)

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code
Ship type required (IMDG) 3
Pollution category (IMDG) Y

SECTION 15: Regulatory information
15.1 Safety, health and environmental regulations / legislation specific for the substance or mixture
Authorisations (REACH)
Not subject to Title VII of Regulation (EC) No 1907/2006
Restrictions (REACH), SVHC
Annex XVII of Regulation (EC) No 1907/2006 is not applicable.
SVHC (Substance of Very High Concern) status: negative.
Control of major-accident hazards (Seveso III)
Subject to Directive 2012/18/EU.
Hazard category H2 ACUTE TOXIC
Qualifying quantity column 2: 50 000 kg
Qualifying quantity column 3: 200 000 kg

List of flavouring substances
Approved as a flavouring agent (Regulation (EC) No 872/2012).

Classification, labelling and packaging
Regulation (EC) No 1272/2008 (CLP-Regulation)
Other EU-/national regulations
Other applicable EU-/national regulations have to be observed.

15.2 Chemical safety assessment
A Chemical Safety Assessment has been carried out for furfuryl alcohol.

SECTION 16: Other information
16.1 Changes to the previous version
Previous version 13
Changes None

16.2 Abbreviations and acronyms
ADN Transport of dangerous goods by inland waterways
ADR Transport of dangerous goods by road
DNEL Derived No Effect Level
EC50 Effect Concentration, 50 percent
ERICard Emergency Response Intervention Card
GHS / CLP Globally Harmonised System / Classification, Labelling and Packaging
IC50 Inhibitory Concentration, 50 percent
IATA Transport of dangerous goods by air
IMDG Transport of dangerous goods by sea
LC50 Lethal Concentration, 50 percent
LD50 Lethal Dose, 50 percent
LOAEC Lowest observed adverse effect concentration
NOAEC No observed adverse effect concentration
NOAEL No observed adverse effect level
NOEC No observed effect concentration
NOEL No observed effect level
PBT Persistent, Bioaccumulative and Toxic
PNEC Predicted No Effect Concentration
RID Transport of dangerous goods by rail
TWA Time Weighted Average
vPvB very Persistent and very Bioaccumulative

16.3 Literature references and sources for data
REACH dossier.
16.4 Full text of hazard statements which are not written out in full under Sections 2 to 15

None.

This data sheet has been compiled by KWA. Despite the careful attention paid to the setting up of the text, KWA cannot be held responsible for any error appearing in the text and resulting in whatever damage it may cause.
KWA, Spijksedijk 18c, 4207 GN Gorinchem, The Netherlands. Phone +31 183 649 556