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

1.1 **Product identifiers**
   - **Product name**: Furfuraldehyde
   - **CAS-No.**: 98-01-1

1.2 **Relevant identified uses of the substance or mixture and uses advised against**
   - **Identified uses**: Laboratory chemicals, Industrial & for professional use only.

1.3 **Details of the supplier of the safety data sheet**
   - **Company**: Central Drug House (P) Ltd
     7/28 Vardaan House
     New Delhi-10002
     INDIA
   - **Telephone**: +91 11 49404040
   - **Email**: care@cdhfinechemical.com

1.4 **Emergency telephone number**
   - **Emergency Phone #**: +91 11 49404040 (9:00am - 6:00 pm) [Office hours]

SECTION 2: Hazards identification

2.1 **Classification of the substance or mixture**

   **Classification according to Regulation (EC) No 1272/2008**
   - Acute toxicity, Oral (Category 3), H301
   - Acute toxicity, Inhalation (Category 3), H331
   - Acute toxicity, Dermal (Category 4), H312
   - Skin irritation (Category 2), H315
   - Eye irritation (Category 2), H319
   - Carcinogenicity (Category 2), H351
   - Specific target organ toxicity - single exposure (Category 3), Respiratory system, H335

   For the full text of the H-Statements mentioned in this Section, see Section 16.

   **Classification according to EU Directives 67/548/EEC or 1999/45/EC**
   - R40
   - T Toxic
   - Xi Irritant
   - Xn Harmful
   - R23/25
   - R36/37/38
   - R21

   For the full text of the R-phrases mentioned in this Section, see Section 16.
2.2 Label elements

Labelling according Regulation (EC) No 1272/2008

Pictogram

Signal word Danger

Hazard statement(s)
H301 + H331 Toxic if swallowed or if inhaled
H312 Harmful in contact with skin.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.
H351 Suspected of causing cancer.

Precautionary statement(s)
P261 Avoid breathing vapours.
P280 Wear protective gloves/ protective clothing.
P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P311 Call a POISON CENTER or doctor/physician.

Supplemental Hazard Statements none

2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher. Photosensitizer.

SECTION 3: Composition/information on ingredients

3.1 Substances

Synonyms: 2-Furaldehyde
Furan-2-carboxaldehyde

Formula: C₅H₄O₂
Molecular weight: 96.09 g/mol
CAS-No.: 98-01-1
EC-No.: 202-627-7
Index-No.: 605-010-00-4

Hazardous ingredients according to Regulation (EC) No 1272/2008

Component | Classification | Concentration
--- | --- | ---
2-Furaldehyde |  | 
CAS-No. | 98-01-1 | Acute Tox. 3; Acute Tox. 4; <= 100 %
EC-No. | 202-627-7 | Skin Irrit. 2; Eye Irrit. 2; Carc.
Index-No. | 605-010-00-4 | 2; STOT SE 3; H301 + H331, H312, H315, H319, H335, H351

Hazardous ingredients according to Directive 1999/45/EC

Component | Classification | Concentration
--- | --- | ---
2-Furaldehyde |  | 
CAS-No. | 98-01-1 | T, Carc.Cat.3, R21 - R23/25 - <= 100 %
EC-No. | 202-627-7 | R36/37/38 - R40
Index-No. | 605-010-00-4 |
SECTION 4: First aid measures

4.1 Description of first aid measures

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

In case of eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture
Carbon oxides

5.3 Advice for firefighters
Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information
Use water spray to cool unopened containers.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Wear respiratory protection. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.
For personal protection see section 8.

6.2 Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

6.3 Methods and materials for containment and cleaning up
Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13). Keep in suitable, closed containers for disposal.

6.4 Reference to other sections
For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling
Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.
For precautions see section 2.2.
7.2 Conditions for safe storage, including any incompatibilities
Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Storage class (TRGS 510): Non-combustible, acute toxic Cat. 1 and 2 / very toxic hazardous materials

7.3 Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters
Components with workplace control parameters

8.2 Exposure controls
Appropriate engineering controls
Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

Personal protective equipment

Eye/face protection
Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Body Protection
Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Appearance</td>
<td>Form: clear, viscous, liquid</td>
</tr>
<tr>
<td></td>
<td>Colour: light brown</td>
</tr>
<tr>
<td>b) Odour</td>
<td>No data available</td>
</tr>
<tr>
<td>c) Odour Threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>d) pH</td>
<td>No data available</td>
</tr>
<tr>
<td>e) Melting point/freezing point</td>
<td>Melting point/range: -36 °C - lit.</td>
</tr>
<tr>
<td>f) Initial boiling point and boiling range</td>
<td>162 °C - lit.</td>
</tr>
<tr>
<td>g) Flash point</td>
<td>61,7 °C - closed cup</td>
</tr>
<tr>
<td>h) Evaporation rate</td>
<td>No data available</td>
</tr>
<tr>
<td>i) Flammability (solid, gas)</td>
<td>No data available</td>
</tr>
<tr>
<td>j) Upper/lower flammability or explosive limits</td>
<td>Upper explosion limit: 19,3 %(V)</td>
</tr>
<tr>
<td></td>
<td>Lower explosion limit: 2,1 %(V)</td>
</tr>
</tbody>
</table>
k) Vapour pressure 18,0 hPa at 55 °C
2,3 hPa at 20 °C
l) Vapour density 3,32 - (Air = 1.0)
m) Relative density 1,16 g/cm3 at 25 °C
n) Water solubility soluble
o) Partition coefficient: n-octanol/water log Pow: 0,41
p) Auto-ignition temperature No data available
q) Decomposition temperature No data available
r) Viscosity No data available
s) Explosive properties No data available
t) Oxidizing properties No data available

9.2 Other safety information
Surface tension 43,5 mN/m at 20 °C
Relative vapour density 3,32 - (Air = 1.0)

SECTION 10: Stability and reactivity

10.1 Reactivity
No data available

10.2 Chemical stability
Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions
No data available

10.4 Conditions to avoid
Heat, flames and sparks.

10.5 Incompatible materials
Oxidizing agents, Strong acids

10.6 Hazardous decomposition products
Other decomposition products - No data available
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
LD50 Oral - Rat - male - 145 - 204 mg/kg
LD50 Oral - Rat - female - 90 - 119 mg/kg
LC50 Inhalation - Rat - male and female - 4 h - > 0,54 - < 1,63 mg/l
(OECD Test Guideline 403)
LD50 Dermal - Rabbit - > 2,000 mg/kg
(OECD Test Guideline 402)
Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

Skin corrosion/irritation
Skin - Rabbit
Result: Mild skin irritation - 24 h
(OECD Test Guideline 404)

Serious eye damage/eye irritation
Eyes - Rabbit
Result: Moderate eye irritation - 24 h
(OECD Test Guideline 405)
Respiratory or skin sensitisation
Maximisation Test (GPMT) - Guinea pig
Did not cause sensitisation on laboratory animals.
(OECD Test Guideline 406)

Germ cell mutagenicity
Mouse
lymphocyte
Mutation in mammalian somatic cells.

Human
HeLa cell
DNA inhibition

Human
lymphocyte
Sister chromatid exchange

Carcinogenicity
Carcinogenicity - Rat - Oral
Tumorigenic: Equivocal tumorigenic agent by RTECS criteria. Liver: Tumors.
This product is or contains a component that has been reported to be possibly carcinogenic based on its
IARC, ACGIH, NTP, or EPA classification.
Limited evidence of carcinogenicity in animal studies

IARC: 3 - Group 3: Not classifiable as to its carcinogenicity to humans (2-Furaldehyde)

Reproductive toxicity
No data available

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

Additional Information
RTECS: LT7000000
Central nervous system depression, Headache, Material is extremely destructive to tissue of the mucous
membranes and upper respiratory tract, eyes, and skin., Cough

SECTION 12: Ecological information

12.1 Toxicity
Toxicity to fish LC50 - Pimephales promelas (fathead minnow) - 32 mg/l - 96 h
Toxicity to daphnia and other aquatic invertebrates EC50 - Daphnia magna (Water flea) - 29 mg/l - 24 h
Toxicity to algae EC50 - other microorganisms - 570 mg/l - 24 h

12.2 Persistence and degradability
Biodegradability aerobic Biochemical oxygen demand - Exposure time 28 d
Result: 93.5 % - Readily biodegradable
(OECD Test Guideline 301C)

12.3 Bioaccumulative potential
No data available

12.4 Mobility in soil
No data available
12.5 Results of PBT and vPvB assessment
This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Other adverse effects
Harmful to aquatic life.
No data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods
Product
This combustible material may be burned in a chemical incinerator equipped with an afterburner and scrubber. Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging
Dispose of as unused product.

SECTION 14: Transport information

14.1 UN number
ADR/RID: 1199  IMDG: 1199  IATA: 1199

14.2 UN proper shipping name
ADR/RID: FURALDEHYDES
IMDG: FURALDEHYDES
IATA: Furaldehydes

14.3 Transport hazard class(es)
ADR/RID: 6.1 (3)  IMDG: 6.1 (3)  IATA: 6.1 (3)

14.4 Packaging group
ADR/RID: II  IMDG: II  IATA: II

14.5 Environmental hazards
ADR/RID: no  IMDG Marine pollutant: no  IATA: no

14.6 Special precautions for user
No data available

SECTION 15: Regulatory information
This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

15.2 Chemical Safety Assessment
For this product a chemical safety assessment was not carried out

SECTION 16: Other information
Full text of H-Statements referred to under sections 2 and 3.

Acute Tox.  Acute toxicity
Car.  Carcinogenicity
Eye Irrit.  Eye irritation
H301  Toxic if swallowed.
H301 + H331  Toxic if swallowed or if inhaled
H312  Harmful in contact with skin.
H315  Causes skin irritation.
H319  Causes serious eye irritation.
H331  Toxic if inhaled.
H335  May cause respiratory irritation.
Full text of R-phrases referred to under sections 2 and 3

<table>
<thead>
<tr>
<th>R</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>T</td>
<td>Toxic</td>
</tr>
<tr>
<td>R21</td>
<td>Harmful in contact with skin.</td>
</tr>
<tr>
<td>R23/25</td>
<td>Toxic by inhalation and if swallowed.</td>
</tr>
<tr>
<td>R36/37/38</td>
<td>Irritating to eyes, respiratory system and skin.</td>
</tr>
<tr>
<td>R40</td>
<td>Limited evidence of a carcinogenic effect.</td>
</tr>
</tbody>
</table>

Further information
The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Central Drug House (P) Ltd and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.cdhfinechemical.com for additional terms and conditions of sale.