

Material Name: Furfural  
Issue Date: 2015-05-29  
Revision: ILL1.0

Safety Data Sheet:  
**Material Name: Furfural**  
**SDS ID: Furfural**  
Issue Date: 2015-05-29  
Revision: ILL1.0

**Other Sections**

01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16

\*\*\* Section 1 - PRODUCT AND COMPANY IDENTIFICATION \*\*\*

**Material Name**

Furfural

**Suppliers Information**

Harborchem  
PO Box 630, Cranford NJ 07016  
Phone: (908) 272-7070  
Fax: (908) 272-8966

**Emergency Contact:** CHEMTREC 1-800-424-9300

**Manufacturer Information**

Illovo Sugar (South Africa) Limited  
Building 3C, Gleneagles Office Park  
10 Flanders Drive  
Mount Edgecombe 4300  
South Africa  
Phone#: +31 (0) 6 22 94 6383 OR +31 (0) 30 27 48 888  
Phone: +27 (31) 508-4300  
Fax: +27 (31) 508-4597

**Trade Names**

2-Furaldehyde

**Synonyms**

Furan-2-carboxaldehyde; Furale; Furfuraldehyde; 2-Furylmethanol; Promucis aldehyde; Ant Oil, Furanaldehyde

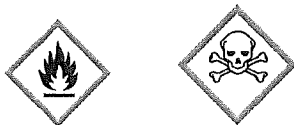
\*\*\* Section 2 - HAZARDS IDENTIFICATION \*\*\*

**Classification in accordance with paragraph (d) of 29 CFR 1910.1200.**

Flammable Liquids - Category 3  
Acute Toxicity - Oral - Category 3  
Skin Corrosion/Irritation - Category 2  
Serious Eye Damage/Eye Irritation - Category 2B  
Specific Target Organ Toxicity - Single Exposure - Category 3  
Hazardous to the Aquatic Environment - Acute - Category 3

**GHS Label Elements**

**Symbol(s)**



**Signal Word**

Danger

Material Name: Furfural  
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Revision: ILL1.0

**Hazard Statement(s)**

Flammable liquid and vapor  
Toxic if swallowed  
Causes skin irritation  
Causes eye irritation  
May cause respiratory irritation. May cause drowsiness or dizziness  
Harmful to aquatic life

**Precautionary Statement(s)**

**Prevention**

Wash thoroughly after handling.  
Do not eat, drink or smoke when using this product.  
Wear protective gloves/protective clothing/eye protection/face protection.  
Avoid breathing dust/fume/gas/mist/vapors/spray.  
Contaminated work clothing should not be allowed out of the workplace.  
Use only outdoors or in a well-ventilated area.  
Keep away from heat/sparks/open flame/hot surfaces - No smoking.  
Keep container tightly closed.  
Ground/Bond container and receiving equipment.  
Use explosion-proof electrical/ventilating/lighting equipment.  
Use only non-sparking tools.  
Take precautionary measures against static discharge.  
Avoid release to the environment.

**Response**

IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. Specific treatment (see label).  
Rinse mouth.  
IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower. If skin irritation or rash occurs: Get medical advice/attention. Wash contaminated clothing before reuse.  
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do so. Continue rinsing. If eye irritation persists: Get medical advice/attention.  
IF INHALED: Remove person to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell In case of fire: Use appropriate media for extinction

**Storage**

Store locked up. Store in a well-ventilated place. Keep container tightly closed. Keep cool.

**Disposal**

Dispose of contents/container in accordance with local/regional/national/international regulations.

\*\*\* Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS \*\*\*

CAS	Component Name	Percent
98-01-1	Furfural	100

\*\*\* Section 4 - FIRST AID MEASURES \*\*\*

**Inhalation**

IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.

**Skin**

IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. Take off contaminated clothing and wash before re-use. If skin irritation or rash occurs, seek medical advice/attention.

**Eyes**

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

**Ingestion**

IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. Rinse mouth.

### **Most Important Symptoms/Effects**

#### **Acute**

Toxic if swallowed, eye irritation, skin irritation. May cause respiratory irritation. May cause drowsiness or dizziness.

#### **Delayed**

No information on significant adverse effects.

### **Indication of Immediate Medical Attention and Special Treatment**

Treat symptomatically and supportively.

## **\* \* \* Section 5 - FIRE FIGHTING MEASURES \* \* \***

### **Suitable Extinguishing Media**

Carbon dioxide, regular dry chemical, alcohol-resistant foam, water spray.

### **Unsuitable Extinguishing Media**

None reported.

### **Special Hazards Arising from the Chemical**

See Section 9 for Flammability Properties. Combustible liquid. Vapors are heavier than air and may travel a considerable distance to a source of ignition and flashback. Containers may rupture or explode.

### **Hazardous Combustion Products**

#### **Combustion:**

Fire may produce irritating, poisonous and/or corrosive fumes.

### **Fire Fighting Measures**

Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out.

### **Protective Equipment and Precautions for Firefighters**

Wear full protective fire-fighting gear including self-contained breathing apparatus (SCBA) for protection against possible exposure. Use water spray to keep containers cool. Use water spray jet to minimize or disperse vapors.

## **\* \* \* Section 6 - ACCIDENTAL RELEASE MEASURES \* \* \***

### **Personal Precautions, Protective Equipment and Emergency Procedures**

Wear appropriate personal protective equipment recommended in Section 8 of the MSDS. Discard contaminated clothing and footwear. Avoid inhalation of material or combustion by-products. Use extra caution to avoid skin contact, particularly if skin is cut or scratched.

### **Methods and Materials for Containment and Cleaning Up**

Do not attempt to extinguish fire unless flow of material can be stopped first. Eliminate all sources of ignition. Soak up inert absorbent and dispose as waste requiring special attention. Neutralize prior to disposal. Ventilate affected area. Keep unnecessary people away, isolate hazard area and deny entry.

### **Environmental Precautions**

Neutralize prior to disposal. Do not allow to enter ground-water, surface water or drains, even not in small quantities.

## **\* \* \* Section 7 - HANDLING AND STORAGE \* \* \***

### **Precautions for Safe Handling**

Keep away from heat, sparks, open flame, and hot surfaces - No smoking. Keep container tightly closed. Use explosion-proof electrical/ventilating/lighting equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Wash thoroughly after handling. Do not eat, drink, or smoke when using this product. Avoid breathing dust/fume/gas/mist/vapors/spray. Use only outdoors or in a well-ventilated area. Contaminated work clothing should not be allowed out of the workplace. Wear protective gloves/eye protection/face protection.

### **Conditions for Safe Storage, Including any Incompatibilities**

Store in a well-ventilated place. Keep cool. Store locked up. Keep container tightly closed. Keep dry. Keep away from sources of ignition. Protect from physical damage. Keep separated from incompatible substances.

### **Incompatibilities**

Oxidizing materials, strong acids, bases, mineral acids.

\*\*\* Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION \*\*\*

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ACGIH - Threshold Limit Values - Time Weighted Averages (TLV- TWA)	Furfural	2 ppm TWA
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U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs)	Furfural	5 ppm TWA; 20 mg/m3 TWA
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NIOSH - Pocket Guide - Proposed TWAs	Furfural	2 ppm TWA
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**Engineering Controls**

Provide local exhaust or process enclosure ventilation system. Keep good industrial hygiene. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

**Individual Protection Measures, such as Personal Protective Equipment**

**Eyes/Face Protection**

Wear protective eye/face protection.

**Protective Clothing**

Wear protective gloves/clothing and eye/face protection. Wear protective clothing to minimize skin contact.

**Glove Recommendations**

Wear protective gloves.

**Protection**

A NIOSH approved air-purifying respirator with an appropriate cartridge or canister may be appropriate under certain circumstances where airborne concentrations are expected to exceed exposure limits.

Material Name: Furfural  
Issue Date: 2015-05-29  
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\* \* \* Section 9 - PHYSICAL AND CHEMICAL PROPERTIES \* \* \*

Appearance	Yellow liquid which turns reddish-brown upon exposure to light and air.	Physical State	Liquid
Odor	almond odor	Color	yellow
Odor Threshold	Not available	pH	Not available
Melting Point	-39 C	Boiling Point	162 C
Evaporation Rate	Not available	Boiling Point Range	Not available
Flammability (solid, gas)	Not available	Autoignition	316.1 C
Flash Point	60 C [Closed Cup]	Lower Explosive Limit	2.1 %
Decomposition	Not available	Upper Explosive Limit	19.3 %
Vapor Pressure	Not available	Vapor Density (air=1)	3.3
Specific Gravity (water=1)	1.16	Water Solubility	8.3 g/100mL
Partition coefficient: n-octanol/water	Not available	Viscosity	Not available
Solubility (Other)	Not available	Molecular Weight	96.09
OSHA Flammability Class	Combustible IIIA		

\* \* \* Section 10 - STABILITY AND REACTIVITY \* \* \*

**Reactivity**

No hazard expected.

**Chemical Stability**

Stable under normal conditions of use.

**Conditions to Avoid**

Avoid heat, flames, sparks and other sources of ignition. Avoid contact with incompatible materials, moisture, and water.

**Incompatible Materials**

Oxidizing materials, strong acids, bases, mineral acids.

**Hazardous Decomposition Products**

**Combustion:**

Oxides of carbon, low molecular weight hydrocarbons.

\* \* \* Section 11 - TOXICOLOGICAL INFORMATION \* \* \*

**Acute and Chronic Toxicity**

**Component Analysis - LD50/LC50**

The components of this material have been reviewed in various sources and the following selected endpoints are published:

Furfural (98-01-1)

Inhalation LC50Rat 175 ppm 6 h; Oral LD50Rat >102 mg/kg

**Immediate Effects**

Toxic if swallowed, skin irritation, eye irritation. May cause respiratory irritation. May cause drowsiness or dizziness.

**Delayed Effects**

No information on significant adverse effects.

**Inhalation:**

May cause respiratory irritation. May cause drowsiness and dizziness.

**Skin Contact**

Causes skin irritation.

**Eye Contact**

Causes eye irritation.

**Ingestion**

Toxic if swallowed.

**Irritation/Corrosivity Data**

Causes skin irritation. Causes eye irritation. May cause respiratory irritation.

**Respiratory Sensitization**

No data available.

**Dermal Sensitization**

This material is not considered to be a skin sensitizer.

**Component Carcinogenicity**

Furfural	98-01-1
ACGIH	A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans
IARC	Monograph 63 [1995](Group 3 (not classifiable))
DFG	Category 3B (could be carcinogenic for man)

**Germ Cell Mutagenicity**

No data available.

**Reproductive Toxicity**

No data available.

**Specific Target Organ Toxicity - Single Exposure**

Respiratory system.

**Specific Target Organ Toxicity - Repeated Exposure**

Material Name: Furfural  
Issue Date: 2015-05-29  
Revision: ILL1.0

No data available.

**Aspiration hazard**

No data available.

**Medical Conditions Aggravated by Exposure**

Skin disorders and allergies, eye disorders, respiratory disorders.

**\*\*\* Section 12 - ECOLOGICAL INFORMATION \*\*\***

**Ecotoxicity**

This material is expected to be harmful to aquatic life in very low concentrations.

**Component Analysis - Aquatic Toxicity**

Ecotoxicity - Freshwater Fish - Acute Toxicity Data	Furfural	96 Hr LC50 Pimephales promelas: 13.4 - 19.3 mg/L [static]; 96 Hr LC50 Pimephales promelas: 16.79 - 26.35 mg/L [flow-through]
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**Environmental Fate**

If released into soil, furfural is expected to display high mobility and has the potential to leach into ground water. In the water, furfural is expected to undergo microbial degradation under both aerobic and anaerobic conditions. It is believed that bioconcentration of furfural in aquatic organisms will not be significant.

**\*\*\* Section 13 - DISPOSAL CONSIDERATIONS \*\*\***

**Disposal Methods**

Dispose of contents/container in accordance with local/regional/national/international regulations. Do not allow to enter into ground-water, surface water or drains.

**Component Waste Numbers**

Furfural	98-01-1
RCRA	waste number U125 (Ignitable waste)

**\*\*\* Section 14 - TRANSPORT INFORMATION \*\*\***

**US DOT Information:**

**Shipping Name:** Furaldehyde

**UN/NA #:** UN1199

**Packing Group:** II

**Required Label(s):** 6.1, 3

**TDG Information:**

**Shipping Name:** Furaldehyde

**UN#:** UN1199

**Packing Group:** II

**Required Label(s):** 6.1, 3

**\*\*\* Section 15 - REGULATORY INFORMATION \*\*\***

**U.S. Federal Regulations**

This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 311/312 (40 CFR 370.21), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), and/or require an OSHA process safety plan

Furfural	98-01-1
CERCLA	5000lb final RQ ; 2270kg final RQ

**Flavor Extract Manufacturers Association (GRAS)**

Furfural (98-01-1)

FEMA No: 2489

**U.S. State Regulations**

The following components appear on one or more of the following state hazardous substances lists:

Material Name: Furfural  
Issue Date: 2015-05-29  
Revision: ILL1.0

Component	CAS	CA	MA	NN	NJ	PA
Furfural	98-01-1	Yes	Yes	Yes	Yes	Yes

Not listed under California Proposition 65

#### Canadian WHMIS Ingredient Disclosure List (IDL)

Components of this material have been checked against the Canadian WHMIS Ingredients Disclosure List. The List is composed of chemicals which must be identified on MSDSs if they are included in products which meet WHMIS criteria specified in the Controlled Products Regulations and are present above the threshold limits listed on the IDL.

Furfural	98-01-1
	1%

#### WHMIS Classification

##### Component Analysis - Inventory

Component	CAS#	US	CA
Furfural	98-01-1	Yes	DSL

#### \* \* \* Section 16 - OTHER INFORMATION \* \* \*

#### NFPA Ratings: Health: 3 Fire: 2 Reactivity: 1

Hazard Scale: 0=Minimal 1=Slight 2=Moderate 3=Serious 4=Severe

#### Key / Legend

ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSL - Domestic Substances List; EEC - European Economic Community; EINECS - European Inventory of Existing Commercial Chemical Substances; EPA - Environmental Protection Agency; EU - European Union; F - Fahrenheit; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; ICAO - International Civil Aviation Organization; IDL - Ingredient Disclosure List; IDLH - Immediately Dangerous to Life and Health; IMDG - International Maritime Dangerous Goods; JP - Japan; Kow - Octanol/water partition coefficient; KR - Korea; LEL - Lower Explosive Limit; LOLI - List Of Lists™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PH - Philippines; RCRA - Resource Conservation and Recovery Act; RID - European Rail Transport; RTECS - Registry of Toxic Effects of Chemical Substances®; SARA - Superfund Amendments and Reauthorization Act; STEL - Short-term Exposure Limit; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act; TWA - Time Weighted Average; UEL - Upper Explosive Limit; US - United States

#### Other Information

Reasonable care has been taken in the preparation of this information; however, the manufacturer makes no warranty whatsoever including the warranty of merchantability, expressed or implied, with respect to this information. The manufacturer makes no representations and assumes no liability for any direct, incidental, consequential, or other such damages resulting from its use or misuse.



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