

# Safety Data Sheet

according to Regulation (EC) No 1907/2006

## 5-(Hydroxymethyl)-furfural

Print date: 28.12.2012

Product code:

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

#### 1.1. Product identifier

5-(Hydroxymethyl)-furfural

CAS No: 67-47-0  
EC No: 200-654-9

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

##### Use of the substance/mixture

Industrial manufacturing.

##### Uses advised against

none/none

#### 1.3. Details of the supplier of the safety data sheet

Company name:	AVA-Biochem BSL AG	
Street:	Rothausstr. 61	
Place:	4132 Muttenz (Schweiz)	
Telephone:	+41 61 469 59 92	
e-mail:	info@ava-biochem.com	
Responsible Department:	Dr. Timo Gans-Eichler Chemieberatung Raesfeldstr. 22 48149 Münster	e-mail: tge-consult@t-online.de Tel.: +49 (0)251/924520-60 www.tge-consult.de

#### 1.4. Emergency telephone

**number:** +41 61 469 59 92 (9:00-17:00 Mo-Fr)

### SECTION 2: Hazards identification

#### 2.1. Classification of the substance or mixture

Indications of danger: Irritant  
R phrases:  
Irritating to eyes, respiratory system and skin.  
Harmful to aquatic organisms.  
May cause long-term adverse effects in the aquatic environment.

##### GHS classification

Hazard categories:  
Serious eye damage/eye irritation: Eye Irrit. 2  
Specific target organ toxicity - single exposure: STOT SE 3  
Skin corrosion/irritation: Skin Irrit. 2  
Hazardous to the aquatic environment: Aquatic Chronic 3  
Hazard Statements:  
Causes serious eye irritation.  
May cause respiratory irritation.  
Causes skin irritation.  
Harmful to aquatic life with long lasting effects.

#### 2.2. Label elements

##### Hazardous components which must be listed on the label

5-(Hydroxymethyl)-2-furaldehyde

Signal word: Warning  
Pictograms: GHS07

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### Hazard statements

H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
H412	Harmful to aquatic life with long lasting effects.

### Precautionary statements

P280	Wear protective gloves/protective clothing/eye protection/face protection.
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.
P312	Call a POISON CENTER or doctor/physician if you feel unwell.
P501	Dispose of contents/container to disposal according to official regulations .

## SECTION 3: Composition/information on ingredients

### 3.1. Substances

#### Chemical characterization

Substance.

Sum formula:	C6H6O3
Molecular weight:	126.11

#### Hazardous components

EC No	Chemical name	Quantity
CAS No	Classification	
Index No	GHS classification	
REACH No		
200-654-9	5-(Hydroxymethyl)-2-furaldehyde	95 - 100 %
67-47-0	Xi - Irritant R36/37/38-52-53	
	Eye Irrit. 2, STOT SE 3, Skin Irrit. 2, Aquatic Chronic 3; H319 H335 H315 H412	

Full text of R and H phrases: see Section 16.

#### Further Information

Full text of R- and H-phrases: see section 16.

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

#### General information

In case of accident or if you feel unwell, seek medical advice immediately (show safety data sheet if possible).

#### After inhalation

In case of accident by inhalation: remove casualty to fresh air and keep at rest. In the case of lung irritation: Primary treatment using corticoide spray, eg. Auxiloson spray, Pulmicort-dosage-spray. (Auxiloson and Pulmicort are registered trademarks). in case of allergic symptoms especially in the breathing area, seek medical advice immediately.

#### After contact with skin

Take off immediately all contaminated clothing. After contact with skin, wash immediately with: Water.

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In case of skin irritation, seek medical treatment.

### After contact with eyes

In case of contact with eyes, rinse immediately with plenty of flowing water for 10 to 15 minutes holding eyelids apart. Subsequently consult an ophthalmologist.

### After ingestion

Rinse mouth thoroughly with water. Immediately get medical attention. Let water be swallowed in little sips (dilution effect).

### 4.2. Most important symptoms and effects, both acute and delayed

No information available.

### 4.3. Indication of any immediate medical attention and special treatment needed

First Aid, decontamination, treatment of symptoms.

## SECTION 5: Firefighting measures

### 5.1. Extinguishing media

#### Suitable extinguishing media

Water spray.  
alcohol resistant foam.  
dry extinguishing powder.  
The product itself is not combustible. Extinguishing materials should be selected according to the surrounding area.

#### Extinguishing media which must not be used for safety reasons

High power water jet.

### 5.2. Special hazards arising from the substance or mixture

Can be released in case of fire: Carbon monoxide. Carbon dioxide (CO<sub>2</sub>).

### 5.3. Advice for firefighters

Wear a self-contained breathing apparatus and chemical resistant suit.

#### Additional information

Collect contaminated fire extinguishing water separately. Do not allow entering drains or surface water.

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

Remove all sources of ignition.  
Do not breathe dust. Avoid contact with skin, eye and clothing.  
Beat down dust with water spray.  
See protective measures under point 7 and 8.

### 6.2. Environmental precautions

Do not empty into drains or the aquatic environment. Prevent spreading over great surfaces (e.g. by damming or installing oil booms).

### 6.3. Methods and material for containment and cleaning up

Collect mechanically. Avoid generation of dust.  
Treat the assimilated material according to the section on waste disposal.  
Clean contaminated objects and areas thoroughly observing environmental regulations.

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

#### Advice on safe handling

Avoid generation of dust. Do not breathe dust.  
Wear suitable protective clothing. (Refer to chapter 8.)  
Use extractor hood (laboratory).

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### Advice on protection against fire and explosion

Usual measures for fire prevention. Product is not dust explosive in its original delivery form. The addition of particulate matter, however, results in a dust explosion risk.

### Further information on handling

Avoid contact with skin, eye and clothing.

### 7.2. Conditions for safe storage, including any incompatibilities

#### Requirements for storage rooms and vessels

Keep away from sources of ignition - No smoking.

#### Advice on storage compatibility

Do not store together with: Explosives. Oxidizing solids. Oxidizing liquids. Radioactive substances. Infectious substances.

#### Further information on storage conditions

Keep container tightly closed in a cool, well-ventilated place. Protect against: UV-radiation/sunlight. Keep container dry.

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

#### Additional advice on limit values

To date, no national limit values exist.

### 8.2. Exposure controls

#### Occupational exposure controls

Use extractor hood (laboratory). Dust should be vacuumed up immediately at the place it occurs.

#### Protective and hygiene measures

Always close containers tightly after the removal of product. Do not eat, drink, smoke or sneeze at the workplace. Wash hands before breaks and at the end of work.

#### Respiratory protection

With correct and proper use, and under normal conditions, breathing protection is not required.

Respiratory protection required in case of:

Generation/formation of dust

Suitable respiratory protective equipment: particulates filter device (DIN EN 143).

Type: P2-P3

#### Hand protection

Pull-over gloves of rubber. DIN EN 374

NBR (Nitrile rubber). (0,11 mm)

Before using check leak tightness / impermeability. In case of reutilization, clean gloves before taking off and store in well-aired place.

#### Eye protection

Suitable eye protection: Tightly sealed safety glasses. DIN EN 166

#### Environmental exposure controls

No special measures are necessary.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Physical state:	solid
Colour:	off-white-light yellow
Odour:	characteristic

pH-Value:

**Test method**  
N/A

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#### Changes in the physical state

Melting point: ~31,5 °C  
 Boiling point: 110@0,02 mm Hg °C  
 Sublimation point: No data available  
 Flash point: 79 °C

#### Flammability

Solid: No data available

#### Explosive properties

Product itself is not explosive.

Lower explosion limits: No data available  
 Upper explosion limits: No data available

#### Oxidizing properties

none/none

Vapour pressure: No data available  
 Density: 1,2 g/cm<sup>3</sup>  
 Bulk density: No data available  
 Water solubility: easily soluble.

#### Solubility in other solvents

Methanol. Acetone. Benzene. Methanol.

### SECTION 10: Stability and reactivity

#### 10.1. Reactivity

Stable under normal storage and handling conditions.

#### 10.2. Chemical stability

No information available.

#### 10.3. Possibility of hazardous reactions

No information available.

#### 10.4. Conditions to avoid

Keep away from heat. Protect from moisture. Protect from direct sunlight.

#### 10.5. Incompatible materials

Oxidizing agents, strong. Reducing agents, strong. strong alkalis

#### 10.6. Hazardous decomposition products

Can be released in case of fire: Carbon dioxide (CO<sub>2</sub>). Carbon monoxide.

### SECTION 11: Toxicological information

#### 11.1. Information on toxicological effects

##### Toxicokinetics, metabolism and distribution

No information available.

##### Acute toxicity

CAS No	Chemical name				
	Exposure routes	Method	Dose	Species	Source
67-47-0	5-(Hydroxymethyl)-2-furaldehyde				
	oral	LD50	2500 mg/kg	Rat.	ChemID

##### Specific effects in experiment on an animal

No information available.

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### Irritation and corrosivity

No information available.

### Sensitising effects

No information available.

### Severe effects after repeated or prolonged exposure

Subchronic oral toxicity: (Mouse. 3 months.): NOAEL = 375 mg/ kg (reduced body weight. )

Chronic oral toxicity: (Mouse. 2 years.): NOAEL = 375 mg/ kg (reduced body weight. )

Lit: NTP TECHNICAL REPORT ON THE TOXICOLOGY AND CARCINOGENESIS STUDIES OF 5-(HYDROXYMETHYL)-2-FURFURAL (CAS NO. 67-47-0) IN F344/N RATS AND B6C3F1 MICE (GAVAGE STUDIES)

Chronic oral toxicity: (Rat. 11 months. ): NOEL = 80 mg/ kg (Enlargement of the spleen. )

Lit: Fundam. Appl. Toxicol., 4:843-853

### Carcinogenic/mutagenic/toxic effects for reproduction

In-vitro mutagenicity: There is evidence in literature for negative results as well as positive results at higher concentrations.

No experimental indications of mutagenicity in-vivo exist.

Carcinogenicity:

In mice, female, 2 years, oral at 188 mg /kg, 375 mg/kg increased liver tumor incidence.

In rats, 2 years, oral up to 750 mg /kg no evidence of carcinogenicity.

In mice, male, 2 years, oral kg to 750 mg / no evidence of carcinogenicity.

Lit: NTP TECHNICAL REPORT ON THE TOXICOLOGY AND CARCINOGENESIS STUDIES OF 5-(HYDROXYMETHYL)-2-FURFURAL (CAS NO. 67-47-0) IN F344/N RATS AND B6C3F1 MICE (GAVAGE STUDIES)

## SECTION 12: Ecological information

### 12.1. Toxicity

Acute crustacea toxicity: LC 50 (72h) = 34 mg/l (27 mg/l - 43 mg/l) daphnia magna

Acute crustacea toxicity: LC 50 (24h) = 62 mg/l (53 mg/l -78 mg/l) daphnia magna

### 12.2. Persistence and degradability

No information available.

### 12.3. Bioaccumulative potential

No indication of bio-accumulation potential.

### Partition coefficient n-octanol/water

CAS No	Chemical name	Log Pow
67-47-0	5-(Hydroxymethyl)-2-furaldehyde	0,090

### 12.4. Mobility in soil

Koc (calc.) = 2

If product enters soil, it will be mobile and may contaminate groundwater

### 12.5. Results of PBT and vPvB assessment

No information available.

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

#### Advice on disposal

Waste disposal according to official state regulations. Consult the local waste disposal expert about waste disposal.

#### Waste disposal number of waste from residues/unused products

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160305 WASTES NOT OTHERWISE SPECIFIED IN THE LIST; off-specification batches and unused products; organic wastes containing dangerous substances  
Classified as hazardous waste.

### Waste disposal number of used product

160305 WASTES NOT OTHERWISE SPECIFIED IN THE LIST; off-specification batches and unused products; organic wastes containing dangerous substances  
Classified as hazardous waste.

### Waste disposal number of contaminated packaging

150110 WASTE PACKAGING; ABSORBENTS, WIPING CLOTHS, FILTER MATERIALS AND PROTECTIVE CLOTHING NOT OTHERWISE SPECIFIED; packaging (including separately collected municipal packaging waste); packaging containing residues of or contaminated by dangerous substances  
Classified as hazardous waste.

### Contaminated packaging

Cleaned containers may be recycled.

## SECTION 14: Transport information

### Land transport (ADR/RID)

**14.1. UN number:** Not restricted

**14.2. UN proper shipping name:** Not restricted

### Inland waterways transport (ADN)

**14.1. UN number:** Not restricted

**14.2. UN proper shipping name:** Not restricted

### Marine transport (IMDG)

**14.1. UN number:** Not restricted

**14.2. UN proper shipping name:** Not restricted

### Air transport (ICAO)

**14.1. UN number:** Not restricted

**14.2. UN proper shipping name:** Not restricted

### 14.5. Environmental hazards

Dangerous for the environment: no

## SECTION 15: Regulatory information

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

#### National regulatory information

Employment restrictions: Observe employment restrictions for young people.

Water contaminating class (D): 1 - slightly water contaminating

### 15.2. Chemical safety assessment

For this substance a chemical safety assessment has not been carried out.

## SECTION 16: Other information

### Changes

Rev. 1,0; 25.09.2012; Initial release

### Abbreviations and acronyms

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

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RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations)

Concerning the International Transport of Dangerous Goods by Rail)

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)

ICAO: International Civil Aviation Organization

ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)

GHS: Globally Harmonized System of Classification and Labelling of Chemicals

EINECS: European Inventory of Existing Commercial Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

NOAEL: No observed adverse effect level

NOAEC: No observed adverse effect concentration

### Full text of R phrases referred to under Sections 2 and 3

36/37/38 Irritating to eyes, respiratory system and skin.

52 Harmful to aquatic organisms.

52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

53 May cause long-term adverse effects in the aquatic environment.

### Full text of H statements referred to under Sections 2 and 3

H315 Causes skin irritation.

H319 Causes serious eye irritation.

H335 May cause respiratory irritation.

H412 Harmful to aquatic life with long lasting effects.

### Further Information

The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge. The information is intended to give you advice about the safe handling of the product named in this safety data sheet, for storage, processing, transport and disposal. The information cannot be transferred to other products. In the case of mixing the product with other products or in the case of processing, the information on this safety data sheet is not necessarily valid for the new made-up material.