



# MATERIAL SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Date of issue: 02/05/2013

Version 1.0

## SECTION 1. Identification

### Product identifier

Product number 820594  
Product name Furan (stabilised) for synthesis

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

Identified uses Chemical for synthesis

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

Company EMD Millipore Corporation | 290 Concord Road, Billerica, MA 01821,  
United States of America | SDS Phone Support: +1-978-715-1335 |  
General Inquiries: +1-978-715-4321 | Monday to Friday, 9:00 AM to  
4:00 PM Eastern Time (GMT-5)  
  
e-mail: mm\_sds@merckgroup.com

Emergency telephone 800-424-9300 CHEMTREC (USA)  
+1-703-527-3887 CHEMTREC (International)  
24 Hours/day; 7 Days/week

## SECTION 2. Hazards identification

### GHS Classification

Flammable liquid, Category 1, H224  
Carcinogenicity, Category 1B, H350  
Germ cell mutagenicity, Category 2, H341  
Acute toxicity, Category 4, Inhalation, H332  
Acute toxicity, Category 4, Oral, H302  
Specific target organ systemic toxicity - repeated exposure, Category 2, H373  
Skin irritation, Category 2, H315  
Chronic aquatic toxicity, Category 3, H412

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

### GHS-Labeling

#### Hazard pictograms



#### Signal Word

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Danger

### *Hazard Statements*

H224 Extremely flammable liquid and vapor.  
H302 + H332 Harmful if swallowed or if inhaled.  
H315 Causes skin irritation.  
H341 Suspected of causing genetic defects.  
H350 May cause cancer.  
H373 May cause damage to organs through prolonged or repeated exposure.  
H412 Harmful to aquatic life with long lasting effects.

### *Precautionary Statements*

P201 Obtain special instructions before use.  
P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.  
P233 Keep container tightly closed.  
P240 Ground/bond container and receiving equipment.  
P273 Avoid release to the environment.  
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.  
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.  
P308 + P313 IF exposed or concerned: Get medical advice/ attention.  
P403 + P235 Store in a well-ventilated place. Keep cool.

Restricted to professional users.

### **OSHA Hazards**

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

### **Other hazards**

None known.

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## **SECTION 3. Composition/information on ingredients**

Formula	C <sub>4</sub> H <sub>4</sub> O (Hill)
CAS-No.	110-00-9
Molar mass	68.07 g/mol

### **Hazardous ingredients**

*Chemical Name ( Concentration)*

CAS-No.

*Furan ( >= 90 % - <= 100 % )*

110-00-9

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## **SECTION 4. First aid measures**

### **Description of first-aid measures**

*Inhalation*

After inhalation: fresh air. Immediately apply artificial respiration. If necessary oxygen.  
Immediately call in physician.

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### *Skin contact*

After skin contact: wash off with plenty of water. Remove contaminated clothing. Call a physician immediately.

### *Eye contact*

After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist.

### *Ingestion*

After swallowing: caution if victim vomits. Risk of aspiration! Keep airways free. Pulmonary failure possible after aspiration of vomit. Call a physician immediately.

Never give anything by mouth to an unconscious person.

### **Most important symptoms and effects, both acute and delayed**

irritant effects, Cough, Shortness of breath, Drowsiness, Dizziness, inebriation, Nausea, Headache, Convulsions, drowsiness

### **Indication of any immediate medical attention and special treatment needed**

No information available.

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## **SECTION 5. Fire-fighting measures**

### **Extinguishing media**

#### *Suitable extinguishing media*

Carbon dioxide (CO<sub>2</sub>), Foam, Dry powder

#### *Unsuitable extinguishing media*

For this substance/mixture no limitations of extinguishing agents are given.

### **Special hazards arising from the substance or mixture**

Combustible material

Vapors are heavier than air and may spread along floors.

Forms explosive mixtures with air at ambient temperatures.

Pay attention to flashback.

Development of hazardous combustion gases or vapors possible in the event of fire.

### **Advice for firefighters**

#### *Special protective equipment for fire-fighters*

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

#### *Further information*

Prevent fire extinguishing water from contaminating surface water or the ground water system.

Remove container from danger zone and cool with water.

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## **SECTION 6. Accidental release measures**

### **Personal precautions, protective equipment and emergency procedures**

Advice for non-emergency personnel: Avoid substance contact. Do not breathe vapors, aerosols. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.

Advice for emergency responders: Protective equipment see section 8.

### **Environmental precautions**

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Do not empty into drains. Risk of explosion.

### Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills.

Observe possible material restrictions (see sections 7 and 10).

Take up with liquid-absorbent material (e.g. Chemisorb®). Dispose of properly. Clean up affected area.

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## SECTION 7. Handling and storage

### Precautions for safe handling

Work under hood. Do not inhale substance/mixture. Avoid generation of vapors/aerosols.

Observe label precautions.

#### *Advice on protection against fire and explosion*

Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge.

### Conditions for safe storage, including any incompatibilities

Keep locked up or in an area accessible only to qualified or authorized persons. Keep away from heat and sources of ignition. Keep container tightly closed in a dry and well-ventilated place.

Store at +15°C to +25°C (+59°F to +77°F).

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## SECTION 8. Exposure controls/personal protection

### Exposure limit(s)

Contains no substances with occupational exposure limit values.

### Engineering measures

Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.

### Individual protection measures

Protective clothing should be selected specifically for the workplace, depending on concentration and quantity of the hazardous substances handled. The chemical resistance of the protective equipment should be inquired at the respective supplier.

#### *Hygiene measures*

Immediately change contaminated clothing. Apply skin- protective barrier cream. Wash hands and face after working with substance.

#### *Eye/face protection*

Safety glasses

#### *Hand protection*

Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

#### *Other protective equipment:*

Flame retardant antistatic protective clothing

#### *Respiratory protection*

required when vapors/aerosols are generated.

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Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

## SECTION 9. Physical and chemical properties

Physical state	liquid
Color	light brown
Odor	etheral, acrid
Odor Threshold	No information available.
pH	No information available.
Melting point	-86 °C
Boiling point/boiling range	90 °F ( 32 °C) at 1,013 hPa
Flash point	-33 °F ( -36 °C)
Evaporation rate	No information available.
Flammability (solid, gas)	No information available.
Lower explosion limit	2.3 %(V)
Upper explosion limit	14.3 %(V)
Vapor pressure	670 hPa at 68 °F ( 20 °C)
Relative vapor density	No information available.
Relative density	0.94 g/cm <sup>3</sup> at 68 °F ( 20 °C)
Water solubility	10 g/l at 77 °F ( 25 °C)
Partition coefficient: n-octanol/water	log Pow: 1.34 (experimental) (Lit.) Bioaccumulation is not expected (log Pow <1).
Autoignition temperature	No information available.
Decomposition temperature	No information available.

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Viscosity, dynamic 0.38 mPa.s  
at 68 °F ( 20 °C)

Explosive properties No information available.

Ignition temperature 734 °F ( 390 °C)

Saturated vapor concentration 1,870 g/m<sup>3</sup>

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### SECTION 10. Stability and reactivity

#### Reactivity

danger of spontaneous combustion!  
Vapors may form explosive mixture with air.  
Formation of peroxides possible.

#### Chemical stability

Sensitivity to light  
Sensitive to air.  
tendency towards spontaneous polymerization

#### *Stabilizer*

butyl hydroxytoluene (BHT)

#### Possibility of hazardous reactions

Exothermic reaction with:  
Oxidizing agents, acids, Air

#### Conditions to avoid

Warming.  
A range from approx. 15 Kelvin below the flash point is to be rated as critical.  
Exposure to light.

#### Incompatible materials

no information available

#### Hazardous decomposition products

Peroxides

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### SECTION 11. Toxicological information

#### Information on toxicological effects

##### *Likely route of exposure*

Inhalation, Eye contact, Skin contact, Ingestion

##### *Acute oral toxicity*

Symptoms: Irritations of mucous membranes in the mouth, pharynx, oesophagus and gastrointestinal tract., Risk of aspiration upon vomiting., Aspiration may cause pulmonary edema and pneumonitis.

absorption

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## *Acute inhalation toxicity*

LC50 rat: 5.3 mg/l; 4 h (External MSDS)

Symptoms: Possible damages:, mucosal irritations  
absorption

## *Skin irritation*

Causes skin irritation.

## *CMR effects*

Carcinogenicity:

May cause cancer.

Mutagenicity:

Suspected of causing genetic defects.

## *Specific target organ systemic toxicity - single exposure*

The substance or mixture is not classified as specific target organ toxicant, single exposure.

## *Specific target organ systemic toxicity - repeated exposure*

May cause damage to organs through prolonged or repeated exposure.

## *Aspiration hazard*

Regarding the available data the classification criteria are not fulfilled.

## **Carcinogenicity**

IARC	Group 2B: Possibly carcinogenic to humans Furan 110-00-9
OSHA	No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.
NTP	Anticipated carcinogen. Furan 110-00-9
ACGIH	No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

## **Further information**

Systemic effects:

After absorption:

drop in blood pressure, drowsiness, Drowsiness, Nausea, Dizziness, Headache, inebriation,  
Convulsions

Damage to:

Liver, Kidney

Possible risk of irreversible effects.

Further data:

Handle in accordance with good industrial hygiene and safety practice.

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## **SECTION 12. Ecological information**

### **Ecotoxicity**

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### *Toxicity to fish*

LC50 Pimephales promelas (fathead minnow): 61 mg/l; 96 h (Lit.)

### **Persistence and degradability**

#### *Biodegradability*

4 %; 28 d

OECD Test Guideline 301C

Not readily biodegradable.

### **Bioaccumulative potential**

#### *Partition coefficient: n-octanol/water*

log Pow: 1.34

(experimental)

(Lit.) Bioaccumulation is not expected (log Pow <1).

### **Mobility in soil**

No information available.

### **Other adverse effects**

#### *Additional ecological information*

Discharge into the environment must be avoided.

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## **SECTION 13. Disposal considerations**

The information presented only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. Disposal should be in accordance with applicable regional, national and local laws and regulations.

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## **SECTION 14. Transport information**

### **Land transport (DOT)**

UN number UN 2389

Proper shipping name FURAN

Class 3

Packing group I

Environmentally hazardous --

### **Air transport (IATA)**

UN number UN 2389

Proper shipping name FURAN

Class 3

Packing group

Environmentally hazardous --

Special precautions for user yes

**Not permitted for transport**

### **Sea transport (IMDG)**



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**UN number** UN 2389  
**Proper shipping name** FURAN  
**Class** 3  
**Packing group** I  
**Environmentally hazardous** --  
**Special precautions for user** yes  
**EmS** F-E S-D

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## SECTION 15. Regulatory information

### United States of America

#### OSHA Hazards

Flammable Liquid  
Skin irritant  
Carcinogen  
Mutagen

This information is based on 29 CFR 1910.1200 criteria prior to adoption of the GHS, and may deviate from the GHS information on the label and in section 2.

#### SARA 311/312 Hazards

Fire Hazard  
Acute Health Hazard  
Chronic Health Hazard

#### SARA 313

The following components are subject to reporting levels established by SARA Title III, Section 313:

##### *Ingredients*

Furan 110-00-9

#### SARA 302

The following components are subject to reporting levels established by SARA Title III, Section 302:

##### *Ingredients*

Furan 110-00-9

#### Clean Water Act

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.

This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.

#### Massachusetts Right To Know

##### *Ingredients*

Furan

#### Pennsylvania Right To Know

##### *Ingredients*

Furan

#### New Jersey Right To Know

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*Ingredients*

Furan

**Notification status**

TSCA: On TSCA Inventory

DSL: All components of this product are on the Canadian DSL.

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**SECTION 16. Other information**

**Training advice**

Provide adequate information, instruction and training for operators.

**Full text of H-Statements referred to under sections 2 and 3.**

H224	Extremely flammable liquid and vapor.
H302	Harmful if swallowed.
H315	Causes skin irritation.
H332	Harmful if inhaled.
H341	Suspected of causing genetic defects.
H350	May cause cancer.
H373	May cause damage to organs through prolonged or repeated exposure.
H412	Harmful to aquatic life with long lasting effects.

**Key or legend to abbreviations and acronyms used in the safety data sheet**

Used abbreviations and acronyms can be looked up at [www.wikipedia.org](http://www.wikipedia.org).

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The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to appropriate safety precautions. It does not represent a warranty of any product properties and we assume no liability for any loss or injury which may result from the use of this information. Users should conduct their own investigations to determine the suitability of the information.

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