

**SAFETY DATA SHEET**

according to Regulation (EC) No. 1907/2006

Revision Date 28.08.2017

Version 9.0

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**SECTION 1. Identification of the substance/mixture and of the company/undertaking****1.1 Product identifier**

Catalogue No.	807679
Product name	Styrene (stabilised) for synthesis
REACH Registration Number	01-2119457861-32-xxxx
CAS-No.	100-42-5

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

Identified uses	Chemical for synthesis For additional information on uses please refer to the Merck Chemicals portal ( <a href="http://www.merckgroup.com">www.merckgroup.com</a> ).
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**1.3 Details of the supplier of the safety data sheet**

Company	Merck KGaA * 64271 Darmstadt * Germany * Phone:+49 6151 72-0
Responsible Department	LS-QHC * e-mail: <a href="mailto:prodsafe@merckgroup.com">prodsafe@merckgroup.com</a>

<b>1.4 Emergency telephone number</b>	<b>Please contact the regional company representation in your country.</b>
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**SECTION 2. Hazards identification****2.1 Classification of the substance or mixture****Classification (REGULATION (EC) No 1272/2008)**

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 807679  
Product name Styrene (stabilised) for synthesis

---

Flammable liquid, Category 3, H226

Acute toxicity, Category 4, Inhalation, H332

Skin irritation, Category 2, H315

Eye irritation, Category 2, H319

Reproductive toxicity, Category 2, H361d

Specific target organ toxicity - repeated exposure, Category 1, hearing organs, H372

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

## 2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

*Hazard pictograms*



*Signal word*

Danger

*Hazard statements*

H226 Flammable liquid and vapour.

H315 Causes skin irritation.

H319 Causes serious eye irritation.

H332 Harmful if inhaled.

H361d Suspected of damaging the unborn child.

H372 Causes damage to organs (hearing organs) through prolonged or repeated exposure.

*Precautionary statements*

Prevention

P210 Keep away from heat.

Response

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.

P314 Get medical advice/ attention if you feel unwell.

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 807679  
Product name Styrene (stabilised) for synthesis

---



## Reduced labelling (≤125 ml)

### Hazard pictograms



### Signal word

Danger

### Hazard statements

H361d Suspected of damaging the unborn child.

H372 Causes damage to organs (hearing organs) through prolonged or repeated exposure.

Index-No. 601-026-00-0

## 2.3 Other hazards

None known.

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## SECTION 3. Composition/information on ingredients

### 3.1 Substance

Formula	C <sub>6</sub> H <sub>5</sub> CHCH <sub>2</sub>	C <sub>8</sub> H <sub>8</sub> (Hill)
Index-No.	601-026-00-0	
EC-No.	202-851-5	
Molar mass	104,15 g/mol	

### Hazardous components (REGULATION (EC) No 1272/2008)

#### Chemical name (Concentration)

CAS-No.	Registration number	Classification
styrene (>= 50 % - <= 100 % )		
100-42-5	01-2119457861-32-xxxx	Flammable liquid, Category 3, H226 Acute toxicity, Category 4, H332 Skin irritation, Category 2, H315 Eye irritation, Category 2, H319

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 807679  
Product name Styrene (stabilised) for synthesis

---

Reproductive toxicity, Category 2, H361d  
Specific target organ toxicity - repeated exposure, Category 1,  
H372

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

## 3.2 Mixture

Not applicable

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## SECTION 4. First aid measures

### 4.1 Description of first aid measures

After inhalation: fresh air. If breathing stops: mouth-to-mouth breathing or artificial respiration.  
Oxygen if necessary. Immediately call in physician.

In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/  
shower. Consult a physician.

After eye contact: rinse out with plenty of water. Call in ophthalmologist. Remove contact lenses.

After swallowing: immediately make victim drink water (two glasses at most). Consult a  
physician.

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

irritant effects, Dermatitis, Dizziness, Vomiting, Tiredness

Drying-out effect resulting in rough and chapped skin.

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

No information available.

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## SECTION 5. Firefighting measures

### 5.1 Extinguishing media

*Suitable extinguishing media*

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

*Unsuitable extinguishing media*

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

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# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 807679  
Product name Styrene (stabilised) for synthesis

---

## 5.2 Special hazards arising from the substance or mixture

Combustible.

Vapours are heavier than air and may spread along floors.

Forms explosive mixtures with air at elevated temperatures.

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

## 5.3 Advice for firefighters

*Special protective equipment for firefighters*

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*

Remove container from danger zone and cool with water. Prevent fire extinguishing water from contaminating surface water or the ground water system.

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## SECTION 6. Accidental release measures

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

Advice for non-emergency personnel: Do not breathe vapours, aerosols. Avoid substance contact. Ensure adequate ventilation. Keep away from heat and sources of ignition. Evacuate the danger area, observe emergency procedures, consult an expert.

Advice for emergency responders:

Protective equipment see section 8.

### 6.2 Environmental precautions

Do not let product enter drains. Risk of explosion.

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

### 6.4 Reference to other sections

Indications about waste treatment see section 13.

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# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 807679  
Product name Styrene (stabilised) for synthesis

---

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## SECTION 7. Handling and storage

### 7.1 Precautions for safe handling

#### *Advice on safe handling*

Observe label precautions.

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

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

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

#### *Hygiene measures*

Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

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

#### *Storage conditions*

Keep container tightly closed in a dry and well-ventilated place. Keep away from heat and sources of ignition.

Recommended storage temperature see product label.

### 7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.

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## SECTION 8. Exposure controls/personal protection

### 8.1 Control parameters

### 8.2 Exposure controls

#### Engineering measures

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 807679  
Product name Styrene (stabilised) for synthesis

---

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

See section 7.1.

## Individual protection measures

Protective clothing needs to be selected specifically for the workplace, depending on concentrations and quantities of the hazardous substances handled. The chemical resistance of the protective equipment should be enquired at the respective supplier.

### *Eye/face protection*

Safety glasses

### *Hand protection*

full contact:

Glove material:	Viton (R)
Glove thickness:	0,70 mm
Break through time:	> 480 min

splash contact:

Glove material:	Nitrile rubber
Glove thickness:	0,40 mm
Break through time:	> 30 min

The protective gloves to be used must comply with the specifications of EC Directive 89/686/EEC and the related standard EN374, for example KCL 890 Vitoject® (full contact), KCL 730 Camatril® -Velours (splash contact).

The breakthrough times stated above were determined by KCL in laboratory tests acc. to EN374 with samples of the recommended glove types.

This recommendation applies only to the product stated in the safety data sheet(>,<) supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: [www.kcl.de](http://www.kcl.de)).

### *Other protective equipment*

Flame retardant antistatic protective clothing.

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 807679  
Product name Styrene (stabilised) for synthesis

---

## *Respiratory protection*

required when vapours/aerosols are generated.

Recommended Filter type: ABEK-filter

The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.

## **Environmental exposure controls**

Do not let product enter drains.

Risk of explosion.

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## **SECTION 9. Physical and chemical properties**

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

Form	liquid
Colour	colourless
Odour	sweet
Odour Threshold	No information available.
pH	No information available.
Melting point	-31 °C
Boiling point/boiling range	145 °C at 1.013 hPa
Flash point	31 °C Method: c.c.
Evaporation rate	No information available.



# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 807679  
Product name Styrene (stabilised) for synthesis

---

Flammability (solid, gas)	No information available.
Lower explosion limit	1,1 %(V)
Upper explosion limit	8,9 %(V)
Vapour pressure	6 hPa at 20 °C
Relative vapour density	3,59
Density	0,906 g/cm <sup>3</sup> at 20 °C
Relative density	No information available.
Water solubility	0,24 g/l at 20 °C
Partition coefficient: n-octanol/water	log Pow: 2,96 OECD Test Guideline 107 Bioaccumulation is not expected.
Auto-ignition temperature	No information available.
Decomposition temperature	No information available.
Viscosity, dynamic	0,762 mPa.s at 20 °C
Explosive properties	Not classified as explosive.
Oxidizing properties	none

## 9.2 Other data

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No.	807679
Product name	Styrene (stabilised) for synthesis

---

Ignition temperature 480 °C

Saturated vapour concentration 25,6 g/m<sup>3</sup>  
at 20 °C

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## SECTION 10. Stability and reactivity

### 10.1 Reactivity

Vapour/air-mixtures are explosive at intense warming.

### 10.2 Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) .

#### *Stabilizer*

4-tert-butylpyrocatechol

### 10.3 Possibility of hazardous reactions

Exothermic reaction with:

chlorosulfonic acid, Oxidizing agents

Chlorine, with, Iron

Violent polymerisation may be caused by:

aluminium chloride, sodium

Risk of explosion with:

Strong acids, polymerisation initiators, Peroxides

Oxygen, with, Heat

### 10.4 Conditions to avoid

Heating.

### 10.5 Incompatible materials

no information available

### 10.6 Hazardous decomposition products

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 807679  
Product name Styrene (stabilised) for synthesis

---

no information available

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## SECTION 11. Toxicological information

### 11.1 Information on toxicological effects

#### *Acute oral toxicity*

LD50 Rat: 2.650 mg/kg

(RTECS)

Symptoms: Irritation of mucous membranes

#### *Acute inhalation toxicity*

LC50 Rat: 12 mg/l; 4 h

(RTECS)

Symptoms: Possible damages:, mucosal irritations

#### *Acute dermal toxicity*

This information is not available.

#### *Skin irritation*

Rabbit

Result: Irritations

(IUCLID)

Drying-out effect resulting in rough and chapped skin. Dermatitis

Causes skin irritation.

#### *Eye irritation*

Rabbit

Result: Eye irritation

(IUCLID)

Causes serious eye irritation.

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 807679  
Product name Styrene (stabilised) for synthesis

---

## *Sensitisation*

Sensitisation test: Guinea pig

Result: negative

(IUCLID)

## *Germ cell mutagenicity*

This information is not available.

## *Carcinogenicity*

This information is not available.

## *Reproductive toxicity*

This information is not available.

## *Teratogenicity*

This information is not available.

## *CMR effects*

Teratogenicity:

Suspected of damaging the unborn child.

## *Specific target organ toxicity - single exposure*

This information is not available.

## *Specific target organ toxicity - repeated exposure*

Causes damage to organs through prolonged or repeated exposure.

Target Organs: hearing organs

## *Aspiration hazard*

This information is not available.

## 11.2 Further information

After absorption:

Tiredness, Dizziness, Vomiting

Other dangerous properties can not be excluded.

Handle in accordance with good industrial hygiene and safety practice.

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 807679  
Product name Styrene (stabilised) for synthesis

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## SECTION 12. Ecological information

### 12.1 Toxicity

#### *Toxicity to fish*

LC50 *Lepomis macrochirus* (Bluegill sunfish): 25 mg/l; 96 h  
(in soft water) (Lit.)

#### *Toxicity to daphnia and other aquatic invertebrates*

EC50 *Daphnia magna* (Water flea): 4,7 mg/l; 48 h  
(Lit.)

#### *Toxicity to algae*

IC5 *M.aeruginosa*: 67 mg/l; 8 d  
(Lit.)

#### *Toxicity to bacteria*

microtox test EC50 *Photobacterium phosphoreum*: 5,5 mg/l; 5 min  
(Lit.)

### 12.2 Persistence and degradability

#### *Biodegradability*

80 %; 20 d  
OECD Test Guideline 301D  
(IUCLID)  
Readily biodegradable

### 12.3 Bioaccumulative potential

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

log Pow: 2,96  
OECD Test Guideline 107

Bioaccumulation is not expected.

### 12.4 Mobility in soil

No information available.

### 12.5 Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted.

### 12.6 Other adverse effects

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 807679  
Product name Styrene (stabilised) for synthesis

---

## *Henry constant*

195 Pa·m<sup>3</sup>/mol

(Lit.) Distribution preferentially in air.

## *Stability in water*

237 d

reaction with hydroxyl radicals (experimental)

Discharge into the environment must be avoided.

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## SECTION 13. Disposal considerations

### *Waste treatment methods*

See [www.retrologistik.com](http://www.retrologistik.com) for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

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## SECTION 14. Transport information

### Land transport (ADR/RID)

14.1 UN number	UN 2055
14.2 Proper shipping name	STYRENE MONOMER, STABILIZED
14.3 Class	3
14.4 Packing group	III
14.5 Environmentally hazardous	--
14.6 Special precautions for user	yes
Tunnel restriction code	D/E

### Inland waterway transport (ADN)

Not relevant

### Air transport (IATA)

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 807679  
Product name Styrene (stabilised) for synthesis

---

**14.1 UN number** UN 2055  
**14.2 Proper shipping name** STYRENE MONOMER, STABILIZED  
**14.3 Class** 3  
**14.4 Packing group** III  
**14.5 Environmentally hazardous** --  
**14.6 Special precautions for user** no

## Sea transport (IMDG)

**14.1 UN number** UN 2055  
**14.2 Proper shipping name** STYRENE MONOMER, STABILIZED  
**14.3 Class** 3  
**14.4 Packing group** III  
**14.5 Environmentally hazardous** --  
**14.6 Special precautions for user** yes

EmS F-E S-D

## 14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not relevant

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## SECTION 15. Regulatory information

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

#### *EU regulations*

Major Accident Hazard SEVESO III  
Legislation FLAMMABLE LIQUIDS  
P5c  
Quantity 1: 5.000 t  
Quantity 2: 50.000 t

Occupational restrictions Take note of Dir 94/33/EC on the protection of young people at work. Observe work restrictions regarding maternity protection in accordance to Dir 92/85/EEC or stricter national regulations where applicable.

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 807679  
Product name Styrene (stabilised) for synthesis

---

Regulation (EC) No 1005/2009 on substances that deplete the ozone layer not regulated

Regulation (EC) No 850/2004 of the European Parliament and of the Council of 29 April 2004 on persistent organic pollutants and amending Directive 79/117/EEC not regulated

Substances of very high concern (SVHC) This product does not contain substances of very high concern according to Regulation (EC) No 1907/2006 (REACH), Article 57 above the respective regulatory concentration limit of  $\geq 0.1$  % (w/w).

### *National legislation*

Storage class 3

## 15.2 Chemical safety assessment

For this product a chemical safety assessment was not carried out.

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## SECTION 16. Other information

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

H226	Flammable liquid and vapour.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H361d	Suspected of damaging the unborn child.
H372	Causes damage to organs through prolonged or repeated exposure.

### Training advice

Provide adequate information, instruction and training for operators.



# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 807679  
Product name Styrene (stabilised) for synthesis

---

## Labelling

### *Hazard pictograms*



### *Signal word*

Danger

### *Hazard statements*

H226 Flammable liquid and vapour.

H315 Causes skin irritation.

H319 Causes serious eye irritation.

H332 Harmful if inhaled.

H361 Suspected of damaging fertility or the unborn child.

H372 Causes damage to organs (hearing organs) through prolonged or repeated exposure.

### *Precautionary statements*

#### Prevention

P210 Keep away from heat.

#### Response

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.

P314 Get medical advice/ attention if you feel unwell.

## 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).

## Regional representation

This information is given on the authorised Safety Data Sheet for your country.

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No.	807679
Product name	Styrene (stabilised) for synthesis

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*The information contained herein is based on the present state of our knowledge. It characterises the product with regard to the appropriate safety precautions. It does not represent a guarantee of any properties of the product.*