

SAFETY DATA SHEET

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING


- 1.1 Product identifier**
- Product Name: Styrene
- Product Description: V9003a-STYRENE-Styrene
- Trade name: STYRENE
- Product Code: STYRENE
- CAS No.: 100-42-5
EC No.: 202-851-5
- Synonyms: Ethenyl benzene, phenyl ethene, phenyl ethylene, vinyl benzene, cinnamol, cinnamenol, cinnamene
- 1.2 Relevant identified uses of the substance or mixture and uses advised against**
- Identified use(s): Industrial use only.
- 1.3 Details of the supplier of the safety data sheet**
- Company Identification: Vitol SA
Boulevard du Pont d'Arve 28
P.O. Box 384
1211 Geneva 4
Switzerland
- Telephone: +31 10 498 7200
Fax: +31 10 452 9545
E-Mail (competent person): xreach@vitol.com
- 1.4 Emergency telephone number**
- Emergency Phone No. (24 h): +44 (0) 1235 239 670 (24 hours, 7 days)

2. HAZARDS IDENTIFICATION

- 2.1 Classification of the substance or mixture** According to Regulation (EC) No. 1272/2008 (CLP)
- Flam. Liq. 3; H226
Acute Tox. 4; H332
Eye Irrit. 2; H319
Skin Irrit. 2; H315
Asp. Tox. 1; H304
STOT SE 3; H335
STOT RE 1; H372
According to Directive 67/548/EEC & Directive 1999/45/EC
- Xn; R20, R48/20, R65
Xi; R36/37/38
R10
- 2.2.1 Label elements** According to Regulation (EC) No. 1272/2008 (CLP)
- Hazard pictogram(s):



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Signal word(s):	Danger
Hazard statement(s):	H226: Flammable liquid and vapour. H315: Causes skin irritation. H319: Causes serious eye irritation. H332: Harmful if inhaled. H304: May be fatal if swallowed and enters airways. H335: May cause respiratory irritation. H372: Causes damage to organs through prolonged or repeated exposure: Hearing deterioration.
Precautionary statement(s):	P101: If medical advice is needed, have product container or label at hand. P210: Keep away from heat, sparks, open flame, hot surfaces - No smoking. P260: Do not breathe dust/fume/gas/mist/vapours/spray. P280: Wear protective gloves/protective clothing/eye protection/face protection. P315: Get immediate medical advice/attention. P301 + P330 + P331: IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
2.2.2 Label elements	<u>According to Directive 67/548/EEC & Directive 1999/45/EC</u>
Hazard pictogram(s):	
Hazard Symbol:	Harmful.
Risk Phrases:	R10: Flammable. R20: Harmful by inhalation. R36/37/38: Irritating to eyes, respiratory system and skin. R48/20: Harmful: danger of serious damage to health by prolonged exposure through inhalation. R65: Harmful: may cause lung damage if swallowed.
Safety Phrases:	S23: Do not breathe vapour/spray. S62: If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label.
2.3 Other hazards	Vapour may create explosive atmosphere. The vapour is heavier than air; beware of pits and confined spaces. May cause irritation to the respiratory system.

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3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

EC Classification No. 1272/2008

Hazardous ingredient(s)	%W/W	CAS No.	EC No.	Hazard symbol(s) and hazard statement(s)
Styrene	> 99.0	100-42-5	202-851-5	Flam. Liq. 3; H226 Acute Tox. 4; H332 Eye Irrit. 2; H319 Skin Irrit. 2; H315 Asp. Tox. 1; H304 STOT SE 3; H335 STOT RE 1; H372

EC Classification No. 67/548/EC

Hazardous ingredient(s)	%W/W	CAS No.	EC No.	Risk Phrases and Safety Phrases
Styrene	> 99.0	100-42-5	202-851-5	Xn; R20, R48/20, R65 Xi; R36/37/38 R10

4. FIRST AID MEASURES

4.1 Description of first aid measures

Inhalation:	Remove patient from exposure, keep warm and at rest. Obtain medical attention.
Skin Contact:	Remove contaminated clothing immediately and drench affected skin with plenty of water, then wash with soap and water. If symptoms persist, obtain medical attention. Contaminated clothing should be thoroughly cleaned.
Eye Contact:	If substance has got into the eyes, immediately wash out with plenty of water for at least 15 minutes. If symptoms persist, obtain medical attention.
Ingestion:	Do not induce vomiting. Provided the patient is conscious, wash out mouth with water and give 200-300 ml (half a pint) of water to drink. Obtain medical attention.

4.2 Most important symptoms and effects, both acute and delayed

Irritating to eyes and skin. May cause irritation to the respiratory system.

4.3 Indication of any immediate medical attention and special treatment needed

Have available eyewash bottle with clean water. If breathing is laboured, oxygen should be administered by qualified personnel.

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5. FIRE-FIGHTING MEASURES

- 5.1 Extinguishing media**
 Suitable Extinguishing Media: Foam, CO2 or dry powder.
 Unsuitable Extinguishing Media: Do not use water jet.
- 5.2 Special hazards arising from the substance or mixture**
 Vapour may create explosive atmosphere. The vapour is heavier than air; beware of pits and confined spaces.
 May give off toxic fumes in a fire. Carbon monoxide, Carbon dioxide.
- 5.3 Advice for fire-fighters**
 A self contained breathing apparatus and suitable protective clothing should be worn in fire conditions. Keep fire exposed containers cool by spraying with water.
 Flash Point (°C): 31 (@ 1013 hPa)
 Flammable Limits (Lower) (%v/v): 0.9
 Flammable Limits (Upper) (%v/v): 6.8
 Auto Ignition Temperature (°C): 490

6. ACCIDENTAL RELEASE MEASURES

- 6.1 Personal precautions, protective equipment and emergency procedures**
 Eliminate sources of ignition. Vapour may create explosive atmosphere. The vapour is heavier than air; beware of pits and confined spaces. Ensure adequate ventilation. Use non-sparking hand tools and explosion proof electrical equipment. Take precautionary measures against static discharges.
 Avoid inhalation of vapours. Avoid contact with skin and eyes. Wear suitable protective clothing and gloves. (See Section: 8). Contaminated clothing should be thoroughly cleaned.
- 6.2 Environmental precautions**
 Do not allow to enter drains, sewers or watercourses. Spillages or uncontrolled discharges into watercourses must be alerted to the Environment Agency or other appropriate regulatory body.
- 6.3 Methods and material for containment and cleaning up**
 Adsorb spillages onto sand, earth or any suitable adsorbent material. Sweep up carefully with non-sparking tools. Transfer to a container for disposal. Wash spill area with soapy water. Contaminated adsorbent must be removed in sealed, plastic lined drums and disposed of via an authorised waste disposal contractor.
- 6.4 Reference to other sections**
 Personal Protection: See Section: 8.
 Other advice: Caution - spillages may be slippery.

7. HANDLING AND STORAGE

- 7.1 Precautions for safe handling**
 Eliminate sources of ignition. Vapour may create explosive atmosphere. The vapour is heavier than air; beware of pits and confined spaces. Provide adequate ventilation, including appropriate local extraction, to ensure that the occupational exposure limit is not exceeded. Use non-sparking hand tools and explosion proof electrical equipment. Take precautionary

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measures against static discharges.

Avoid inhalation of vapours. Avoid contact with skin and eyes. Wear suitable protective clothing and gloves. (See Section: 8).

Do not eat, drink or smoke at the work place. Wash hands and exposed skin after use. Contaminated clothing should be thoroughly cleaned.

7.2 Conditions for safe storage, including any incompatibilities

Keep away from heat and sources of ignition. Keep from direct sunlight. Keep away from frost. Keep only in the original container in a cool, well-ventilated place.

7.3 Specific end use(s)

Industrial use only.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

EH40 – UK Occupational Exposure Limits

SUBSTANCE.	CAS No.	LTEL (8 hr TWA ppm)	LTEL (8 hr TWA mg/m ³)	STEL (ppm)	STEL (mg/m ³)	Note:
Styrene	100-42-5	100	430	250	1080	-

France: 50 ppm, 215 mg/m³ (VME)

Spain : 20 ppm, 86 mg/m³ (VLA-ED) ; 40 ppm, 172 mg/m³ (VLA-EC) – VLB, ae

Germany: 600 mg/l Kreatinin (BGW)

8.2 Exposure controls

8.2.1 Appropriate engineering controls

Provide adequate ventilation, including appropriate local extraction, to ensure that the occupational exposure limit is not exceeded.

8.2.2 Personal Protection

Eye/face protection



Goggles giving complete protection to eyes. (EN 166)

Skin protection



Protective gloves. (EN 374)

Respiratory protection



In case of insufficient ventilation, wear suitable respiratory equipment. (BS EN 14387:2004+A1)

Other:

Apron or other light protective clothing, boots and plastic or rubber gloves.

8.2.3 Environmental Exposure Controls

Avoid release to the environment.

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9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance:	Liquid.
Colour:	Colourless to yellowish liquid.
Odour:	Aromatic.
Odour Threshold (ppm):	0.047
pH:	Not applicable.
Melting Point (°C) / Freezing Point (°C):	-31
Boiling Point (°C):	145 (@ 1013 hPa)
Flash Point (°C):	31 (@ 1013 hPa)
Relative Evaporation Rate (Butyl Acetate = 1):	0.49
Flammability (solid, gas):	Not applicable. - Liquid.
Flammable Limits (Lower) (%v/v):	0.9
Flammable Limits (Upper) (%v/v):	6.8
Vapour Pressure (Pascal):	667 (@ 20°C)
Vapour Density (Air=1):	3.6
Specific Gravity:	0.9 - 0.91 (@ 20°C)
Solubility (Water):	320 mg/l (@ 25°C) (Practically insoluble.)
Partition Coefficient:	log Pow = 2.96 (@ 25°C)
Auto Ignition Temperature (°C):	490 (@ 1013 hPa)
Decomposition Temperature (°C):	Not applicable.
Dynamic viscosity:	0.696 mPa/s (@ 25°C)
Explosive Properties:	Not explosive. Vapour may create explosive atmosphere.
Oxidising Properties:	Not oxidising.

9.2 Other information

Conductivity:	10 pS/m
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10. STABILITY AND REACTIVITY

10.1 Reactivity	Susceptible to violent exothermic polymerisation, initiated by heating or the presence of catalysts. Reacts with - Strong oxidising agents.
10.2 Chemical stability	Stable under normal conditions.
10.3 Possibility of hazardous reactions	No information available.
10.4 Conditions to avoid	Keep away from heat, sources of ignition and direct sunlight.
10.5 Incompatible materials	Oxidizing agents.
10.6 Hazardous Decomposition Product(s)	May give off toxic fumes in a fire. Carbon monoxide, Carbon dioxide.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity:

Ingestion:	LD ₅₀ (oral/rat): 5000 mg/kg
Inhalation:	LD ₅₀ (inhalation/rat): 11.8 mg/l/4 h
Skin Contact:	LD ₅₀ (dermal/rabbit): >2000 mg/kg (OECD Guideline 402)
Eye Contact:	No information available.

Skin corrosion/irritation:

Irritating to skin.

Serious eye damage/irritation:

Irritating to eyes.

Respiratory or skin sensitization:

May cause irritation to the respiratory system.

Mutagenicity:

There is no evidence of mutagenic potential.

Carcinogenicity:

No evidence of carcinogenicity in man.

Reproductive toxicity:

Negative.

STOT - single exposure:

No information available.

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STOT-repeated exposure:	Hearing deterioration.
Aspiration hazard:	Risk of aspiration. Aspiration of liquid may cause pulmonary oedema.
Other information:	No information available.

12. ECOLOGICAL INFORMATION

12.1 Toxicity	LC ₅₀ (Sheepshead Minnow): 9.1 mg/l/96 h LC ₅₀ (Goldfish): 26 mg/l/24 h WGK: 2.
12.2 Persistence and degradability	The substance is volatile and will partition into the atmosphere. Readily biodegradable. The product is unlikely to persist in the environment.
12.3 Bioaccumulative potential	The product has low potential for bioaccumulation.
12.4 Mobility in soil	The product has moderate mobility in soil.
12.5 Results of PBT and VPVB assessment	Not persistent.
12.6 Other adverse effects	No information available.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods	Do not empty into drains; dispose of this material and its container in a safe way. To be disposed of as hazardous waste. Contaminated adsorbent must be removed in sealed, plastic lined drums and disposed of via an authorised waste disposal contractor. Disposal should be in accordance with local, state or national legislation.
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14. TRANSPORT INFORMATION

14.1 UN number	2055
14.2 Proper Shipping Name	STYRENE MONOMER, STABILISED
14.3 Transport hazard class(es)	3
14.4 Packing Group	III
14.5 Environmental hazards	Not classified as a Marine Pollutant.
14.6 Special precautions for user	Flammable. Vapour may create explosive atmosphere. The vapour is heavier than air; beware of pits and confined spaces.
14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Pollution Category: Y Ship Type: 3

15. REGULATORY INFORMATION

According to Regulation (EC) No. 1272/2008 (CLP)

Hazard pictogram(s):



Signal word(s):

Danger

Hazard statement(s):

H226: Flammable liquid and vapour.
H315: Causes skin irritation.

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Precautionary statement(s):	<p>H319: Causes serious eye irritation. H332: Harmful if inhaled. H304: May be fatal if swallowed and enters airways. H335: May cause respiratory irritation. H372: Causes damage to organs through prolonged or repeated exposure: Hearing deterioration.</p> <p>P101: If medical advice is needed, have product container or label at hand. P210: Keep away from heat, sparks, open flame, hot surfaces - No smoking. P260: Do not breathe dust/fume/gas/mist/vapours/spray. P280: Wear protective gloves/protective clothing/eye protection/face protection. P315: Get immediate medical advice/attention. P301 + P330 + P331: IF SWALLOWED: rinse mouth. Do NOT induce vomiting.</p>
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According to Directive 67/548/EEC & Directive 1999/45/EC

Hazard pictogram(s):



Hazard Symbol:

Harmful.

Risk Phrases:

R10: Flammable.
 R20: Harmful by inhalation.
 R36/37/38: Irritating to eyes, respiratory system and skin.
 R48/20: Harmful: danger of serious damage to health by prolonged exposure through inhalation.
 R65: Harmful: may cause lung damage if swallowed.

Safety Phrases:

S23: Do not breathe vapour/spray.
 S62: If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label.

16. OTHER INFORMATION

Full text of Hazard statements and Risk phrases for pure substances listed in section 3.

Hazard Symbol:

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R65: Harmful: may cause lung damage if swallowed.

The following sections contain revisions or new statements: 1-16.

Abbreviations:

CAS = Chemical Abstracts Service;
CNS = Central Nervous System;
EINECS = European Inventory of Existing Commercial Chemical Substances;
EC50 = Effective Concentration 50%;
IARC = International Agency for Research on Cancer;
IC50 = Inhibitory Concentration 50%;
LC50 = Lethal Concentration 50%;
LD50 = Lethal Dose 50%;
LTEL = Long Term Exposure Limit;
STEL = Short Term Exposure Limit;
TWA = Time Weighted Average;

References:

IUCLID Chemical Data Sheets, IUCLID Export Files, OECD-IUCLID Export Files, EUSES Export Files,
European Union (2007a). European risk assessment report, Styrene CAS No. 100-42-5, EINECS No. 202-851-5,
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IARC. Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man. Geneva: World Health
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<http://monographs.iarc.fr/index.php> p. V60 234 (1994) (Accessed via Toxnet (<http://toxnet.nlm.nih.gov/>) on 22
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of Chemical Hazard. Volumes 1-3. NIOSH. OSHA. US Printing Office, Washington, DC. PB, 81-123. (Accessed via
Chempendium (<http://ccinfoweb.ccohs.ca/chempendium/search.html>) on 22 November 2010).

Disclaimer:

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