

SIBUR-KHIMPROM JSC

SAFETY DATA SHEET

Prepared in accordance with Annex II of the REACH regulation EC 1907/2006,
Regulation (EC) 1272/2008 and regulation (EC) 453/2010

STYRENE

VERSION: 2
DATE CREATED: 11/01/2011
DATE UPDATED: -
Regulation: EC No 1272/2008

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

1.1 Product identifier

NAME OF SUBSTANCE: Styrene
SYNONYMS: Phenyl ethylene, Phenyl ethene, Vinyl benzene
Ethenyl benzene, Styrene monomer
TRADE NAMES: Styrene
Index No (CLP) 601-026-00-0
CHEMICAL NAME AND
FORMULA: Styrene C₈H₈
CAS #: 100-42-5
EC #: 202-851-5

1.2. Relevant identified uses of the substance

See Annex 1

Most common technical function of substance: Monomer

Uses advised against

The use of the substance should be limited to those specified in Annex 1.

1.3. Details of the supplier of the safety data sheet

SUPPLIER:

Company name: Sibur-Khimprom CJSC
Address: 98, Promishlennaya str., Perm, Perm region,
614055, Russian Federation
Contact phone: +7 (3422) 90-83-72; 90-84-84; 90-82-82
Fax: +7 (3422) 90-81-61; 90-86-60
Email Address: mail@siburperm.ru
Emergency phone: +7 (3422) 90-87-05 (round the clock)
+7 (3422) 90-86-79, 290-87-18 (English, German,
5 AM to 1 PM CET, leave the message, GMT+5)

Emergency phone in the country of delivery: **112** (Please note that emergency numbers may vary depending upon the country of delivery though 112 remains valid as universal number)

ONLY REPRESENTATIVE:

Company name: Gazprom Marketing and Trading France
Address: 68 avenue des Champs-Élysées, Paris, 75008,
France
Contact phone: +33 1 42 99 73 50
Fax: +33 1 42 99 73 99
Email address: yury.severinchik@gazprom-mt.com

2 HAZARDS IDENTIFICATION

2.1 CLASSIFICATION

Styrene

Classification and labelling according to Annex I of Directive 67/548/EEC+ self classification

Physical/Chemical Hazards:

R10 Flammable.

Health Hazards:

Xn; R20 Harmful by inhalation.

Xn; R65 Harmful: may cause lung damage if swallowed.

Xn; R48/20 Harmful: danger of serious damage to health by prolonged exposure through inhalation.

Xi; R36/37/38 Irritant; Irritating to eyes, respiratory system and skin.

Environmental hazards:

none

Classification and labelling according to EU CLP 2008 + self classification:

Physical/Chemical Hazards:

Flam. Liquid 3 (Hazard statement: H226: Flammable liquid and vapour).

Health Hazards:

Acute Tox. 4 (H332: Harmful if inhaled)

Skin Irritation 2 (H315: Causes skin irritation)

Eye Irrit. 2 (H319: Causes serious eye irritation)

Aspiration hazard: Asp. Tox. 1 (H304: May be fatal if swallowed and enters airways)

Specific target organ toxicity - single: STOT Single Exp. 3 (Hazard statement: H335: May cause respiratory irritation)

Specific target organ toxicity repeated: STOT Rep. Exp. 1 (H372: Causes damage to organs through prolonged or repeated exposure (hearing))

Environmental hazards:

none

2.2 LABELLING

EU LABELLING

Indication of danger: Harmful



Xn- harmful

Symbol: Xn;

CLP LABELLING

Signal word: Danger

Hazard pictogram:



GHS02: flame



GHS08: health hazard

The Full Text for all S, P-Phrases is displayed in Section 15.

3 COMPOSITION/INFORMATION ON INGREDIENTS

Name	EC-No	CAS-No	Content, %	Classification 67/548/EEC/ EU CLP 2008
Styrene	202-851-5	100-42-5	99.6-100	F:R10; Xn: R20,R65, R48/20; Xi: R36/3738 H226;332;315;319;304;335;372
m-xylene	215-535-7	1330-20-7	0.001-0.015	
Paraffin hydrocarbons/ or Paraffin oils	232-384-2	8012-95-1	0.001-0.015	
(1-methylethyl)benzene/ or Isopropylbenzene	202-704-5	98-82-8	0.01-0.02	
α -Methylstyrene/ or 2-phenylpropene	202-705-0	98-83-9	0.01-0.05	
Propylbenzene /or n-propylbenzene	203-132-9	103-65-1	0.001-0.01	
Ethylbenzene	202-849-4	100-41-4	0.01-0.05	
Phenylacetylene	208-645-1	536-74-3	0.001-0.01	
1-ethyl-2-methylbenzene /or Ethyltoluene	247-093-6	25550-14-5	0.001-0.01	
Additives (stabilizer inhibits the polymerization of styrene) 4-tert-Butylbenzene-1,2-diol /or 4-tert-Butylpyrocatechol	202-653-9	98-29-3	5-10 ppm	

Specific Conc. Limits (CLP): none



The product does not contain impurities or additives that could affect product's labelling and classification according to 67/548/EEC and EU CLP 2008

4 FIRST-AID MEASURES

DESCRIPTION OF FIRST AID MEASURES:

GENERAL ADVICE

Remove contaminated clothing. In danger of consciousness loss, place patient in recovery position and transport accordingly. Apply artificial respiration if necessary.

INHALATION

Keep patient calm, remove to fresh air, and seek medical attention.

SKIN CONTACT

Wash thoroughly with soap and water.

EYE CONTACT

Immediately wash affected eyes for at least 15 minutes under running water with eyelids held open, consult an eye specialist.

INGESTION

Keep patient calm, remove to fresh air, seek medical attention.

MOST IMPORTANT SYMPTOMS AND EFFECTS, BOTH ACUTE AND DELAYED

Aspiration into the lungs may cause chemical pneumonitis, which can be fatal. Harmful by inhalation; may cause lung damage. Irritating to skin and eyes. Headache, nausea, dizziness, narcosis.

Target organs: Central nervous system, auditory system, liver, respiratory system.

5 FIRE-FIGHTING MEASURES

SUITABLE EXTINGUISHING MEDIA

dry extinguishing media, foam, carbon dioxide

SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE

Hazardous combustion products may include carbon monoxide and formaldehyde.

Floating and can be reignited on surface water.

The vapour is heavier than air, spreads along the ground and distant ignition is possible.

UNSUITABLE EXTINGUISHING MEDIA

Unsuitable extinguishing media for safety reasons: water.

ADVICE FOR FIREFIGHTERS

Special protective equipment: Wear self-contained breathing apparatus and chemical-protective clothing.

Further information: Keep containers cool by spraying with water if exposed to fire.

6 ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES

For Non-Emergency Personnel:

Use breathing apparatus if exposed to vapours/aerosol.

Sources of ignition should be kept well clear.

Evacuate the area of all non-essential personnel. Shut off leaks without personal risk, if possible.

Extinguish naked flames. Remove ignition sources. No smoking. Avoid sparks. Take precautionary measures against static discharge.

For Emergency Responders

Avoid contact with skin, eyes, and clothing. Ventilate contaminated area thoroughly. Do not breathe vapour. Take off immediately all contaminated clothing.

ENVIRONMENTAL PRECAUTIONS

Prevent contamination of soil and water. Prevent from spreading or entering into drains, ditches or rivers by using sand, earth, or other appropriate barriers.

METHODS AND MATERIAL FOR CONTAINMENT AND CLEANING UP

Methods for cleaning up or taking up:

For small amounts: Pick up with suitable absorbent material. Dispose of absorbed material in accordance with regulations.

For large amounts: Dike spillage. Place into suitable container for disposal.

For residues: Pick up with suitable absorbent material. Dispose of absorbed material in accordance with regulations.

REFERENCE TO OTHER SECTIONS

For more information on exposure controls/personal protection or disposal considerations, please check section 8 and 13 of this safety data sheet.

7 HANDLING AND STORAGE

PRECAUTIONS FOR SAFE HANDLING

Protective measures

Electrostatic discharge may cause fire

Ensure electrical continuity by bonding and grounding (earthing) all equipment.

Do NOT use compressed air for filling, discharging or handling operations

Electrostatic charges may be generated during pumping.

Restrict line velocity during pumping in order to avoid generation of electrostatic discharge.

If positive displacement pumps are used, these must be fitted with a non-integral pressure relief valve

Extinguish any naked flames. Do not smoke. Remove ignition sources. Avoid sparks

The vapour is heavier than air, spreads along the ground and distant ignition is possible

Advice on general occupational hygiene

Wear suitable protective clothing and gloves.

CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES

Storage

Further information on storage conditions: Keep at temperature not exceeding 40°C.

Storage stability: Storage temperature: < 40°C



Check frequently to ensure that stabilizer content is adequate. Additives: 4-tert-butyl catechol (CAS Number: 98-29-3)

Precautions for safe handling: unsuitable materials for containers: brass, copper

SPECIFIC END USE(S)

For more information please see the identified uses in Appendix I of this SDS.

For more information please see the relevant exposure scenario in Appendix II of this SDS

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

CONTROL PARAMETERS, OCCUPATIONAL EXPOSURE LEVELS

Country	8hr avg TLV (ppm)	STEL (ppm)
Austria	50	100 (15 min)
Belgium	50	100 (15 min)
Czech Republic	47	234
Denmark	25	25
Finland	20	100 (15 min)
France	50	-
Germany	20	40 (30 min)
Hungary	12	-
Italy	50	100 (15 min)
Luxemburg	20	40 (30 min)
Netherlands	25	50 (15 min)
Norway	25	37.5 (15 min)
Poland	24	72
Spain	50	100 (15 min)
Sweden	20	50 (15 min)
Switzerland	50	100 (4 x 10 min)
United Kingdom	100	250 (10 min)

Control parameters for the purpose of the CSA for REACH

DN(M)ELs for workers

Acute - systemic effects, inhalation 289 mg/m³

Acute - local effects, inhalation 306 mg/m³

Long-term - systemic effects, dermal 406 mg/kg bw/day

Long-term - systemic effects, inhalation 85 mg/m³

DN(M)ELs for the general population

Acute - systemic effects, inhalation 174.25 mg/m³

Acute - local effects, inhalation 182.75 mg/m³

Long-term - systemic effects, dermal 343 mg/kg bw/day

Long-term - systemic effects, inhalation 10.2 mg/m³

Long-term - systemic effects, oral 2.1 mg/kg bw/day

Consumer -DNEL long-term inhalation:

The consumer DNEL long-term inhalation route 17 ppm

Humans via environment DNEL long-term inhalation:

effects on colour vision DNEL long-term inhalation via environment 6.0 ppm (25.5 mg/m³)
ototoxicity DNEL long-term inhalation via environment: 2.4 ppm (10.2 mg/m³)

PNEC water

PNEC aqua (freshwater): 0.028 mg/L
PNEC aqua (marine water): 0.0028 mg/L
PNEC aqua (intermittent releases): 0.04 mg/L

PNEC sediment

PNEC sediment (freshwater): 0.614 mg/kg sediment dw
PNEC sediment (marine water): 0.0614 mg/kg sediment dw

EXPOSURE CONTROLS

For more information please see the relevant exposure scenario in Appendix II of this SDS

9 PHYSICAL AND CHEMICAL PROPERTIES

Property	Results	Remarks
Physical state at 20°C and 1013 hPa	liquid Colour: Colorless to yellowish	
Melting / freezing point	-31° C	Melting point is not relevant because the value is below -20° C.
Boiling point	145° C at 1013 hPa	
Relative density	0.9 - 0.91 at 20° C.	
Vapour pressure	6.67 hPa at 20° C.	
Surface tension	not applicable	Based on chemical structure, no surface activity is predicted.
Water solubility	320 mg/l at 25° C.	
Partition coefficient n-octanol/water (log value)	log Pow= 2.96 at 25° C	
Flash point	31° C at 1013 hPa	
Flammability	Flammable liquid	flammable Substance is a flammable liquid, GHS-Category 3. (FP: > 23° C and < 60°C). Flammability derived from flash point. Based on chemical structure pyrophoric properties and flammability in contact with water are not to be expected.
Explosive properties	non explosive	non explosive There are no chemical groups associated with explosive properties present in the molecule as cited in the ECHA Guidance R7a, Table 7.1 -28).
Self-ignition temperature	490° C at 1013 hPa	

Oxidising properties	no oxidising properties	Oxidising: no Substance is incapable of reacting exothermically with combustible materials.
Granulometry	Not applicable	Substance is marketed or used in a non-solid or granular form.
Stability in organic solvents and identity of relevant degradation products	not applicable	The stability of the substance is not considered as critical.
Dissociation constant	not applicable	The substance does not contain any ionisable structure.
Viscosity	0.696 mPa/s (dynamic) at 25°C	

10 STABILITY AND REACTIVITY

REACTIVITY

Reacts violently with strong oxidizing agents. Oxidizes on contact with air. Polymerizes exothermically on exposure to light, heat and most halides. In case of contact with water the inhibitor concentration might decrease and cause polymerization.

CHEMICAL STABILITY

Check frequently to ensure that stabilizer content is adequate. Additives: 4-tert-butyl catechol (CAS Number: 98-29-3)

Unsuitable materials for containers: brass, copper

POSSIBILITY OF HAZARDOUS REACTIONS

Hazardous reactions are not expected during normal storage.

CONDITIONS TO AVOID

Heat, flames and sparks.

Exposure to air, exposure to sunlight.

INCOMPATIBLE MATERIALS

Unsuitable materials for containers: brass, copper

Strong oxidizing agents, halides

HAZARDOUS DECOMPOSITION PRODUCTS

Hazardous decomposition products are not expected to form during normal storage

11 TOXICOLOGICAL INFORMATION

INFORMATION ON TOXICOLOGICAL EFFECTS

Acute toxicity:

Oral low toxicity,

Dermal low toxicity LD50: > 2000 mg/kg bw

Inhalation study with 6 human volunteers exposed for 7 hours: NOAEC = 100 ppm; no effects on the central nervous system (CNS) function at this concentration

acute inhalation toxicity: rat, 4 h inhalation: LC50 = 2770 ppm (11.8 mg/l)

Based on the physical-chemical properties of styrene, the substance fulfils the requirements to be classified as Category 1 for aspiration hazard according to GHS-CLP criteria (1272/2008/EC) and as Xn, R65 according to EU-DSD criteria (67/548/EEC).

Irritation / corrosion: Styrene is not corrosive.

Eye irritation: rabbit: irritating

Skin irritation: rabbit: irritating

Respiratory irritation: human: NOAEC = 216 ppm

Styrene fulfils the requirements to be classified as Category 2 for skin irritation according to GHS-CLP criteria (1272/2008/EC) and as Xi, R38 according to EU-DSD criteria (67/548/EEC).

Styrene fulfils the requirements to be classified as Category 2A for eye irritation according to GHS-CLP criteria (1272/2008/EC) and as Xi, R36 according to EU-DSD criteria (67/548/EEC).

Styrene fulfils the requirements to be classified as STOT single exposure Category 3 for respiratory irritation according to GHS-CLP criteria (1272/2008/EC) and as Xi, R37 according to EU-DSD criteria (67/548/EEC).

Sensitisation

Dermal: not skin sensitizing

Respiratory tract: not respiratory sensitizing

Repeated dose toxicity

- human: effects on colour vision after long-term inhalation: NOAEC = 50 ppm (8-hr TWA)

Inhalation:

- human: ototoxicity after long-term inhalation: NOAEC = 20 ppm

- rat: ototoxicity after long-term inhalation: NOAEC = 500 ppm

- rat: developmental toxicity after long-term inhalation: NOAEC = 500 ppm

Dermal: corrected NOAEL = 615 mg/kg/d, resulting from route-to-route extrapolation (inhalation to dermal route)

Styrene causes a specific adverse effect on hearing in laboratory animals after long-term exposure. Additionally, there is an indication for styrene-induced hearing losses in humans.

Classification of styrene as Xn, R48 according to EU-criteria (67/548/EE) and as STOT RE Category 1 according to GHS-criteria (1272/2008/EC) is warranted for ototoxic effects.

Mutagenicity

There is no convincing evidence that styrene possesses significant mutagenic/clastogenic potential in vivo from the available data in experimental animals.

Classification for mutagenicity according to EU-criteria (67/548/EEC) and to GHS-criteria (1272/2008/EC) is not warranted for styrene.

Carcinogenicity

There is no convincing evidence that styrene possesses significant carcinogenic potential in humans.

Classification for carcinogenicity according to EU-criteria (67/548/EEC) and to GHS-criteria (1272/2008/EC) is not warranted for styrene.

Toxicity for reproduction

There is no convincing evidence that styrene possesses a significant potential for causing effects on fertility or developmental toxicity in humans.

12 ECOLOGICAL INFORMATION

TOXICITY

Acute/Prolonged toxicity to fish

Short term toxicity to freshwater fish

LC50 for freshwater fish: 4.02 mg/L

Acute/Prolonged toxicity to aquatic invertebrates

Acutely toxic for aquatic invertebrates

EC50/LC50 for freshwater invertebrates: 4.7 mg/L

Long term toxicity for aquatic invertebrates

EC10/LC10 or NOEC for freshwater invertebrates: 1.01 mg/L

Acute/Prolonged toxicity to aquatic plants

Acutely toxic to aquatic algae.

EC50/LC50 for freshwater algae: 4.9 mg/L

Toxicity to sediment organisms

The substance is not persistent in the sediment compartment. The equilibrium partitioning method has been used for assessing the hazard to sediment organisms.

Toxicity to micro-organisms e.g. bacteria

EC50/LC50 for aquatic micro-organisms: 500 mg/L

Chronic toxicity to aquatic organisms

Toxicity to soil dwelling organisms

No data on chronic terrestrial toxicity are available. The substance is not persistent in the soil compartment. The equilibrium partitioning method has been used for assessing the hazard to soil organisms.

Toxicity to terrestrial plants

No data on chronic terrestrial toxicity are available. The substance is not persistent in the soil compartment. The equilibrium partitioning method has been used for assessing the hazard to soil organisms.

GENERAL EFFECT

PERSISTENCE AND DEGRADABILITY

Hydrolysis: According to structural properties, hydrolysis is not expected

Phototransformation in air: After evaporation or exposure to the air, the product will be rapidly degraded by photochemical processes.

Phototransformation in water: Indirect photolysis is not a relevant degradation process in water in comparison to volatilisation and biotransformation.

Biodegradation in water and in soil: Styrene can be readily degraded in water under aerobic conditions. Rate of microbial mineralisation is rapid also in sewage, mineral soils and organic soils under aerobic conditions. Styrene degrades more slowly in groundwater than in surface waters.

BIOACCUMULATIVE POTENTIAL

Significant accumulation in organisms is not expected

MOBILITY IN SOIL

Adsorption to solid soil phase is possible. Koc at 20°C: 352

RESULTS OF PBT AND VPVB ASSESSMENT

Taking into account all available data on biotic and abiotic degradation, bioaccumulation and toxicity it can be stated that styrene does not fulfill the PBT criteria (not PBT) and not the vPvB criteria (not vPvB).

13 DISPOSAL CONSIDERATIONS

GENERAL INFORMATION

Recover or recycle if possible. Otherwise: incineration

The recommendations given are considered appropriate for safe disposal. However, local regulations may be more stringent and these must be complied with.

14 TRANSPORT INFORMATION

Road/Rail transport ADR/RID

UN-Number

UN-2055

UN proper shipping name

STYRENE MONOMER, STABILIZED

Transport hazard class(es)

Class 3

Classification code F1

Packing group

III

Environmental hazards

Non marine pollutant

Special precautions for user

None

Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

Category B (Y)

IBC 3

15 REGULATORY INFORMATION

EC Label name: STYRENE

EC label/EC number : 202-851-5

EC Annex I number: 601-026-00-0

Chemical Safety Assessment has been performed for styrene.

[APPENDIX II TO THE eSDS OF STYRENE \(CAS 100-42-5; EINECS 202-851-5\): Exposure scenarios for Styrene](#)

Safety Advice (S-phrases):

S23 - do not breathe gas/fumes/vapour/spray (appropriate wording to be specified by the manufacturer) (vapour)

S62 - if swallowed, do not induce vomiting: seek medical advice immediately and show this container or label



Precautionary statements:

P210: Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P233: Keep container tightly closed.
P240: Ground/bond container and receiving equipment.
P241: Use explosion-proof electrical/ventilating/lighting equipment.
P242: Use only non-sparking tools.
P243: Take precautionary measures against static discharge.
P260 Do not breathe dust/fume/gas/mist/vapours/spray
P264 Wash hands thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P314 Get medical advice/attention if you feel unwell.
P331 Do NOT induce vomiting.
P362 Take off contaminated clothing and wash before re-use.
P405 Store locked up.
P501: Dispose of absorbed material in accordance with regulations.
P303+P361+P353: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing.
Rinse skin with water/shower.
P301+P310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P403+P233: Store in a well-ventilated place. Keep container tightly closed.
P403+P235 Store in a well-ventilated place. Keep cool.
P304+P340 IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.
P305+P351+P338, IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313 If eye irritation persists: Get medical advice/attention.
P302+P352, IF ON SKIN: Wash with plenty of soap and water.
P332+P313, If skin irritation occurs: Get medical advice/attention.

UK REGULATORY REFERENCES

Chemicals (Hazard Information & Packaging) Regulations. The Control of Substances Hazardous to Health Regulations 1988. Health and Safety at Work Act 1974.

ENVIRONMENTAL LISTING

Control of Pollution Act 1974.

EU DIRECTIVES

System of specific information relating to Dangerous Preparations. 2001/58/EC. Dangerous Preparations Directive 1999/45/EC.

Directive 67/548/EEC on the approximation of the laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances.

STATUTORY INSTRUMENTS

Notification of New Substances Regulations (NONS) 1993. The Export and Import of Dangerous Chemicals Regulations 2005 number 928.



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APPROVED CODE OF PRACTICE

Classification and Labelling of Substances and Preparations Dangerous for Supply (EU 2001/59/EC). Safety Data Sheets for Substances and Preparations (REACH).

GUIDANCE NOTES

Workplace Exposure Limits EH40. Introduction to Local Exhaust Ventilation HS(G)37. CHIP for everyone HSG(108).

NATIONAL REGULATIONS

The Chemicals (Hazard Information and Packaging for Supply) Regulations 2002. No. 1689.

Workplace Exposure Limits 2005 (EH40).

The Carriage of Dangerous Goods and use of transportable pressure equipment regulations 2004.

Control of Substances hazardous to health regulations 2002 (as amended).

NATIONAL REGULATIONS (GERMANY)

Major Accident Hazard Legislation 82/501/EWG.

16 OTHER INFORMATION

ISSUED BY HS&E Manager

VERSION: 2
DATE CREATED: 11/01/2011
DATE UPDATED: -

DISCLAIMER

This information is based on our current level of knowledge. This information may be subject to revision as new knowledge and experience becomes available, and SIBUR makes no warranties and assumes no liability in connection with any use of this information. Since SIBUR cannot be aware of all aspects of your business and the impact the REACH Regulation has for your company, SIBUR strongly encourages you to get familiar with the REACH Regulation in order to comply with its requirements and timelines.

Annex 1

Relevant identified uses of the substance

Uses by workers in industrial settings

Identified Use (IU) name	Substance supplied to that use	Use descriptors
Manufacturing of styrene	as such (substance itself)	<p>Process category (PROC):</p> <p>PROC 1: Use in closed process, no likelihood of exposure PROC 2: Use in closed, continuous process with occasional controlled exposure PROC 3: Use in closed batch process (synthesis or formulation) PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC 8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC 15: Use as laboratory reagent</p> <p>Environmental release category (ERC):</p> <p>ERC 1: Manufacture of substances</p> <p>Sector of end use (SU):</p> <p>SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites SU 8: Manufacture of bulk, large scale chemicals (including petroleum products)</p> <p>Subsequent service life relevant for that use?: no</p>
Continuous mass polymerisation of Polystyrene (HIPS and GPPS)	as such (substance itself)	<p>Process category (PROC):</p> <p>PROC 2: Use in closed, continuous process with occasional controlled exposure PROC 8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC 14: Production of preparations or articles by tableting, compression, extrusion, pelletisation PROC 15: Use as laboratory reagent</p> <p>Environmental release category (ERC):</p> <p>ERC 6c: Industrial use of monomers for manufacture of</p>

		<p>thermoplastics</p> <p>Sector of end use (SU):</p> <p>SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites</p> <p>SU 12: Manufacture of plastics products, including compounding and conversion</p> <p>Subsequent service life relevant for that use?: no</p>
Batch suspension polymerisation of Polystyrene (HIPS and GPPS)	as such (substance itself)	<p>Process category (PROC):</p> <p>PROC 2: Use in closed, continuous process with occasional controlled exposure</p> <p>PROC 3: Use in closed batch process (synthesis or formulation)</p> <p>PROC 8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities</p> <p>PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities</p> <p>PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)</p> <p>PROC 14: Production of preparations or articles by tableting, compression, extrusion, pelletisation</p> <p>PROC 15: Use as laboratory reagent</p> <p>Environmental release category (ERC):</p> <p>ERC 6c: Industrial use of monomers for manufacture of thermoplastics</p> <p>Sector of end use (SU):</p> <p>SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites</p> <p>SU 12: Manufacture of plastics products, including compounding and conversion</p> <p>Subsequent service life relevant for that use?: no</p>
Production of Expandable Polystyrene	as such (substance itself)	<p>Process category (PROC):</p> <p>PROC 2: Use in closed, continuous process with occasional controlled exposure</p> <p>PROC 3: Use in closed batch process (synthesis or formulation)</p> <p>PROC 8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities</p> <p>PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities</p> <p>PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)</p> <p>PROC 14: Production of preparations or articles by tableting, compression, extrusion, pelletisation</p> <p>PROC 15: Use as laboratory reagent</p> <p>Environmental release category (ERC):</p>



		<p>ERC 6c: Industrial use of monomers for manufacture of thermoplastics</p> <p>Sector of end use (SU):</p> <p>SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites</p> <p>SU 12: Manufacture of plastics products, including compounding and conversion</p> <p>Subsequent service life relevant for that use?: no</p>
Production of Styrenic Copolymers	as such (substance itself)	<p>Process category (PROC):</p> <p>PROC 2: Use in closed, continuous process with occasional controlled exposure</p> <p>PROC 3: Use in closed batch process (synthesis or formulation)</p> <p>PROC 8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities</p> <p>PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities</p> <p>PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)</p> <p>PROC 15: Use as laboratory reagent</p> <p>Environmental release category (ERC):</p> <p>ERC 6c: Industrial use of monomers for manufacture of thermoplastics</p> <p>Sector of end use (SU):</p> <p>SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites</p> <p>SU 12: Manufacture of plastics products, including compounding and conversion</p> <p>Subsequent service life relevant for that use?: no</p>
Manufacturing of UP/VE resins and formulated resins	as such (substance itself)	<p>Process category (PROC):</p> <p>PROC 1: Use in closed process, no likelihood of exposure</p> <p>PROC 3: Use in closed batch process (synthesis or formulation)</p> <p>PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises</p> <p>PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)</p> <p>PROC 8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities</p> <p>PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities</p> <p>PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)</p> <p>PROC 15: Use as laboratory reagent</p> <p>Environmental release category (ERC):</p>



		<p>ERC 2: Formulation of preparations</p> <p>Sector of end use (SU):</p> <p>SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites</p> <p>SU 12: Manufacture of plastics products, including compounding and conversion</p> <p>Subsequent service life relevant for that use?: no</p>
FRP manufacturing in an industrial setting	as such (substance itself)	<p>Process category (PROC):</p> <p>PROC 3: Use in closed batch process (synthesis or formulation)</p> <p>PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)</p> <p>PROC 7: Industrial spraying</p> <p>PROC 8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities</p> <p>PROC 10: Roller application or brushing</p> <p>PROC 13: Treatment of articles by dipping and pouring</p> <p>PROC 14: Production of preparations or articles by tableting, compression, extrusion, pelletisation</p> <p>PROC 15: Use as laboratory reagent</p> <p>Environmental release category (ERC):</p> <p>ERC 6d: Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers</p> <p>Sector of end use (SU):</p> <p>SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites</p> <p>SU 12: Manufacture of plastics products, including compounding and conversion</p> <p>Subsequent service life relevant for that use?: no</p>
Production of Styrene Butadiene Rubber (SBR)	as such (substance itself)	<p>Process category (PROC):</p> <p>PROC 2: Use in closed, continuous process with occasional controlled exposure</p> <p>PROC 3: Use in closed batch process (synthesis or formulation)</p> <p>PROC 8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities</p> <p>PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities</p> <p>PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)</p> <p>PROC 15: Use as laboratory reagent</p> <p>Environmental release category (ERC):</p> <p>ERC 6c: Industrial use of monomers for manufacture of thermoplastics</p>



		<p>Sector of end use (SU):</p> <p>SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites</p> <p>SU 11: Manufacture of rubber products</p> <p>Subsequent service life relevant for that use?: no</p>
Production of Styrene Butadiene Latex (SBL)	as such (substance itself)	<p>Process category (PROC):</p> <p>PROC 2: Use in closed, continuous process with occasional controlled exposure</p> <p>PROC 3: Use in closed batch process (synthesis or formulation)</p> <p>PROC 8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities</p> <p>PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities</p> <p>PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)</p> <p>PROC 15: Use as laboratory reagent</p> <p>Environmental release category (ERC):</p> <p>ERC 6c: Industrial use of monomers for manufacture of thermoplastics</p> <p>Sector of end use (SU):</p> <p>SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites</p> <p>SU 11: Manufacture of rubber products</p> <p>Subsequent service life relevant for that use?: no</p>
Production of Styrene Isoprene Copolymers	as such (substance itself)	<p>Process category (PROC):</p> <p>PROC 2: Use in closed, continuous process with occasional controlled exposure</p> <p>PROC 3: Use in closed batch process (synthesis or formulation)</p> <p>PROC 8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities</p> <p>PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities</p> <p>PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)</p> <p>PROC 15: Use as laboratory reagent</p> <p>Environmental release category (ERC):</p> <p>ERC 6c: Industrial use of monomers for manufacture of thermoplastics</p> <p>Sector of end use (SU):</p> <p>SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites</p> <p>SU 11: Manufacture of rubber products</p>



		<p>Subsequent service life relevant for that use?: no</p>
Production of other Styrene based polymeric dispersions	as such (substance itself)	<p>Process category (PROC):</p> <p>PROC 2: Use in closed, continuous process with occasional controlled exposure PROC 3: Use in closed batch process (synthesis or formulation) PROC 8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC 15: Use as laboratory reagent</p> <p>Environmental release category (ERC):</p> <p>ERC 6c: Industrial use of monomers for manufacture of thermoplastics</p> <p>Sector of end use (SU):</p> <p>SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites SU 12: Manufacture of plastics products, including compounding and conversion</p> <p>Subsequent service life relevant for that use?: no</p>
Production of filled Polyols	as such (substance itself)	<p>Process category (PROC):</p> <p>PROC 2: Use in closed, continuous process with occasional controlled exposure PROC 3: Use in closed batch process (synthesis or formulation) PROC 8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC 15: Use as laboratory reagent</p> <p>Environmental release category (ERC):</p> <p>ERC 6c: Industrial use of monomers for manufacture of thermoplastics</p> <p>Sector of end use (SU):</p> <p>SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites SU 12: Manufacture of plastics products, including compounding and conversion</p> <p>Subsequent service life relevant for that use?: no</p>



Uses by professional workers

Identified Use (IU) name	Substance supplied to that use	Use descriptors
FRP manufacturing in a professional setting	as such (substance itself)	<p>Process category (PROC): PROC 3: Use in closed batch process (synthesis or formulation) PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC 8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC 10: Roller application or brushing PROC 11: Non industrial spraying</p> <p>Environmental release category (ERC): ERC 6c: Industrial use of monomers for manufacture of thermoplastics</p> <p>Sector of end use (SU): SU 12: Manufacture of plastics products, including compounding and conversion SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)</p> <p>Subsequent service life relevant for that use?: no</p>

Uses by consumers

Identified Use (IU) name	Use descriptors
Consumer use of Liquid UP resin for repair purposes	<p>Chemical product category (PC): PC 9a: Coatings and paints, thinners, paint removes</p> <p>Environmental release category (ERC): ERC 6c: Industrial use of monomers for manufacture of thermoplastics</p> <p>Sector of end use (SU): SU 21: Consumer uses: Private households (= general public = consumers)</p> <p>Subsequent service life relevant for that use?: no</p>
Consumer use of Resin paste used as fillers/putties	<p>Chemical product category (PC): PC 9b: Fillers, putties, plasters, modelling clay</p> <p>Environmental release category (ERC): ERC 6c: Industrial use of monomers for manufacture of thermoplastics</p> <p>Sector of end use (SU): SU 21: Consumer uses: Private households (= general public = consumers)</p> <p>Subsequent service life relevant for that use?: no</p>