



Safety data sheet

according to 1907/2006/EC, Article 31

Printing date 19.05.2020

Version: 6

Revision: 19.05.2020

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

- **1.1 Product identifier**
- **Trade name:** **SM**
- **Chemical Identification:** Styrene
- **CAS Number:** 100-42-5
- **EC number:**
202-851-5
- **Index number:**
601-026-00-0
- **Registration number** 01-2119457861-32-0006
- **1.2 Relevant identified uses of the substance or mixture and uses advised against**
Industrial and professional uses only.
Refer to Exposure Scenarios for covered SU, PROC, PC, AC and ERC.
- **Application of the substance / the mixture**
Monomer for the preparation of Copolymers
Styrene resin
Reaction resin
Intermediate
Chemicals for synthesis
- **Uses advised against** Consumer uses of UPR (Unsaturated polyester resins)
- **1.3 Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**
Taiwan SM Corp., Kaohsiung plant
NO.7, Industrial 1st Rd, Lin-Yuan
Kaohsiung County 83203
Taiwan, R.O.C.
- **Only Representative**
TUV SUD Iberia, S.A.U.
Ronda Can Fatjó 13
08290 Cerdanyola del Vallès (Barcelona)
Spain
- **Further information obtainable from:**
reach.es@tuv-sud.es
cykao@khmail.smct.com.tw
- **1.4 Emergency telephone number:** TSMC: +886-7-6414511 Ext. 221

SECTION 2: Hazards identification

- **2.1 Classification of the substance or mixture**
- **Classification according to Regulation (EC) No 1272/2008**



GHS02 flame

Flam. Liq. 3 H226 Flammable liquid and vapour.



GHS08 health hazard

Repr. 2 H361d Suspected of damaging the unborn child.
 STOT RE 1 H372 Causes damage to the hearing organs through prolonged or repeated exposure.
 Asp. Tox. 1 H304 May be fatal if swallowed and enters airways.



GHS07

Acute Tox. 4 H332 Harmful if inhaled.

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Skin Irrit. 2	H315	Causes skin irritation.
Eye Irrit. 2	H319	Causes serious eye irritation.
STOT SE 3	H335	May cause respiratory irritation.
<hr/>		
Aquatic Chronic 3	H412	Harmful to aquatic life with long lasting effects.

2.2 Label elements**Labelling according to Regulation (EC) No 1272/2008**

The substance is classified and labelled according to the CLP regulation.

Hazard pictograms

GHS02 GHS07 GHS08

Signal word Danger**Hazard statements**

- H226 Flammable liquid and vapour.
- H332 Harmful if inhaled.
- H315 Causes skin irritation.
- H319 Causes serious eye irritation.
- H361d Suspected of damaging the unborn child.
- H335 May cause respiratory irritation.
- H372 Causes damage to the hearing organs through prolonged or repeated exposure.
- H304 May be fatal if swallowed and enters airways.
- H412 Harmful to aquatic life with long lasting effects.

Precautionary statements

- P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
- P240 Ground and bond container and receiving equipment.
- P241 Use explosion-proof [electrical/ventilating/lighting] equipment.
- P260 Do not breathe dust/fume/gas/mist/vapours/spray.
- P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.
- P301+P310 IF SWALLOWED: Immediately call a POISON CENTER/ doctor.
- P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].
- P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P403+P233 Store in a well-ventilated place. Keep container tightly closed.
- P405 Store locked up.

2.3 Other hazards**Results of PBT and vPvB assessment**

- **PBT:** The substance does not meet the PBT criteria (not PBT) according to (EC) 1907/2006, Annex XIII
- **vPvB:** The substance does not meet the vPvB criteria (not vPvB) according to (EC) 1907/2006, Annex XIII

SECTION 3: Composition/information on ingredients

3.1 Chemical characterisation: Substances**CAS No.**

100-42-5

CAS Description: styrene**Identification number(s)****EC number:** 202-851-5**Index number:** 601-026-00-0

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- **Impurities and stabilising additives:**
Total content: <0.3 % by weight.
Contains 4-tert-butylpyrocatechol (CAS 98-29-3) as stabilizer.
- **SVHC** Not applicable

SECTION 4: First aid measures

- **4.1 Description of first aid measures**
- **General information:**
In case of irregular breathing or respiratory arrest provide artificial respiration.
Immediately remove any clothing soiled by the product.
- **After inhalation:**
Supply fresh air or oxygen; call for doctor.
Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.
In case of unconsciousness place patient stably in side position for transportation.
- **After skin contact:** Immediately wash with water and soap and rinse thoroughly.
- **After eye contact:**
Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
- **After swallowing:** Do not induce vomiting; call for medical help immediately.
- **4.2 Most important symptoms and effects, both acute and delayed**
Nausea
Headache
Dizziness
- **4.3 Indication of any immediate medical attention and special treatment needed** Treat symptomatically.

SECTION 5: Firefighting measures

- **5.1 Extinguishing media**
- **Suitable extinguishing agents:**
CO₂, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- **For safety reasons unsuitable extinguishing agents:** Water
- **5.2 Special hazards arising from the substance or mixture**
The vapour is heavier than air, spreads along the ground and distant ignition is possible.
Will float and can be reignited on surface water
Carbon monoxide (CO)
- **5.3 Advice for firefighters**
- **Protective equipment:** Wear self-contained breathing apparatus and chemical-protective clothing.
- **Additional information** Cool endangered receptacles with water spray.

SECTION 6: Accidental release measures

- **6.1 Personal precautions, protective equipment and emergency procedures**
Ensure adequate ventilation.
Avoid contact with skin, eyes and clothes.
Keep away from ignition sources.
Use breathing apparatus if exposed to vapours/dust/aerosol.
Wear protective equipment. Keep unprotected persons away.
- **6.2 Environmental precautions:**
Do not allow product to reach sewage system or any water course.
Do not allow to enter sewers/ surface or ground water.
- **6.3 Methods and material for containment and cleaning up:**
Ensure adequate ventilation.
Absorb liquid components with liquid-binding material.
Collect free product with suitable means.

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- Keep in suitable, closed containers for disposal.
 Dispose contaminated material as waste according to item 13.
- **6.4 Reference to other sections**
 - See Section 7 for information on safe handling.
 - See Section 8 for information on personal protection equipment.
 - See Section 13 for disposal information.

SECTION 7: Handling and storage

- **7.1 Precautions for safe handling**
- Keep away from heat and direct sunlight.
- Ensure good ventilation/exhaustion at the workplace.
- Prevent formation of aerosols.
- Containers should be earthed during decanting operations.
- **Information about fire - and explosion protection:**
- Vapours may form explosive mixture with air.
- Keep ignition sources away - Do not smoke.
- Protect against electrostatic charges.
- **7.2 Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and receptacles:**
- Store in a cool location.
- Check frequently to ensure that stabilizer is adequate (CAS Number 98-29-3).
- Iron, galvanized iron and steel are suitable metals for tanks.
- Unsuitable materials for containers: copper, brass.
- Vents and flame arrestors can be easily plugged with formation of polymer. These must be periodically inspected and freed of the polymer.
- All openings in the system should terminate outdoors and be protected by flash screen.
- **Information about storage in common storage facility:** Not required
- **Further information about storage conditions:**
- Store in cool, dry conditions in well sealed receptacles.
- Keep container tightly sealed.
- For indoor storage: good natural ventilation may be sufficient. If additional ventilation is required, the ventilation equipment should be designed to handle the styrene monomer vapor, which is heavier than air. A down draft mechanical exhaust is indicated in those operations in which general ventilation should be to ensure a substantial away from the work area. All ventilation systems require periodic inspection.
- **Maximum storage temperature:** 40 °C
- **7.3 Specific end use(s)** No further relevant information available.

SECTION 8: Exposure controls/personal protection

- **Additional information about design of technical facilities:** No further data; see item 7.
- **8.1 Control parameters**

· **Ingredients with limit values that require monitoring at the workplace:**

CAS: 100-42-5 styrene

VL (Belgium)	Short-term value: 216 mg/m ³ , 50 ppm Long-term value: 108 mg/m ³ , 25 ppm D;
AGW (Germany)	Long-term value: 86 mg/m ³ , 20 ppm 2(II);DFG, Y
LEP (Spain)	Short-term value: 172 mg/m ³ , 40 ppm Long-term value: 86 mg/m ³ , 20 ppm VLB, ae

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WEL (Great Britain)	Short-term value: 1080 mg/m ³ , 250 ppm Long-term value: 430 mg/m ³ , 100 ppm
TWA (Italy)	Short-term value: 170 mg/m ³ , 40 ppm Long-term value: 85 mg/m ³ , 20 ppm A4, IBE
NDS (Poland)	Short-term value: 100 mg/m ³ Long-term value: 50 mg/m ³

· DNELs**CAS: 100-42-5 styrene**

Oral	DNEL systemic effects, long-term	2.1 mg/kg bw/day (population)
Dermal	DNEL systemic effects, long-term	406 mg/kg bw/day (worker)
Inhalative	DNEL systemic effects, long-term	10.2 mg/m ³ (population) 85 mg/m ³ (worker)
	DNEL systemic effects, short-term	289 mg/m ³ (worker)
	DNEL local effects, short-term	306 mg/m ³ (worker)

· PNECs**CAS: 100-42-5 styrene**

PNEC water (freshwater)	0.028 mg/L (general)
PNEC water (marine water)	0.014 mg/L (general)
PNEC sediment (freshwater)	0.614 mg/kg sed dw (general)
PNEC sediment (marine water)	0.307 mg/kg sed dw (general)
PNEC soil	0.2 mg/kg soil dw (general)
PNEC STP	5 mg/L (general)
PNEC water (int releases)	0.04 mg/L (general)

· **Additional information:** The lists valid during the making were used as basis.

· 8.2 Exposure controls**· Additional information about design of technical facilities:**

Process should be designed so that the operator is not exposed to direct contact with styrene monomer or the vapor. The technical problems of designing equipment, providing adequate ventilation and operating procedures which promise maximum security and economy, can best be handled by competent engineers.

Due to the tendency of styrene monomer to form polymers which may plug equipment, all piping, valves, gauges, vents, tank openings, pressure relief devices, and engineering controls should be so designed and located that may be readily and periodically inspected and cleaned.

· Personal protective equipment:**· General protective and hygienic measures:**

Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.
Avoid contact with the eyes and skin.

· Respiratory protection:

In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.

See annex (Exposure Scenarios)

· Protection of hands:

Protective gloves

In all cases, the protective gloves to be used should be chemically resistant gloves conform EN 374.
The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

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Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation.

- **Material of gloves**

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

Examples of preferred glove barrier materials include: polyethylene, ethyl vinyl alcohol laminate ("EVAL"), polyvinyl alcohol ("PVA"), polyvinyl chloride ("PVC" or "vinyl"). Styrene/butadiene rubber. Viton. Examples of acceptable glove barrier materials include : butyl rubber, chlorinated polyethylene, natural rubber (latex), neoprene, nitrile/butadiene runner ("nitrile" or "NBR").

- **Penetration time of glove material**

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

- **Eye protection:**



Tightly sealed goggles

- **Body protection:**

Coverall
Boots

SECTION 9: Physical and chemical properties

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

- **General Information**

- **Appearance:**

Form:	Liquid
Colour:	Colourless
Smell:	Aromatic
Olfactory threshold:	Not determined

- **pH-value:** neutral

- **Change in condition**

Melting point/freezing point:	-30.7 °C (peer-reviewed source)
Initial boiling point and boiling range:	145.2 °C (peer-reviewed source)

- **Flash point:** 31 °C (peer-reviewed source)

- **Flammability (solid, gas):** Flammable liquid and vapors.
Based on chemical structure, pyrophoric properties and flammability in contact with water are not to be expected.

- **Auto-ignition temperature:** 490°C (peer-reviewed source)

- **Explosive properties:** Product is not explosive. However, formation of explosive air/vapour mixtures is possible.

- **Explosion limits:**

Lower:	0.9 Vol %
Upper:	6.8 Vol %

- **Oxidising properties** The substance is not capable of reacting exothermically with combustible materials on the basis of the chemical structure.

- **Vapour pressure at 20 °C:** 6.67 hPa (peer-reviewed source)

- **Density at 20 °C:** 0.9-0.91 g/cm³ (peer-reviewed source)

- **Vapour density** Not determined

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· Evaporation rate	Not determined
· Solubility in / Miscibility with:	
water at 20 °C:	0.32 g/l (peer-reviewed source)
· organic solvents:	Not determined
· Partition coefficient: n-octanol/water at 25 °C	2.96 log POW (OECD 107, shake flask)
· Viscosity:	
Dynamic at 25 °C:	0.696 mPas (value from literature)
Kinematic:	0.77 mm ² /s (value from CSR, calculation based on a value of 0.696 mPa/s for dynamic visc.)
	kin visc. = dyn visc. / density
· 9.2 Other information	
Surface tension	Not applicable
Granulometry	Not applicable
Molecular weight	104.15

SECTION 10: Stability and reactivity

- **10.1 Reactivity** Polymerises with risk of fire and explosion. Reacts with strong oxidising agents.
- **10.2 Chemical stability** The product is stable if inhibitor concentration is maintained
- **Thermal decomposition / conditions to be avoided:** Depends on the additives.
- **10.3 Possibility of hazardous reactions**
Danger of polymerisation.
Inhibited material may form explosive peroxides. Uninhibited material may polymerize which becomes self-sustaining at temperatures above 65°C. Exposure to butyllithium, dibenzoyl peroxide, azoisobutyronitrile or di-tert-butylperoxide may cause violent polymerization. Violent reaction with chlorosulfonic acid, oleum, sulfuric acid and oxidizers.
- **10.4 Conditions to avoid**
Air, light, heat.
Keep away from heat, sparks and open flames.
Static electricity discharge.
- **10.5 Incompatible materials:**
Strong oxidizing agents.
Chlorosulfonic acid, oleum, sulfuric acid.
Copper alloys.
- **10.6 Hazardous decomposition products:**
Carbon monoxide, carbon dioxide and other organic compounds will be evolved when this material undergoes combustion or thermal oxidative degradation.

SECTION 11: Toxicological information

- **11.1 Information on toxicological effects**
- **Acute toxicity**
Harmful if inhaled.
- **LD/LC50 values relevant for classification:**
In the reference study from Stewart et al., no CNS depression in humans exposed to 100ppm for 7 hours
Reference study from Oltramare et al (1974), some minor impairment in neurobehavioural performance observed at about 200 ppm for 1.5 h.

CAS: 100-42-5 styrene

Dermal	LD50	>2,000 mg/kg bw, semiocclusive (rat) (OECD 402)
Inhalative	LC50	11.8 mg/l (rat) (Shugaev, 1969)
	NOAEC Acute	100 ppm (Human) (Stewart et al., 1968)

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- **Primary irritant effect:**

- **Skin corrosion/irritation**

rabbit: irritating (Wolf et al., 1956; Spencer et al., 1942; Futamura et al., 2009)

Repeated occlusive skin application of 10-20 doses of undiluted styrene over 2-4 weeks to the ear and abdomen.

Causes skin irritation.

- **Serious eye damage/irritation**

Test in animals: two drops of undiluted liquid styrene were applied to the right eye of an unspecified number of albino rabbits.

Exposure to airborne styrene vapour can also cause eye irritation (Spencer et al., 1942; Wolf et al., 1956)

Causes serious eye irritation.

- **respiratory tract**

Human: study with 9 human volunteers exposed for 1 hour : NOAEC = 216 ppm (Stewart et al., 1968)

Not irritant.

- **Respiratory or skin sensitisation**

There has been extensive inhalation exposure in humans which has resulted in only two case reports of asthma (Hayes et al., 1991; Moscato et al., 1990), each of which has unconvincing aspects to it. This suggests that styrene has no significant asthmagenic potential.

Not sensitising

- **Other information (about experimental toxicology):**

There is no evidence styrene possesses significant endocrine disruption activity. Negative in vitro studies for estrogenic activity and androgenic activity and on a negative uterotrophic assay in female rats.

- **Toxicokinetics, metabolism and distribution**

From the physicochemical properties of styrene and experimental animal information, extensive absorption near 100% happens from the gastrointestinal tract.

Styrene is metabolised to a significant extent in the liver in all species. Results from PBPK modelling suggest that metabolism of styrene by the liver is probably mainly responsible for the production of the blood level/body burden of styrene oxide, SO.

- **Repeated dose toxicity**

CAS: 100-42-5 styrene

Dermal	NOAEL Rep. Dose Tox.	615 mg/kg/bw (rat) (Inh to dermal route extrapol, Triebig et al. 2009)
Inhalative	NOAEC Rep Dose	50 ppm (Human) (color vision effect, Seeber et al., 2009)
		500 ppm (rat) (Ototoxicity, Lataye et al., 2005)
	NOAEC Rep Dose	20 ppm (Human) (Ototoxicity, Triebig et al., 2009)

- **CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)**

- **Germ cell mutagenicity**

There is no convincing evidence that the styrene has shown mutagenic activity in humans.

In-vitro assay results available (including tests in vitro chromosome aberration studies in mammalian cells), show that styrene does pose some genotoxic potential. Metabolic activation (presumably to styrene oxide) is required for this activity.

The available data in-vivo in experimental animals suggest that styrene is weakly positive in indicator tests detecting, SCEs, DNA strand breaks and DNA adducts. In contrast, an in vivo UDS test performed in accordance with international guidelines did not reveal a genotoxic effect of styrene in mouse liver.

Overall, based on standard regulatory tests, there is no convincing evidence that styrene possesses significant mutagenic/clastogenic potential in vivo from the available data in experimental animals.

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

In vitro studies:

Equivalent or similar to OECD guideline 471 in Salmonella typhimurium strains

Positive in *S. typhimurium* with metabolic activation.

Equivalent or similar to OECD Guideline 473 (In Vitro Mammalian Chromosome Aberration Test) isolated lymphocytes: positive. The frequency of chromatid aberrations (mostly breaks) in a dose-dependent manner was induced by styrene.

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OECD Guideline 479 (Genetic Toxicology: In Vitro Sister Chromatid Exchange Assay in Mammalian Cells): positive.

In vivo studies:

OECD Guideline 474 (Mammalian Erythrocyte Micronucleus Test) polychromatic and normochromatic erythrocytes from the bone marrow.

Negative genotoxicity

Non mutagenic / non pro-mutagenic.

· **Carcinogenicity**

Based on available data, the classification criteria are not met.

Overall, there is no convincing evidence that styrene possesses significant carcinogenic potential in humans.

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

· **Reproductive toxicity**

Classified into this hazard class as category 2.

Developmental toxicity studies in a number of species available via the inhalation route).

Developmental delays have been reported postnatally related to reduced body weights in a number of non-GLP, non-OECD studies at 300 ppm styrene (Kishi et al., 1995; Katakura et al., 2001). This has been confirmed by a two generation (F2) study (Cruzan et al., 2005).

The effects are considered to be of low or minimal toxicological significance (e.g., small effects on foetal weights, or small differences in postnatal developmental assessments). Although this is a borderline case for classification, the RAC considers that the overall pattern of long-lasting developmental delays and neurological/neuromuscular deficits fulfill the requirements for classification with Repr. 2, H361d (CLP).

CAS: 100-42-5 styrene

Inhalative	NOAEC (fertility)	500 ppm (rat) (2-gen study, Cruzan et. al. 2005a)
	NOAEC (Developmental)	150 ppm (rat) (2-gen study, Cruzan et al. 2005a)

The test substance is considered to be classified as Repro Category 2; H361d: suspected of damaging the unborn child.

· **STOT-single exposure**

May cause respiratory irritation.

· **STOT-repeated exposure**

Causes damage to the hearing organs through prolonged or repeated exposure.

· **Aspiration hazard**

May be fatal if swallowed and enters airways.

SECTION 12: Ecological information

· **12.1 Toxicity**

· **Aquatic toxicity:**

CAS: 100-42-5 styrene

LC50/EC50 (static)	4.9 mg/L (Pseudokirchneriella subcapitata) (EPA OTS 797.1050 (Algal Toxicity, Tiers I and II))
	500 mg/L (Micro-organisms) (equivalent or similar to OECD Guideline 209)
EC10/LC10	1.01 mg/L (Daphnia sp.) (OECD Guideline 211, Daphnia magna Reproduction Test)
LC50/96 h (dynamic)	4.02 mg/L (Pimephales promelas) (96h flow -through acute fish tox test.)
EC50/48h (dynamic)	4.7 mg/L (Daphnia sp.) (OECD Guideline 202 Daphnia sp. Acute Immobilisati)

· **12.2 Persistence and degradability**

The majority of styrene released into the environment is expected to reach the atmosphere due to its high potential for volatilisation. Styrene is rapidly degraded in the atmosphere by reaction with hydroxyl radicals and tropospheric ozone. Volatilisation from soil and water is rapid and styrene is readily biodegradable. Some adsorption to soils and sediments may occur.

Styrene has a moderate mobility in soil.

The physical removal of airborne styrene by processes such as wet and dry deposition is thought to be

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relatively minor, and long-range transport of styrene is considered insignificant, based on its short atmospheric half-life.

Readily biodegradable.

100% after 28 days (COD) ISO DIS 9408 (Ultimate Aerobic Biodegradability), equivalent to OECD 301F.

According to structural properties, hydrolysis is not expected.

· 12.3 Bioaccumulative potential

Bioaccumulation is not expected to occur.

log Kow: 2.96

Styrene does not exceed the screening criteria for bioaccumulation stipulated in the ECHA's guidance on information requirements and chemical safety assessment

BCF = 74 (predicted using log Kow and the equation from the Technical Guidance Document, TGD).

This value suggests that the compound probably does not accumulate appreciably in aquatic organisms.

Styrene is probably metabolized and excreted (bioaccumulation is unlikely to happen). This is also supported by the fact that analogue substances, such as toluene, xylene and ethylbenzene do not accumulate to any great degree in aquatic organisms.

· 12.4 Mobility in soil

Adsorption to solid phase is possible.

Koc (20 °C): 352

Koc value estimated using the equation from the TGD for hydrophobic substances and the log Kow of 3.02

Mobility of styrene in soil is considered to be moderate.

Henry's Law constant H: 195 Pa m³/mol at 20°C and 23.4 mBar

Due to the relatively high vapour pressure and low to moderate water solubility, volatilisation from water to the atmosphere is an important distribution process for styrene. The Henry's law constant value of 232Pa m³/mol calculated from vapour pressure and water solubility, indicates rapid volatilisation from surface waters.

· Additional ecological information:

· General notes:

Water hazard class 2 (German Regulation) (Assessment by list): hazardous for water.

Do not allow product to reach ground water, water course or sewage system.

Danger to drinking water if even small quantities leak into the ground.

· 12.5 Results of PBT and vPvB assessment

· **PBT:** The substance does not meet the PBT criteria (not PBT) according to (EC) 1907/2006, Annex XIII.

· **vPvB:** The substance does not fulfill the vPvB criteria (not vPvB)

· 12.6 Other adverse effects

There is no clear evidence of an adverse effect of styrene on human endocrine function.

SECTION 13: Disposal considerations

· 13.1 Waste treatment methods

· Recommendation

Must not be disposed together with household garbage. Do not allow product to reach sewage system.

Contain and dispose of waste according to local regulations.

· European waste catalogue

HP3	Flammable
HP4	Irritant - skin irritation and eye damage
HP5	Specific Target Organ Toxicity (STOT)/Aspiration Toxicity
HP10	Toxic for reproduction
HP14	Ecotoxic

· Uncleaned packaging:

· Recommendation:

Disposal must be made according to official regulations.

Contaminated packaging: contaminated, empty containers must be disposed of as chemical waste.

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SECTION 14: Transport information

<ul style="list-style-type: none"> · 14.1 UN-Number · ADR, IMDG, IATA 	UN2055
<ul style="list-style-type: none"> · 14.2 UN proper shipping name · ADR · IMDG, IATA 	2055 STYRENE MONOMER, STABILIZED STYRENE MONOMER, STABILIZED
<ul style="list-style-type: none"> · 14.3 Transport hazard class(es) · ADR, IMDG, IATA 	<div style="text-align: center;">  </div>
<ul style="list-style-type: none"> · Class · Label 	3 Flammable liquids. 3
<ul style="list-style-type: none"> · 14.4 Packing group · ADR, IMDG, IATA 	III
<ul style="list-style-type: none"> · 14.5 Environmental hazards: · Marine pollutant: 	No
<ul style="list-style-type: none"> · 14.6 Special precautions for user · Hazard identification number (Kemler code): · EMS Number: · Stowage Category · Stowage Code 	Warning: Flammable liquids. 39 F-E,S-D C SW1 Protected from sources of heat.
<ul style="list-style-type: none"> · 14.7 Transport in bulk according to Annex II of Marpol and the IBC Code 	Not applicable.
<ul style="list-style-type: none"> · Transport/Additional information: 	<ul style="list-style-type: none"> · ADR · Excepted quantities (EQ): · Limited quantities (LQ) · Excepted quantities (EQ) · Transport category · Tunnel restriction code
<ul style="list-style-type: none"> · IMDG · Limited quantities (LQ) · Excepted quantities (EQ) 	<ul style="list-style-type: none"> E1 5L Code: E1 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 1000 ml 3 D/E 5L Code: E1 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 1000 ml
<ul style="list-style-type: none"> · UN "Model Regulation": 	UN 2055 STYRENE MONOMER, STABILIZED, 3, III

SECTION 15: Regulatory information

- 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
- Inventory - United States - Toxic Substances Control Act (TSCA) Substance is not listed.
- OECD - List of High Production Volume Chemicals Substance is not listed.
- Inventory - Canada - Domestic Substances List (DSL) Substance is not listed
- Philippines Inventory of Chemicals and Chemical Substances Substance is listed.
- Australian Inventory of Chemical Substances Substance is listed.

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· Inventory - Korea - Existing and Evaluated Chemical Substances		
CAS: 100-42-5	styrene	KE-35342

- | | | |
|---------------|---------|----------|
| CAS: 100-42-5 | styrene | KE-35342 |
|---------------|---------|----------|
- **New Zealand Inventory of Chemicals** Substance is listed.
 - **TCSI - Taiwan Chemical Substance Inventory** Substance is listed.
 - **Japan Existing and New Chemical Substances (ENCS)** 3-4
 - **Seveso category P5c FLAMMABLE LIQUIDS**
 - **Qualifying quantity (tonnes) for the application of lower-tier requirements** 5,000 t
 - **Qualifying quantity (tonnes) for the application of upper-tier requirements** 50,000 t
 - **REGULATION (EC) No 1907/2006 ANNEX XVII** Conditions of restriction: 3, 40
 - **15.2 Chemical safety assessment:** A Chemical Safety Assessment has been carried out.

SECTION 16: Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- **Abbreviations and acronyms:**

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
 ICAO: International Civil Aviation Organisation
 NOAEL: Non Observed Adverse Effect Level
 LOAEL: Lowest Observed Adverse Effect Level
 WAF: Water Accommodated Fraction
 ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
 IMDG: International Maritime Code for Dangerous Goods
 IATA: International Air Transport Association
 GHS: Globally Harmonised System of Classification and Labelling of Chemicals
 EINECS: European Inventory of Existing Commercial Chemical Substances
 CAS: Chemical Abstracts Service (division of the American Chemical Society)
 DNEL: Derived No-Effect Level (REACH)
 PNEC: Predicted No-Effect Concentration (REACH)
 LC50: Lethal concentration, 50 percent
 LD50: Lethal dose, 50 percent
 PBT: Persistent, Bioaccumulative and Toxic
 SVHC: Substances of Very High Concern vPvB:
 very Persistent and very Bioaccumulative Flam.
 Liq. 3: Flammable liquids – Category 3
 Acute Tox. 4: Acute toxicity - inhalation – Category 4
 Skin Irrit. 2: Skin corrosion/irritation – Category 2
 Eye Irrit. 2: Serious eye damage/eye irritation – Category 2
 Repr. 2: Reproductive toxicity – Category 2
 STOT SE 3: Specific target organ toxicity (single exposure) – Category 3
 STOT RE 1: Specific target organ toxicity (repeated exposure) – Category 1
 Asp. Tox. 1: Aspiration hazard – Category 1
 Aquatic Chronic 3: Hazardous to the aquatic environment - long-term aquatic hazard – Category 3

- **Sources**

REACH Registration data.

Own data from manufacturer.

- *** Data compared to the previous version altered.**

Version 1: 01 / 05 / 2011

Version 2: 28 / 06 / 2011

Update including data from REACH Registration.

Version 3: 09 / 12 / 2015

Update of Only Representative data and Regulatory Information.

Version 4: 16 / 01 / 2016

Update of C&L.

Version 5: 14 / 06 / 2018

Update of the address of the Only Representative.

Version 6: 19 / 05 / 2020

Update of Only Representative data.

General update to align with the updated Registration Dossier.

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