SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

STYRENE MONOMER

Version 6.1 Print Date 2012/07/27

Revision Date 2012/07/27 **MSDS code: MSTY100**

1. Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Trade name	:	STYRENE MONOMER
Substance name	:	styrene
Index-No.	:	601-026-00-0
CAS-No.	:	100-42-5
EC-No.	:	202-851-5
Registration number	:	01-2119457861-32-xxxx

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

Use of the Substance/Mixture	:	Identified use: See table in front of appendix for a complete overview of identified uses.
Uses advised against	:	At this moment we have not identified any uses advised against

1.3. Details of the supplier of the safety data sheet

Company	:	Brenntag UK & Ireland Albion House, Rawdon Park GB LS19 7XX Leeds Yeadon
Telephone	:	+44 (0) 113 3879 200
Telefax	:	+44 (0) 113 3879 280
E-mail address	:	msds@brenntag.co.uk

1.4. Emergency telephone number

Emergency telephone number	:	Emergency only telephone number (open 24 hours): +44 (0) 1865 407333 (N.C.E.C. Culham)

2. Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

REGULATION (EC) No 1272/2008			
Hazard class	**Hazard category**	**Target Organs**	**Hazard statements**

Flammable liquids	Category 3	---	H226
Acute toxicity (Inhalation)	Category 4	---	H332
Skin corrosion/irritation	Category 2	---	H315
Serious eye damage/eye irritation	Category 2	---	H319
Specific target organ toxicity - single exposure	Category 3	---	H335
Specific target organ toxicity - repeated exposure (Inhalation)	Category 1	---	H372
Aspiration hazard	Category 1	---	H304

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

Classification according to EU Directives 67/548/EEC or 1999/45/EC

Directive 67/548/EEC or 1999/45/EC	
Hazard symbol / Category of danger	**Risk phrases**
	R10
Harmful (Xn)	R20
Irritant (Xi)	R36/37/38
Harmful (Xn)	R48/20
Harmful (Xn)	R65

For the full text of the R-phrases mentioned in this Section, see Section 16.

Most important adverse effects

Human Health : See section 11 for toxicological information.

Physical and chemical hazards : See section 9 for physicochemical information.

Potential environmental effects : See section 12 for environmental information.

2.2. Label elements

Labelling according to Regulation (EC) No 1272/2008

Hazard symbols	:		
Signal word	:	Danger	
Hazard statements	:	H226	Flammable liquid and vapour.
		H332	Harmful if inhaled.
		H319	Causes serious eye irritation.
		H335	May cause respiratory irritation.
		H315	Causes skin irritation.
		H372	Causes damage to organs through prolonged or repeated exposure if inhaled.
		H304	May be fatal if swallowed and enters airways.
Precautionary statements			
Prevention	:	P210	Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
		P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
		P261	Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
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.
		P301 + P310 + P331	IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician. Do NOT induce vomiting.
Storage	:	P403 + P235	Store in a well-ventilated place. Keep cool.

Hazardous components which must be listed on the label:

• styrene

2.3. Other hazards

For Results of PBT and vPvB assessment see section 12.5.

3. Composition/information on ingredients

3.1. Substances

Hazardous components	Amount [%]	Classification (REGULATION (EC) No 1272/2008)		Classification (67/548/EEC)
		Hazard class / Hazard category	Hazard statements	
styrene				
Index-No. : 601-026-00-0 CAS-No. : 100-42-5 EC-No. : 202-851-5 Registration : 01-2119457861-32-xxxx	<= 100	Flam. Liq.3 Acute Tox.4 Skin Irrit.2 Eye Irrit.2 STOT SE3 STOT RE1 Asp. Tox.1	H226 H332 H315 H319 H335 H372 H304	R10 Xn; R20 Xi; R36/37/38 Xn; R48/20 Xn; R65

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

4. First aid measures

4.1. Description of first aid measures

General advice : Take off contaminated clothing and shoes immediately. First aider needs to protect himself.

If inhaled : Remove to fresh air. If breathing is irregular or stopped, administer artificial respiration. Oxygen, if needed. If unconscious place in recovery position. Consult a physician.

In case of skin contact : Wash off immediately with soap and plenty of water. Get medical attention if symptoms occur.

In case of eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 10 minutes. Consult an eye specialist immediately. Go to an ophthalmic hospital if possible.

If swallowed	: Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. Do NOT induce vomiting. Risk of aspiration! Call a physician immediately. In case of spontaneous vomiting prevent aspiration, make sure that victims head is lower than the hips.

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

Symptoms	: Inhalation of vapours is irritating to the respiratory system, may cause throat pain and cough. Vapours are highly irritant to the eyes and upper respiratory system. Inhalation can cause CNS-depression and narcosis.
Effects	: Aspiration may cause pulmonary oedema and pneumonitis.

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

Treatment	: Treat symptomatically.

5. Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	:	Water spray, foam, dry powder or CO2.
Unsuitable extinguishing media	:	High volume water jet

5.2. Special hazards arising from the substance or mixture

Specific hazards during firefighting	:	Vapours are heavier than air and spread along the ground. Vapours may form explosive mixtures with air. Flash back possible over considerable distance. In case of fire hazardous decomposition products may be produced such as: Carbon monoxide, Carbon dioxide (CO2)

5.3. Advice for firefighters

Special protective equipment for firefighters	:	In the event of fire, wear self-contained breathing apparatus.Wear appropriate body protection (full protective suit)
Further information	:	Cool closed containers exposed to fire with water spray.Heating will cause a pressure rise - with risk of bursting.Collect contaminated fire extinguishing water separately. This must not be discharged into drains.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions	:	Use personal protective equipment. Keep away unprotected persons. Provide adequate ventilation. Keep away from heat and sources of ignition. Avoid contact with skin and eyes. Do not breathe vapours or spray mist.

6.2. Environmental precautions

Environmental precautions	:	Do not flush into surface water or sanitary sewer system. Avoid subsoil penetration. If the product contaminates rivers and lakes or drains inform respective authorities.

6.3. Methods and materials for containment and cleaning up

Methods and materials for containment and cleaning up	:	Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).
Further information	:	Treat recovered material as described in the section "Disposal considerations".

6.4. Reference to other sections

See Section 1 for emergency contact information.
See Section 8 for information on personal protective equipment.
See Section 13 for waste treatment information.

7. Handling and storage

7.1. Precautions for safe handling

Advice on safe handling	:	Keep container tightly closed. Provide sufficient air exchange and/or exhaust in work rooms. Use personal protective equipment. Avoid contact with the skin and the eyes. Do not breathe vapours or spray mist. Emergency eye wash fountains and emergency showers should be available in the immediate vicinity.
Hygiene measures	:	Keep away from food, drink and animal feedingstuffs. Smoking, eating and drinking should be prohibited in the application area. Wash hands before breaks and at the end of workday. Take off all contaminated clothing immediately.

7.2. Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers	:	Keep in an area equipped with solvent resistant flooring. Keep only in the original container.
Advice on protection against fire and explosion	:	Keep away from sources of ignition - No smoking. Vapours are heavier than air and may spread along floors. Vapours may form explosive mixtures with air. Take measures to prevent the build up of electrostatic charge. Use only in an area containing explosion proof equipment.
Further information on storage conditions	:	Keep tightly closed in a dry and cool place. Keep away from direct sunlight. Keep in a well-ventilated place.
Advice on common storage	:	Incompatible with oxidizing agents. Keep away from food, drink and animal feedingstuffs.
Storage temperature	:	< 40 °C

7.3. Specific end use(s)

Specific use(s)	:	Identified use: See table in front of appendix for a complete overview of identified uses.

8. Exposure controls/personal protection

8.1. Control parameters

Component: styrene	**CAS-No. 100-42-5**
Derived No Effect Level (DNEL)	
Workers, Acute - systemic effects, Inhalation	: 289 mg/m3
Workers, Acute - local effects, Inhalation	: 306 mg/m3
Workers, Long-term - systemic effects, Skin contact	: 406 mg/kg bw/day
Workers, Long-term - systemic effects, Inhalation	: 85 mg/m3
Consumers, Acute - systemic effects, Inhalation	: 174.25 mg/m3
Consumers, Acute - local effects, Inhalation	: 182.75 mg/m3

Consumers, Long-term - systemic effects, Skin contact	:	343 mg/kg bw/day
Consumers, Long-term - systemic effects, Inhalation	:	10.2 mg/m3
Consumers, Long-term - systemic effects, Ingestion	:	2.1 mg/kg bw/day

Predicted No Effect Concentration (PNEC)

Fresh water	:	0.028 mg/l
Marine water	:	0.0028 mg/l
Intermittent releases	:	0.04 mg/l
Sewage treatment plant (STP)	:	5 mg/l
Sediment (Fresh water) Related to, dry weight	:	0.614 mg/kg
Sediment (Marine water) Related to, dry weight	:	0.0614 mg/kg
Soil Related to, dry weight	:	0.2 mg/kg

Other Occupational Exposure Limit Values

EH40 WEL, Time Weighted Average (TWA):
100 ppm, 430 mg/m3

EH40 WEL, Short Term Exposure Limit (STEL):
250 ppm, 1,080 mg/m3

8.2. Exposure controls

Appropriate engineering controls
Refer to protective measures listed in sections 7 and 8.

Personal protective equipment
Respiratory protection

Advice	:	In case of insufficient ventilation, wear suitable respiratory equipment.

Required, if exposure limit is exceeded (e.g. OEL).
Recommended Filter type:A

Hand protection

Advice	:	Wear suitable gloves. The glove material has to be impermeable and resistant to the product / the substance / the preparation. As the product is a mixture of several substances, the durability of the glove materials cannot be calculated in advance and has to be tested before use. Protective gloves should be replaced at first signs of wear.
Material	:	Fluorinated rubber
Break through time	:	> 480 min
Glove thickness	:	0.4 mm

Eye protection

Advice	:	Goggles or faceshield giving complete protection to the eyes

Skin and body protection

Advice	:	Wear personal protective equipment.

Environmental exposure controls

General advice	:	Do not flush into surface water or sanitary sewer system. Avoid subsoil penetration. If the product contaminates rivers and lakes or drains inform respective authorities.

9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

Form	:	Liquid
Colour	:	colourless to yellow
Odour	:	aromatic sweet

Odour Threshold	:	no data available
pH	:	not applicable
Melting point/range	:	-31 °C
Boiling point/boiling range	:	145 °C (1013 hPa)
Flash point	:	31 °C (1013 hPa)
Evaporation rate	:	no data available
Flammability (solid, gas)	:	Flammable.
Upper explosion limit	:	6.1 %(V)
Lower explosion limit	:	1.1 %(V)
Vapour pressure	:	6.67 hPa (20 °C)
Relative vapor density	:	3.6 (15 - 20 °C)
Relative density	:	no data available
Density	:	0.91 g/cm3 (20 °C)
Water solubility	:	320 mg/l (25 °C)
Partition coefficient: n-octanol/water	:	log Kow 2.96 (20 °C)
Ignition temperature	:	490 °C (1013 hPa)
Thermal decomposition	:	no data available
Viscosity, dynamic	:	0.696 mPa.s (25 °C)
Explosivity	:	Formation of explosive air/vapour mixtures is possible. Product is not explosive.
Oxidizing properties	:	not oxidising

9.2. Other information

Molecular Weight	:	104.15 g/mol

10. Stability and reactivity

10.1. Reactivity

Advice	:	Stable under recommended storage conditions.

10.2. Chemical stability

Advice	:	The product is normally supplied in a stabilized form. If the permissible storage period and/or storage temperature is noticeably exceeded, the product may polymerise with heat evolution.

10.3. Possibility of hazardous reactions

Hazardous reactions	:	Hazardous polymerisation may occur.

10.4. Conditions to avoid

Conditions to avoid	:	Heat, flames and sparks.Take precautionary measures against static discharges.
Thermal decomposition	:	no data available

10.5. Incompatible materials

Materials to avoid	:	Strong oxidizing agents, Peroxides, Contamination, Alkali metals, Strong acids, alkalis, Copper, Copper alloys, Brass

10.6. Hazardous decomposition products

Hazardous decomposition products	:	Carbon oxides, Toxic gases

11. Toxicological information

11.1. Information on toxicological effects

Acute toxicity
Oral
Please find this information in the listing of the

component/components below in the MSDS.

Inhalation

Please find this information in the listing of the component/components below in the MSDS.

Dermal

Please find this information in the listing of the component/components below in the MSDS.

Irritation

Skin

Degreases the skin which may cause dry and rough. Prolonged or repeated skin contact may result in dermatitis.

Eyes

Please find this information in the listing of the component/components below in the MSDS.

Sensitisation

Please find this information in the listing of the component/components below in the MSDS.

CMR effects

CMR Properties

Carcinogenicity	:	Please find this information in the listing of the component/components below in the MSDS.
Mutagenicity	:	Please find this information in the listing of the component/components below in the MSDS.
Teratogenicity	:	Please find this information in the listing of the component/components below in the MSDS.

Reproductive toxicity	:	Please find this information in the listing of the component/components below in the MSDS.

Specific Target Organ Toxicity

Single exposure

remark	:	Please find this information in the listing of the component/components below in the MSDS.

Repeated exposure

remark	:	Please find this information in the listing of the component/components below in the MSDS.

Other toxic properties

Aspiration toxicity

Please find this information in the listing of the component/components below in the MSDS.

Further information

Experience with human exposure	:	Inhalation of high vapour concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting.

Component: styrene **CAS-No. 100-42-5**

Acute toxicity

Oral

LD50	:	ca. 5000 mg/kg (rat) Aspiration may cause pulmonary oedema and pneumonitis.

Inhalation

LC50	:	11.8 mg/l (rat; 4 h) Vapours are toxic when inhaled.

Dermal		
LD50	:	> 2000 mg/kg (rat) (OECD Test Guideline 402)
Irritation		
Skin		
		Irritating to skin. (rabbit) Degreases the skin which may cause dry and rough. Prolonged or repeated skin contact may result in dermatitis.
Eyes		
		Irritating to eyes. (rabbit)
Sensitisation		
		not sensitizing (guinea pig)
CMR effects		
CMR Properties		
Carcinogenicity	:	Causes fibrosis and lung tumours in laboratory animals. The observed tumors do not appear to be relevant for men.
Mutagenicity	:	In vivo tests did not show mutagenic effects
Teratogenicity	:	It is not considered teratogenic. Causes developmental effects in animals at high, maternally toxic doses.
Reproductive toxicity	:	Animal testing did not show any effects on fertility.
Specific Target Organ Toxicity		
Single exposure		
Inhalation	:	May cause respiratory irritation.
Repeated exposure		

Inhalation	:	Causes damage to organs through prolonged or repeated exposure.

Other toxic properties
Aspiration toxicity
May be fatal if swallowed and enters airways.

12. Ecological information

12.1. Toxicity

Component: styrene		**CAS-No. 100-42-5**
Acute toxicity		
Fish		
LC50	:	4.02 mg/l (Pimephales promelas (fathead minnow); 96 h)
Toxicity to daphnia and other aquatic invertebrates		
EC50	:	4.7 mg/l (Daphnia magna (Water flea); 48 h)
algae		
EC50	:	4.9 mg/l (Pseudokirchneriella subcapitata (green algae); 72 h)
Bacteria		
EC20	:	140 mg/l (activated sludge; 30 min) (OECD Test Guideline 209)

12.2. Persistence and degradability

Component: styrene	**CAS-No. 100-42-5**

Persistence and degradability	
Persistence	
Result	: The product is insoluble and floats on water. The product evaporates easily from water surface.
Biodegradability	
Result	: 71 % (Related to: Theoretical oxygen demand; Exposure Time: 28 d) Readily biodegradable
Result	: 100 % (Exposure Time: 14 d)(OECD Test Guideline 302)

12.3. Bioaccumulative potential

Component: styrene	**CAS-No. 100-42-5**
Bioaccumulation	
Result	: Bioaccumulation is not expected.

12.4. Mobility in soil

Component: styrene	**CAS-No. 100-42-5**
Mobility	
	: Highly mobile in soils

12.5. Results of PBT and vPvB assessment

Component: styrene	**CAS-No. 100-42-5**
Results of PBT and vPvB assessment	

Result	:	This substance is not considered to be persistent, bioaccumulating nor toxic (PBT)., This substance is not considered to be very persistent nor very bioaccumulating (vPvB).

12.6. Other adverse effects

Additional ecological information		
Result	:	Do not flush into surface water or sanitary sewer system. Avoid subsoil penetration.

Component: styrene	**CAS-No. 100-42-5**
Chemical Oxygen Demand (COD)	
Result : 2880 mg/g	

13. Disposal considerations

13.1. Waste treatment methods

Product	:	Disposal together with normal waste is not allowed. Special disposal required according to local regulations. Do not let product enter drains. Contact waste disposal services.
Contaminated packaging	:	Empty contaminated packagings thoroughly. They can be recycled after thorough and proper cleaning. Packagings that cannot be cleaned are to be disposed of in the same manner as the product. Do not burn, or use a cutting torch on, the empty drum. Risk of explosion.
European Waste Catalogue Number	:	No waste code according to the European Waste Catalogue can be assigned for this product, as the intended use dictates the assignment. The waste code is established in consultation with the regional waste disposer.

14. Transport information

14.1. UN number

2055

14.2. UN proper shipping name

ADR	:	STYRENE MONOMER, STABILIZED
RID	:	STYRENE MONOMER, STABILIZED
IMDG	:	STYRENE MONOMER, STABILIZED

14.3. Transport hazard class(es)

ADR-Class	:	3
(Labels; Classification Code; Hazard identification No; Tunnel restriction code)		3; F1; 39; (D/E)
RID-Class	:	3
(Labels; Classification Code; Hazard identification No)		3; F1; 39
IMDG-Class	:	3
(Labels; EmS)		3; F-E, S-D

14.4. Packaging group

ADR	:	III
RID	:	III
IMDG	:	III

14.5. Environmental hazards

Labeling according to 5.2.1.8 ADR	:	no
Labeling according to 5.2.1.8 RID	:	no
Labeling according to 5.2.1.6.3 IMDG	:	no
Classification as environmentally hazardous according to 2.9.3 IMDG	:	no

14.6. Special precautions for user

Not applicable.

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

IMDG : Not applicable.

15. Regulatory information

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

UK ISR	:	styrene: Annual reporting level threshold: 100 kg
Other regulations	:	Occupational restrictions: Take note of Dir 92/85/EEC on the safety and health of pregnant workers at work and of Dir 94/33/EC on the protection of young people at work.

Notification status

styrene:

Regulatory List	Notification	Notification number
AICS	YES	
DSL	YES	
INV (CN)	YES	
ENCS (JP)	YES	(3)-4
JEX (JP)	YES	(3)-4
ISHL (JP)	YES	(3)-4
NZ CLSC	YES	
TSCA	YES	
EINECS	YES	202-851-5
KECI (KR)	YES	KE-35342
PICCS (PH)	YES	

15.2. Chemical Safety Assessment

A Chemical Safety Assessment has been carried out for this substance.

16. Other information

Full text of R-phrases referred to under sections 2 and 3.

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.

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

H226	Flammable liquid and vapour.
H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H335	May cause respiratory irritation.
H372	Causes damage to organs through prolonged or repeated exposure.

Further information

Other information : The information provided in this Safety Data Sheet is correct to our knowledge at the date of its revision. The information given only describes the products with regard to safety arrangements and is not to be considered as a warranty or quality specification and does not constitute a legal relationship. The information contained in this Safety Data Sheet relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text

|| Indicates updated section.

No.	Short title	Main User Group (SU)	Sector of Use (SU)	Product Category (PC)	Process Category (PROC)	Environmental Release Category (ERC)	Article Category (AC)	Specified
1	Manufacture of substance	3	8	NA	1, 2, 8a, 8b, 15	1	NA	ES26
2	Formulation & (re)packing of substances and mixtures	3	12	NA	1, 3, 4, 5, 8a, 8b, 9, 15	2	NA	ES29
3	Polymer production	3	12	NA	2, 3, 8a, 8b, 9, 15	6c	NA	ES210
4	Continuous mass polymerisation of Polystyrene	3	12	NA	2, 8a, 8b, 9, 14, 15	6c	NA	ES114
5	Batch suspension polymerisation of Polystyrene	3	12	NA	2, 3, 8a, 8b, 9, 14, 15	6c	NA	ES121
6	Production of styrenic copolymers	3	12	NA	2, 3, 8a, 8b, 9, 15	6c	NA	ES126
7	Production of styrene butadiene rubber (SBR)	3	11	NA	2, 3, 8a, 8b, 9, 15	6c	NA	ES174
8	Production of styrene butadiene latex (SBL)	3	11	NA	2, 3, 8a, 8b, 9, 15	6c	NA	ES181
9	Production of styrene isoprene copolymers	3	12	NA	2, 3, 8a, 8b, 9, 15	6c	NA	ES187
10	Production of other styrene based polymeric dispersions	3	12	NA	2, 3, 8a, 8b, 9, 15	6c	NA	ES202
11	Use in resin pastes	21	NA	9b	NA	8a, 8d	NA	ES619
12	Polymer processing	3	12	NA	3, 5, 7, 8a, 10, 13, 14, 15	6d	NA	ES41
13	Use in fibre-reinforced plastic applications	22	12	NA	3, 4, 5, 8a, 10, 11	8c	NA	ES49

1. Short title of Exposure Scenario 1: Manufacture of substance	
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	SU8: Manufacture of bulk, large scale chemicals (including petroleum products)
Process categories	PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC15: Use as laboratory reagent
Environmental Release Categories	ERC1: Manufacture of substances

2.1 Contributing scenario controlling environmental exposure for: ERC1
No exposure assessment presented for the environment.

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC8a, PROC8b, PROC15		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	0.5 - 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
	Frequency of use	< 1 hours/day(PROC8b)
Other operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently.	
Technical conditions and measures to control dispersion from source towards the worker	Clean up contamination/spills as soon as they occur.	
	Transfer via enclosed lines.(PROC1)	
	Store substance within a closed system.(PROC1)	
	Handle substance within a closed system.(PROC2)	
	Use a sampling system designed to control exposure.(PROC8a)	
	Use in semi-automated and predominantly enclosed filling lines.(PROC8b)	
	Ensure material transfers are under containment or extract ventilation.(PROC8b)	
	Clear transfer lines prior to de-coupling.(PROC8b)	
	Ensure operation is undertaken outdoors.(PROC8b)	
	Drain down system prior to equipment opening or maintenance.(PROC8b)	
	Retain drain downs in sealed storage pending disposal or for subsequent recycle.(PROC8b)	
	No specific measures identified.(PROC15)	
Organisational measures to prevent /limit releases, dispersion and exposure	Provide basic employee training to prevent /minimise exposures and to report any skin problems that may develop.	
	Operate activity away from sources of substance emission or release.(PROC8b)	

Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands. Avoid direct skin contact with product. Wear suitable gloves tested to EN374 during the activities where the skin contact is possible. Wash off any skin contamination immediately.

3. Exposure estimation and reference to its source

Workers

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated., Predicted exposures are not expected to exceed the applicable exposure limits when the operational conditions/risk management measures given in section 2 are implemented

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

1. Short title of Exposure Scenario 2: Formulation & (re)packing of substances and mixtures		
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites	
Sectors of end-use	SU12: Manufacture of plastics products, including compounding and conversion	
Process categories	PROC1: Use in closed process, no likelihood of exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC15: Use as laboratory reagent	
Environmental Release Categories	ERC2: Formulation of preparations	
2.1 Contributing scenario controlling environmental exposure for: ERC2		
No exposure assessment presented for the environment.		
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC15		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	0.5 - 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
	Frequency of use	< 1 hours/day(PROC8a)
Other operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently.	
Technical conditions and measures to control dispersion from source towards the worker	Clean up contamination/spills as soon as they occur.	
	Use in semi-automated and predominantly enclosed filling lines.(PROC1, PROC3)	
	Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.(PROC1)	
	Store substance within a closed system.(PROC3)	
	Use bulk or semi-bulk handling systems.(PROC3, PROC8b)	
	provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC3, PROC4, PROC8a, PROC8b)	

	Provide extraction ventilation at points where emissions occur.(PROC3, PROC5)
	Ensure dedicated sample points are provided.(PROC4)
	Avoid dip sampling.(PROC4)
	Put lids on containers immediately after use.(PROC5)
	Drain down and flush system prior to equipment opening or maintenance.(PROC3, PROC8a)
	Retain drain downs in sealed storage pending disposal or for subsequent recycle.(PROC3, PROC8a)
	Ensure operation is undertaken outdoors.(PROC8b)
	Use dedicated equipment.(PROC8b)
	Fill containers/cans at dedicated filling points supplied with local extract ventilation.(PROC9)
	Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure.(PROC15)
Organisational measures to prevent /limit releases, dispersion and exposure	Provide basic employee training to prevent /minimise exposures and to report any skin problems that may develop.
	Ensure operatives are trained to minimise exposures.(PROC1, PROC3)
	Dispose of empty containers and wastes safely.(PROC8a)
	Dispose of waste in accordance with environmental legislation.(PROC8a)
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands. Avoid direct skin contact with product. Wear suitable gloves tested to EN374 during the activities where the skin contact is possible. Wash off any skin contamination immediately.
	Wear a respirator conforming to EN140 with Type A filter or better.(PROC8a)

3. Exposure estimation and reference to its source

Workers

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated., For some of the Contributing Scenarios workplace exposures have been estimated from measured data., Predicted exposures are not expected to exceed the applicable exposure limits when the operational conditions/risk management measures given in section 2 are implemented

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

1. Short title of Exposure Scenario 3: Polymer production		
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites	
Sectors of end-use	SU12: Manufacture of plastics products, including compounding and conversion	
Process categories	PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC15: Use as laboratory reagent	
Environmental Release Categories	ERC6c: Industrial use of monomers for manufacture of thermoplastics	
2.1 Contributing scenario controlling environmental exposure for: ERC6c		
No exposure assessment presented for the environment.		
2.2 Contributing scenario controlling worker exposure for: PROC2, PROC3, PROC8a, PROC8b, PROC9, PROC15		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	0.5 - 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
	Frequency of use	< 1 hours/day(PROC8b)
Other operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently.	
	Limit the substance content in the mixture to 5 %.(PROC9)	
Technical conditions and measures to control dispersion from source towards the worker	Handle substance within a closed system.(PROC2)	
	provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC3)	
	Use a sampling system designed to control exposure.(PROC8a)	
	Clear transfer lines prior to de-coupling.(PROC8b)	
	No specific measures identified.(PROC15)	
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.	
3. Exposure estimation and reference to its source		

Workers

ECETOC TRA Version 2 with modifications has been used, Predicted exposures are not expected to exceed the applicable exposure limits when the operational conditions/risk management measures given in section 2 are implemented

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

1. Short title of Exposure Scenario 4: Continuous mass polymerisation of Polystyrene	
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	SU12: Manufacture of plastics products, including compounding and conversion
Process categories	PROC2: Use in closed, continuous process with occasional controlled exposure PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelettisation PROC15: Use as laboratory reagent
Environmental Release Categories	ERC6c: Industrial use of monomers for manufacture of thermoplastics

2.1 Contributing scenario controlling environmental exposure for: ERC6c
No exposure assessment presented for the environment.

2.2 Contributing scenario controlling worker exposure for: PROC2, PROC8a, PROC8b, PROC9, PROC14, PROC15		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	0.5 - 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
	Frequency of use	< 1 hours/day(PROC8b)
Other operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently.	
	Limit the substance content in the mixture to 5 %.(PROC9, PROC14)	
Technical conditions and measures to control dispersion from source towards the worker	Handle substance within a closed system.(PROC2)	
	Use a sampling system designed to control exposure.(PROC8a)	
	Clear transfer lines prior to de-coupling.(PROC8b)	
	No specific measures identified.(PROC15)	
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.	

3. Exposure estimation and reference to its source

Workers

ECETOC TRA Version 2 with modifications has been used, Predicted exposures are not expected to exceed the applicable exposure limits when the operational conditions/risk management measures given in section 2 are implemented

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

1. Short title of Exposure Scenario 5: Batch suspension polymerisation of Polystyrene		
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites	
Sectors of end-use	SU12: Manufacture of plastics products, including compounding and conversion	
Process categories	PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelettisation PROC15: Use as laboratory reagent	
Environmental Release Categories	ERC6c: Industrial use of monomers for manufacture of thermoplastics	

2.1 Contributing scenario controlling environmental exposure for: ERC6c
No exposure assessment presented for the environment.

2.2 Contributing scenario controlling worker exposure for: PROC2, PROC3, PROC8a, PROC8b, PROC9, PROC14, PROC15		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	0.5 - 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
	Frequency of use	< 1 hours/day(PROC8b)
Other operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently.	
	Limit the substance content in the mixture to 5 %.(PROC9, PROC14)	
Technical conditions and measures to control dispersion from source towards the worker	Handle substance within a closed system.(PROC2)	
	provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC3)	
	Use a sampling system designed to control exposure.(PROC8a)	
	Clear transfer lines prior to de-coupling.(PROC8b)	
	No specific measures identified.(PROC15)	
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.	

3. Exposure estimation and reference to its source

Workers

ECETOC TRA Version 2 with modifications has been used, Predicted exposures are not expected to exceed the applicable exposure limits when the operational conditions/risk management measures given in section 2 are implemented

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

1. Short title of Exposure Scenario 6: Production of styrenic copolymers		
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites	
Sectors of end-use	SU12: Manufacture of plastics products, including compounding and conversion	
Process categories	PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC15: Use as laboratory reagent	
Environmental Release Categories	ERC6c: Industrial use of monomers for manufacture of thermoplastics	
2.1 Contributing scenario controlling environmental exposure for: ERC6c		
No exposure assessment presented for the environment.		
2.2 Contributing scenario controlling worker exposure for: PROC2, PROC3, PROC8a, PROC8b, PROC9, PROC15		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	0.5 - 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
	Frequency of use	< 1 hours/day(PROC8b)
Other operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently.	
	Limit the substance content in the mixture to 5 %.(PROC9)	
Technical conditions and measures to control dispersion from source towards the worker	Handle substance within a closed system.(PROC2)	
	provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC3)	
	Use a sampling system designed to control exposure.(PROC8a)	
	Clear transfer lines prior to de-coupling.(PROC8b)	
	No specific measures identified.(PROC15)	
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.	
3. Exposure estimation and reference to its source		

Workers

ECETOC TRA Version 2 with modifications has been used, Predicted exposures are not expected to exceed the applicable exposure limits when the operational conditions/risk management measures given in section 2 are implemented

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

1. Short title of Exposure Scenario 7: Production of styrene butadiene rubber (SBR)		
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites	
Sectors of end-use	SU11: Manufacture of rubber products	
Process categories	PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC15: Use as laboratory reagent	
Environmental Release Categories	ERC6c: Industrial use of monomers for manufacture of thermoplastics	
2.1 Contributing scenario controlling environmental exposure for: ERC6c		
No exposure assessment presented for the environment.		
2.2 Contributing scenario controlling worker exposure for: PROC2, PROC3, PROC8a, PROC8b, PROC9, PROC15		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	0.5 - 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
	Frequency of use	< 1 hours/day(PROC8b)
Other operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently.	
	Limit the substance content in the mixture to 5 %.(PROC9)	
Technical conditions and measures to control dispersion from source towards the worker	Handle substance within a closed system.(PROC2)	
	provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC3)	
	Use a sampling system designed to control exposure.(PROC8a)	
	Clear transfer lines prior to de-coupling.(PROC8b)	
	No specific measures identified.(PROC15)	
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.	
3. Exposure estimation and reference to its source		

Workers

ECETOC TRA Version 2 with modifications has been used, Predicted exposures are not expected to exceed the applicable exposure limits when the operational conditions/risk management measures given in section 2 are implemented

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

1. Short title of Exposure Scenario 8: Production of styrene butadiene latex (SBL)		
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites	
Sectors of end-use	SU11: Manufacture of rubber products	
Process categories	PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC15: Use as laboratory reagent	
Environmental Release Categories	ERC6c: Industrial use of monomers for manufacture of thermoplastics	
2.1 Contributing scenario controlling environmental exposure for: ERC6c		
No exposure assessment presented for the environment.		
2.2 Contributing scenario controlling worker exposure for: PROC2, PROC3, PROC8a, PROC8b, PROC9, PROC15		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	0.5 - 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
	Frequency of use	< 1 hours/day(PROC8b)
Other operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently.	
	Limit the substance content in the mixture to 5 %.(PROC9)	
Technical conditions and measures to control dispersion from source towards the worker	Handle substance within a closed system.(PROC2)	
	provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC3)	
	Use a sampling system designed to control exposure.(PROC8a)	
	Clear transfer lines prior to de-coupling.(PROC8b)	
	No specific measures identified.(PROC15)	
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.	
3. Exposure estimation and reference to its source		

Workers

ECETOC TRA Version 2 with modifications has been used, Predicted exposures are not expected to exceed the applicable exposure limits when the operational conditions/risk management measures given in section 2 are implemented

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

1. Short title of Exposure Scenario 9: Production of styrene isoprene copolymers		
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites	
Sectors of end-use	SU12: Manufacture of plastics products, including compounding and conversion	
Process categories	PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC15: Use as laboratory reagent	
Environmental Release Categories	ERC6c: Industrial use of monomers for manufacture of thermoplastics	
2.1 Contributing scenario controlling environmental exposure for: ERC6c		
No exposure assessment presented for the environment.		
2.2 Contributing scenario controlling worker exposure for: PROC2, PROC3, PROC8a, PROC8b, PROC9, PROC15		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	0.5 - 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
	Frequency of use	< 1 hours/day(PROC8b)
Other operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently.	
	Limit the substance content in the mixture to 5 %.(PROC9)	
Technical conditions and measures to control dispersion from source towards the worker	Handle substance within a closed system.(PROC2)	
	provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC3)	
	Use a sampling system designed to control exposure.(PROC8a)	
	Clear transfer lines prior to de-coupling.(PROC8b)	
	No specific measures identified.(PROC15)	
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.	
3. Exposure estimation and reference to its source		

Workers

ECETOC TRA Version 2 with modifications has been used, Predicted exposures are not expected to exceed the applicable exposure limits when the operational conditions/risk management measures given in section 2 are implemented

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

1. Short title of Exposure Scenario 10: Production of other styrene based polymeric dispersions	
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	SU12: Manufacture of plastics products, including compounding and conversion
Process categories	PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC15: Use as laboratory reagent
Environmental Release Categories	ERC6c: Industrial use of monomers for manufacture of thermoplastics

2.1 Contributing scenario controlling environmental exposure for: ERC6c
No exposure assessment presented for the environment.

2.2 Contributing scenario controlling worker exposure for: PROC2, PROC3, PROC8a, PROC8b, PROC9, PROC15		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	0.5 - 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
	Frequency of use	< 1 hours/day(PROC8b)
Other operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently.	
	Limit the substance content in the mixture to 5 %.(PROC9)	
Technical conditions and measures to control dispersion from source towards the worker	Handle substance within a closed system.(PROC2)	
	provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC3)	
	Use a sampling system designed to control exposure.(PROC8a)	
	Clear transfer lines prior to de-coupling.(PROC8b)	
	No specific measures identified.(PROC15)	
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.	

3. Exposure estimation and reference to its source

Workers

ECETOC TRA Version 2 with modifications has been used, Predicted exposures are not expected to exceed the applicable exposure limits when the operational conditions/risk management measures given in section 2 are implemented

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

1. Short title of Exposure Scenario 11: Use in resin pastes		
Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)	
Chemical product category	PC9b: Fillers, putties, plasters, modelling clay	
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8d: Wide dispersive outdoor use of processing aids in open systems	
2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d		
No exposure assessment presented for the environment.		
2.2 Contributing scenario controlling consumer exposure for: PC9b		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 35%
	Physical Form (at time of use)	liquid
	Vapour pressure	> 10 Pa
Amount used	Amount used per event	0.1 kg
Frequency and duration of use	Frequency of use	365 days/year
	Frequency of use	5 Times per day
	Exposure duration per event	10 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area: <= 22 cm²
Other given operational conditions affecting consumers exposure	Room size	34 m3
	Covers use in a one car garage (34 m3) under typical ventilation.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	No specific risk management measure identified beyond those operational conditions stated.	

3. Exposure estimation and reference to its source

Consumers

The ConsExpo model has been used to estimate consumer exposures unless otherwise indicated., Predicted exposures are not expected to exceed the applicable exposure limits when the operational conditions/risk management measures given in section 2 are implemented

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

1. Short title of Exposure Scenario 12: Polymer processing	
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	SU12: Manufacture of plastics products, including compounding and conversion
Process categories	PROC3: Use in closed batch process (synthesis or formulation) PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC7: Industrial spraying PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelettisation PROC15: Use as laboratory reagent
Environmental Release Categories	ERC6d: Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers

2.1 Contributing scenario controlling environmental exposure for: ERC6d
No exposure assessment presented for the environment.

2.2 Contributing scenario controlling worker exposure for: PROC3, PROC5, PROC7, PROC8a, PROC10, PROC13, PROC14, PROC15		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	0.5 - 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Other operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently.	
	Limit the substance content in the mixture to 25 %.(PROC5, PROC13, PROC14)	
Technical conditions and measures to control dispersion from source towards the worker	Clean up contamination/spills as soon as they occur.	
	Put lids on containers immediately after use.(PROC3, PROC5, PROC8a)	
	Transfer via enclosed lines.(PROC3)	
	provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC3, PROC7, PROC14)	
	Provide extraction ventilation at points where emissions occur.(PROC5, PROC8a, PROC13)	
	Handle substance within a predominantly closed system provided with extract ventilation.(PROC5)	
	Provide a good standard of controlled ventilation (10 to 15 air changes per hour)(PROC5, PROC10)	

	Use drum pumps or carefully pour from container.(PROC5)
	Carry out in a vented booth or extracted enclosure.(PROC7)
	Use long handled tools where possible.(PROC7)
	Carefully pour from containers.(PROC7)
	Use long handled brushes and rollers where possible.(PROC10)
	Provide the operation with a properly sited receiving hood.(PROC14)
	No specific measures identified.(PROC15)
Organisational measures to prevent /limit releases, dispersion and exposure	Provide basic employee training to prevent /minimise exposures and to report any skin problems that may develop.
	Ensure the ventilation system is regularly maintained and tested.(PROC7, PROC10)
	Dispose of empty containers and wastes safely.(PROC7, PROC10)
	Contain and dispose of waste according to local regulations.(PROC8a)
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands. Avoid direct skin contact with product. Wear suitable gloves tested to EN374 during the activities where the skin contact is possible. Wash off any skin contamination immediately. Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying.
	Wear suitable coveralls to prevent exposure to the skin.(PROC7, PROC10)
	Wear a respirator conforming to EN140 with Type A filter or better.(PROC7)

3. Exposure estimation and reference to its source

Workers

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated., Predicted exposures are not expected to exceed the applicable exposure limits when the operational conditions/risk management measures given in section 2 are implemented

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

1. Short title of Exposure Scenario 13: Use in fibre-reinforced plastic applications		
Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)	
Sectors of end-use	SU12: Manufacture of plastics products, including compounding and conversion	
Process categories	PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC10: Roller application or brushing PROC11: Non industrial spraying	
Environmental Release Categories	ERC8c: Wide dispersive indoor use resulting in inclusion into or onto a matrix	
2.1 Contributing scenario controlling environmental exposure for: ERC8c		
No exposure assessment presented for the environment.		
2.2 Contributing scenario controlling worker exposure for: PROC3, PROC4, PROC5, PROC8a, PROC10, PROC11		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	0.5 - 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
	Frequency of use	< 1 hours/day(PROC8a)
	Frequency of use	< 4 hours/day(PROC11)
Other operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently.	
	Limit the substance content in the mixture to 25 %.(PROC4, PROC10)	
Technical conditions and measures to control dispersion from source towards the worker	Clean up contamination/spills as soon as they occur.	
	provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC5, PROC8a, PROC10, PROC11)	
	Put lids on containers immediately after use.(PROC5)	
	Use drum pumps or carefully pour from container.(PROC5)	
	Use long handled brushes and rollers where possible.(PROC10)	
Organisational measures to prevent /limit releases, dispersion and exposure	Provide basic employee training to prevent /minimise exposures and to report any skin problems that may develop.	
	Dispose of empty containers and wastes safely.(PROC8a)	
	Segregate the activity away from other operations.(PROC11)	

Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands. Avoid direct skin contact with product. Wear suitable gloves tested to EN374 during the activities where the skin contact is possible. Wash off any skin contamination immediately. Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying.
	Wear a respirator conforming to EN140 with Type A filter or better.(PROC4, PROC5, PROC10)
	Wear a full face respirator conforming to EN140 with Type A filter or better.(PROC11)

3. Exposure estimation and reference to its source

Workers

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated., Predicted exposures are not expected to exceed the applicable exposure limits when the operational conditions/risk management measures given in section 2 are implemented

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.