



MATERIAL SAFETY DATA SHEET

PART NUMBER 11 10 81 and 11 10 82

SECTION 1 PRODUCT IDENTIFICATION AND MANUFACTURE

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PRODUCT KLEER SET Resin

SECTION 2 COMPOSITION / INFORMATION ON INGREDIENTS

2.1. Classification of the substance or mixture

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

Symbol(s) Xn - Harmful

R-phrases R10 - Repr. Cat. 3; R63 - Xn;R48/20 - Xn;R20 - Xi;R36/37/38 - R43

Classification of the substance or mixture - GHS/CLP (n° 1272/2008)

Skin Corrosion/Irritation	Category 2
Serious Eye Damage/Eye Irritation	Category 2
Skin Sensitization	Category 1
Reproductive Toxicity	Category 2
Specific Target Organ Toxicity (Single Exposure)	Category 3
Specific target organ toxicity - repeated exposure	Category 1
Chronic Aquatic Toxicity	Category 3
Flammable liquids	Category 3

2.2. Label elements

Contains Methyl methacrylate, Styrene



Signal word

Hazard statements

Danger

H315 - Causes skin irritation
H317 - May cause an allergic skin reaction
H319 - Causes serious eye irritation
H335 - May cause respiratory irritation
H361d - Suspected of damaging the unborn child
H372 - Causes damage to organs through prolonged or repeated exposure if inhaled
H412 - Harmful to aquatic life with long lasting effects

Physical hazards

EU H-Phrases

H226 - Flammable liquid and vapour
EUH208 Contains phthalic anhydride- May produce an allergic reaction.



Precautionary statements

P370 + P378 - In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction
 P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
 P243 - Take precautionary measures against static discharge
 P260 - Do not breathe vapour
 P273 - Avoid release to the environment
 P280 - Wear protective gloves/ protective clothing/ eye protection/ face protection
 P302 + P352 - IF ON SKIN: Wash with plenty of soap and water
 P304 + P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
 P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
 P333 + P313 - If skin irritation or rash occurs: Get medical advice/ attention
 P403 + P233 - Store in a well-ventilated place. Keep container tightly closed.

2.3. Other hazards

No information available.

SECTION 3 SUBSTANCE HAZARD IDENTIFICATION

3.2. Mixtures

Hazardous components

Chemical Name	EC-No	REACH Registration Number	CAS-No	Weight percent	Classification (67/548)	GHS Classification
Styrene	202-851-5	01-2119457861-3 2	100-42-5	~ 31	R10 Repr. Cat. 3; R63 Xn; R20 Xn; R48/20 Xn; R65 Xi; R36/37/38	Flam. Liq. 3 (H226) Repr. 2 (H361d) Acute Tox. 4 (H332) Skin Irrit. 2 (H315) Eye Irrit. 2 (H319) Asp. Tox. 1 (H304) STOT SE 3 (H335) STOT RE 1 (H372) Aquatic Chronic 3 (H412)
Methyl methacrylate	201-297-1	01-2119452498-2 8	80-62-6	~ 4	F; R11 Xi; R37/38 R43	Flam. Liq. 2 (H225) STOT SE 3 (H335) Skin Irrit. 2 (H315) Skin Sens. 1 (H317)
phthalic anhydride	201-607-5	01-2119457017-4	85-44-9	< 1	Xn; R22 Xi; R37/38 Xi; R41 R42/43	Acute Tox. 4 (H302)1 Skin Irrit. 2 (H315) Skin Sens. 1 (H317) Eye Dam. 1 (H318) Resp. Sens. 1 (H334) STOT SE 3 (H335)

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

SECTION 4 FIRST AID MEASURES

4.1. Description of first aid measures

General advice	Show this safety data sheet to the doctor in attendance Do not breathe dust/fume/gas/mist/vapours/spray
Eye Contact	Rinse thoroughly with plenty of water, also under the eyelids. Keep eye wide open while rinsing. If symptoms persist, call a physician
Skin contact	Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes If skin irritation persists, call a physician
Inhalation	Move to fresh air If not breathing, give artificial respiration Consult a physician
Ingestion	Do NOT induce vomiting. Rinse mouth. Consult a physician
Protection of first-aiders	Use personal protective equipment See section 8 for more information



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

Eye Contact	Irritating to eyes
Skin contact	Irritating to skin May cause sensitisation by skin contact
Inhalation	Harmful: danger of serious damage to health by prolonged exposure through inhalation Irritating to respiratory system May produce an allergic reaction.
Ingestion	Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea.

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

Notes to physician	No information available
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SECTION 5

FIRE FIGHTING MEASURES

5.1. Extinguishing media

Suitable extinguishing media	Dry chemical, Foam, Carbon dioxide (CO ₂), (closed systems)
Extinguishing Media Which Must not be Used for Safety Reasons	Do not use a solid water stream as it may scatter and spread fire.

5.2. Special hazards arising from the substance or mixture

Special exposure hazards arising from the substance or preparation Vapours may form explosive mixtures with air. Most vapours are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks) itself, combustion products, Heating or fire can release toxic gas : Carbon monoxide resulting gases

5.3. Advice for firefighters

Special protective equipment for fire-fighters Wear self-contained breathing apparatus and protective suit.

Other information Cool containers / tanks with water spray.
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

SECTION 6

ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Personal precautions Remove all sources of ignition
Heat, flames and sparks.
Take precautionary measures against static charges.
Ensure adequate ventilation
Use personal protective equipment

For emergency responders Avoid breathing vapours or mists In the event of fire and/or explosion do not breathe fumes. Use personal protective equipment

6.2. Environmental precautions

Environmental precautions The product should not be allowed to enter drains, water courses or the soil.
Do not flush into surface water or sanitary sewer system

6.3. Methods and material for containment and cleaning up

Methods for 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)
Use clean non-sparking tools to collect absorbed material

6.4. Reference to other sections

See section 8 for more information
See Section 12 for additional Ecological Information



SECTION 7 HANDLING AND STORAGE

7.1. Precautions for safe handling

Precautions for safe handling	Avoid static electricity build up with connection to earth Use only in area provided with appropriate exhaust ventilation In case of insufficient ventilation, wear suitable respiratory equipment For personal protection see section 8
Prevention of fire and explosion	Keep away from open flames, hot surfaces and sources of ignition Do not use compressed air for filling, discharging or handling. Empty containers may contain flammable or explosive vapours
Hygiene measures	When using, do not eat, drink or smoke Provide regular cleaning of equipment, work area and clothing Wash hands before breaks and at the end of workday.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures/Storage Conditions	Keep in a dry, cool and well-ventilated place. Keep at temperature not exceeding 30°C Keep away from heat and sources of ignition.
Materials to avoid	Strong oxidizing agents, Peroxides, Reducing agents
Packaging material	metallic GRP Tanks (Reinforced Glass Polyester)
Unsuitable materials for containers	Aluminium copper Copper alloys

7.3. Specific end use(s) Specific use(s) No information available

SECTION 8 EXPOSURE CONTROL/PERSONAL PROTECTION

8.1. Control parameters

Occupational Exposure limits

Chemical Name	European Union	ACGIH OEL (Ceiling)	The United Kingdom	Ireland
Styrene 100-42-5	-	TLV-8h TWA: 20 ppm - 85 mg/m ₃ TLV-15min STEL: 40 ppm - 170 mg/m ₃	STEL 250 ppm STEL 1080 mg/m ₃ TWA 20 ppm TWA 430 mg/m ₃	TWA 100 ppm TWA mg/m ₃ 85 STEL 40 ppm STEL 170 mg/m ₃
Methyl methacrylate 80-62-6	TWA 50 ppm, STEL 100 ppm (2007)	100 STEL 100 ppm STEL 416 ppm (2007)	TWA 50 ppm STEL 100 mg/m ₃ TWA 50 ppm TWA 208 mg/m ₃	ppm
phthalic anhydride 85-44-9		TWA 1 ppm	STEL 12 mg/m ₃ TWA 4 mg/m ₃ Sen+	TWA 4 mg/m ₃ STEL 12 mg/m ₃ Sensitizer

Special hazards arising from the substance or mixture

Biological standards

Chemical Name	European Union	The United Kingdom	Ireland
Styrene 100-42-5	-	We are not aware of any national exposure limit.	We are not aware of any national exposure limit.

Derived No Effect Level (DNEL)

Type	Derived No Effect Level (DNEL)			Remark
	Styrene (100-42-5)			
Workers - Long Term - Systemic effect	DNEL oral	DNEL dermal	DNEL inhalation	
Workers - Acute Short Term - Local effect		406 mg/Kg bw/day	85 mg/m ₃	
Workers - Acute Short term - Systemic effect			306 mg/m ₃	
General Population - Acute ¹ Short Term - Local effect			289 mg/m ₃	
General Population – Acute Short Term - Systemic effect			82.7 mg/m ₃	
General Population – Long Term - Systemic effect	2.1 mg/Kg bw/day	343 mg/Kg bw/day	174.2 mg/m ₃	
			10.2 mg/m ₃	



Methyl methacrylate (80-62-6)

Type	DNEL oral	DNEL dermal	DNEL inhalation	Remark
Workers - Long Term - Systemic effect		13.67 mg/kg bw/day	208 mg/m ³	
Workers - Long Term – Local effect		1.5 mg/cm ²	208 mg/m ³	
Workers - Acute Short Term - Local effect		1.5 mg/cm ²		
General Population – Long Term - Systemic effect		8.2 mg/kg bw/day	74.3 mg/m ³	
General Population – Long Term - Local effect		1.5 mg/cm ²	104 mg/m ³	
General Population – Acute Short Term - Local effect		1.5 mg/cm ²		

phthalic anhydride (85-44-9)

Type	DNEL oral	DNEL dermal	DNEL inhalation	Remark
Workers - Long Term - Systemic effect		10 mg/kg bw/day	32.2 mg/m ³	
General Population – Long Term - Systemic effect	5 mg/kg bw/day	5 mg/kg bw/day	8.6 mg/m ³	

Predicted No Effect Concentration (PNEC)

PNEC Component Styrene (100-42-5)

Exposure	Type	PNEC
Fresh water	PNEC Aqua	0.028 mg/L
Marine water	PNEC Aqua	0.014 mg/L
Intermittent use/release	PNEC Aqua	0.04 mg/L
Fresh water	PNEC Sediment	0.614 mg/Kg.dw
Marine water	PNEC Sediment	0.307 mg/Kg.dw
Terrestrial Compartment	PNEC Soil	0.2 mg/Kg.dw
STP microorganisms	PNEC STP	5 mg/L

Methyl methacrylate (80-62-6)

Exposure	Type	PNEC
Fresh water	PNEC Aqua	0.94 mg/L
Marine water	PNEC Aqua	0.94 mg/L
Intermittent use/release	PNEC Aqua	0.94 mg/L
Fresh water	PNEC Sediment	5.74 mg/kg sediment dw
Terrestrial Compartment	PNEC Soil	1.47 mg/kg soil dw
	PNEC STP	10 mg/L

phthalic anhydride (85-44-9)

Exposure	Type	PNEC
Fresh water	PNEC Aqua	1 mg/L
Marine water	PNEC Aqua	0.1 mg/L
Intermittent use/release	PNEC Aqua	5.6 mg/L
	PNEC STP	10 mg/L
Fresh water	PNEC Sediment	3.8 mg/kg sediment dw
Marine water	PNEC Sediment	0.38 mg/kg sediment dw
Terrestrial Compartment	PNEC Soil	0.173 mg/kg soil dw

8.2. Exposure controls

Occupational exposure controls

Engineering measures

Apply technical measures to comply with the occupational exposure limits. When working in confined spaces (tanks, containers, etc.), ensure that there is a supply of air suitable for breathing and wear the recommended equipment

Personal protective equipment

General Information

Use personal protective equipment.

Respiratory protection

In case of insufficient ventilation wear suitable respiratory equipment

Breathing apparatus with filter

Type A

Eye protection

Safety glasses with side-shields

Do not wear contact lenses

Skin and body protection

Antistatic boots

Protective shoes or boots.

Wear fire/flame resistant/retardant clothing

**Hand protection**

Impervious gloves, ,, Glove material, :, Neoprene, ,, Nitriles, ,, Viton (R), or, Polyvinyl alcohol, Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.

Environmental exposure controls

Environmental exposure controls Do not allow material to contaminate ground water system.

SECTION 9**PHYSICAL AND CHEMICAL PROPERTIES****9.1. Information on basic physical and chemical properties**

Property	Values	Remark
Appearance	translucent	
Physical state	Liquid	
Particle size		no data available
Odour	Styrene	
Odour Threshold		no data available
pH		no data available
pH (as aqueous solution)		no data available
Melting point/range	- 30 °C	Values related to styrene
Freezing point		no data available
Boiling point	145 °C	Values related to styrene
Flash point 31 °C		
Evaporation rate		no data available
Flammability Limits in Air		
upper	6,1 - 6,8%	Values related to styrene
lower	0,9 -1,1%	Values related to styrene
Vapour pressure	6 hPa 20°C	
Vapour density	3.6	Values related to styrene
Density	1.12 g/cm ³	25°C
Water solubility	Insoluble in water	
Partition coefficient: n-octanol/water		
Autoignition temperature	490 °C	Values related to styrene
Decomposition temperature		no data available
Viscosity, kinematic	330 mm ² /s	25°C
Viscosity, dynamic	370 mPa.s	25°C
Explosive properties		not applicable
Oxidizing properties		not applicable

9.2. Other information

Property	Values	Remark
Solubility in other solvents	Soluble in most organic solvents	

SECTION 10**STABILITY AND REACTIVITY PROPERTIES****10.1. Reactivity**

Reactivity Product may ignite and burn at temperatures exceeding the flash point

10.2. Chemical stability

Stability Stable under recommended storage conditions.

10.3. Possibility of hazardous reactions

Hazardous reactions In use, may form flammable/explosive vapour-air mixture.

Hazardous polymerisation Polymerisation can occur.

10.4. Conditions to avoid

Conditions to avoid Heat, flames and sparks.
Exposure to light.
Take precautionary measures against static charges.

10.5. Incompatible materials

Materials to avoid Strong oxidizing agents, Peroxides, Reducing agents



10.6. Hazardous decomposition products

Hazardous decomposition Products Incomplete combustion and thermolysis produces potentially toxic gases such as carbon monoxide and carbon dioxide

SECTION 11

TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Acute toxicity

Inhalation Harmful: danger of serious damage to health by prolonged exposure through inhalation
Irritating to respiratory system May produce an allergic reaction.

Ingestion Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea.

Chemical Name	LD50 Oral	LD50 Dermal	LC50 Inhalation	Read-across (Analogy)
Styrene 100-42-5		5000 mg/kg (Rat)	> 2000 mg/kg bw (Rat) 24h OECD 402	11.8 mg/L (Rat) 4h CSR
Methyl methacrylate 80-62-6		> 5000 mg/kg bw (Rat) OECD 401	> 5000 mg/kg bw (Rabbit) OECD 402	29.8 mg/L (7093 ppm) (Rat) 4h (vapor) OECD 403
phthalic anhydride 85-44-9		1530 mg/kg bw (Rat)	> 3160 mg/kg bw (Rabbit)	> 2.14 mg/L (Rat) 4h OECD 403

Skin corrosion/irritation

Chemical Name	Skin corrosion/irritation	Read-across (Analogy)
Styrene 100-42-5	Irritating to skin in vivo assay rabbit	
Methyl methacrylate 80-62-6	Irritating to skin rabbit Draize Test	
phthalic anhydride 85-44-9	Irritating to skin in vivo assay rabbit OECD 404	

Serious Eye Damage/Eye Irritation

Chemical Name	Serious Eye Damage/Eye Irritation	Read-across (Analogy)
Styrene 100-42-5	Irritating to eyes in vivo assay Rabbit	
Methyl methacrylate 80-62-6	Mild eye irritation rabbit Draize Test	
phthalic anhydride 85-44-9	Irritating to eyes in vivo assay rabbit Draize Test	

Respiratory or skin sensitisation May cause sensitisation by skin contact

Chemical Name	Respiratory or skin sensitisation	Read-across (Analogy)
Styrene 100-42-5	Does not cause skin sensitization Does not cause respiratory sensitization CSR	
Methyl methacrylate 80-62-6	May cause sensitisation by skin contact mouse OECD 429	
phthalic anhydride 85-44-9	May cause sensitisation by inhalation and skin contact in vivo assay guinea pig OECD 406	

Mutagenic Effects



In vitro study

Chemical Name	Ames test	Read-across (Analogy)
Styrene 100-42-5	Ambiguous In vitro gene mutation study in bacteria OECD 471	
Methyl methacrylate 80-62-6	negative In vitro gene mutation study in bacteria OECD 471	
phthalic anhydride 85-44-9	negative In vitro gene mutation study in bacteria Salmonella sp. OECD 471	

Component	In vitro study	Read-across (Analogy)
Styrene 100-42-5 (~ 31)	Ambiguous In vitro gene mutation study in mammalian cells hamster OECD 476	
phthalic anhydride 85-44-9 (< 1)	negative In vitro gene mutation study in mammalian cells hamster OECD 476	

Chemical Name	Mutagenicity (in vitro mammalian cytogenetic test)	Read-across (Analogy)
Styrene 100-42-5	positive Chromosome aberration test in vitro OECD 473 OECD 479	
phthalic anhydride 85-44-9	Ambiguous Chromosome aberration test in vitro hamster OECD 473	

in vivo assay

Chemical Name	Mutagenicity (in vivo mammalian bone-marrow cytogenetic test, chromosomal analysis)	Read-across (Analogy)
Styrene 100-42-5	negative mouse OECD 486 OECD 474	
Methyl methacrylate 80-62-6	negative mouse OECD 478	

Carcinogenicity Animal testing did not show any carcinogenic effects

Carcinogenicity Styrene (100-42-5)		Species	Dose	Evaluation
Exposure routes	Method	rat	NOAEC systemic (carcinogenicity) >= 4.34 mg/L air (nominal)	negative
Inhalation	OECD 453	mouse	LOAEC (carcinogenicity) female/male = 0.09 - 0.18 mg/L air resp., NOAEC (carcinogenicity) male = 0.09 mg/L air	positive
Oral	No information available	rat	NOAEL (carcinogenicity) >= 2000 mg/kg bw /day	positive
Oral	No information available	mouse	LOAEL (carcinogenicity) = 150 mg/kg bw /day	positive

Methyl methacrylate (80-62-6)		Species	Dose	Evaluation
Exposure routes	Method	mouse	NOAEC (carcinogenicity, systemic toxicity) >= 4.1 mg/L air (male/female) LOAEC (local toxicity) = 2.05 mg/L air (male/female)	negative
Inhalation	OECD 451			



Exposure routes	Method	Species	Dose	Evaluation
Inhalation	OECD 451	rat	NOAEC (carcinogenicity) >= 2.05 mg/L air (female) NOAEC (carcinogenicity) >= 4.1 mg/L air (male) NOAEC (systemic toxicity) >= 2.05 mg/L air (male/female) LOAEC (local toxicity) = 1.03 mg/L air (male/female)	negative

phthalic anhydride (85-44-9)				
Exposure routes	Method	Species	Dose	Evaluation
Oral	No information available	mouse	NOAEL (carcinogenicity, male) = 3570 mg/kg bw/day (72w) NOAEL (carcinogenicity, female) = 1785 mg/kg bw/day (72w)	negative
Oral	No information available	rat	NOAEL (carcinogenicity) = 1000 mg/kg bw/day (105w)	negative

Reproductive toxicity Animal testing did not show any effects on fertility

Reproductive toxicity

Styrene (100-42-5)

Exposure routes	Method	Species	Dose	Evaluation
Inhalation	No information available	rat	NOAEL/LOAEL (fertility) 60d = 100 - 200 mg/kg bw/day	positive
Oral	OECD 422	rat	NOAEL/LOAEL (fertility) 60d = 200 - 400 mg/kg bw/day	positive
Inhalation	OECD 416	rat	NOAEC (P, F1) = 0.64 mg/L air LOAEC (P, F1) = 2.13 mg/L air NOAEC (F2) = 0.21 mg/L air LOAEC (F2) = 0.64 mg/L air (70d)	negative

Methyl methacrylate (80-62-6)

Exposure routes	Method	Species	Dose	Evaluation
Oral	OECD 416	rat	NOAEL (general, systemic toxicity) = 50 mg/kg bw/day (male/female) NOAEL (fertility and reproductive performance) = 400 mg/kg bw/day (male/female) NOAEL (developmental toxicity) = 400 mg/kg bw/day (male/female)	negative

phthalic anhydride (85-44-9)

Exposure routes	Method	Species	Dose	Evaluation
Oral	No information available	mouse	NOAEL (reproductive, male) = 3570 mg/kg bw/day (72w) NOAEL (reproductive, female) = 1785 mg/kg bw/day (72w)	negative

Developmental Toxicity Suspected of damaging the unborn child.

Developmental Toxicity

Styrene (100-42-5)

Route of Exposure	Method	Species	Dose	Evaluation
Inhalation	No information available	rat	NOAEC/LOAEC (maternal toxicity + developmental toxicity) >50d = 1.08 - 2.15 mg/L air	positive



Route of Exposure	Method	Species	Dose	Evaluation
Inhalation	OECD 414	rat	LOAEC (maternal toxicity) 6-15d = 1.28 mg/L air	positive
Inhalation	OECD 414	rat	NOAEC (developmental toxicity) 6-15d >= 2.56 mg/L air	negative
Inhalation	OECD 414	rabbit	NOAEC (maternal toxicity + developmental toxicity) 6-18d = 2.56 mg/L air	negative

Methyl methacrylate (80-62-6)

Route of Exposure	Method	Species	Dose	Evaluation
Inhalation	OECD 414	rat	LOEC (maternal toxicity) = 0.41 mg/L air NOAEC (fetotoxicity) >= 8.3 mg/L air NOAEC (teratogenicity) >= 8.3 mg/L air	negative
Oral	OECD 414	rabbit	NOAEL (maternal toxicity) = 50 mg/kg bw/day NOAEL (developmental toxicity) = 450 mg/kg bw/day	negative

phthalic anhydride (85-44-9)

Route of Exposure	Method	Species	Dose	Evaluation
Oral	Read-across (Analogy) phthalic acid Cas N° : 88-99-	rat	NOAEL (maternal toxicity) 3= 1000 mg/kg bw/day NOAEL (teratogenicity) = 1700 mg/kg bw/day	positive

Specific target organ toxicity - single exposure - May cause irritation of respiratory tract

Chemical Name	STOT - single exposure	Remark
Methyl methacrylate 80-62-6	Irritating to respiratory system	
phthalic anhydride 85-44-9	May cause respiratory irritation	

Specific target organ toxicity – repeated exposure

Chemical Name	STOT - single exposure	Remark
Styrene 100-42-5	Causes damage to organs through prolonged or repeated exposure target organ(s) Central nervous system Ears	NOAEC (inhalation, rat, male) = 3.47 mg/L air (28d), NOAEC (ototoxicity) = 2.13 mg/L air (28d) NOAEC (inhalation, mouse) = 0.181 mg/L air (28d), OECD 412 NOAEC (inhalation, rat) = 0.688 mg/L air (28d), OECD 412 NOAEC nasal tract. (inhalation, rat) = 0.85 mg/L air (90d), NOAEC overall (inhalation, rat) = 2.13 mg/L air (90d) NOAEL toxicity (oral, rat) = 1000 mg/kg bw/day, LOAEL toxicity (oral, rat) = 2000 mg/kg bw/day NOAEL toxicity (oral, mouse) = 150 mg/kg bw/day, LOAEL toxicity (oral, mouse) = 300 mg/kg bw/day LOAEC local toxicity (inhalation, rat) = 0.21 mg/L air, OECD 453
Methyl methacrylate 80-62-6	Not classified	NOAEL (oral, rat) >= 2000 ppm (male/female) NOAEL (oral, rat) >= 124.1 mg/kg bw/day (male) NOAEL (oral, rat) >= 164 mg/kg bw/day (female) NOAEC (inhalation, rat) 90d = 1000 ppm OECD 453
phthalic anhydride 85-44-9	NOAEL (oral, rat) 7 weeks = 1250 mg/kg bw/day LOAEL (oral, rat) 7 weeks = 2500 mg/kg bw/day NOAEL (oral, rat) 105 weeks = 500 mg/kg bw/day LOAEL male/female (mouse) 72 weeks : 2340 - 1717 mg/kg bw/day	
Aspiration hazard	Due to the viscosity, this product does not present an aspiration hazard.	
Other information	None	



SECTION 12

ECOLOGICAL INFORMATION

12.1. Toxicity

Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Do not flush into surface water or sanitary sewer system

Acute aquatic toxicity - Component Information

Chemical Name	Toxicity to algae	Toxicity to daphnia and other aquatic invertebrates.	Toxicity to fish	Toxicity to microorganisms
Styrene 100-42-5	LC50 (72h) = 4.9 mg/L (Pseudokirchnerella subcapitata) EPA OTS 797.1050	EC50 (48h) = 4.7 mg/L (Daphnia magna), NOEC = 1.9 mg/L OECD 202	LC50 (96h) = 4.02 - mg/L (Pimephales promelas) OECD 203	10 EC (30min) = 500 mg/L (Activated sludge of a predominantly domestic sewage) OECD 209 EC3 (16h) = 100 mg/L (Pseudomonas putida) inhibition test, Bringmann-Kühn EC50 (3h) > 1000 mg/L (Activated sludge), ISO 8192 EC50 (16h) = 13 mg/L (Pseudomonas putida), ISO 10712
Methyl methacrylate 80-62-6	EC50 (72h) > 110 mg/L (Selenastrum capricornutum) OECD 201	EC50 (48h) = 69 mg/L (Daphnia magna) OECD 202	LC50 (96h) = 79 mg/L (Oncorhynchus mykiss) OECD 203	
phthalic anhydride 85-44-9	EC50 (72h) = 68 mg/L, NOEC (72h) = 32 mg/L (Pseudokirchnerella subcapitata) OECD 201	EC50 (48h) = 71 mg/L (Daphnia magna) OECD 202	LC50 (96h) > 99 mg/L (Oryzias latipes) OECD 203	

Chronic aquatic toxicity - Component Information

Chemical Name	Toxicity to algae	Toxicity to daphnia and other aquatic invertebrates.	Toxicity to fish	Toxicity to microorganisms
Styrene 100-42-5		NOEC (21d) = 1.01 mg/L (Daphnia magna), LOEC (21d) = 2.06 mg/L, EC50 (21d) = 1.88 mg/L OECD 203		
Methyl methacrylate 80-62-6	NOEC (72h) = 49 mg/L (Selenastrum capricornutum) OECD 201	NOEC (21d) = 37 mg/L (Daphnia magna) OECD 211(Danio rerio)	NOEC (35d) = 9.4 mg/L, LOEC (35d) = 18.8 mg/L OECD Chemicals Testing OECD 210	NOEC (28d) > 1000 mg/kg soil dw Program UPEC/3
phthalic anhydride 85-44-9		NOEC (reproduction) 21d = 16 mg/L, EC50 (reproduction) 21d = 42 mg/L (Daphnia magna) OECD 211	LC50 (7d) = 560 mg/L (Danio rerio), OECD 210 LOEC (total embryotoxicity) 60d = 32 mg/L, NOEC (mortality, length, weight, embryotoxicity) 60d = 10 mg/L, OECD 210	

Effects on terrestrial organisms - Component Information

Acute toxicity

phthalic anhydride (85-44-9)

Acute toxicity Test Method Species Values Remarks

Lactuca sativa EC50 (germination) = 731 mg/L

Chronic toxicity

Styrene (100-42-5)

Chronic toxicity	Method	Species	Values	Remarks
Toxicity to invertebrates	OECD 207	Eisenia foetida	LC50 (14d) = 120 mg/kg soil dw LOEC (burrowing time and mean percent weight change) = 65 mg/kg soil dw LOEC (survival) = 180 mg/kg soil dw NOEC (mean percent weight change) = 34 mg/kg soil dw	



12.2. Persistence and degradability

Component	Biodegradation	Evaluation
Styrene 100-42-5 (~ 31)	87% (20d) similar to OECD 301D	Readily biodegradable
Methyl methacrylate 80-62-6 (~ 4)	94.3 % (14d) OECD 301 C	Readily biodegradable
phthalic anhydride 85-44-9 (< 1)	68 % (10d), 74 % (30d) OECD 301 D	Readily biodegradable

12.3. Bioaccumulative potential

Bioconcentration factor (BCF)

Styrene (100-42-5)

Method	Species	Bioconcentration factor (BCF)
Calculation method		74

Methyl methacrylate (80-62-6)

Method	Species	Bioconcentration factor (BCF)
Calculation method QSAR		2.97

phthalic anhydride (85-44-9)

Method	Species	Bioconcentration factor (BCF)
Calculation method		3.16 - 3.4

Chemical Name	log Pow
Styrene 100-42-5	3
Methyl methacrylate 80-62-6	1.38
phthalic anhydride 85-44-9	1.6

12.4. Mobility in soil

Chemical Name	LogKoc	Koc
Styrene 100-42-5	2.55	352
Methyl methacrylate 80-62-6	0.94 - 1.86	-
phthalic anhydride 85-44-9	-	31

12.5. Results of PBT and vPvB assessment

Chemical Name	PBT	vPvB
Styrene 100-42-5	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).
Methyl methacrylate 80-62-6	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).
phthalic anhydride 85-44-9	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. Autres effets néfastes

None known.

SECTION 13

DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Waste from Residues/Unused Products	Dispose of in accordance with the European Directives on waste and hazardous waste.
Contaminated packaging	Do not flush into surface water or sanitary sewer system Empty containers should be taken to an approved waste handling site for recycling or disposal.
Other information	According to the European Waste Catalogue, Waste Codes are not product specific, but application specific. Waste codes should be assigned by the user based on the application for which the product was used.

**SECTION 14****TRANSPORT INFORMATION****ADR/RID**

UN-No UN1866
Hazard class 3
Proper shipping name Resin solution
Packing group III
Classification Code F1
Tunnel restriction code (D/E)
ADR Hazard Id (Kemmler Number) 30
Description UN1866, RESIN SOLUTION, 3, PG III, (D/E)
Limited quantity LQ7

IMDG/IMO

UN-No UN1866
Hazard class 3
Proper shipping name Resin solution
Packing group III
Marine pollutant NP
EmS F-E, S-E
Description UN1866, RESIN SOLUTION, 3, PG III, (31°C c.c.)
Limited quantity 5 L

ICAO/IATA

UN-No UN1866
Hazard class 3
Packing group III
ERG Code 3L
Description UN1866, RESIN SOLUTION, 3, PG III
Limited quantity 10 L

ADN

UN-No UN1866
Hazard class 3
Proper shipping name Resin solution
Packing group III
Classification Code F1
Special Provisions 640E
Description UN1866, RESIN SOLUTION, 3, PG III
Limited quantity LQ7
Ventilation VE01

Special precautions for users

Special precautions No information available

SECTION 15**REGULATORY INFORMATION**

This mixture is classified as hazardous according to regulation (EC) No. 1272/2008 [CLP]

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

European Union		
Chemical Name	96/82/EC (SEVESO) - §9	96/82/EC (SEVESO) - §6, §7
Styrene - 100-42-5	50000	5000 tonnes 50000 tonnes



National regulatory information

The United Kingdom

Avoid exceeding of the given occupational exposure limits (see section 8).

Ireland

Avoid exceeding of the given occupational exposure limits (see section 8).

15.2. Chemical safety assessment

not applicable

SECTION 16

OTHER INFORMATION

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

H225 - Highly flammable liquid and vapour

H226 - Flammable liquid and vapour

H302 - Harmful if swallowed

H304 - May be fatal if swallowed and enters airways

H315 - Causes skin irritation

H317 - May cause an allergic skin reaction

H318 - Causes serious eye damage

H319 - Causes serious eye irritation

H332 - Harmful if inhaled

H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled

H335 - May cause respiratory irritation

H361d - Suspected of damaging the unborn child

H372 - Causes damage to organs through prolonged or repeated exposure if inhaled

H412 - Harmful to aquatic life with long lasting effects

EUH208 - May produce an allergic reaction

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

R10 - Flammable

R11 - Highly flammable

R20 - Harmful by inhalation

R22 - Harmful if swallowed

R41 - Risk of serious damage to eyes

R43 - May cause sensitisation by skin contact

R63 - Possible risk of harm to the unborn child

R65 - Harmful: may cause lung damage if swallowed

R36/37/38 - Irritating to eyes, respiratory system and skin.

R37/38 - Irritating to respiratory system and skin.

R42/43 - May cause sensitisation by inhalation and skin contact.

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

This safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006