Safety Data Sheet

UNIPOL R-EPS

Issue date: 17/09/2025 (**Replaces:** 28/11/2024) Version**:** 3.1

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identification

Product identifier	**UNIPOL R-EPS** Regular Expandable Polystyrene.
Synonyms	Regular EPS, Expandable polystyrene, poly(phenylethene).
Unique formula identification (UFI)	No UFI required for a non-hazardous mixture

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

Identified use	Used for the industrial manufacturing of foamed thermal insulation.
Use advised against	This product should not be used for applications other than identified above without seeking prior advice from the manufacturer.

1.3 Details of the safety data sheet supplier

Supplier	Unipol Holland BV PO Box 5340 AV Oss The Netherlands
Telephone	+ 31 412 643 243
Email	algemeen@unipol.nl

1.4 Emergency telephone number

Emergency telephone number National Poisons Information Centre	Unipol + 31 (0)412 643 243 (working days 0900-17.00 CET) + 31 (0)88 - 755 8000 National Poisons Information Centre (NVIC). Exclusively intended to inform professional emergency services staff in case of acute poisoning)

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

EU Regulation No 1272/2008 (CLP) Not classified.

2.2 Label elements Volgens Verordening (EC) No. 1272/2008 (CLP).

Pictogram(s)	None.
Signal word	None.
Hazard statements	EUH018: In use, may form flammable/explosive vapour-air mixture.
Safety measures	P210: Keep away from heat/sparks/open flames/hot surfaces. - No smoking. P233: Keep container tightly closed. P243: Take precautionary measures against static discharge. P403 + P235: Store in a well-ventilated place. Keep cool.

2.3 Other hazards

Product may release pentane, a flammable hydrocarbon.
May cause irritation to skin and eyes**.**
Does not contain any PBT or vPvB components. Contains no known components with endocrine disrupting properties above 0.1%.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.2. Mixture

Mixture of expandable polystyrene (EPS) and pentane isomers as blowing agent

Chemical name	%W/W	CAS No (EG No)	REACH Registration No	Hazard statements (CLP 1272/2008)	Specific CLP details
Expandable polystyrene (EPS)	>94%	HS Code 3903 (polymers of styrene)	Exempt (polymer)	Not classified	Not applicable
Pentane	< 6 %	109-66-0 (203-692-4)	01-2119459286-30	Flammable liquids, Cat 1; H224. Aspiration hazard. Cat 1; H304. STOT SE 3; H336. Aquatic chronic, Cat 2; H411. EUH066.	EC Index No: 601-006-00-1
2-Methylbutane; iso-pentane	< 1.5 %	78-78-4 (201-142-8)	01-2119475602-38	Flammable liquids, Cat 1; H224. Aspiration hazard. Cat 1; H304. STOT SE 3; H336. Aquatic chronic, Cat 2; H411. EUH066.	EC Index No: 601-085-00-2

For the full text of each relevant hazard statement, see section 16.

Particle characteristics - Nanoform Not applicable.

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

Inhalation: Move the victim to fresh air. If symptoms persist, obtain medical assistance.

Contact with skin: Wash the skin with water and soap. If symptoms persist, obtain medical attention.

Contact with eyes: Irrigate with eyewash solution or clean water, holding the eyelids apart, for at least 15 minutes. If symptoms persist, obtain medical attention.

Ingestion: Unlikely to be hazardous if swallowed. If swallowed it will not lead to vomiting. Obtain medical attention immediately after swallowing.

4.2 Most important symptoms and effects, both acute and delayed

Inhalation: headache, dizziness.
Eye and skin contact: redness, irritation.

4.3 Indication of immediate medical care and special treatment required

Treat according to symptoms.

SECTION 5: FIREFIGHTING MEASURES

Product is not classified as flammable, but will burn on contact with flames or exposure to high temperature (see Section 9).

5.1 Extinguishing media

Suitable extinguishing media: Water spray, foam, dry powder or CO2.

Unsuitable extinguishing media: Do not use water jet.

5.2 Special hazards arising from the substance or mixture

This product may produce hazardous fumes in case of fire.

Hazardous decomposition product(s): Carbon monoxide, Carbon dioxide, styrene, aliphatic hydrocarbons may be released.

5.3 Advice for firefighters

Firefighters must wear full protective clothing including self-contained breathing apparatus. Wear haszmat suit. Keep containers cool by spraying with water if they have been exposed to fire. Flammable concentrations of pentane may accumulate during storage in closed containers.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Caution - spilled beads may be slippery.
Pentane may form an explosive mixture with air. Pentane vapour is heavier than air, be careful near manholes and in confined spaces. Perform gas measurements where elevated concentrations of pentane may occur and take measures to prevent pentane accumulation. Conduct gas measurements where elevated concentrations of pentane may occur and take measures to prevent pentane accumulation. Remove or make safe all sources of ignition. Avoid friction, sparks, or other means of ignition. Take precautionary measures against static discharges. Use only non-sparking tools.

6.2 Environmental precautions

Prevent entry into drains, soil and surface water.

6.3 Containment and cleaning methods and equipment

If safe to do so:
- Small spillages: Sweep up and shovel into waste drums or plastic bags. Transfer to a lidded container for disposal or recovery.
- Large spillages: Where practicable, use vacuum equipment suitable for use in hazardous locations to collect spilt materials. Transfer to a lidded container for disposal or recovery (also see chapter 13).

6.4 Reference to other sections

See also sections 8 and 13.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling of the substance or mixture

Provide effective ventilation, including adequate local extraction. Do not inhale gas/vapour. Prevent formation of dust clouds. Keep away from naked flames and other sources of ignition. Extinguish any other fire. Remove or make safe all sources of ignition. Avoid friction, sparks or other means of ignition. The electrical system must be spark-free. Do not smoke during use. Take precautionary measures against static discharge. Ensure adequate earthing. Prevent release to the environment. Permission must be obtained from the competent local authority prior to disposing of spilled material.

Process hazards

Take precautionary measures against static discharge. To prevent the build-up of static electric charge and also the formation of an explosive pentane-air mixture, containers must be completely emptied during handling, preferably tilt packaging no more than 45°. Line velocity may not exceed 8m/s during normal pumping operations.
All parts of the plant and installations must be electrically bonded and earthed. Check regularly for proper bonding and earthing. Wear anti-static clothing and footwear. No use of electrical devices (e.g. mobile phone) in the vicinity of the product unless they are explosion-proof.

7.2	**Conditions for safe storage, including incompatible products**	Flammable concentrations of pentane may rise during storage in closed containers. Prior to unloading freight containers, open doors and allow to ventilate for one hour. Store containers tightly closed in a cool, well-ventilated place. Keep away from direct sunlight and other sources of heat or ignition. Protect from rain and humid conditions. Bulk: Keep under inert gas. Open-top tanks must be fitted with an open rigid grate. Take precautionary measures against static discharge. The electrical system must be spark-free. The product is usually supplied in cardboard octabins, which are preferably not stacked.
	Specific requirements for storage rooms or vessels	Storage areas must be kept cool to limit the release of pentane and provided with an appropriate ventilation system to prevent pentane build-up. Use must be made of measuring instruments that warn of any increase in concentration or explosive pentane/air mixture. The electrical system must be non-sparking. Installations placed in potentially explosive atmospheres must comply with the requirements of ATEX Directive 94/9/EU.
	Storage temperature	Ambient.
	Storage life	Stable under normal conditions.
	Incompatible materials	Avoid storage or handling together with UN Class 1 explosives.
	Suitable containers	Steel (drums).
7.3	**Specific end use**	Used for industrial production of foamed thermal insulation, not intended for consumer market.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

8.1.1 Occupational exposure limit values

The following limits are for the blowing agent, (pentane is released during processing (expansion) during production).

n-pentane (CAS No 109-66-0; EC No 203-692-4). Source www.ser.nl					
Source	**OEL (8 hr. TGG mg/m³)**	**OEL (8 hr. TGG ppm)**	**STEL (15 min TGG; mg/m³)**	**STEL (15 min TGG; ppm)**	**Comment**
Netherlands (2006)	1800	-	-	-	Statutory limit value
Europe (IOEL; 2006)	3000	1000	-	-	

2-Methylbutane; iso-pentane (CAS No 78-78-4; EC No 201-142-8). Source www.ser.nl					
Source	**OEL (8 hr. TGG mg/m³)**	**OEL (8 hr. TGG ppm)**	**STEL (15 min TGG; mg/m³)**	**STEL (15 min TGG; ppm)**	**Comment**
Netherlands (2006)	1800	-	-	-	Statutory limit value
Europe (IOEL; 2006)	3000	1000	-	-	

8.1.2 Biological limit value Not established.

8.1.3 PNECs and DNELs

n-pentane (CAS No 109-66-0; EC No 203-692-4). Source www.echa.europa.eu		
Limit value (REACH)	**Value**	**Comment**
DNEL Workers inhalation, long-term, systemic (mg/m³)	3000	
DNEL Workers dermal, long-term, systemic (mg/kg/day)	432	
DNEL Consumers, dermal, long-term, systemic (mg/kg/day)	214	
DNEL Consumers, oral, long-term, systemic (mg/kg/day)	214	
DNEL Workers, dermal, long-term, systemic (mg/kg/day)	-	
PNEC fresh & salt water (µg/L)	-	
PNEC fresh & salt water, sediment (mg/kg sediment, dry weight)	-	
PNEC freshwater, intermittent discharges (µg/L)	-	
PNEC sewage treatment plant (mg/L)		

2-Methylbutane; iso-pentane (CAS No 78-78-4; EC No 201-142-8). Source www.echa.europa.eu		
Limit value (REACH)	**Value**	**Comment**
DNEL Workers inhalation, long-term, systemic (mg/m³)	3000	
DNEL Workers dermal, long-term, systemic (mg/kg/day)	432	
DNEL Consumers, inhalation, long-term, systemic (mg/kg/m²)	643	
DNEL Consumers, dermal, long-term, systemic (mg/kg/day)	214	
DNEL Consumers, oral, long-term, systemic (mg/kg/day)	214	
PNEC fresh & salt water (µg/L)	-	
PNEC fresh & salt water, sediment (mg/kg sediment, dry weight)	-	
PNEC freshwater, intermittent discharges (µg/L)	-	
PNEC sewage treatment plant (µg/L)	-	

8.2 Exposure controls

8.2.1 Technical measures Use only in well-ventilated areas.

8.2.2 Individual protection measures, such as personal protective equipment

Eye/face protection Safety glasses.

Skin/hand protection 	Wear suitable gloves. Recommended: impermeable gloves (EN 374). Material NBR, thickness 0.50mm, impermeable to solids (e.g. Ribiflex S NB 27 S, breakthrough time >480 min). Anti-static shoes type S1, S2 or S3 with PU sole or ESD shoes/boots.
Respiratory protection 	Wear an approved dust mask if dust is generated while handling the product. Type P1 (EN 143) or FFP1 (EN 149) "muzzle" (e.g. GISS FFP1 839959).
Thermal hazards	Not applicable.

8.2.3 Environmental exposure control

European and local regulations for Volatile Organic Compounds (VOCs) must be met if they apply to the EPS industry.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

(a) Physical state	Solid, small round grains
b) Colour	White.
c) Odour	Odourless
d) Melting point (°C)	Not available
e) Boiling point (°C)	Not available
f) Flammability (solid, gas)	Not flammable
g) Upper Explosive Limit (UEL)	7.8% (v/v) (Pentane)
Lower Explosive Limit (LEL)	1.3% (v/v) (Pentane)
h) Flashpoint (°C)	< -20°C (Pentane) (DIN 51755).
i) Auto-ignition temperature (°C)	285°C (Pentane) (ASTM E-659).
j) Decomposition temperature (°C)	Not available
k) pH (Value)	Not applicable
l) Kinematic viscosity (mPa.s)	Not determined
m) Solubility (Water)	Insoluble
Solubility (Other)	Soluble in aromatic hydrocarbons, halogenated solvents and ketones
n) Partition coefficient (n-Octanol/water)	Not available
o) Vapour pressure (mm Hg)	Not available
p) Density (g/ml)	1.02-1.05 (1020–1050 kg/m³) @ 20°C (beads)
Bulk density (g/ml)	Approximately 0.6 (600 kg/m³) @ 20°C
q) Vapour density (Air=1)	2.5 (Pentane).
r) Particle characteristics	Nanoform not applicable

9.2 Other information

Softening point 70-75°C (beads expand under release of pentane)

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

Stable under normal conditions.

10.2 Chemical stability

Stable under normal conditions.

10.3	**Possibility of hazardous reactions**	In use, may form flammable/explosive vapour-air mixture.
10.4	**Conditions to avoid**	Keep away from heat, sources of ignition and direct sunlight.
10.5	**Incompatible materials**	Avoid storage or handling together with UN Class 1 explosives.
10.6	**Hazardous decomposition products**	Pentane, styrene monomer, carbon monoxide, trace of hydrogen bromide (in case of fire or during hot wire cutting). When beads are expanded, pentane is released (the release of pentane increases with rising temperatures.

SECTION 11: TOXICOLOGICAL INFORMATION

This assessment is based on information from similar products

11.1 Information on toxicological effects

a)	**Acute toxicity**	
	Inhalation	The product may release pentane vapours, which may lead to dizziness, headache and anaesthetic effects at high concentrations.
	Ingestion	Unlikely to be hazardous if swallowed.
b)	**Irritation**	May cause irritation to skin.
c)	**Serious eye damage/irritation**	May cause irritation to eyes.
d)	**Respiratory/skin sensitisation**	May contain impurities with sensitizing effect. Maximum concentrations are below the lower concentration limit for reporting and/or classification of the product according to the CLP regulation.
e)	**Mutagenicity**	No indication of mutagenicity.
f)	**Carcinogenicity**	No indication of carcinogenicity.
g)	**Toxicity for reproduction**	May contain impurities toxic to reproduction Maximum concentrations are below the lower concentration limit for reporting and/or classification of the product according to the CLP regulation.
h)	**STOT for single exposure**	Contains pentane and iso-pentane which are both classified that they may cause drowsiness or dizziness (H336). Product is not classified as H336.
i)	**STOT for repeated exposure**	No cause for specific target organ toxicity on repeated exposure.
j)	**Aspiration hazard**	Contains pentane and iso-pentane which are both classified for aspiration hazard (H304). Product is not classified as H304.

11.2	**Information on other hazards**	Not applicable.

SECTION 12: ECOLOGICAL INFORMATION

This environmental hazard assessment is based on information available for similar products.
This product contains substances classified as environmentally hazardous. However, recent studies on aquatic organisms have shown that EPS granules, although containing these substances, do not need to be classified for environmental hazards.

12.1	**Toxicity**	Aquatic invertebrates: EC50 (48 h) > 100 mg/l, Daphnia magna (OECD Guideline 202, part 1, static) nominal concentration. The product has low solubility in the test

		medium. An eluate has been tested. Toxic effects were not observed within the range of solubility. Aquatic plants: EC50 (48 h) > 100 mg/l, EC50 (72 h) > 100 mg/l (growth rate), Desmodesmus subspicatus (OECD Guideline 202, part 1, static) Nominal concentration. The product has low solubility in the test medium. An eluate has been tested. Toxic effects were not observed within the range of solubility.
12.2	**Persistence and degradability**	The product itself has not been tested. In accordance with the required stability the product is not readily biodegradable. This statement has been derived from the structure of the product. It can be largely eliminated from water by abiotic processes, e.g. mechanical separation.
12.3	**Bioaccumulative potential**	The product has low potential for bioaccumulation. Bioconcentration factor (BCF) :< 100.
12.4	**Mobility in soil**	The product is essentially insoluble in water. Expandable polystyrene sinks in freshwater, may float or sink in seawater.
12.5	**Results of PBT and vPvB assessment**	The product does not comply with the criteria for PBT or vPvB. Does not contain any PBT or vPvB components.
12.6	**Endocrine disrupting properties**	Contains no known components with endocrine-disrupting properties above 0.1%.
12.7	**Other adverse effects**	Effect on effluent treatment: Practically non-toxic, EC50>100mg/l, for organisms in wastewater treatment plants (estimated). Pentane has an extremely low Global Warming Potential (< 0.00044) and no Ozone Depletion Potential.

RUBRIEK 13: DISPOSAL INFORMATION

Surplus, unused, old beads may still contain residual pentane. Therefore, the product has to be treated using all the safety measures in place for the fresh material. See also Section 7.

13.1	**Waste-treatment methods**	Prevent product from being released in the environment. Recover or recycle if possible. Remove all packaging for recovery or disposal. Normal disposal is by means of incineration by an accredited waste processor.
13.2	**Other information**	Dispose of contents in accordance with local, regional or national legislation.

SECTION 14: TRANSPORT INFORMATION

14.1	**UN number**	UN2211
14.2	**Proper shipping name**	EXPANDABLE POLYMERE BEADS, develops flammable vapour. (PENTANE).
14.3	**Transport hazard class(es)**	9.
14.4	**Packing group**	III.
14.5	**Environmental hazards**	None. Not classified as a marine pollutant.
14.6	**Special precautions for the user**	Keep away from sources of ignition. Transport or conveyance on own production site: Refer to the internal procedures and information provided by this document. Transport or conveyance outside own production site: Apply the requirements and regulations for the transport of hazardous substances and the manufacturer's

recommendations for loading, transporting, and unloading the material safely.

14.7 Transport in bulk according to Annex II of Not applicable. MARPOL and the IBC Code — Not applicable.

14.8 Additional information — Hazard Identification Number: 90.
Tunnel Restriction Code: D/E. IMDG EMS F-A, S-I.

Hazard label(s)

Sea transport (IMDG)

Air transport (ICAO/IATA)

UN Class 9 miscellaneous hazard label.

SECTION15: REGULATORY INFORMATION

15.1 Specific safety, health and environmental regulations and legislation for the substance or mixture

REACH (EC 1907/2006)

Candidate list for authorisation (Art. 59)	Contains no substances from this list at a concentration above 0.1% (w/w).
Authorisation (title VI)	Contains no substances from this list.
Restrictions (title VII)	The supplied synthetic polymer microparticles are subject to the conditions laid down in restriction entry 78 of Annex XVII of REACH.

National regulations — Not applicable (as far as known).

15.2 Chemical safety assessment — Not applicable to the mixture.

SECTION 16: OTHER INFORMATION

This safety data sheet has been prepared in accordance with EU Regulations 1907/2006 (REACH), 1272/2008 (CLP) & 2020/878 (last amendment REACH Annex II).

The following sections have been revised or contain new statements: sections 1.2, 3.2, 6.3, 7.3, 13.1 and 15.1.

LEGENDA

OEL	Occupational Exposure Limit (Occupational Exposure Limit)
IOEL	Indicative Occupational Exposure Limit (Occupational Exposure Limit)
STEL	Short Term Exposure Limit (Short Term Exposure Limit)
TWA	Time-weighted average
PPM	Parts per Million
STOT	Specific Target Organ Toxicity
DNEL	Derived No Effect Level
PNEC	Predicted No Effect Concentration
PBT	Persistent, Bioaccumulative and Toxic
vPvB	Very Persistent and Very Bioaccumulative

Hazard statements and Safety phrases**: (EC) No. 1272/2008 (CLP)**

H224	Extremely flammable liquid and vapour
H304	May be fatal if swallowed and enters airways

H336	May cause sleepiness or dizziness
H411	Toxic to aquatic life with long lasting effects
EUH066	Repeated exposure may cause skin dryness or cracking

Training advice
Appropriate information on safety when handling, storing and processing the product must be given to employees, based on existing information. A DVD on Fire Safety in 18 European languages is available from Plastics Europe. Contact your EPS supplier for a copy.

Disclaimer
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Annex with exposure scenario(s) with the extended safety data sheet ("extended SDS") Not applicable