

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

1.1 Product identification

Product identifier

UNIPOL ECOFREPS

Synonyms

FR-EPS, Flame-Retardant Expandable Polystyrene, poly(phenylethene).

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

Identified use

Used primarily for the manufacture of foamed thermal insulation and packaging.

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 supplier of the safety data sheet

Supplier

Unipol Holland BV
Postbus 824
5340 AV Oss
The Netherlands
+ 31 412 643 243

Telephone

Email

algemeen@unipol.nl

Emergency telephone number

Emergency telephone number

Dutch National Poison Information Centre

+ 31 (0)412 643 243
+ 31 (0)30 - 274 88 88 (only for professional emergency-services staff in case of emergencies)

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

EU Regulation No 1272/2008 (CLP)

Not classified

2.2 Label elements

In accordance with EU Regulation No 1272/2008 (CLP).

Pictogram(s)

None.

Signal word

None.

Hazard statements

EUH018: In use, may form flammable/explosive vapour-air mixture

EUH210: Safety data sheet available on request.

Precautionary statements

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.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.2. Mixture

Mixture of expandable polystyrene (EPS) and pentane isomers as blowing agent and a brominised polymer as flame retardant.

Chemical name	%W/W	CAS No	EC No	REACH Registration No	Hazard statements (CLP 1272/2008)
n-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.
2-Methylbutane; isopentane	< 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.

For full text of H/P phrases, see section 16.

SECTION 4: FIRST AID MEASURES



4.1 Description of first aid measures

Inhalation	Move the victim into fresh air. If symptoms persist, obtain medical attention.
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 any immediate medical attention and special treatment needed 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 CO ₂ .
Unsuitable extinguishing media	Do not use water jet.

5.2 Special hazards arising from the substance or Mixture

This product may give rise to hazardous fumes in a fire. Hazardous decomposition products: carbon monoxide, carbon dioxide, styrene, aliphatic hydrocarbons, and traces of hydrogen bromide may be produced.

5.3 Advice for firefighters

Firefighters should wear full protective clothing, including self-contained breathing apparatus. Wear hazmat 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. 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 and sewers.

6.3 Methods and material for containment and cleaning up

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.

6.4 Reference to other sections

See also sections 8 and 13.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

Provide adequate ventilation, including appropriate local extraction. Do not breathe fumes/vapour. Prevent generation of dust clouds. Should be kept 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 should be spark-free. Do not smoke during use. Take precautionary measures against static discharges. Ensure adequate earthing. Prevent release to the environment. Permission must be obtained from the appropriate Local Authority prior to disposing of spilt material.

Process Hazards

Take precautionary measures against static discharges. To prevent the build-up of static electric charge and the formation of an explosive pentane-air mixture, containers should be emptied completely during processing. Line velocity should not exceed 8 m/s during normal pumping operations.

7.2 Conditions for safe storage

All parts of the plant and equipment should be electrically bonded and earthed.

Electrical bonding and earthing should be checked at regular intervals. Wear antistatic clothing and footwear. Flammable concentrations of pentane may form during storage in closed containers. Prior to unloading freight containers, open the doors and ventilate for one hour. Keep container tightly closed in a cool, well ventilated place. Keep away from direct sunlight and other sources of heat or ignition. Protect against rain and damp conditions. Bulk: Keep under inert gas.

Open-top tanks should be covered with an open rigid grid. Take precautionary measures against static discharges. The electrical system should be spark-free. The product is usually supplied in fibreboard octabins. It is not recommended to double stack octabins.

Specific requirements for storage rooms or drums

Storage rooms should be kept cool to reduce pentane release, and fitted with a suitable ventilation system to prevent accumulation of pentane. In addition, measuring devices that alert to any build-up of an explosive pentane/air mixture should be used. The electrical system should be spark-free.

Equipment to be installed in potentially explosive atmospheres should conform to the requirements of ATEX Directive 94/9/EC.

Ambient.

Stable under normal conditions.

Avoid storing or handling in conjunction with UN Class 1 explosives.

Steel (drums).

Storage temperature

Storage life

Incompatible materials

Suitable containers:

7.3 Specific end use

Mainly used to produce foamed thermal insulation.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

8.1.1 Occupational exposure limit values

n-pentane (CAS no 109-66-0; EC no 203-692-4). Source www.ser.nl					
Source	OEL (8 hr TGG mg/m ³)	OEL (8 hr TGG ppm)	STEL (mg/m ³)	STEL (ppm)	Comment
Netherlands (2006)	1800	-	-	-	Statutory limit value
Europe (SCOEL; 2006)	3000	1000	-	-	

Isopentane (CAS no 78-78-4; EC no 201-142-8). Source www.ser.nl					
Source	OEL (8 hr TGG mg/m ³)	OEL (8 hr TGG ppm)	STEL (mg/m ³)	STEL (ppm)	Comment

Issue date : 14-09-2020 Replaces : 31-03-2016

Netherlands (2006)	1800	-	-	-	Statutory limit value
SCOEL (Europe; 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 inhalation, long-term, systemic (mg/m ³)	3000	
DNEL dermal, long-term, systemic (mg/ kg))	432	
PNEC freshwater & marine water (µg/L)	230	
PNEC freshwater & marine water, sediment (mg/kg sediment, dry weight)	1.2	
PNEC freshwater, intermittent discharges (µg/L)	880	
PNEC sewage-treatment plant (mg/L)	3.6	

Isopentane (CAS no 78-78-4; EC no 201-142-8). Source www.echa.europa.eu		
Limit value (REACH)	Value	Comment
DNEL inhalation, long-term, systemic (mg/m ³)	3000	
DNEL dermal, long-term, systemic (mg/ kg))	432	
PNEC freshwater & marine water (µg/L)	-	
PNEC freshwater & marine 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 Appropriate engineering controls

Use only in well-ventilated areas.

8.2.2 Individual protective measures, such as personal protective equipment

Eye/face protection

Safety glasses.



Skin/hand protection

Wear suitable gloves. Recommended: impervious gloves (EN 374). Material NBR, thickness 0.50mm, impermeable to solids (e.g. Ribiflex S NB 27 S, breakthrough >480 min.). Antistatic shoes type S1, S2 of S3 with PU sole or ESD shoes/boots.



Respiratory protection

An approved dust mask should be worn if dust is generated whilst handling the product. Type P1 (EN 143) or FFP1 (EN 149) "nose type" (e.g. GISS FFP1 839959).



Thermal hazards

Not applicable.

8.2.3 Environmental exposure controls

European Community and local provisions for Volatile Organic Substances (VOC) are to be met when they apply to the EPS industry.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Physical state	Solid, small round beads
Colour	White
Odour	Odourless
Odour (Threshold (ppm))	Not established.
pH (Value)	N/A
Melting point (°C)	Not available.
Boiling point (°C)	Not available.
Flashpoint (°C)	< -50°C (Pentane).
Upper Explosive Limit (UEL)	7.8% (v/v) (Pentane).
Lower Explosive Limit (LEL)	1.3% (v/v) (Pentane).
Auto-ignition temperature (°C)	285°C (Pentane) (ASTM E-659).
Evaporation rate	Not available.
Flammability (solid, gas)	Not flammable.
Vapour pressure (mm Hg)	Not available.
Vapour density (Air=1)	2.5 (Pentane).
Density (g/ml)	1.02 – 1.05 (1020–1050 kg/m ³) @ 20°C (beads).
Bulk density (g/ml)	Approximately 0.6 (600 kg/m ³) @ 20°C.
Softening point (°C)	70-75°C (beads expand with release of pentane).
Solubility (Water)	Insoluble.

Issue date : 14-09-2020 Replaces : 31-03-2016

Solubility (Other)	Soluble in aromatic hydrocarbons, halogenated solvents and ketones.
Partition coefficient (n-Octanol/water)	Not available.
Decomposition temperature (°C)	Not available.
Viscosity (mPa.s)	Not established.
Explosive properties	Not explosive.
Oxidising properties	Not oxidising.

9.2 Other information None.

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 storing or handling in conjunction 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 available on similar products.

11.1 Information on toxicological effects

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.

Irritation

May cause irritation to skin and eyes.

Sensitisation

No data.

Repeated dose toxicity

No data.

Carcinogenicity

No data.

Mutagenicity

No data.

Toxicity for reproduction

No data.

11.2 Information on other hazards

None.

SECTION 12: ECOLOGICAL INFORMATION

This environmental hazard assessment is based on information available on similar products.

This product contains substances that are classified as dangerous to the environment. However recent studies on aquatic organisms have shown that although EPS beads contain these substances, they do not need to be classified as an environmental hazard.

12.1 Toxicity	<p>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.</p> <p>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.</p>
12.2 Persistence and degradability	<p>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.</p>
12.3 Bioaccumulative potential	<p>The product has low potential for bioaccumulation. Bioconcentration factor (BCF) < 100.</p>
12.4 Mobility in soil	<p>The product is essentially insoluble in water. Expandable polystyrene sinks in freshwater, may float or sink in seawater.</p>
12.5 Results of PBT and vPvB assessment	<p>The product does not comply with the criteria for PBT or vPvB.</p>
12.6 Other adverse effects	<p>Effect on effluent treatment: Essentially non-toxic, EC50>100mg/l, for organisms in water-treatment plants (estimate). Pentane has an extremely low Global Warming Potential (< 0.00044) and no Ozone Depletion Potential.</p>

SECTION 13: DISPOSAL CONSIDERATIONS

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	<p>Recover or recycle if possible. Remove all packaging for recovery or disposal. Normal disposal is by means of incineration by an accredited waste processor.</p>
13.2 Other information	<p>Dispose of contents in accordance with local, regional or national legislation.</p>

SECTION 14: TRANSPORT INFORMATION

14.1 UN number	UN2211
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Issue date : 14-09-2020 Replaces : 31-03-2016

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 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.

SECTION 15: REGULATORY INFORMATION

15.1	Safety, health and environmental regulations/legislation specific for the substance or mixture	
	EU Regulation	
	Authorisations and/or restrictions on use	None
	National regulations	Not applicable.
15.2	Chemical safety assessment	Not applicable.

SECTION 16: OTHER INFORMATION

This Safety Data Sheet was prepared in accordance with EC Regulation (EC) 1907/2006 (REACH), 1272/2008 (CLP) & 453/2010.

The following sections were revised or contain new information: 1.1, 1.2, 2.2, section 3, 4.3, 8.1, section 16

KEY

OEL	Occupational Exposure Limit
STEL	Short Term Exposure Limit.
STOT	Specific Target Organ Toxicity.
DNEL	Derived No Effect Level

Issue date : 14-09-2020 Replaces : 31-03-2016

PNEC	Predicted No Effect Concentration.
PBT	PBT: Persistent, Bioaccumulative and Toxic.
STOT SE 3	Specific target organ toxicity — single exposure Category 3.

Hazard statements and Safety phrases: EU 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.
EUH018	In use, may form flammable/explosive vapour-air mixture
EUH066	Repeated exposure may cause skin dryness or cracking.

Training advice

Suitable information on safety during handling, storage and processing of the product should be given to employees based on all the existing information. A DVD on Fire Safety is available from Plastics Europe in 18 European languages. Please contact your EPS beads supplier for a copy.

Disclaimer

The information included in this publication or provided to the user in any other way we believe to be correct and is provided in good faith. However, it is up to the user to check whether the product is suitable for the intended use. Unipol Holland BV does not provide any guarantee that the product is suitable for any intended use. Every guarantee, implicit or explicit, is excluded, unless legislation does not permit exclusion. Unipol Holland BV does not accept liability for loss or damage, other than caused due to death or personal injury as a result of a product with proven shortcomings, that is the result of relying on this information. This publication may not be considered a licence to breach patents, copyright or designs.

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