

Safety data sheet

according to Regulation (EC) 1907/2006, annex II

Printing date 14.11.2019

Version number 1

Revision: 14.11.2019

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

1.1 Product identifier

- Trade name: **VERSALIS REVIVE® EPS**
- Product type: Mixture
- Registration number: Not applicable
- Chemical name: EXPANDABLE POLYSTYRENE (EPS)
- (e-)SDS code: 21483

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

- Application of the substance / the mixture: Production of various expanded polystyrene final applications.
- Uses advised against: Not determined.

1.3 Details of the supplier of the safety data sheet

- Manufacturer/Supplier: Versalis S.p.A.
Piazza Boldrini, 1
I-20097 San Donato Milanese (MI)
N° telefono: +39 02 520 1
- E-mail address of the competent person responsible for the SDS: e-mail: SDS.versalis@versalis.eni.com
- 1.4 Emergency telephone number:** S.E.T. (24h): Italy 800 452 661; other countries +39 (0)362512868.

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

- Classification according to Regulation (EC) No 1272/2008: On the basis of experimental data the product is not classified as dangerous for the environment.

Based on the requirements of the CLP Regulation, the product is not classified.

2.2 Label elements

- Labelling according to Regulation (EC) No 1272/2008: Not applicable
- Hazard pictograms: Not applicable
- Signal word: Not applicable
- Hazard statements: Not applicable
- Precautionary statements: P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P235 Keep cool.
P243 Take action to prevent static discharges.
P403+P233 Store in a well-ventilated place. Keep container tightly closed.
- Additional information: EUH018 In use may form flammable/explosive vapour-air mixture.
EUH210 Safety data sheet available on request.

2.3 Other hazards

- Results of PBT and vPvB assessment
- PBT: This substance / mixture is not a PBT applying the criteria of REACH Regulation, Annex XIII.

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· vPvB: This substance / mixture is not a vPvB applying the criteria of REACH Regulation, Annex XIII.

SECTION 3: Composition/information on ingredients

· 3.2 Chemical characterisation: Mixtures

· Description: Mixture composed of both virgin and post-consumer polymers.
Polymer: polystyrene, CAS: 9003-53-6.

· Dangerous components:

CAS: 109-66-0 EINECS: 203-692-4 Registration number: 01-2119459286-30-XXXX	pentane Flam. Liq. 2, H225; Asp. Tox. 1, H304; Aquatic Chronic 2, H411; STOT SE 3, H336	≤ 4.5%
CAS: 78-78-4 EINECS: 201-142-8 Registration number: 01-2119475602-38-XXXX	isopentane Flam. Liq. 1, H224; Asp. Tox. 1, H304; Aquatic Chronic 2, H411; STOT SE 3, H336	≤ 1.5%

· Additional information: For the wording of the listed hazard phrases refer to section 16.

SECTION 4: First aid measures

· 4.1 Description of first aid measures

· After inhalation: Pentane can cause irritation of the respiratory system. Exposure to high concentrations of pentane vapours can cause narcosis.

· After skin contact: The product doesn't irritate the skin.

· After eye contact: Rinse opened eye for several minutes under running water.

· After swallowing: No specific measure requested in case of ingestion. If needed seek medical assistance.

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

Exposure to pentane vapours may cause irritation and eyes reddening.

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

No further relevant information available.

SECTION 5: Firefighting measures

· 5.1 Extinguishing media

· Suitable extinguishing agents: Water, water spray, foam, dry chemicals, carbon dioxide.

· For safety reasons unsuitable extinguishing agents: Water with full jet

· 5.2 Special hazards arising from the substance or mixture

Combustion products: carbon dioxide, carbon monoxide (when starved of air / oxygen), and possible unburned hydrocarbons.
Overheating/pyrolysis may evolve vapours made up of monomers, low molecular weight polymers and their oxidation products.
Can form explosive gas-air mixtures.

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· 5.3 Advice for firefighters

· Protective equipment:

Wear suitable protective clothing (helmet, goggles, fire resistant gloves, boots) and protect respiratory organs (self contained breathing apparatus).

· Additional information

Cool endangered receptacles with water spray.

SECTION 6: Accidental release measures

· 6.1 Personal precautions, protective equipment and emergency procedures

Remove ignition sources. Avoid sparks. Extinguish naked flames. Take precautionary measures against static discharge. Prevent the spilled product coming into contact with sources of flame.

· 6.2 Environmental precautions:

Wear protective equipment. Keep unprotected persons away.

· 6.3 Methods and material for containment and cleaning up:

The gases / vapors are heavier than air and may flow at ground level.

· 6.4 Reference to other sections

Collect and place in a labelled, sealed container for further disposal. Collect mechanically. Reuse if possible or dispose of as required by national and local regulations (see section 13).

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

For information on disposal of contaminated material, see section 13.

* SECTION 7: Handling and storage

· 7.1 Precautions for safe handling

Product transfer: Take precautionary measures against static discharges. Earth all equipment. Ventilate freight container for one hour before unloading. Increasing line velocity increases the buildup of electrostatic charges.

Keep away from heat and direct sunlight.

Ensure good ventilation, also at floor level (fumes are heavier than air).

· Information about fire - and explosion protection:

Avoid naked flames. Remove ignition sources. Avoid sparks. Do not smoke. Take precautionary measures against static discharges. Earth all equipment.

Once the containers are opened (drums or octabins), the product should be processed as soon as possible, to avoid the build up of explosive/flammable mixtures.

· General recommendations on workplace hygiene

Apply the normal personal hygiene measures, in particular do not eat, drink or smoke while handling.

Wash hands before breaks and at the end of work.

· 7.2 Conditions for safe storage, including any incompatibilities

· Storage:

· Requirements to be met by storerooms and receptacles:

The amount of pentane released increases as the temperature rises. Keep the product in ventilated and fresh (advised temperature 15-20°C) storage areas. Do not store in the open under direct sunlight. Keep away from sources of heat and ignition (no smoking, naked flames, welding, sparks from tools).

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- Information about storage in one common storage facility:
 - Earth storage silos as precautionary measure against the static electricity build-up.
- Further information about storage conditions:
 - Not required.
 - Product should be stored in a safe manner, to avoid danger from unstable or damaged packaging units (octabins/bags/boxes on pallet). In particular, stacking of packaged units can be dangerous to warehouse personnel.
 - Reseal plastic liners of any containers which are not empty. Keep containers tightly closed.
 - Bulk product: Keep under inert gas. Open top tanks should be covered with an open rigid grid.
- **7.3 Specific end use(s)**
 - No further relevant information available.

SECTION 8: Exposure controls/personal protection

· 8.1 Control parameters

- Ingredients with limit values that require monitoring at the workplace:

109-66-0 pentane

WEL | Long-term value: 1800 mg/m³, 600 ppm

78-78-4 isopentane

WEL | Long-term value: 1800 mg/m³, 600 ppm

- DNELs

109-66-0 pentane

Oral	general population	214 mg/kg bw/d
Dermal	Workers-I. term syst	432 mg/kg bw/d
	general population	214 mg/kg bw/d (-)
Inhalative	Workers-acute syst.	3,000 mg/m ³
	general population	643 mg/m ³ (-)

78-78-4 isopentane

Oral	general population	214 mg/kg bw/d
Dermal	Workers-I.term local	432 mg/kg/d
	general population	214 mg/kg bw/d
Inhalative	Workers-I. term syst	3,000 mg/m ³
	general population	643 mg/m ³

- PNECs

109-66-0 pentane

fresh water	0.23 mg/l
marine water	0.23 mg/l
freshwater sediment	1.2 mg/kg dwt
marine sediment	1.2 mg/kg dwt

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soil	0.55 mg/kg dwt
sewage treatm. plant	3.6 mg/l

· Additional information: Assess workplace exposure according to standard EN 689/2019.

· **8.2 Exposure controls**

· Suitable technical controls: Ensure good ventilation / exhaustion at the workplace.

· Personal protection measures: The personal protective equipment will vary according to the possible exposure and danger of working conditions.

· Respiratory protection: In normal conditions masks with antidust filters should be available for use when requested.
For dusts, use a filtering facepiece FFP1 certified EN 149 or higher, or a half-mask certified EN140 with P1 filter or better (white color identifier).
For pentane, use a full face mask EN 136 certified, with gas filter AX (brown color identifier).
For combined exposure to dust and pentane use AXP3 filter.

· Protection of skin

· Protection of hands: Nitrile rubber, NBR (Recommended thickness of the material: ≥ 0.50 mm; Permeation time: > 480 min)

· Eye/face protection: Not necessary when no powders or vapours are present. Where present, wear suitable protective glasses.
Goggles facemask certified EN 166 according to requirements 4 (large dust size) and / or 5 (gases and fine dust).

· Other: Standard work clothes.
Wear antistatic safety shoes EN ISO 20345 certified.

· Thermal dangers: The amount of pentane released increases as the temperature rises.

· Limitation and supervision of exposure into the environment: Take all the technical precautions necessary to prevent the diffusion of the product in the environment

SECTION 9: Physical and chemical properties

· 9.1 Information on basic physical and chemical properties

· General Information

· Appearance:

Form: Granulate

Colour: Grey

· Odour: Weak, characteristic

· Odour threshold: Not determined.

· pH-value: Not applicable.

· Change in condition

Melting point/freezing point: Undetermined.

Initial boiling point and boiling range: Undetermined.

· Flash point: Not applicable.

· Ignition temperature: 285 °C (pentane)

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· Auto-ignition temperature:	Product is not selfigniting.
· Explosive properties:	Product does not present an explosion hazard.
· Explosion limits:	
Lower:	1.3 Vol % (pentane)
Upper:	7.8 Vol % (pentane)
· Vapour pressure at 37.8 °C:	151 kPa (pentane)
· Density at 20 °C:	1.04 g/cm ³
· Vapour density at 20 °C:	2.48 g/cm ³
· Evaporation rate:	Not applicable.
· Solubility in / Miscibility with water:	Insoluble.
· Partition coefficient: n-octanol/water:	Not determined.
· Viscosity:	
Dynamic:	Not applicable.
Kinematic:	Not applicable.
· 9.2 Other information	No further relevant information available.

SECTION 10: Stability and reactivity

· 10.1 Reactivity	The substance / mixture does not present additional hazards related to reactivity compared to those reported in the following subtitles.
· 10.2 Chemical stability	
· Thermal decomposition:	The amount of pentane released increases as the temperature rises. Beads expand at about 70 - 75°C and rapidly give off pentane.
· 10.3 Possibility of hazardous reactions	No dangerous reactions known.
· 10.4 Conditions to avoid	Temperatures higher than 30°C without ventilation. Heat, flames, sparks, exposure to sunlight for long time.
· 10.5 Incompatible materials:	Avoid the contact with oxidising substances.
· 10.6 Hazardous decomposition products:	No dangerous decomposition products known.

SECTION 11: Toxicological information

· 11.1 Information on toxicological effects	
· Acute toxicity	Based on available data, classification criteria are not met.

· LD/LC50 values relevant for classification:

109-66-0 pentane		
Oral	LD50 (24h)	>2,000 mg/kg (rat) (OECD 401)
Inhalative	LC50/4 h	>25.3 mg/l (rat) (OECD 403)
78-78-4 isopentane		
Oral	LD50 (24h)	>2,000 mg/kg (rat) (OECD 401)
Inhalative	LC50/4 h	>25.3 mg/l (rat) (OECD 403)

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- Primary irritant effect: Based on available data, classification criteria are not met.
- Skin corrosion/irritation: Based on available data, classification criteria are not met.
- Serious eye damage/irritation: The product's dust may cause irritation of eyes.
- Respiratory or skin sensitisation: Based on available data, the classification criteria are not met.
- Additional toxicological information: Specific information on the product is not available in the literature. Residual monomers may be present in the product at trace levels, hindered in the polymer matrix and therefore not available in normal conditions.
- CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction): No evidence of these effects has been reported.
- Germ cell mutagenicity: Based on available data, the classification criteria are not met.
- Carcinogenicity: Based on available data, the classification criteria are not met.
- Reproductive toxicity: Based on available data, the classification criteria are not met.
- STOT-single exposure: Based on available data, the classification criteria are not met.
- STOT-repeated exposure: Based on available data, the classification criteria are not met.
- Aspiration hazard: Based on available data, the classification criteria are not met.

SECTION 12: Ecological information

· 12.1 Toxicity

· Aquatic toxicity:

EC50 (72h) (static) >100 mg/l (ScS)

EC50 (48h) (static) >100 mg/l (Daphnia Magna) (OECD Growth rate - Guideline 201)

· 12.2 Persistence and degradability

The product is essentially a high molecular weight polymer, not regarded as ecotoxic.

· 12.3 Bioaccumulative potential

No further relevant information available.

· 12.4 Mobility in soil

No further relevant information available.

· Other information:

The product sinks in fresh water. The product may float or sink in sea water.

· 12.5 Results of PBT and vPvB assessment

· PBT:

This substance / mixture is not a PBT applying the criteria of REACH Regulation, Annex XIII.

· vPvB:

This substance / mixture is not a vPvB applying the criteria of REACH Regulation, Annex XIII.

· 12.6 Other adverse effects

No further relevant information available.

SECTION 13: Disposal considerations

· 13.1 Waste treatment methods

Residues should be disposed of as required by national and local regulations.

· Recommendation

The same safety considerations that apply to the product as it is, apply to scraps/waste as well.

Product surplus or wastes resulting from the normal use, must be handled according to the precautions and individual protective measures, as indicated under Sections 7 and 8.

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The incineration must be done under approved conditions, possibly with energy recovery and only at suitable facilities equipped with a scrubber for the treatment of fumes before their release into the atmosphere.

- Uncleaned packaging:
- Recommendation:
- Recommended cleansing agents:

Disposal must be made according to official regulations.
Not applicable.

SECTION 14: Transport information

· **14.1 UN-Number**

· ADR/RID/ADN, IMDG, IATA UN2211

· **14.2 UN proper shipping name**

· ADR/RID/ADN, IMDG, IATA POLYMERIC BEADS, EXPANDABLE

· **14.3 Transport hazard class(es)**

· ADR/RID/ADN



· Class 9 (M3) Miscellaneous dangerous substances and articles.
· Label -

· IMDG, IATA



· Class 9 Miscellaneous dangerous substances and articles.
· Label 9

· **14.4 Packing group**

· ADR/RID/ADN, IMDG, IATA III

· **14.5 Environmental hazards:**

· Marine pollutant: No

· **14.6 Special precautions for user** Warning: Miscellaneous dangerous substances and articles.

· Danger code (Kemler): 90

· EMS Number: F-A,S-I

· Stowage Category: E

· Stowage Code SW1 Protected from sources of heat.

· Segregation Code SW6 When stowed under-deck, mechanical ventilation shall be in accordance with SOLAS regulation II-2/19 (II-2/54) for flammable liquids with flashpoint below 23°C c.c.
SG5 Segregation as for class 3
SG14 Stow "separated from" class 1 except for division 1.4S

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<ul style="list-style-type: none"> · 14.7 Transport in bulk according to Annex II of Marpol and the IBC Code 	<p>Not applicable.</p>
<ul style="list-style-type: none"> · Transport/Additional information: 	<p>The product is not classified as dangerous for transportation according to the following regulations: ADR/RID, IMO, IATA.</p>
<ul style="list-style-type: none"> · ADR/RID/ADN · Limited quantities (LQ) · Excepted quantities (EQ) 	<p>Special Provision 382, 633 5 kg Code: E1 Maximum net quantity per inner packaging: 30 g Maximum net quantity per outer packaging: 1000 g</p>
<ul style="list-style-type: none"> · Transport category · Tunnel restriction code 	<p>3 D/E</p>
<ul style="list-style-type: none"> · IMDG · Limited quantities (LQ) · Excepted quantities (EQ) 	<p>Special Provision 965. 5 kg Code: E1 Maximum net quantity per inner packaging: 30 g Maximum net quantity per outer packaging: 1000 g</p>
<ul style="list-style-type: none"> · IATA · MARPOL: 	<p>Not applicable.</p>

SECTION 15: Regulatory information

<ul style="list-style-type: none"> · 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture 	
<ul style="list-style-type: none"> · National regulations: 	<p>National implementations of European Community Directives listed below</p>
<ul style="list-style-type: none"> · Regulations of the European Union 	<p>Directive EC) No. 2010/75 of 29 November 2010 and subsequent amendments (industrial emissions). Directive (EC) No. 2008/98 of 16 November 2008 and s.m.i (waste). Directive (EC) No. 2000/60 of 23 October 2000 and subsequent amendments (water). Directive 98/24/EC and subsequent amendments (Chemical agents) Directive 2012/18/EU and subsequent amendments (Seveso)</p>
<ul style="list-style-type: none"> · 15.2 Chemical safety assessment: 	<p>The exposure scenarios of the registered components are available on request. Chemical Safety Assessment of the product is not required.</p>

SECTION 16: Other information

<ul style="list-style-type: none"> · Relevant phrases 	<p>H224 Extremely flammable liquid and vapour. H225 Highly flammable liquid and vapour. H304 May be fatal if swallowed and enters airways. H336 May cause drowsiness or dizziness. H411 Toxic to aquatic life with long lasting effects.</p>
<ul style="list-style-type: none"> · Training hints 	<p>It is advised to train the personnel about health and safety in the workplace, particularly in the use of PPEs (Directive 98/24/EC) and environment (e.g. product and packaging waste management).</p>

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· Classification according to Regulation (EC) No 1272/2008

The classification for environment has been carried out by experimental data; the classification for health has been made by applying the CLP calculation method.

· Department issuing SDS:
· Abbreviations and acronyms:

SRBS/CESP

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

GHS: Globally Harmonised System of Classification and Labelling of Chemicals

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

DNEL: Derived No-Effect Level (REACH)

PNEC: Predicted No-Effect Concentration (REACH)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bioaccumulative and Toxic

vPvB: very Persistent and very Bioaccumulative

Flam. Liq. 1: Flammable liquids – Category 1

Flam. Liq. 2: Flammable liquids – Category 2

STOT SE 3: Specific target organ toxicity (single exposure) – Category 3

Asp. Tox. 1: Aspiration hazard – Category 1

Aquatic Chronic 2: Hazardous to the aquatic environment - long-term aquatic hazard – Category 2

· * Data compared to the previous version altered.

Data and information contained in this Safety Data Sheet are based on our available knowledge at the last revision date. No guarantee can be given as to the sufficiency of any safety measures contained in this Safety Data Sheet, nor can it be assumed that other or additional measures may not be required under particular or exceptional circumstances. The user must make sure of the fitness and completeness of the information, according to the specific use they want to do.