

Synthos EPS

Safety Data Sheet

According to Regulation (EC) 1907/2006 (REACH) and Regulation (UE) 2015/830

Date of compilation (version no.): 2019/11/01 (1)

Revision (revision no.): 2020/12/28 (2)

SECTION 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKIN

1.1. Product identifier

Product name: Expandable polystyrene
 Trade name: InVento OPTIMA FR/PL, InVento OPTIMA FRN/PL, InVento OPTIMA FRE/PL, InVento PRIME FR/PL
 CAS no. 9003-53-6 polystyrene
 EC no. Polymer exempt
 REACH registration number: Polymer exempt

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

Identified uses

Used primarily for the manufacture of foamed thermal insulation and packaging. Outdoor and indoor use of articles manufactured from the product by professional users and by consumers.

Uses advised against

None.

1.3. Details of the supplier of the safety data sheet

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reachSD@synthosgroup.com

Plant productions:

- Synthos Dwory 7 spółka z ograniczoną odpowiedzialnością spółka jawna, ul. Chemików 1, Oświęcim, Poland

1.4. Emergency telephone number

48 33 847 22 23 (available 24/7)

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

2.1.1. Classification of the mixture in accordance with Regulation (EC) No 1272/2008

This product is not classified as dangerous in accordance with Regulation (EC) No 1272/2008. In use may form flammable/explosive vapour-air mixture.

2.2. Label elements

Hazard Pictogram None.
 Signal word(s) None.
 Hazard statement(s) None.

Precautionary Statement Prevention:

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
 P233 Keep container tightly closed.
 P243 Take action to prevent static discharges.
 P403 + P235 Store in a well-ventilated place. Keep cool.

Supplementary information:

EUH018 In use may form flammable/explosive vapour-air mixture.
 In accordance with EU and national laws any other label elements are not required.

2.3. Other hazards

The product contains no substances that meet the criteria for PBT or vPvB in accordance with Annex XIII. Product releases pentane, a flammable hydrocarbon.

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Synthos EPS

Safety Data Sheet

According to Regulation (EC) 1907/2006 (REACH)
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Version no. (revision no.): 1(2)

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Not applicable

3.2 Mixtures

The product is a mixture composed mainly of polystyrene and blowing agent (mixture of n-pentane and isopentane).

Components/ components contributing to the hazards

Component	CAS No.	EC No.	Index No.	REACH Registration No.
mixture of: n-pentane	109-66-0	203-692-4	601-006-00-1	01-2119459286-30-****
isopentane	78-78-4	201-142-8		01-2119475602-38-****

Component	Conc. [%]	Classification in accordance with Regulation 1272/2008
mixture of: n-pentane isopentane	< 5,2	Flam. Liq. 1, H224; Asp. Tox. 1, H304; STOT SE 3, H336; Aquatic Chronic 2, H411 EUH066

SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures

4.1.1. Inhalation

Remove the victim from the place of exposure. If symptoms persist call medical help.

4.1.2. Skin contact

Remove the victim from the place of exposure. Take off contaminated clothing and shoes. Flush skin with plenty of running water.

4.1.3. Eye contact

Keep the eyelids widely apart and flush eyes with plenty of running water at least for 15 minutes. Remove contact lenses if possible (if not adhered to the eye). Provide medical help (oculist) if necessary.

4.1.4. Ingestion/swallow

Consult a physician.

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

Overexposure to contained in the product pentane mixture may cause CNS depression. Symptoms of overexposure include dizziness and headache, loss of coordination, dazed state.

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

Unlikely, but treat symptomatically

SECTION 5: FIREFIGHTING MEASURES

5.1. Extinguishing media

5.1.1. Suitable extinguishing media

Extinguishing powders, water spray, carbon dioxide, foam.

5.1.2. Unsuitable extinguishing media

Water jet.

5.2. Special hazards arising from the substance or mixture

Explosive atmosphere area – mixtures of isomers of pentane are extremely flammable.

The following substances may be formed during fire: carbon monoxide, carbon dioxide, styrene, aromatic and aliphatic hydrocarbons, traces of hydrogen bromide and acidic vapours.

Polystyrene dust is dangerous. Ignition sources can cause fire and/or explosion.

Burning polystyrene releases irritating and/or toxic fumes, gases and soot.

Warning – water can make the surface very slippery (scattered product poses hazard of slide and fall).

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5.3. Advice for fire-fighters

Fire fighters should wear complete protective clothing including self-contained breathing apparatus. Chemical protection suit. Keep containers cool by spraying with water if exposed to fire. Flammable concentrations of pentane may accumulate on storage in closed containers.

Dispose of fire debris and contaminated extinguishing water in accordance with regulations in force. Collect contaminated extinguishing water separately, do not allow it to reach sewage or effluent systems.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Avoid direct contact with the product. Remove all sources of ignition – do not eat, drink or smoke, do not use open fire, do not use sparking tools. Follow instructions given by emergency responders.

6.1.2. For emergency responders

Caution - spillages may be slippery.

Pentane can form explosive mixture with air. The pentane vapour is heavier than air; beware of pits and 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

Protect sink basins. Do not discharge into drains. Avoid releasing to the environment.

6.3. Methods and material for containment and cleaning up

6.3.1. Methods and material for containment

None.

6.3.2. Methods and material for cleaning up

Collect mechanically into labelled container using non-sparking tools such as shovels made of wood or aluminium. The product can also be collected pneumatically. Reuse or dispose of in accordance with regulations in force.

6.4. Reference to other sections

N/A.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

Do not breathe vapours or dust. Do not breathe vapours and fumes releasing from heated product. Remove vapours with the use of proper ventilation equipment. Avoid formation and accumulation of dust.

Keep away from sources of ignition - No smoking. Keep fire extinguishers in vicinity. Do not allow formation of explosive mixtures of pentanes and air. Take precautionary measures against static discharges. Do not use open flame. Use antistatic tools.

Provide all devices with grounding/earthing.

Provide good room ventilation, particularly at ground level (pentane vapours are heavier than air).

Protect against moisture. Protect from direct sunlight. Protect against heat. Keep container tightly sealed. Processing machines must be fitted with local exhaust ventilation. Avoid the formation and deposition of dust.

Avoid release of the product into drains.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions

Expandable polystyrene is to be stored in original tightly sealed containers (with the use of PE/PA6 barrier film) in well ventilated areas or under a roofing, away from sources of open flame, heat and ignition. Protect the product against freezing. Storage areas should conform to the requirements of the ATEX Directive.

Keep container tightly closed, in a cool, well ventilated place.

Keep away from direct sunlight and other sources of heat or ignition. Keep away from rain and moist conditions.

Take precautionary measures against static discharges. The electrical system should be spark-free.

Storage stability

Synthos EPS

Safety Data Sheet

According to Regulation (EC) 1907/2006 (REACH)
and Regulation (UE) 2015/830
Version no. (revision no.): 1(2)

Keep only in the original container in a cool, dry, well-ventilated place away from sources of ignition, heat or flame.

Packaging materials

The product is packed by the manufacturer to aluminium containers equipped with a tight closure or to cardboard boxes (octabins) with a PE/PA6 bag (liner) inside.

7.3. Specific end use(s)

Not applicable.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

8.1.1. Occupational exposure limits

Substance	CAS No.	Workplace exposure limit (EH40-United Kingdom)				Comments
		Long-term exposure limit (8-hour TWA reference period)		Short-term exposure limit (15-minute reference period)		
		ppm	mg/m ³	ppm	mg/m ³	
pentane	109-66-0	600	1800	-	-	-
isopentane	78-78-4	600	1800	-	-	-
styrene	100-42-5	100	430	250	1080	-

8.1.2. DN(M)EL levels

8.1.2.1. DN(M)EL levels – workers

Not established

8.1.2.2. DN(M)EL levels – general population

Data not available.

8.1.3. PNEC levels

Data not available.

8.2. Exposure controls

8.2.1. Appropriate engineering controls

Ventilation of the workplace.

8.2.2. Individual protection measures, such as personal protective equipment

8.2.2.1. Eye/face protection

Safety glasses.

8.2.2.2. Skin protection

Hand protection

Wear suitable gloves. Recommended: Impervious gloves (EN 374). Breakthrough time of the glove material: refer to the information provided by the gloves' producer.

Other

Wear suitable antistatic protective clothing and antistatic safety shoes or antistatic boots.

8.2.2.3. Respiratory protection

In case of insufficient ventilation wear mask with organic vapours filter.

8.2.2.4. Thermal hazards

The product creates no thermal hazards.

8.2.3. Environmental exposure controls

Avoid release to the environment. Do not discharge into drains.

Emissions from vents and processing equipment have to be controlled in order to determine whether they are in compliance with in force regulations on environmental protection. Based on results of such controls the need for implementation of relevant environmental risk management measures can be determined.

8.3. Further information

Not applicable

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

a) appearance Solid, Small spherical beads, grey

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Safety Data Sheet

According to Regulation (EC) 1907/2006 (REACH)
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Version no. (revision no.): 1(2)

b) odour	faint pentane-like
c) odour threshold	data not available
d) pH	not applicable
e) melting point/freezing point	60 ÷ 80°C (softening temperature)
f) initial boiling point and boiling range	N/A – decomposes
g) flash point	n-pentane: – 49°C isopentane: – 51°C
h) evaporation rate	not applicable
i) flammability (solid, gas)	In use may form flammable/explosive vapour-air mixture.
j) upper/lower flammability or expl. limits	lower explosive limit: n-pentane: 7.8 % v/v isopentane: 7.6 % v/v upper explosive limit: n-pentane: 1.3 % v/v isopentane: 1.0 %v/v dusts: ca. 20 g/m ³
k) vapour pressure	n-pentane: 56.2 kPa @ 20°C 158.7 kPa @ 50°C isopentane: 77.1 kPa @ 20°C 208.6 kPa @ 50°C
l) vapour density	N/A
m) relative density	ca. 1.05 g/cm ³ @ 20°C
n) solubility	insoluble in water soluble in aromatic hydrocarbons, ketones and esters
o) partition coefficient logK _{o/w}	N/A
p) auto-ignition temperature	n-pentane: 285°C isopentane: 420°C
q) decomposition temperature	ca. 230°C
r) viscosity	N/A
s) explosive properties	In use may form flammable/explosive vapour-air mixture.
t) oxidizing properties	N/A
9.2. Other information	
u) heat of combustion	data not available
v) heat of polymerization	N/A
w) bulk density	ca. 550 - 650 kg/ m ³ @ 20°C

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity

The product is of low reactivity.

10.2. Chemical stability

The product is stable in the given conditions of storage and use of stabilizers is not required (see Section 7.2).

The product releases pentane vapours under all conditions, but the release rate is much more higher at the temperatures exceeding 20 ÷ 25°C.

At the temperatures exceeding 70 ÷ 80°C beads begin to soften and increase their volume.

At the temperature 90 ÷ 110°C pentane which is being released intensively causes increase of the beads volume by ca. 20 ÷ 40 times (expansion).

After processing with evolution of pentane decomposition of polymer starts at the temperature exceeding ca. 230°C and above 300°C the decomposition process is much more intensive.

10.3. Possibility of hazardous reactions

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

10.4. Conditions to avoid

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Temperature exceeding 20°C, sources of ignition: heat, sparks, open flame. Avoid direct sunlight. Avoid electro-static discharge.

10.5. Incompatible materials

Strong oxidants, organic solvents.

10.6. Hazardous decomposition products

Thermal decomposition of the product may produce i.a. styrene, acidic vapours and carbon monoxide, pentane, traces of hydrogen bromide.

SECTION 11: TOXICOLOGICAL INFORMATION

No data on toxicological properties of the product as such is available. Hazards which the product creates to the human health and life have been assessed in accordance with rules applicable for mixtures (see also Section 2 of this Safety Data Sheet).

11.1. Information on toxicological effects

11.1.1. Acute toxicity

Based on available data, the classification criteria are not met.

11.1.2. Skin corrosion/irritation

Based on available data, the classification criteria are not met.

11.1.3. Serious eye damage/irritation

Based on available data, the classification criteria are not met.

11.1.4. Respiratory or skin sensitisation

Based on available data, the classification criteria are not met.

11.1.5. Germ cell mutagenicity

Based on available data, the classification criteria are not met.

11.1.6. Carcinogenicity

Based on available data, the classification criteria are not met.

11.1.7. Reproductive toxicity

Based on available data, the classification criteria are not met.

11.1.8. STOT-single exposure

Based on available data, the classification criteria are not met.

11.1.9. STOT-repeated exposure

Based on available data, the classification criteria are not met.

11.1.10. Aspiration hazard

Based on available data, the classification criteria are not met.

11.2. Information on likely routes of exposure

Dermal, inhalation.

11.3. Symptoms related to the physical, chemical and toxicological characteristics

Symptoms of overexposure to pentane include drowsiness and dizziness, headache, loss of coordination, dazed state.

11.4. Delayed and immediate effects as well as chronic effects from short and long-term exposure

Overexposure to contained in the product pentane mixture may cause CNS depression.

SECTION 12: ECOLOGICAL INFORMATION

This environmental hazard assessment is based on information available on similar products. This product contains a substance which is classified as dangerous for the environment. However recent studies on aquatic organisms have shown that EPS-beads, while containing this substance, do not need to be classified for environmental hazard.

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. No toxic effects occur within the range of solubility.

Aquatic plants:

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. No toxic effects occur within the range of solubility.

12.2. Persistence and degradability

Polystyrene contained in the product is not readily biodegradable. Pentane which releases from the product is readily biodegradable according to OECD criteria. In the atmosphere pentane is rapidly oxidized in photochemical reactions with half-life of 1 to 10 days.

12.3. Bioaccumulative potential

It is expected that polystyrene contained in the product does not exhibit bioaccumulative potential. Pentanes which release from the product may undergo bioaccumulation.

12.4. Mobility in soil

Data not available.

12.5. Results of PBT and vPvB assessment

The product contains no substances that meet the criteria for PBT or vPvB in accordance with Annex XIII.

12.6. Other adverse effects

Data not available.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Primary, product wastes should be recovered. Wastes, which could not be recovered should be biologically, chemically or physically transformed or stored on landfill.

Landfilling should be performed only for those wastes, destruction of which is technically impossible or ecologically or economically unjustified.

Recovery or destruction of product wastes has to be performed in accordance with regulations in force, in special assigned facility and/or equipment meeting the appropriate requirements.

Waste code: the product itself: 07 02 13.

Recover or recycle if possible. Remove all packaging for recovery or disposal. Normal disposal is via incineration operated by an accredited disposal contractor.

Dispose of contents in accordance with local, state or national legislation.

Returnable packaging may be reused after decontamination.

SECTION 14: TRANSPORT INFORMATION

ADR/RID, IMDG, ICAO/IATA packaging and carriage provisions apply.

Packaging shall be loaded on to closed or sheeted vehicles or containers.

14.1. UN number

2211

14.2. UN proper shipping name

POLYMERIC BEADS, EXPANDABLE

14.3. Transport hazard class(es)

9

14.4. Packing group

III

14.5. Environmental hazards

The mixture is **not** environmentally hazardous according to the criteria of the UN Model Regulations.

14.6. Special precautions for user

None.

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

Not applicable.

Additional Information

IMDG Class 9 IMDG EMS F-A, S-I

SECTION 15: REGULATORY INFORMATION

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

- REGULATION (EC) No 1907/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC (including any amendments/adaptations to technical progress).
- COMMISSION REGULATION (EU) 2015/830 of 28 May 2015 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)
- REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006 (including any amendments/adaptations to technical progress).
- DIRECTIVE 2008/98/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 19 November 2008 on waste and repealing certain Directives (including any amendments/adaptations to technical progress).

15.2. Chemical safety assessment

Chemical safety assessment has been carried out for those components of the mixture for which it was required.

SECTION 16: OTHER INFORMATION

16.1. Revised sections

1.1.

16.2. List of relevant R phrases, hazard statements, safety phrases and/or precautionary statements given under Sections 2 to 15 and (if applicable) full text of any statements which are not written out in full under the aforementioned Sections

H224	Extremely 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
vPvB	Very persistent and very bioaccumulative (substance)
PBT	Persistent, bioaccumulative and toxic (substance)
PNEC	Predicted No Effect Concentration
DNEL	Derived No Effect Levels
LC50	Lethal Dose 50%, dose required to kill half the members of a tested population after a specified test duration
EC50	Concentration of a tested substance causing 50% changes in response (e.g. on growth) during a specified time interval.

This document is of an informative character. The information given herein is based on the present state of our knowledge and experience. It makes neither product properties nor qualitative parameters guarantee and cannot be used as a basis of any claims. The information provided is not applicable for any mixtures of the product with any other materials. The product has to be transported, stored and used in accordance with regulations in force, good occupational hygiene practice and recommendations given its Safety Data Sheet.