



ACCORDING TO EC-REGULATIONS 1907/2006 (REACH), Annex II

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

1.1

	Product identifier		
	Product Name	Circulum® GF-NF grades (p/e)	
		Expandable Polystyrene.	
	Chemical Name	Expandable Polystyrene (containing	pentane expanding agent).
	Synonyms	FR-EPS, Flame Retardant Expandal	ole polystyrene,
	Trade name	poly(phenylethene). Circulum® GF-NF grades (p/e)	
	CAS No.	None assigned.	
	EINECS No.	Polymer exempt.	
	REACH Registration No.	Polymer exempt.	
1.2	Relevant identified uses of the substance or mixt	ure and uses advised against	
	Identified use(s)	Used primarily for the manufacture c and packaging.	f foamed thermal insulation
	Uses advised against	None known.	
1.3	Details of the supplier of the Safety Data Sheet		
	Company name	BEWI RAW	
		Mailing adress NL	Mailing Adress FIN
		Postbus 37	P.O. Box 360
	Postal code	4870 AA	6101
	City	Etten-Leur	Porvoo
	Land	Nederland	Finland
	E-mail	info@bewi.com	
	Website	http://www.bewi.com/contact/	
1.4	Emergency telephone number		
	Emergency Phone No.	Poison information Centre (NVIC- NL) +31 (0) 30 274 88 88 (Only professional care providers)	Poison information Centre (FIN) +358 9 471977
2. SEC	CTION 2: HAZARDS IDENTIFICATION	+44 (0) 1865 407 333 (Only for trans	port emergencies)
2.1	Classification of the substance or mixture		
	Regulation (EC) No. 1272/2008 (CLP)	Not classified	
2.2	Label elements		
	Product Name	Circulum® GF-NF grades (p/e)	
		Expandable Polystyrene.	
	Hazard Pictogram	None.	
	Signal word(s)	None.	
	Hazard statement(s)	None.	
	Precautionary statement(s)	None	

P243: Take precautionary measures against static discharge.

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

P403 + P235: Store in a well-ventilated place. Keep cool.

Product releases pentane, a flammable hydrocarbon.

Supplementary Information

2.3 Other hazards

May cause irritation to skin and eyes.

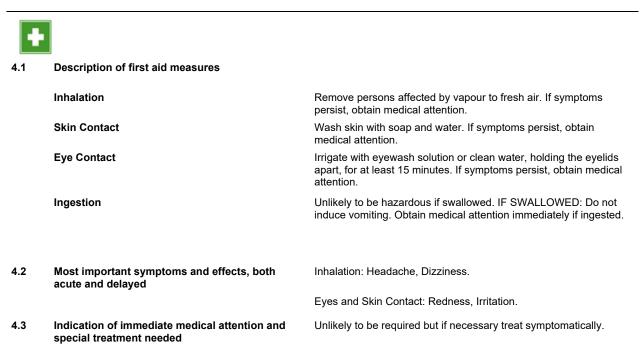
3. SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Polystyrene (CAS No. 9003536), containing pentane isomers as blowing agent and a polymeric brominated flame retardant.

Hazardous ingredient(s)	%W/W	CASNo.	EC No.	REACH Registration	Hazard pictogram(s) and Hazard Codes
				No.	
lso pentane	<2	78-78-4	201-142-8	01-2119475602-38	(iso-:GHS02, Flam. Liq. 1; H224), GHS08, Asp. Tox. 1; H304, GHS07, STOT SE 3; H336, GHS09,Aquatic Chronic 2; H411, EUH066.
n-pentane	<5	109-66-0	203-692-4	01-2119459286-30	(n-: GHS02, Flam. Liq. 2; H225), GHS08, Asp. Tox. 1; H304, GHS07, STOT SE 3; H336, GHS09,Aquatic Chronic 2; H411, EUH066.

For full text of H/P statements a see section 16.

4. SECTION 4: FIRST AID MEASURES



5. SECTION 5: FIRE-FIGHTING MEASURES

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Product is not classified as flammable, but will burn on contact with flame 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 give rise to hazardous fumes in a fire.
		Hazardous Decomposition Product(s): Carbon monoxide, Carbon dioxide, styrene, aliphatic hydrocarbons and traces of hydrogen bromide can be produced.
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.
6. SE	CTION 6: ACCIDENTAL RELEASE MEASURES	
6.1	Personal precautions, protective equipment and emergency procedures	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	Prevent entry into drains.
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: Use vacuum equipment suitable for use in hazardous locations for collecting spilt materials, where practicable. Transfer to a lidded container for disposal or recovery.
6.4	Reference to other sections	See Also Section 8 and 13.
7. SE	CTION 7: HANDLING AND STORAGE	
7.1	Precautions for safe handling	Provide adequate ventilation, including appropriate local extraction. Do not breathe dust. Avoid 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 eat, drink or smoke when using this product. Take precautionary measures against static discharges. Ensure adequate earthing. Avoid release to the environment. Permission must be obtained from the appropriate Local Authority before disposing of waste material.

	t: Circulum®. t code: GF, NF-grades (Po/EL)	Version: 5 NL/FIN-eng	Page: 4/10 Date: 19-08-2021	V
	Process Hazards	the buildup of static electric explosive pentane-air mixtur when processing. Line veloc normal pumping operations.	es against static discharges. To avoid charge, and also the formation of an re, containers should be fully emptied bity should not exceed 8m/s during uipment should be electrically bonded	
7.2	Conditions for safe storage, including incompatibilities	together and connected to e checked at regular intervals. be used.anyFlammable concentrations of	arth. Electrical continuity should be Antistatic clothing and footwear should of pentane may accumulate on storage unloading freight containers, keep	
		doors open and ventilate for		
		Keep away from direct sunliging ignition. Keep away from rai	ght and other sources of heat or n and moist conditions.	
		Bulk: Keep under inert gas. an open rigid grid.	Open top tanks should be covered with	
	Specific design for storage rooms or v	electrical system should be supplied in fibreboard octabi stack octabins or place them support under the pallet. Vessels Storage rooms should be ke provided with a suitable ven	es against static discharges. The spark-free. The product is usually ins. It is recommended not to double n on storage racks without additional ept cool to reduce pentane release, and tilation system to prevent accumulation ty devices to alert any build up of res should be used.	
		The electrical system should	be spark-free.	
			potentially explosive atmospheres ements of ATEX Directive 94/9/EC.	
	Storage Temperature	Ambient.		
	Incompatible materials	Avoid storing or handling in explosives.	conjunction with UN Class 1	
	Suitable containers	Steel (drums).		
7.3	Specific end use(s)	Used primarily for the manuf and packaging.	facture of foamed thermal insulation	
8. SEC	TION 8: EXPOSURE CONTROLS/PERSO	ONAL PROTECTION		

8.1 Control parameters

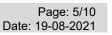
8.1.1 Occupational Exposure Limits

SUBSTANCE	CAS No.	LTEL (8 hr TWA ppm)	LTEL (8 hr TWA mg/m³)	STEL (ppm)	STEL (mg/m³)	Note
Pentane (mixed isomers)	109-66-0	600	1800	-	-	WEL
	78-78-4					

WEL: Workplace Exposure Limit (UK HSE EH40)

8.1.2 Biological limit value

Not established.



BEW/

8.1.3 PNECs and DNELs

Component	Exposure Route	Exposure Type (long/short)	Application area	Value
Pentane, iso-	Dermal	long term, systemic effects	Worker	432 mg/kg/d
	Inhalation	long term, systemic effects	Worker	3000 mg/m3
	Dermal	long term, systemic effects	Consumer	214 mg/kg/d
	Inhalation	long term, systemic effects	Consumer	643 mg/m3
	Oral	long term, systemic effects	Consumer	214 mg/kg/d
n-Pentane	Dermal	long term, systemic effects	Worker	432 mg/kg/d
	Inhalation	long term, systemic effects	Worker	3000 mg/m3
	Dermal	long term, systemic effects	Consumer	214 mg/kg/d
	Inhalation	long term, systemic effects	Consumer	643 mg/m3
	Oral	long term, systemic effects	Consumer	214 mg/kg/d

Predicted No Effect Concentration (PNEC)			
Component	Exposure route	Value	Remark
Pentane, -iso	Water	0,25 mg/l	fresh, marine, intermittent relase
	Sediment	1,10 mg/kg	
	Soil	0,55 mg/kg	
	STP	3,9 mg/l	
n-Pentane	Water	0,23 mg/l	
	Sediment	1,2 mg/kg	
	Soil	0,55 mg/kg	
	STP	3,6 mg/l	

8.2 Exposure controls

8.2.1 Appropriate engineering controls

8.2.2 Personal protection equipment

Eye/face protection



Skin protection (Hand protection/ Other)



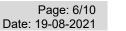
Safety spectacles.

Use only in well-ventilated areas.

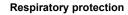
Wear suitable gloves. Recommended: Impervious gloves (EN 374). Material NBR, thickness 0,50mm, impermeable for solids (e.g. Ribiflex S NB 27 S, breakthrough >480 min.) Antistatic shoes type S1, S2 of S3 with PU sole or ESD shoes/boots.

Wear suitable protective clothing.

Antistatic safety shoes or antistatic boots, type S1, S2 or S3 with PU sole or ESD boots.



BEW





An approved dust mask should be worn if dust is generated during handling.

Thermal hazards

8.2.3 Environmental Exposure Controls

Not applicable.

European Community and local provisions on Volatile Organic Substances (VOC), are to be fulfilled when they are applicable to the EPS industry.

9. SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

	These properties are the most relevant		
	These properties are the most relevant.		
9.1	Information on basic physical and chemical properties		
	Form	Solid, Small spherical beads.	
	Colour	NF: white GF: grey	
	Odour	Perceptible odour.	
	Odour Threshold (ppm)	Not established.	
	pH (Value)	Not applicable.	
	Melting Point (°C)	Not available.	
	Boiling Point (°C)	Not available.	
	Flash Point (°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)	In use, may form flammable/explosive vapour-air mixture.	
	Vapour Pressure (mm Hg)	Not available.	
	Vapour Density (Air=1)	2.5 (Pentane)	
	Density (g/ml)	1020–1050kg/m³ @ 20°C (beads)	
	Bulk Density (g/ml)	circa. 600kg/m³ @ 20°C	
	Softening Point (°C)	70-75°C (beads expand with evolution of pentane)	
	Solubility (Water)	Insoluble.	
	Solubility (Other)	Soluble in aromatic hydrocarbons, halogenated solvents and ketones.	
	Partition Coefficient (n-Octanol/water)	Not available.	
	Decomposition Temperature (°C)	ca. 230oC	
	Viscosity (mPa.s)	Not established.	
	Explosive properties	In use, may form flammable/explosive vapour-air mixture.	
	Oxidising properties	Not oxidising.	
9.2	Other information	None.	

10. SECTION 10: STABILITY AND REACTIVITY

Produc	t: Circulum®.		Page: 7/10	BEW
Produc	t code: GF, NF-grades (Po/EL)	Version: 5 NL/FIN-eng	Date: 19-08-202	
10.1	Reactivity	Stable under	normal conditions.	
10.2	Chemical stability	Stable under	normal conditions.	
10.3	Possibility of hazardous reactions	Keep away fro	om heat, sources of ignition and direct sunlig	nt.
10.4	Conditions to avoid	In use, may fo	orm flammable/explosive vapour-air mixture.	
10.5	Incompatible materials	Avoid storing explosives.	or handling in conjunction with UN Class 1	
10.6	Hazardous Decomposition Product(s)		ene monomer, carbon monoxide, hydrogen b e or during hot wire cutting).	romide.
		Release of pe with evolution	entane increases with temperature. (beads ex of pentane).	pand

11. SECTION 11: TOXICOLOGICAL INFORMATION

This assessment is based on information available on similar products. 11.1 Information on toxicological effects 11.1.1 Polymer Acute toxicity Inhalation The product can evolve pentane vapours, which at high concentrations may lead to dizziness, headache and anaesthetic effects. Ingestion Unlikely to be hazardous if swallowed. **Skin Contact** No data. Eye Contact No data. Irritation May cause irritation to skin and eyes. Corrosivity No data. Sensitisation No data. Repeated dose toxicity No data. Carcinogenicity No data. Mutagenicity No data. **Toxicity for reproduction** No data. 11.2 Other information None. 12. SECTION 12: ECOLOGICAL INFORMATION

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

This product contains substances which are classified as dangerous for the environment. However recent studies on aquatic organisms have shown that EPS-beads, while containing these substances, 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 (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.

No toxic effects occur within the range of solubility.

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2.2	Persistence and degradability	The product itself has not been tested. In accordance with the required stability the product is not readily biodegradable. The statement has been derived from the structure of the product. It can be largely eliminated from the water by abiotic processes, e.g. mechanical separation.
2.3	Bioaccumulative potential	The product has low potential for bioaccumulation.
2.4	Mobility in soil	The product is essentially insoluble in water. Expandable polystyrene sinks in fresh water, may float or sink in sea water.
2.5	Results of PBT and vPvB assessment	See Section: 15.1.1.
2.6	Other adverse effects	Pentane has very low Global Warming Potential (<0.00044) and zero Ozone Depletion Potential.
3. SE	CTION 13: DISPOSAL CONSIDERATIONS	
	Surplus, unused, old beads may still contain measures in place for the fresh material. Se	n residual pentane. Therefore product has to be treated using all the safety ee Also Section 7.
3.1	Waste treatment methods	Recover or recycle if possible. Remove all packaging for recovery or disposal. Normal disposal is via incineration operated by an accredited disposal contractor. Waste code: the product itself: 07
3.2	Additional Information	02 13. Dispose of contents in accordance with local, state or national legislation.
4. SE	CTION 14: TRANSPORT INFORMATION	
4.1	UN number	UN2211
4.2	Proper Shipping Name	POLYMERIC BEADS, EXPANDABLE.
4.3	Transport hazard class(es)	9
4.4	Packing Group	III
4.5	Environmental hazards	None.
		Not classified as a Marine Pollutant.
4.6	Special precautions for user	633: Keep away from any source of ignition.
		Transport or conveyance within the manufacturing premises:
14.7	Transport in bulk according to Annex II o MARPOL73/78 and the IBC Code	 Refer to the internal procedures and information provided by this document. Transport or conveyance outside the manufacturing premises: Apply the requirements of the regulations on transport of dangerous goods and the manufacturer's recommendation on safe loading, transporting, unloading of the material. of Not applicable.
4.8	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)	9
		UN Class 9 miscellaneous hazard label
5. SE	CTION 15: REGULATORY INFORMATION	
15.1	Safety, health and environmental regulations/legislation specific for the su	

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

The following sections contain revisions or new statements: 1,2,3,8,14,16.

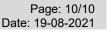
LEGEND

LTEL	Long Term Exposure Limit
STEL	Short Term Exposure Limit
DNEL	Derived No Effect Level
PNEC	Predicted No Effect Concentration
РВТ	Persistent, Bioaccumulative and Toxic
vPvB	very Persistent very Bioaccumulative
Repr. Cat 3	Toxicity for reproduction Category 3

Regulation (EC) No. 1272/2008 (CLP)

Hazard statement(s), Precautionary statement(s) and Hazard Codes

H224	Extremely flammable liquid and vapour.
H304	May be fatal if swallowed and enters airways.
H336	May cause drowsiness or dizziness.
H361	Suspected of damaging fertility or the unborn child.
H362	May cause harm to breast-fed children.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.
H411	Toxic to aquatic life with long lasting effects.
EUH066	Repeated exposure may cause skin dryness or cracking.
Flam. Liq. 1	Flammable liquid Category 1
Asp. Tox. 1	Aspiration hazard Category 1
STOT SE 3	Specific target organ toxicity — single exposure Category 3
Repr. 2	Reproductive toxicity Category 2
Aquatic Acute 1	Hazardous to the aquatic environment Acute Category 1
Aquatic Chronic 1	Hazardous to the aquatic environment Chronic Category 1
Aquatic Chronic 2	Hazardous to the aquatic environment Chronic Category 2
Training advice:	Suitable information on safety in handling, storage and conversion of the product should be given to employees based on all the existing information. A DVD on EPS Fire Safety is available from Plastics Europe in 18 European languages. Please contact your EPS beads supplier for a copy.





Information contained in this publication or as otherwise supplied to Users is believed to be accurate and is given in good faith, but it is for the Users to satisfy themselves of the suitability of the product for their own particular purpose. BEWI RAW gives no warranty as to the fitness of the product for any particular purpose and any implied warranty or condition (statutory or otherwise) is excluded except to the extent that exclusion is prevented by law. BEWI RAW accepts no liability for loss or damage (other than that arising from death or personal injury caused by defective product, if proved), resulting from reliance on this information. Freedom under Patents, Copyright and Designs cannot be assumed.

Annex to the extended Safety Data Sheet (eSDS)

The exposure scenarios of the registered components are available on request.