CIRCULUM® GFS

Flame retardant grey EPS (Oss, NL)

Version 1.0 (21/05/2026)

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General information

Circulum® GFS is an expandable polystyrene (EPS) containing a brominated polymeric flame retardant (HBCD free) and pentane as blowing agent. Circulum® GFS also contains graphite to reduce the thermal conductivity. Due to the presence of the flame retardant, the product is not suitable for direct food contact applications.

Circulum® GFS is produced via suspension polymerization and has a characteristic grey colour. Fire properties are tested and proven according to the following test report:

- EN 13163:2012+A1:2015
  - EN 13501-1, Kiwa Rijswijk FPC-300357-1, Euroclass E

Technical information

Typical property	Unit	GFS -714o	GFS -514o
Beads size range (>95% between)	mm	0.6 – 1.0	0.8 – 1.8
Pentane content	%	5.0 – 6.0	
Residual styrene monomer	%	< 0.1	
Bulk density of raw material	kg/m^3	550 - 650	
Typical bulk density range (1 step pre-expansion)	kg/m^3	20 - 40	15 - 25

Typical applications

GFS-714o	Block and shape moulding application. Due to its small bead size, it can be used for producing thin-walled products with a thickness < 10 mm.
GFS-514o	Block and shape moulding application. It can be used for thick-walled, shape moulded products and insulating foam boards produced by block moulding.

Processing

Circulum® GFS processing will depend on the grade type and the equipment used. Optimal settings exist for every combination. General guidelines are:

- Pre-expansion: Circulum® GFS can be pre-expanded to the densities indicated above using standard continuous or batch pre-expanders. The minimum achievable density depends on the grade type, processing parameters, and pre-expansion equipment. Steam must be saturated and maintained at a temperature of 100–110 °C. Densities below the indicated range require a two-step pre-expansion process, either by using a continuous pre-expander or a batch pre-expander. For densities above the indicated range, it is recommended to mix the steam with air.
- Silo storage (ageing): Silo storage time will depend on the density of the pre-expanding beads and ambient conditions. The optimum time for ageing is mostly 10-48 hours for one-step pre-expanding and 2-4 hours between the first and second step in a two-step pre-expanding process.
- Moulding: Circulum® GFS can be moulded with standard steam chest moulding machines. Steaming time and steam pressure will depend on the equipment used as well as on the size of the final product.

Packaging and storage

Circulum® GFS is shipped in octabins on wooden pallets containing 1100 kg net of material. The octabins are not weather – or waterproof and need to be protected from direct sunlight and other weather conditions (rain, snow, frost, etc). It is not recommended to stack the octabins.

Circulum® GFS should be stored at temperatures below 20ºC, in a ventilated area and in the original and sealed packaging. Circulum® GFS that is stored at these conditions should be processed within three months from the date of shipment. After opening or damaging the octabin the beads inside should be processed immediately.

Safety

Circulum® GFS is classified as dangerous goods in transport according to the European regulations for product transport. UN-number: 2211, class 9, packing group: III ADR. During processing and handling, the release of pentane may lead to the formation of flammable atmospheres. Appropriate precautions must be taken to minimize ignition risks. The following actions are recommended:

- ensure adequate ventilation at all stages of processing;
- monitor pentane concentration (LEL) at critical locations (e.g. vessels and silo areas);
- avoid tilting or rotating octabins more than 145 ° during discharge;
- limit the number of octabins emptied simultaneously into one vessel;
- use appropriate anti-static clothing and footwear;
- ensure all equipment is properly grounded (earthed);
- apply additional precautions during low humidity conditions

Recycling

Circulum® GFS is suitable for recycling using modern methods of grinding, cleaning and regranulation. In-house production should be kept clean to facilitate reuse of internal scrap. BEWI Circular can be contacted for further recycling options.

BEWI Circular
Website: https://bewi.com/circular/
Email address: circular@bewi.com