Technical Leaflet

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Expandable Polystyrene
BFL Product Series

Products and their uses

Styropek® BFL products include **BFL 295, BFL 395, BFL 397, BFL 397S and BFL 495**. **Styropek® BFL** products can be used in a wide variety of applications, including blocks for panels, general insulation, below grade use, fabrication, flotation, and general packaging.

Additional applications include insulated concrete forms, thin or thick walled custom molding, and other general protective packaging. The intended uses of each product grade are outlined in **Table 1**.

Description

Modified expandable polystyrene (EPS) / non-flammable / antiflame / auto-extinguishable containing approximately 3.45 – 3.75 wt% pentane as the blowing agent. All products are supplied as spherical beads with a bulk density of approximately 40 pcf (640 kg/m^3).

Technical specifications for the BFL F95 products are listed in **Table 2**.

Styropek® BFL products are compatible with many anti-stat, mineral oil, color additives and other additives added during processing.

Styropek® BFL products do not contain chlorofluorocarbons and hydrofluorocarbons compounds.

Regulatory Compliance

EPS foams manufactured from Styropek® BFL comply with several standards and international regulations depending on their application:

* ASTM E-84/UL-723 & CAN/ULC S102.2 for Surface burning characteristics of building materials. UL listing under report R38219 at UL Online Certification Directory.
* ASTM C-578 & CAN/ULC 701-11 for Thermal Insulation. UL listing under report R38219.
* ASTM D6817 for Geofoam application. UL listing under report R38219.
* UL 94 for flammability for parts in Devices and Appliances, rated as HF-1. UL listing under report E474710 at UL Online Certification Directory.
* Several International Building Codes, as described in ESR-1498 report issued by ICC-ES.
* FM Standards 4411, 4651, 4880, 4881 & 4882 for Walls and Ceilings, getting the mark FM Approved, as described at the online FM Approval guide.
* GREENGUARD UL 2818 for Chemical Emissions (VOC's) for building materials, finishes and furnishings. Certificated # 1828-420.
* REACH Directive for regulation of SVHC substances.
* RoHS Directive for regulation of Heavy metals and specific flame retardants.
* FMVSS 302 for Flammability of Interior Materials, according US DOT.

Table 1: Uses

Product	Intended uses
Styropek® BFL 295	Block molding applications, low and high densities requiring excellent fusion or with regrind
Styropek® BFL 395	Block molding applications, especially suited for excellent surface cut appearance
Styropek® BFL 397	Shape molding applications requiring modified material or high density block molding applications with excellent surface cut appearance
Styropek® BFL 397S	Fast cycle, short age shape molding, thick parts and ICF applications requiring modified material or high density block molding applications with excellent surface appearance
Styropek® BFL 495	Shape molding for thin walled applications with fast cycles and excellent surface finish requiring modified material

Note: These products can be used for other applications depending on the skill and equipment of each molder

Tabla 2: Thechnical Product Specifications

Product	Pentane, %	Res. Monomer, ppm	Bead size, mm	
Styropek® BFL 295	3.45 – 3.75	< 1000	0.85 – 1.70	96% min
Styropek® BFL 395	3.45 – 3.75	< 1000	0.60 – 1.25	97% min
Styropek® BFL 397	3.45 – 3.75	< 1000	0.60 – 1.25	97% min
Styropek® BFL 397S	3.45 – 3.75	< 1000	0.60 – 1.25	97% min
Styropek® BFL 495	3.45 – 3.75	< 1000	0.425 – 0.85 < 0.425	97% min 2% max

Packaging and Storage

Styropek® BFL products are packaged in Flexible Intermediate Bulk Containers of 800 kg (1,763 pounds). Plastic liners are used to maintain product shelf life by retaining the blowing agent.
Styropek® BFL products should be stored indoor in a cool place (maximum temperature 80°F or 27 °C). In the unopened bulk containers, the typical shelf life after receipt is 120 days.
The containers should be protected from rain, snow, frost, direct sunlight and mechanical damage.
Bags that have been opened should be used as soon as possible or these bags must be tightly closed (hermetically protected). Otherwise, the material could have physical or chemical issues.

Processing

Polystyrene foams made from **Styropek® BFL** products are produced in three stages: pre-expansion, intermediate aging and molding. Full details are given in the Technical Handbook.

Tabla 3

Product	Typical expanded density range
Styropek® BFL-295	15 – 96 kg/m^3 (0.94 – 5.99 pcf)
Styropek® BFL_395	16 – 96 kg/m^3 (0.99 – 5.99 pcf)
Styropek® BFL-397	20 – 48 kg/m^3 (1.25 – 3.01 pcf)
Styropek® BFL-397S	25 – 60 kg/m^3 (1.56 – 3.74 pcf)
Styropek® BFL 495	25 – 65 kg/m^3 (1.25 – 4.05 pcf)

pcf = pound per cubic foot = lb/ft^3

Pre-expansion

The minimum achievable density depends on the pre-expansion equipment and technique used. In properly functioning batch pre-expanders, the products **Styropek® BFL** can be processed to the bulk densities shown in **Table 3**. In continuous pre-expanders, they can be processed to bulk densities of 1.6 – 1.8 pcf (25 – 30 kg/m^3). Care should be taken during expansion, as prolonged steam times will result in excessive loss of pentane and difficulty in achieving acceptable fusion during molding.

Intermediate aging

The minimum recommended prepuff intermediate aging period for low density block molding of these products is 16 hours depending on density, ambient temperature, the intended use of the bead, and the molding equipment to be used. Block densities greater than 1.8 pcf (29 kg/m^3) may require 24 to 48 hours intermediate aging. For shape molding applications, a minimum of 4 hours is recommended. At low to mid-range densities for block or shape molding, care should also be taken when aging products in excess of 24 to 36 hours.

Molding

These products are intended for molding on automatic molding machines. Molding can be accomplished under a wide range of conditions and densities.

Safety

Styropek® BFL products and the finished foam products should not be exposed to ignition sources (including open flame, sparks, or electrostatic charges) during storage, processing, shipment and application.

Adequate ventilation in all processing areas must be provided to prevent hazardous accumulations of hydrocarbon vapors.

For complete safety precautions and recommendations, refer to the Material Safety Data Sheets (SDS) and the Technical Handbook.

Biological effects

EPS foams manufactured from **Styropek® BFL** products do not serve as food to animals nor have a nutritional value to microorganisms such as fungus and bacteria. None of its compounds are water soluble and do not emit hydro soluble substances that pollute underground water. In the dumping ground they do not decompose nor form any polluting substances.

Styropek® BFL products are 100% recyclable.

Chemical effects

The chemical resistance of **Styropek® BFL** products can be found in our Technical Handbook. Extended exposure to ultraviolet light may cause the EPS foam to turn yellowish and the surface to become brittle.

Observations

IMPORTANT: The information provided in this publication is based on STYROPEK, S.A. DE C.V. best knowledge and experience. In view of the many factors that may affect the processing and application of the products, this data does not relieve molders from the responsibility of carrying out their own tests and experiments; neither does it imply any legally binding assurance of certain properties or of suitability for a specific purpose. It is the responsibility of those to whom we supply our products to comply with any existing laws and legislation as well as proprietary rights, which STYROPEK S.A DE C.V. is holder.

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