

# Styropor® expandable polystyrene BFL Product Series

## Products and their uses

Styropor BFL products include BFL 222, BFL 322, BFL 327S, BFL 327 and BFL 422. Styropor 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 walled custom molding, and other general protective packaging. The intended uses of each product grade are outlined in Table 1.

## Description

Expandable polystyrene (EPS) containing approximately 3.75 – 3.95 wt% pentane as the blowing agent.

All products are supplied as spherical beads with a bulk density of approximately 40 lbs·ft<sup>-3</sup> (640 kg·m<sup>-3</sup>). The bead size range for each product is shown in Table 2.

Styropor BFL products are compatible with many anti-stat, mineral oil and color additives that can be added during processing.

## Application Compliance

EPS foams manufactured from Styropor BFL comply with surface burning characteristics (ASTM E-84) and physical property (ASTM C- 578) requirements of U.S. model building codes. National Evaluation Service report NER-479 and ICC Evaluation Service report ESR-1498 contain specific code compliance criteria for Styropor BFL. EPS foams manufactured from Styropor BFL meet UL 94 classification requirements and have obtained an HF-1 rating as described in UL listing E54675. Technical specifications for the BFL products are listed in Table 2.

## Packaging and storage

Styropor BFL products are packaged in Flexible Intermediate Bulk Containers of 1,763 lbs (800 kgs). Plastic liners are used to maintain product shelf life by retaining the blowing agent.

Styropor products should be stored in a cool place. In the unopened bulk containers, the typical shelf life after receipt is 30-60 days. The containers should be protected from rain, snow, frost, direct sunlight and mechanical damage.

**Table 1**

Product	Intended uses
Styropor BFL 222	Block molding applications, low and high densities requiring excellent fusion or with regrind
Styropor BFL 322	Block molding applications, especially suited for excellent surface cut appearance
Styropor BFL 327S	Fast cycle shape molding and ICF applications requiring modified material or high density block molding applications with excellent surface appearance
Styropor BFL 327	Shape molding applications requiring modified material or high density block molding applications with excellent surface cut appearance
Styropor BFL 422	Shape molding for thin walled applications with fast cycles and excellent surface finish requiring modified material

**Table 2: Technical product specifications**

Product	Pentane content	Moisture content	Bead size (mm)	
Styropor BFL 222	3.75-3.95%	1.2% max	0.85 – 1.7	≥97%
Styropor BFL 322	3.75-3.95%	1.2% max	0.6 – 1.2	≥97%
Styropor BFL 327S	3.75-3.95%	1.2% max	0.6 – 1.2	≥97%
Styropor BFL 327	3.75-3.95%	1.2% max	0.6 – 1.2	≥97%
Styropor BFL 422	3.75-3.95%	1.2% max	0.42 – 0.85 2% max < 0.425	≥97%

**Processing**

Polystyrene foams made from Styropor BFL products are produced in three stages: pre-expansion, intermediate aging and molding. Full details are given in the brochure *Processing Styropor*.

**Pre-expansion**

The minimum density achievable depends on the pre-expansion equipment and technique used. In properly functioning batch pre-expanders, the products 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 lbs.ft<sup>-3</sup> (25 – 30 kg.m<sup>-3</sup>). 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.

**Table 3**

Product	Typical expanded density range
Styropor BFL 222	0.90-7.0 lb/ft <sup>3</sup> (14-110 kg.m <sup>-3</sup> )
Styropor BFL 322	0.95-5.0 lbs/ft <sup>3</sup> (15-80 kg.m <sup>-3</sup> )
Styropor BFL 327S	1.1-5.0 lbs/ft <sup>3</sup> (18-80 kg.m <sup>-3</sup> )
Styropor BFL 327	1.1-5.0 lbs/ft <sup>3</sup> (18-80 kg.m <sup>-3</sup> )
Styropor BFL 422	1.1-4.0 lbs/ft <sup>3</sup> (18-65 kg.m <sup>-3</sup> )

**Intermediate aging**

The minimum recommended pre-puff intermediate aging period for low density block molding of these products is 16 hrs depending on density, ambient temperature, the intended use of the bead, and the molding equipment to be used. Block densities greater than 1.8 lbs.ft<sup>-3</sup> (29 kg.m<sup>-3</sup>) may require 24 to 48 hours intermediate aging. For shape molding applications, a minimum of four 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**

Styropor 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 Styropor bulletin S-6 *Fire Safety Precautions in Styropor Processing Plants* and appropriate Material Safety Data Sheets.

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