PRODUCTS SERIES
Biopek® CHP
EXPANDABLE POLYSTYRENE

TECHNICAL DATA SHEET
July 2023

Biopek® CHP Description

The product line Biopek® CHP is expandable polystyrene (EPS) in spherical beads that is processed like standard EPS and has been designed to have accelerated biodegradation compared to standard EPS, while maintaining the excellent performance characteristics of EPS molded foam.

Biopek® CHP products are compatible with many antistatic and other additives that can be added during the transformation process.

Products and Applications

The Biopek® CHP series products are: CHP140, CHP240, CHP320, CHP340 AND CHP440. Biopek® CHP products can be used in a wide variety of applications, including protective packaging, food packaging, fish boxes and coolers. The typical use of each fraction is described in Table 1.

Compliance with Standards and Regulations

Biopek® CHP foam complies with the following standards and regulations according to its specific application:

* FDA Articles 21 CFR 1771640 and 21 CFR 178.3010 for food contact packaging applications.
* NOM-010-STPS-2014 of the Mexican Legislation.
* EU 10-2011 of the European Community for application as food contact packaging material.
* REACH Directive on the restriction of the use of hazardous substances.
* RoHS Directive restricting the use of heavy metals and specific flame retardants.

Packaging and Storage

Biopek® CHP products are available in flexible super-sacks of 800 kg (1,763 lbs.). Internal plastic liners are used to extend the life of the product by holding the blowing agent.

Biopek® CHP products should be stored in cool places (maximum temperature 27°C/80°F), in their respective containers properly closed.

The typical shelf life of Biopek® CHP is 180 days from the manufacturing date. Opened containers should be used as soon as possible. If not, they should be hermetically sealed, otherwise their physical and/or chemical properties may change. Containers should be protected from rain, snow, frost, direct sunlight and physical damage.

Processing

Biopek® CHP based foams are produced in three main stages: pre-expansion, intermediate storage and molding. Full details of each of these three stages can be found in the Technical Manual.

TABLE 1: APPLICATIONS

Products	Typical applications
Biopek® CHP140	Manufacturing of low-density blocks, cut or molded parts with wall thickness greater than 15 mm, material with excellent fusion and accelerated biodegradability characteristics.
Biopek® CHP240	Medium and high-density block molding and packaging, with excellent fusion and short cycle time, with accelerated biodegradability characteristics.
Biopek® CHP340	Medium-density molded packaging, with excellent fusion and short cycle time, and accelerated biodegradability characteristics.
Biopek® CHP320	Block molding and cut or molded plates, with wall thickness greater than 10 mm, with excellent fusion and accelerated biodegradability characteristics.
Biopek® CHP440	Thin-wall packaging molding (wall > 6 mm), medium and high densities, with excellent surface finish, good fusion, and excellent cycle time, with accelerated biodegradability characteristics.

Note: These products can be used in other applications depending on the skill and equipment of each foam producer.

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Table 2: Product Technical Specifications

Products	Pentane, %	Monomer Resp., ppm	Size Range, mm	
Biopek® CHP140	5.4 – 6.0	< 1000 ppm	1.40 - 2.50	97% min
Biopek® CHP240	5.4 – 6.0	< 1000 ppm	1.25- 1.70	96% min
Biopek® CHP320	5.4 – 6.0	< 1000 ppm	1.00 – 1.40	97% min
Biopek® CHP340	5.4 – 6.0	< 1000 ppm	0.60 - 1.25	97.0% min
Biopek® CHP440	5.4 – 6.0	< 1000 ppm	0.30 – 0.80 <0.30	97.0% min 2.0% max

Pre-expansion

The minimum achievable density depends on the type of pre-expander and the technique used.

For proper processing, Biopek® CHP products should be processed in batch-type pre-expanders and can reach the densities shown in Table 3. In continuous pre-expanders, Biopek® CHP can be processed at densities greater than 28 kg/m3 (1.75 lb./ft3).

TABLE 3 Typical Density

Products	Typical Density Range
Biopek® CHP140	13 - 25 kg/m3 - (1.00 – 1.60 lb/ft3)
Biopek® CHP240	16 - 40 kg/m3 - (1.13 – 2.50 lb/ft3)
Biopek® CHP340	16 – 32 kg/m3 - (1.00 – 2.00 lb/ft3)
Biopek® CHP320	14 – 40 kg/m3 - (1.25 – 2.5 lb/ft3)
Biopek® CHP440	20 – 40 kg/m3 - (1.25 – 2.5 lb/ft3)

lb./ft3 = pounds per cubic feet = pcf

The working vapor pressure in the pre-expander can be from 0.25 to 0.50 bar. Caution should be exercised during pre-expansion, as prolonged steam times can result in excessive pentane losses and difficulties in achieving adequate melts in the molding.

Intermediate Storage

The recommended minimum intermediate storage time for these products is 2 hrs., depending on the density and temperature of the environment. Caution should be exercised when exceeding 24 hrs. as molding conditions can increase steam times and pressures needed to obtain acceptable melts.

Molding

These products are designed for molding in automatic and manual machines, with or without vacuum. Molding can be achieved under a wide range of conditions and densities. Molding vapor pressures are typically higher than that of regular pentane-containing Styropek® products.

Safety precautions

It should be taken into consideration that during storage and l processing of Biopek® CHP, flammable/explosive mixtures may be formed by the blowing agent (pentane), which migrates from the material. Therefore, all possible forms of ignition should be avoided (flames, sparks, electric shocks, static electricity build-up, etc.).

Adequate ventilation should be provided in all process areas to prevent the accumulation of pentane vapors.

For more safety information, please refer to the Material Safety Data Sheets (SDS) and the Technical Manual.

Biological Effects

None of its components are water-soluble, and it does not release water-soluble substances that could contaminate groundwater. It does not create pollutants in landfills. Biopek® CHP is fully recyclable. Subject to the relevant regulations, expanded Biopek® CHP can be disposed of as household waste.

Third-party testing of a similar formulation using ASTM D5511 shows accelerated biodegradation compared to standard EPS. This testing method is widely accepted and simulates the conditions of wet and biologically active landfills. Not all landfills meet these conditions.

The customer is aware of the specifications of Biopek, and as a consequence, Styropek shall not be held responsible for the uses, combinations with other materials, or disposal of products made with Biopek. Furthermore, Styropek does not guarantee that the results of the tests are reproducible under conditions different from those reported. Styropek recommends that users perform biodegradability tests for their particular applications. The information published by Styropek is presented in good faith. All Styropek products are subject to their own terms and conditions.

Chemical Effects

The resistance of Biopek® CHP to chemicals and solvents can be found in the Technical Manual. Prolonged exposure to ultraviolet light causes the foamed material to turn yellowish and the surface to become brittle

REMARKS

IMPORTANT: The information contained in this publication is based on generally accepted technical procedures and on experience acquired by STYROPEK, and its technologists. Each transformer shall perform its own tests considering the specific handling, processing, and application factors of Styropek®, and STYROPEK shall not be held responsible for the variation of the materials used in each particular process. Likewise, it is the obligation of all those to whom STYROPEK supplies with its products, to respect the industrial property rights owned by STYROPEK.

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