

PRODUCTS SERIES

Biopek® MXP

EXPANDABLE POLYSTYRENE

TECHNICAL DATA SHEET

May 2024



Description Biopek®MXP

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

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

Products and Applications

The Biopek® MXP series products are: MXP240H MXP340H MXP440H and MXP540H Biopek®MXP products can be used in a wide variety of applications including protective packaging, food packaging, fish boxes, coolers and nurseries. The typical use of each fraction is described in Table 1

Compliance with Standards and Regulations

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

- FDA Articles 21 CFR 177.1640 and 21 CFR 178.3010 for food contact packaging applications.
- NOM-010-STPS-2014 of the Mexican Legislation.
- EU 10-201 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®MXP products are available in flexible super-sacks 800 kgs (1,763 lbs). Internal plastic "Liners" are used to extend the life of the product by holding the blowing agent.

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

The typical shelf life of Biopek®MXP is 120 days from delivery date to the customer. Opened containers should be used as soon as possible, otherwise 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® MXP 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: APPLICATION

Products	Typical applications
Biopek® MXP240H	Blockmolding and packaging of high density, with excellent fusion and short cycle time, with characteristics of biodegradability in accelerated form.
Biopek® MXP340H	Molded packaging with excellent melting and short cycle time, with accelerated biodegradability characteristics.
Biopek® MXP440H	Narrow wall packaging molding (wall > 6mm), medium and high densities, with excellent superficial finish, good melt and excellent cycle time, with accelerated biodegradability characteristics.
Biopek® MXP540H	Cup molding and packaging of high density with excellent surface finish (wall >3mm), with characteristics of biodegradability in accelerated form.

Note: These products can be used in other applications depending on the skill and equipment of each EPS Beads Customer.

Styropek

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Table 2: Product Technical Specifications

Products	Pentane, %	Monomer Resid, ppm	Size Range, mm	
Biopek® MXP240H	5.2 – 5.8	< 1000 ppm	0.85-1.70	96% min
Biopek® MXP340H	5.2 – 5.8	< 1000 ppm	0.60 – 1.18	97% min
Biopek® MXP440H	5.2 – 5.8	< 1000 ppm	0.355 – 0.85 <0.355	97.0% min 2.0% max
Biopek® MXP540H	5.2 – 5.8	< 1000 ppm	0.30 – 0.50 <0.30	96.0% min 3.0% max



Pre-expansion

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

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

TABLE 3 Typical densities

Products	Typical Density Range
Biopek® MXP240H	16 - 40 kg/m3 - (1.00 – 2.50 lb/ft3)
Biopek® MXP340H	16 – 32 kg/m3 - (1.00 – 2.00 lb/ft3)
Biopek® MXP440H	20 – 40 kg/m3 - (1.25 – 2.5 lb/ft3)
Biopek® MXP540H	30 – 80 kg/m3 - (1.87 – 5.00 lb/ft3)

lb/ft3 = pound per cubic foot = pcf

The working vapor pressure in the pre-expander can be from 0.25 - 0.50 bar. Care should be taken 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, temperature of the environment. Caution should be exercised when exceeding 24 hrs. as molding conditions can increase steam times and pressures 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 variety of conditions and densities. Molding vapor pressures are typically higher than that of regular pentane-containing Styropek® products.

Safety Measure

It should be taken into consideration that during storage and processing of Biopek® MXP, 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 review the Safety Data Sheets (SDS) and the Technical Manual.

Biological Effects

None of its components is soluble in water. Biopek® MXP is a recyclable material, but please note that many jurisdictions prohibit the use of unqualified recycling claims if there is not an established program that actually collects, separates or

otherwise recovers a product or package from the waste stream where the product or package is sold.

Our claim is limited to the technical capability of our material to be recycled and does not apply to any final package or products. Customers must develop their own substantiation to support any recyclability or other environmental performance claims made for their entire product.

Subject to applicable local laws and regulations, expanded Biopek® MXP generally may be disposed of as non-hazardous waste.

Biodegradability

This Biopek® MXP sample was tested using ASTM D5511 and demonstrated enhanced biodegradation of 42.5% in 661 days using ASTM D5511 vs 0.9% biodegradation of standard EPS sample in 1293 days.

*Test conducted under laboratory conditions not necessarily reflective of actual product configurations or landfill conditions. Studies of other EPS formulations have shown increased degradation levels under longer laboratory conditions; we are continuing to test this product to assess if further degradation can be expected and will update our claims with new degradation rates, as they become available. California, Colorado (beginning January 2024), Maryland, Minnesota (beginning January 2026 for non-certified products), and Washington prohibit the sale of plastic packaging and plastic products that imply in any way that the item will break down, biodegrade, or decompose in a landfill or other environment.

For more detailed information regarding enhanced biodegradability of Biopek®, please refer to: www.styropek.com

Chemical Effects

The resistance of Biopek® MXP 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 factors of handling, processing, and application of Styropek®, and STYROPEK shall not be held responsible. of 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 of which STYROPEK is the owner.



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