

# P-40 PRODUCT SERIES

# EXPANDABLE

# POLYSTYRENE

## TECHNICAL LEAFLET

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Registered Trademark  
of Styropek S.A. de CV  
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### PRODUCTS AND THEIR USES

Styropek® P-40 products are: P- 240H, P-240AH, P340H, P-440H and P-440MH. Styropek® P-40 products can be used in a wide variety of applications including protective packaging, food boxes, fish boxes, ice boxes and seedling trays. Table 1 describes the common uses of each product.

### DESCRIPTION

Styropek® “P-40” is an expandable polystyrene (EPS) in spherical beads which contains a min. of 5.2 % and a max. of 5.8 %wt pentane as blowing agent. Do not contain chlorofluorocarbons and hydrochlorofluorocarbons compounds.

Contains less than 1000 ppm of residual monomer and 0.5% as maximum of total moisture.

All sizes present a bulk density of approximately 42 lb/ft<sup>3</sup> (670 kg/m<sup>3</sup>). Bead size's range is shown in Table 2.

Styropek® P-40 products are compatible with many anti-stat, mineral oils and colors additives added during he processing.

### REGULATORY COMPLIANCE

EPS foams manufactured from Styropek® P40 comply with the following standards and regulations depending on their application:

\* Articles 21 CFR 177.1640 and 21 CFR 178.3010 from the FDA for Polystyrene used as component or articles intended for use in contact with food.

\* NOM-010-STPS-2014 from the Mexican Regulation.

\* EU 10-2011 Regulation from the Europe Union for plastics materials and articles intended to come in contact with food.

\* REACH Directive for regulation of SVHC substances.

\* RoHS Directive for regulation of Heavy metals and specific flame retardants.

### PACKAGING AND STORAGE

Styropek® P-40 products are packaged in flexible super bags of 800 kg. (1763 pounds). Plastic liners are used to maintain product shelf life by retaining the blowing agent.

Styropek® P-40 products should be stored in a cool place (maximum temperature 27°C or 80°F).

In the unopened bulk containers, the typical shelf life of Styropek® P-40 after it is supplied is 120 days. Opened the packages, should be used promptly, and if it is not possible, should be closed hermetically, otherwise their physical or chemical properties can change. The container bags should be protected from rain, snow, frost, direct sunlight and mechanical damage.

TABLE 1: USES

Product	Intended uses
Styropek® P-240H	Block molding and Shape molding applications, mid-range and high densities with excellent fusion and regrind absorption.
Styropek® P-240AH	Block molding and Shape molding applications, mid-range and high densities with excellent fusion and short cycle time.
Styropek® P-340H	Shape molding applications, mid-range density with excellent fusion, regrind absorption and short cycle time.
Styropek® P-440H	Shape molding applications of narrow wall, mid-range and high densities with excellent surface appearance, fusion and excellent cycle time. (wall thickness > 6 mm)
Styropek® P-440MH	Shape and seedling trays molding applications of narrow wall, with excellent surface finish smooth appearance and fusion.
Styropek® P-540H	High density cup molding and packaging with excellent surface finish (wall > 3mm).

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

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**TABLE 2: TECHNICAL PRODUCTS SPECIFICATIONS**

Product	Pentane, %	Resp.Monómero ppm	Bead size, mm	
Styropek® P-240H	5.2 - 5.8%	< 1000	0.85 - 1.70	97% min
Styropek® P-240AH	5.2 - 5.8%	< 1000	0.85 - 1.70	97% min
Styropek® P-340H	5.2 - 5.8%	< 1000	0.6 – 1.18	97% min
Styropek® P-440H	5.2 - 5.8%	< 1000	0.355 - 0.85 < 0.355	97% min 2% max
Styropek® P-440MH	5.2 - 5.8%	< 1000	0.355 - 0.85 < 0.355	97% min 2% max
Styropek® P-540H	5.2 - 5.8%	< 1000	0.30 - 0.50 < 0.30	96% min 3% max



## PROCESSING

Polystyrene foams made from Styropek® P-40 products are produced in three stages: pre-expansion, intermediate aging and molding. Full details are given in the Technical Handbook.

## PRE-EXPANSION

The minimum density achievable depends on the pre-expansion equipment and technique used.

Styropek® P-40 products should be processed in batch pre-expander and can reach bulk densities shown in Table 3. In continuous pre-expander the densities can be lower than 28 kg/m<sup>3</sup> (1.75 pcf).

The pressure in pre-expansion should be 0.25 to 0.50 bar. 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
Styropek® P-240H	16 – 40 kg/m <sup>3</sup> - (01.00 – 2.50 pcf)
Styropek® P-240AH	18 – 40 kg/m <sup>3</sup> - (1.13 – 2.50 pcf)
Styropek® P-340H	16 – 32 kg/m <sup>3</sup> - (1.00 – 2.00 pcf)
Styropek® P-440H	20 – 40 kg/m <sup>3</sup> - (1.25 – 2.50 pcf)
Styropek® P-440MH	20 – 48 kg/m <sup>3</sup> - (1.25 – 3.00 pcf)
Styropek® P-540H	30 – 80 kg/m <sup>3</sup> - (1.87 – 5.00 pcf)

pcf = pound per cubic foot = lb/ft<sup>3</sup>

## INTERMEDIATE AGING

The minimum recommended pre-puff intermediate aging period by products is 2 hr. depending of density and ambient temperature. Care should be taken when aging products in excess of 24 hr. because conditions of molding may increase times and steam pressures in order to obtain acceptable fusions.

## 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® P-40 products and the finished foam products could form flammable/explosives mixtures with the air and the blowing agent (pentane) that migrates from the material. Therefore, all possible ignition sources must be eliminated (flames, sparks and electrostatic charges).

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

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

## BIOLOGICAL EFFECTS

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.

Observed the local regulations, expanded Styropek® P-40 material can be disposed as domestic garbage. Styropek® P-40 products have been produced and transformed for over 50 years, and during this period no harmful health effects have been observed.

Styropek® P-40 products are 100% recyclable.

## CHEMICAL EFFECTS

The chemical resistance of Styropek® P-40 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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