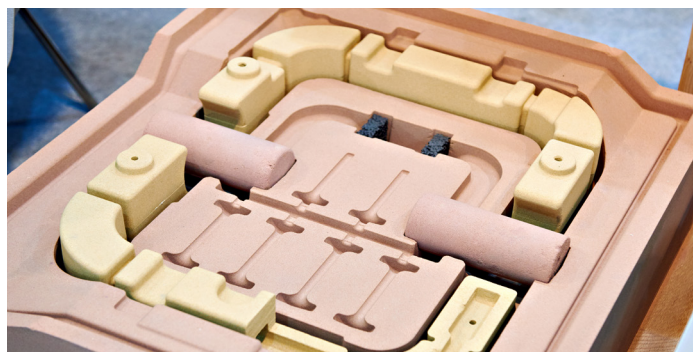


EPS FOAMING AND MOULDING

edwardsvacuum.com

DESCRIPTION

EPS foam is commonly seen in everyday life in the form of white foam cups for hot beverages, plates, refrigerators, insulation, packaging, etc. This foam plastic consists of 96-98% air and 2-4% polystyrene.



Expanded polystyrene does not lose its fundamental properties with time and can be recycled and reused. Its special structural properties composed of individual cells of low-density polystyrene make it extraordinarily light, can support many times its own weight in water and is a great insulator.

Polystyrene moulding powder may contain up to 20% residual monomer, air and water vapour. The powder melts in the extruders at 250-400°C. Any remaining monomer and water evaporate is taken out from the melt phase with the help of a vacuum system. Styrene monomer, which is considered the most difficult to extract, readily distills at 232°C between 70 – and a few 100 mbar vacuum pressure. The vacuum connection to the vacuum pump is made at the barrel end of the extruder where it is forced through a die and cooled. A complete monomer recovery system will include surface condenser, collection tank, and the vacuum pump.

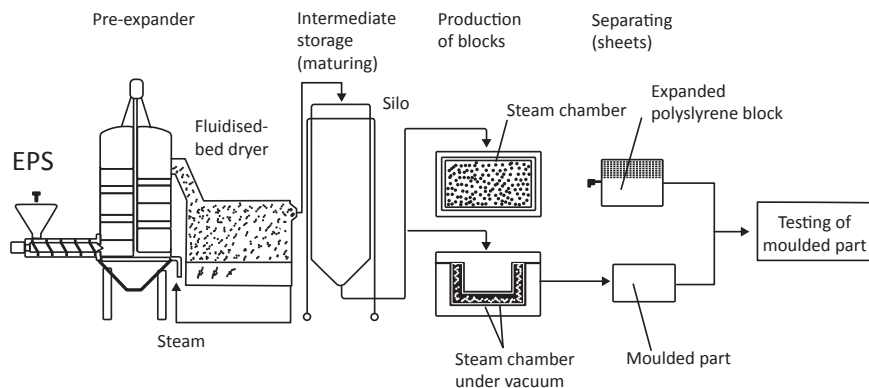
EPS is 100% recyclable and can be mechanically broken apart, making a lightweight, granular product or thermally processed to make a resin that is used in a number of valuable products for use in homes, schools and offices.

Process

EPS is produced in three stages. In the expansion phase, beads expand to 40-50 times their original volume with steam and assisting gases like pentane. Expanded beads are then cooled and dried before being vacuum conveyed to storage silos where they stabilize and mature over 24 hours.

In the moulding stage, beads are heated again by steam fusing them in the shape of the mould due to further expansion. The mould is under vacuum to enable accurate shape formation, remove moisture, extract gasses and allow faster cooling of the mould.

Production contour mouldings



EPS FOAMING AND MOULDING

1. CHALLENGE

EPS insulative properties make it difficult to cool the mould during moulding. Traditionally, moulds were cooled with water. With increasing regard for environment and waste generation, dry vacuum pumps are now becoming more popular in this industry.

3. MAIN BENEFITS

High efficiency vacuum system ensures rapid shaping, short drying period, effective moisture extraction and a low water requirement for mould cooling.

2. SOLUTION



EDC dry claw pumps

- Excellent water vapour handling capability
- Stainless steel claws for corrosion proof operation
- Robust pump capable of fast evacuation for higher throughput
- Efficient pumping reducing energy consumption, noise and maintenance costs
- No waste water generated eliminating disposal costs



Liquid ring pumps

- Traditional technology designed to run continuously for extended periods
- Consistent pumping speed at low pressures with good condensable vapour handling capability
- Optimum efficiency for processes operating across the vacuum range
- Ideal for large batches, extensive capacity range with low noise levels

