



## MANUFACTURING PROCESS OF EPS

### 1. The principle of EPS (expandable polystyrene)

#### What is EPS?



EPS is Expandable polystyrene

EPS is manufactured from styrene monomer, derivative of ethylene and benzene by using a polymerization process.

EPS is light weight cellular plastics material consisting of small spherical shaped particle containing about 98% air.

This micro cellular closed cell construction provides EPS with excellent insulating and shock absorbing characteristics.

#### Where it is used .....

EPS is widely used in mainly everyday situations, where its light weight. Strength, thermal insulation and shock absorption and very low water absorption, dimensionally stable, durability, inert, organic material, does not deteriorate with age those characteristics provide economic high performance products.

The almost exclusive use of EPS as the insulation material for cool stores, freezers and the most demanding of all insulation in the building. (Roof, Wall and Floor insulation).

EPS will last the life of most buildings in which it is used.

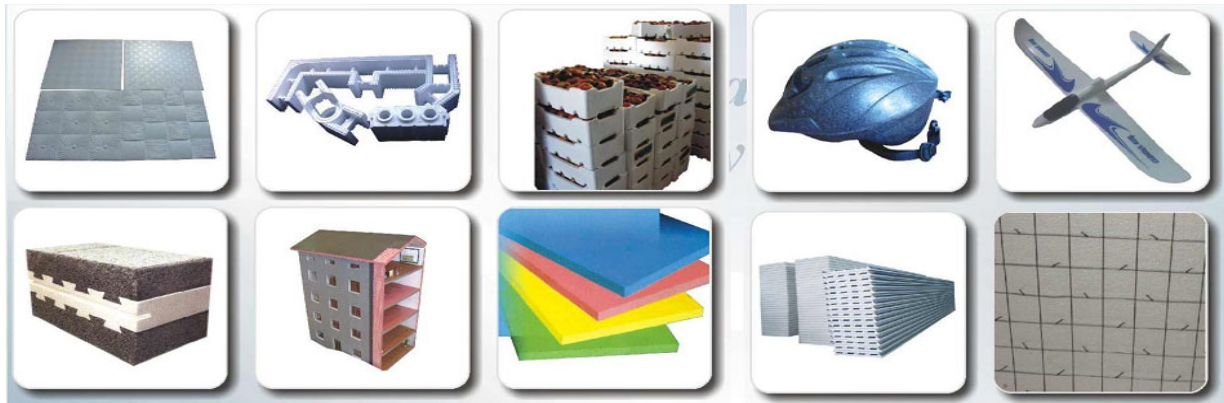
#### Safety

EPS is environment friendly, containing on CFCs or HCFCs, it is inert and safe for building products where if fire resistance is required or desirable, EPS can be supplied containing a flame retardant which is normally used to prevent ignition of the EPS if exposed to a flame.

(This flame retardant product will be supplied depend on customer request)

EPS is resistant to almost all aqueous media including dilute acids and alkalis, methanol. Ethanol and silicone oils.

It has limited resistance to paraffin oils, diesel fuel and vaseline.



### 2. The complete EPS process





There are 5 manufacturing stages:

**1) Pre-expansion:**

Polystyrene granules are **expanded** by free exposure to steam to form larger beads, each consisting of a series of non-interconnecting cells.

**2) Conditioning:**

After expansion, the beads still contain small quantities of both condensed steam and pentane gas. As they cool in the **silos**, air gradually diffuses into the pores, replacing, in part, the other components.

**3) Moulding:**

The beads are moulded to form boards, **blocks** or customised products. The mould serves to shape and retain the pre-foam, and steam is again used to promote expansion. During moulding, the steam causes fusion of each bead to its neighbour, thus forming a homogeneous product.

**4) Shaping:**

Following a short cooling period, the moulded block is removed from the machine, and after further conditioning, may be **cut or shaped** as required using hot wire elements or other appropriate techniques.

**5) Post-production processing:**

The finished products which have a huge application in package and construction, such as vegetable and fish box, electronic parts package, wall and roof insulation, concrete foam, house decoration and so on.