

## **EPS - Expanded Polystyrene**

### **Manufacturers of EPS**

#### ***What is EPS?***

Expanded Polystyrene (EPS) is a thermoplastic, closed cell, lightweight, rigid foam plastic. EPS's properties of low thermal conductivity, high compressive strength and excellent shock absorption properties make it an ideal material for many uses. EPS is especially well suited for insulation and protective packaging applications where reliable performance and value are critical benchmarks.

Using the latest technology and equipment, Polar Industries uses EPS to make a variety of standard and customized products. The production of finished goods from foam is accomplished through well established industry processing stages.

The raw material resin used to manufacture EPS is received in the form of small beads ranging from 0.5 to 1.3mm in diameter. These small beads are formulated and manufactured by the suppliers to contain a small percentage (approximately 4 % to 5%) of the naturally occurring gas Pentane. This gas is impregnated throughout the body of each small bead. The pre-Expansion phase of manufacturing is simply the swelling of the small bead to almost 50 times its original size through the heating and rapid release of the gas from the bead during its glass transition phase.

By utilizing a computer controlled weighing system, a measured amount of beads are introduced into the expansion equipment. Steam is introduced into the vessel and an agitator mixes the expanding beads as the heat in the steam causes the pentane to be released from the beads. A level indicator tells the computer when the specified volume has been reached. After a pressure equalization phase, the expanded beads are released into a bed dryer and all condensed steam moisture is dried from the surface. The Pre Expansion is complete and another cycle is ready to run. This process takes approximately 200 seconds to finish.

After the Expanded beads have been dried they are blown into large nylon open storage bags for the aging process. The beads have been under a dynamic physical transformation that has left them with an internal vacuum in the millions of cells created. This vacuum must be equalized to atmospheric pressure otherwise this delicate balance may result in the collapse, or implosion, of the bead. This process of Aging the expanded beads allows the beads to fill back up with air and equalize. This aging can take from 12 hours to 48 hours, depending on the desired expanded density of the bead. After the aging is finished, the beads are then ready for molding into blocks.



EPS billets aged in stacks.