

## Introduction of EPS by EISHI Machinery Co.,Ltd.



### What is EPS?

EPS is the generic term now used for expanded polystyrene. EPS is used in many everyday situations where its lightweight, strength and thermal characteristics provide a range of economic high performance products. Used successfully for many years in the building industry to insulate floors, walls and roofs of domestic as well as commercial buildings. EPS is the traditional form of insulation, and with its lions share of the domestic flooring market it is the natural choice for developers and specifiers alike.

EPS is well proven in the most punishing of civil engineering applications – its inherent strength means it can support, for example, road and railway structures with complete ease.

EPS is 98% air and as its moisture absorption rate is very low it therefore provides the ideal core for floating pontoons and other marine applications.

EPS does not contain HCFC's or CFC's and never has done, in addition it is fully recyclable, and no waste is created during manufacture.



## EPS Property

EPS is a lightweight cellular plastic material consisting of small hollow spherical balls. It is this closed cellular construction that gives EPS its remarkable insulation characteristics.

EPS is produced in a wide range of densities providing a varying range of physical properties. These are matched to the various applications where the material is used to optimise its performance and strength.

EPS is widely used in many everyday building situations where its lightweight, strength and thermal insulation characteristics provide cost effective high performance solutions.



## Thermal Insulation

Because of its cellular structure EPS remains dimensionally stable and unlike loose fill or fibrous materials will not settle over time.

When used and installed correctly EPS does not deteriorate with age and unlike many other insulants is able to deliver a constant insulation value or LAMDA value as its known over the entire life of the building.

## Moisture Resistant

EPS is a closed cell material and does not readily absorb water. Even subjected to long term and prolonged saturation in for instance a pontoon application then EPS will still maintain its shape, size, structure and physical appearance with only a slight reduction to its thermal performance.

## Durability

EPS is an inert organic material and is therefore resistant to mildew and provides no nutritive value to plants, animals, microorganisms and rodents.

## Easy of Use

Within the building industry EPS is considered to be one of the easiest materials to install on site, it is normally supplied in sheet form but is also available moulded into shapes or in large blocks.

Using a narrow toothed saw EPS is remarkably easy to trim to size on site, making it extremely simple to create the exact form required.



Due to its lightweight - EPS is very easy to handle and does not infringe any on site handling legislation.

EPS does not irritate the skin and is non allergic.

## Environment and Recycling

In order to expand polystyrene steam is applied to tiny grains of styrene that contain a minute amount of pentane. The expanded beads are then moulded into a shape or a large blocks which is then sliced into boards. The minuscule amount of pentane gas used in the process has no known effect on the upper ozone layer.

Any waste EPS produced during manufacture is reground and recycled back into the manufacturing process. Any additional waste EPS from other sources can be easily recycled or used in a wide variety of other products, coat hangers, imitation wood for benches etc.

EPS is an excellent example of an efficient use of a natural resource; the transformation process uses very little energy.

Manufacture and use of EPS does not generate any risk to health or the environment.

## Facts About EPS and the Environment

- **EPS is 98% air.** Only 2% of a typical box is material, this makes EPS a uniquely resource-efficient packaging material with a small carbon footprint.
- **EPS is extremely lightweight;** this helps to reduce fuel consumption, when goods are transported in EPS compared to other heavier packaging materials.
- The **protective performance** of EPS helps to reduce wastage caused by goods that are broken or damaged in the supply chain. This saves resources of energy, materials and transportation.
- **Thousands of tonnes of EPS are recycled** every year in the UK. As a single polymer EPS is straightforward to recycle and is recycled into items such as replacement hardwood decking or garden furniture, coat hangers and disposable cameras.
- **EPS is HFC, CFC and HCFC free** and Pentane is used as its blowing agent. Pentane has a Global Warming Potential\* (GWP) of zero. (The EU does not register pentane as a substance hazardous to human health or the environment.)
- **Styrene, used in the manufacture of EPS,** occurs naturally in many commonplace products including strawberries, beans, nuts, beer, wine, coffee beans and cinnamon.
- **In combustion** the amount of carbon monoxide and particulates given off by EPS is a small fraction of that emitted by wood or cardboard.
- **EPS is inert and innocuous** and provides stability in landfill because it does not biodegrade and leach chemicals into the water system or gases into air that could contribute to global warming.
- **Computer-aided design** ensures that the minimum amount of material is used to make an EPS pack that will reliably protect fragile products in transit.
- The manufacture of EPS is a **low pollution process.** Steam is the key ingredient and the water is re-used many times. There is no waste in the process as all cut off or rejects are re-used.
- **Only 0.1%** of total oil consumption is used to manufacture EPS.
- **Global warming potential (GWP)** is a means of measuring the strength of different 'greenhouse' gases in the atmosphere and can be used to define the impact greenhouses gases have on global warming over specified periods of time. As an example CO<sub>2</sub> has a GWP of 1 over 100 years. All other greenhouse gases HFC, CFC HCFC and methane are measured relative to CO<sub>2</sub>.