



Company overview
Technical information
GEPS | Graphite Expanded Polystyrene

Polystyrene Industries

Polystyrene Industries is based in Western Australia, and are specialist manufacturers of high quality expanded polystyrene (EPS) products for building, commercial and custom mould requirements. Polystyrene Industries is a fully owned subsidiary of Joyce Foam Products. Leading the way in the development of cost effective and practical applications for architectural, landscape and other building requirements, Polystyrene Industries have an advanced computer cutting facility to ensure your specific needs are met efficiently and with precision.

Properties

EPS is a lightweight cellular plastics material consisting of small spherical shaped particles containing about 98% air. This microcellular closed cell construction provides EPS with excellent insulating and shock absorbing 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.

EPS is widely used in many everyday situations where its light weight, strength, thermal insulation and shock absorption characteristics provide economic, high performance products.

Thermal Insulation

EPS has exceptional insulation properties, with a thermal resistance (R value) of 1.31 per 50mm of thickness for S class material, as defined by AS 1366 part 3: 1992. This makes it ideal for wall and underfloor insulation and external cladding of buildings.

Because of its cellular structure EPS is dimensionally stable, and will not settle over time. EPS used and installed correctly does not deteriorate with age and as such is able to deliver constant R values for the life of the building. Equally, for the transport of chilled food such as fish, EPS is the ideal material for the boxes used in this application.

Shock Absorption

EPS exhibits excellent shock absorbing characteristics making it the first choice for packaging of a wide range of products including appliances, electronic products, computers and chemicals. Its predictable characteristics enable packaging to be accurately designed to suit each product, and provide cost effective packaging.

Durability

EPS is an inert, organic material, and therefore will not rot and is highly resistant to mildew. It provides no nutritive value to plants, animals, micro organisms or rodents. EPS will last the life of most buildings in which it is used, provided it does not suffer physical damage.

Moisture Resistance

EPS is a closed cell material and does not readily absorb water, unless subjected to prolonged saturation. Even in this situation it maintains its shape, size, structure, physical appearance and approximately 85% of its insulation value. The ability of EPS to resist moisture is exemplified by its widespread use in fishing floats and marinas, involving exposure to water for prolonged periods of time.

Light Weight

EPS is an extremely light weight material. Typically weighing between 12 and 30 kg per cubic metre, EPS has many advantages over other materials in packaging applications. Equally in building situations, this lightweight characteristic is a major advantage in providing structural design economies. Additionally, when shaped to provide intricate architectural features, it allows architects the freedom to create historical, innovative and economic enhancements to buildings while still meeting strength and earthquake codes.

Safety

EPS is environmentally friendly, containing no CFCs or HCFCs, it is inert and safe for contact with food products, and requires much less energy to produce than many other materials. In applications where fire resistance is necessary or desirable, such as building products, EPS is supplied containing a flame retardant which in normal use prevents ignition of the EPS if exposed to a flame. In a fire situation EPS generates less heat and smoke than most timbers and wood based products.

Ease of Use

EPS is supplied either moulded to the exact shape required for its use, or can be easily cut and shaped when required to suit any application. Its light weight makes handling easy and safe. EPS does not irritate the skin and is non allergenic.



Graphite EPS Physical Properties

Physical Property		Infused Graphite EPS
Nominal Density	Kg/m ³	18-22
Bead Size	mm	0.6 – 1.0 0.9 – 2.0
Lambda Value	(w/m.k)	≤ 0.032
Combustion Performance	Class	B
Water vapour Permeability	ng/pa.ms	≤ 4.5
Bending strength	kpa	≥ 100
Tensile Strength	kpa	≥ 100
Size Stability	%	≤ 0.30

Graphite EPS Dimensional Tolerances

Length or Width	Tolerances on Length or Width	Tolerances on difference in length of Diagonal of a rectangular sheet	Tolerances on thickness
≤ 100mm	+1.0mm -0.5mm	6mm	+1.0mm -0.5mm
>100mm ≤1000mm	+1.5mm -0.5mm	6mm	+1.0mm -0.5mm
>1000 mm ≤2000mm	+2.0mm -1.0mm	10mm	+1.0mm -0.5mm
>2000mm ≤4000mm	+3.5mm -1.5mm	16mm	+1.0mm -0.5mm