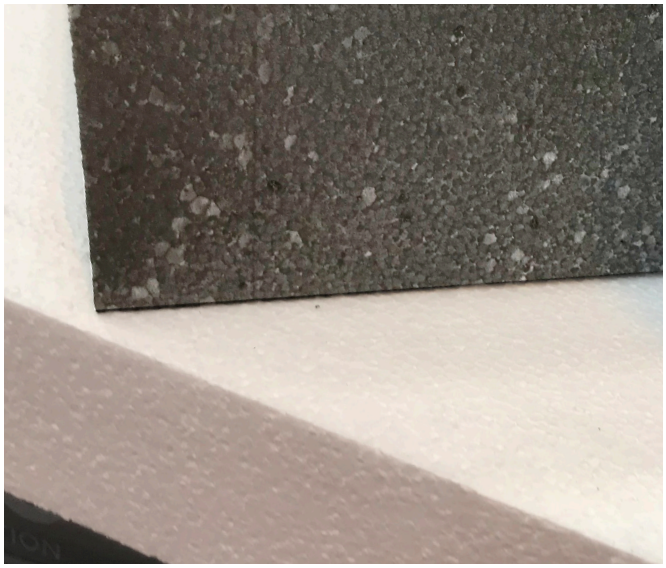
BEWI EPS (Expanded Polystyrene)
Technical Datasheet

BEWI EPS is a lightweight cellular plastic material suitable for a wide range of packaging and building-insulation applications. Construction grade EPS is an excellent insulating material which provides a consistent thermal performance over the range of temperatures normally encountered in buildings.

The material is versatile, lightweight, clean and easy-to-handle, and provides a cost-effective means of packaging and permanent insulation in floors, walls, roofs packaging and to meet, and exceed, the standards laid down in the Building Regulations



Technical Description

Composition

BEWI EPS (expanded polystyrene) comprises expandable beads of polystyrene pre-foamed and fused together in a steam-heated mould under pressure. This produces a block of material, up to 7.3 metres long, which is then cut to size and/or shape. After cutting to size, the material may be faced or laminated with other materials to suit its application.

Alternatively, the beads may be moulded into a finished, shaped section which requires no further processing.

The following grades of material are available, as defined in BS EN 13163:

EPS 50, EPS 70, EPS 100, EPS 150, EPS 200, EPS 250

Tolerances

In accordance with BS EN 13163 tolerances on the cut dimensions are defined as follows:

LENGTH: ±3mm or ±0.6% whichever is greater (L3)

WIDTH: ±3mm or ±0.6% whichever is greater (W3)

THICKNESS: ±2mm (T2)

SQUARENESS: ±5mm per 1000mm (S5).

Alternative tolerances can be provided for specific applications

DIMENSIONAL STABILITY: ±0.5% under constant laboratory conditions (DS(N)5)

Nominal Densities

EPS 50 10kg/m^3

EPS 70 15kg/m^3

EPS 100 20kg/m^3

EPS 150 25kg/m^3

EPS 200 30kg/m^3

EPS 250 35kg/m^3

Standards

BEWI products are produced to the requirements of the BS EN 13163 'Thermal Insulation Products for Buildings – Factory Made Products of Expanded polystyrene (EPS)' specification.

BEWI has been assessed and approved to the 'BS EN ISO 9001 Quality System' for quality assurance in production, installation and servicing.

For more information:
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Technical Information

Application	Packaging	Construction										
EPS Grades	50	70	70 HP	70 HP+	100	100 HP	100 HP+	150	150 HP	150 HP+	200	250
Mechanical Properties												
Compressive strength @ 10% compression (kPa)	50	70			100			150			200	250
Compressive strength @ 1% compression (kPa)	-	20			45			70			90	100
Bending strength (kPa)	-	115			150			200			250	350
Moisture Properties												
Water vapour diffusion resistance factor μ	-	20 - 40			30 - 70			30 - 70			40 - 100	
Water vapour permeability δ mg/(Pa.h.m)	-	0.015-0.030			0.009-0.020			0.009-0.020			0.006-0.015	
Vapour resistivity (MNs/gm)	-	145			200			238			238 350	
Thermal Properties												
Thermal Conductivity (W/mK)	-	0.038	0.032	0.030	0.036	0.032	0.030	0.035	0.032	0.030	0.034	0.034

Properties and Performance (Construction Grades)

Mechanical Properties

BEWI EPS has a high strength to weight ratio.

Tensile Strength

Ranges from 20-400kPa, according to type and product.

Compressive Strength

Ranges from 70-250kPa, according to type and product; to BS EN SO 29469.

Bending Strength

Ranges from 115-350kPa, according to grade and product; to BS EN 12089.

Design Load

Ranges from 20-100kPa for 1% nominal strain, according to type and product; to BS EN ISO 29469.

Moisture Properties

Although BEWI has significant resistance to the passage of water vapour, it should not be regarded as a damp-proof membrane or vapour-control layer and will not provide a barrier against damp penetration.

A suitable damp-proof membrane or vapour-control layer will be required in most forms of construction – see individual product and application data.

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Properties and Performance (Construction Grades) *continued*

Fire

BEWI EPS can be supplied with Class E 'flame-retardant' additive material

Biological Properties

EPS will not sustain mould growth, and has no nutrient value to insects or vermin. The material is non-biodegradable and care should be taken to recycle waste and off cuts.

Thermal Properties

Coefficient of linear expansion: 0.6 × 10–6ºC.

The material is sufficiently resilient and flexible that no allowance needs to be made for thermal expansion in the method of insulation.

Working Temperature Range

EPS can be used within the temperature range –150ºC to +80ºC.

BEWI EPS is unaffected by the normal range of climatic temperatures and can be safely used in cold stores and similar applications.

During installation, and in service, contact with hot-water pipes or other surfaces where the temperature is likely to exceed 80ºC for continuous periods should be avoided.

Health, Safety and Environment

EPS is non-toxic and biologically inert. It is not irritating to the eyes or skin and no medical treatment or action is required as a result of accidental ingestion.

No special precautions are required during handling or cutting when carried out in well ventilated areas.

Compatibility with Other Materials

EPS is soluble in aromatic, halogenated solvents and ketones; it should be protected from contact with hydrocarbons and strong solvents using a suitable membrane.

EPS should not be permitted to come into contact with PVC-sheathed electrical cables since this will lead to migration of plasticiser from the PVC resulting in embrittlement of the cable sheath. Cables should be protected by the use of a physical barrier, for example by being enclosed in a conduit or by an air gap.

Service Life

Providing it is correctly installed and protected, BEWI EPS will remain effective for the life of the building.

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