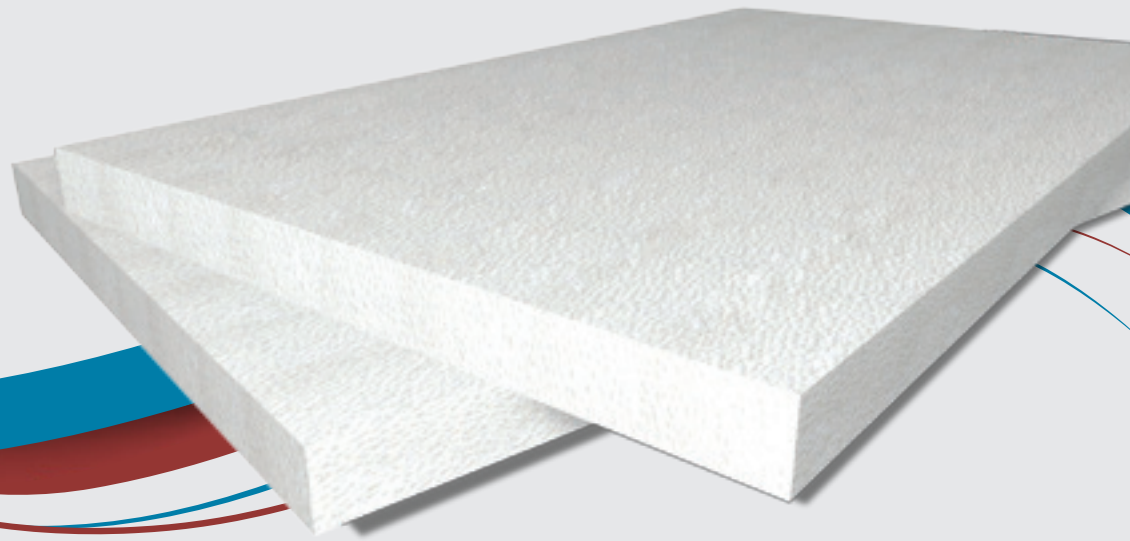


EXPANDED POLYSTYRENE (EPS) THERMAL INSULATION BOARDS



EPS CHARACTERISTICS

- Heat resistant
- Low thermal conductivity
- High permanent R - value
- High compressive strength
- Excellent shock absorption
- Excellent dimensional stability
- Low water absorption
- Reflective white color
- Non - dusting
- Will not rot, mildew or support bacterial growth
- Resistant to most acids and alkalis

EPS ADVANTAGES

- Energy saving
- Low material / installation costs
- Broad range of densities and sizes
- Easy to handle and apply
- Simple to cut and shape
- Tolerates broad range of temperatures
- Doesn't irritate skin
- Restricts moisture penetration
- Does not deplete the Earth ozone layer

DESCRIPTION

EEL Expanded Polystyrene is rigid and light - weighted. By controlling the density of expanding beads during the manufacturing process, EEL can custom produce insulation materials according to the specific requirements of customers applications. EEL production of Expanded Polystyrene boards and injection molded boards are in conformity with the British Standard specification BS 3837 : 1977 for expanded Polystyrene boards, DIN and ASTM (American Society for Testing and Materials).

Type N (Normal): It consists of 100% of closed cell polystyrene expandable beads.

Type A (Fire Retardant): It is similar to Type N, but meets additional requirements for the extent of burn when tested with the method given by virtue of BS 4735. This requirement is met by the incorporation of flame retardant additives and other appropriate modifications.

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THICKNESS AND TOLERANCES

Thickness can be cut as required, from 8 mm up to 1120 mm. On specified thickness, length, and width, tolerance will be ± 2 mm.

MOLDED BOARDS

Molded boards are boards of injection molded from expanded beads, that has surface skin on all sides and molded edges.

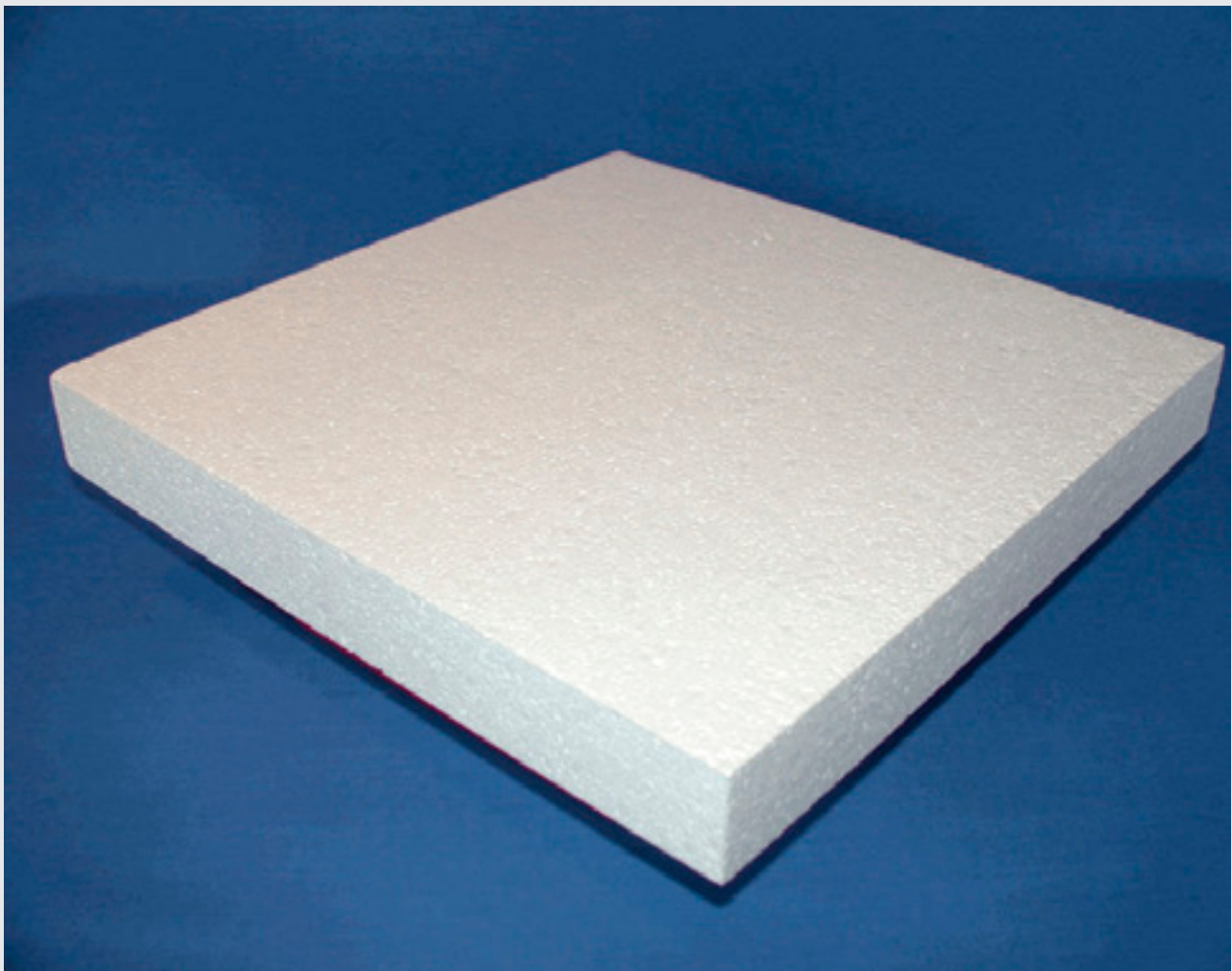
CUT BOARDS

The large molded blocks are hot wire cut on flat lines at any desired thickness, width, and length. In addition, EEL CAD / CAM capabilities provide its customers with an infinite variety of standard, customs, and radius products. Cut boards are boards cut from a block molded from expanded beads, which could be fine, very fine, or coarse grain. Used raw materials could be of general purpose (type N material) or fire retardant category (type A material).

APPLICATIONS OF EXPANDED POLYSTYRENE INSULATION:

PRODUCT PARAMETERS

- Insulation of roofs, walls, and floors - Prefab houses and partitions
- Sound insulation
- Molded pipe insulation for air conditioning
- Insulation of hot and cold water lines
- Expansion joints
- Hourdis and void formers
- Insulation of deep - freeze rooms, cold stores, cold display cabinets and refrigerated vehicles
- Pipe insulation
- Wall insulation inserts



EXPANDED POLYSTYRENE (EPS) THERMAL INSULATION BOARDS

INSULATION PROPERTIES

DESCRIPTION

Injection Moulded Expanded Polystyrene closed cell expanded blue polystyrene panels. It features excellent thermal insulation properties, high compressive strength and very low absorption. EPS panels are moulded and have no cut sides.

Application of EPS for inverted membrane roofs: EPS panels are recommended for any application requiring efficient thermal insulation, good resistance to moisture, and high mechanical strength. By virtue of its high compressive strength and low water absorption, EPS is ideal for the thermal insulation of inverted membrane roofs. EPS panels can be covered with concrete (or other material with sufficient loads capacity) to enable adequate ballasting and protection from U.V radiation, rain and storms. Water absorption by EPS panels is very low and has practically no adverse effect on thermal insulation.

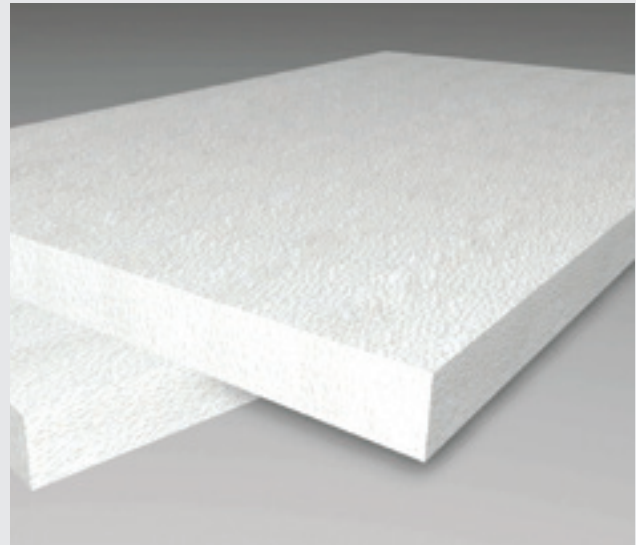
Resistance to chemicals and outdoor exposure: The resistance of EPS to chemicals, solvents, and aging is very much the same as that of the polystyrene (Extruded or cut-cell surface boards), from which it has been derived. EPS is immune to water and aqueous solution of salts, most acids and alkalis. Bonding EPS with emulsion or contact adhesive and bitumen will not affect its physical properties.

INSTALLATION

EPS panels can be worked with conventional wood working tools. The panels could be bound together with hot bitumen, dispersion - type structural or special adhesives. Instructions for use and safety precautions relating to the adhesive must be observed.

STABILITY

Unlike extruded panels, EPS is very stable in high temperatures; it does not warp and would not cause problems which often happen with other boards.



DIMENSIONS (L X B X T)

600 x 125 x 1 - 100 mm
600 x 100 x 1-100 mm
400 x 125 x 1 – 100 mm
400 x 100 x 1 – 100 mm
250 x 125 x 1 – 100 mm
230 x 100 x 1 – 100 mm
300 x 100 x 1 – 60 mm
200 x 100 x 1 - 50 mm



EXPANDED POLYSTYRENE (EPS) THERMAL INSULATION BOARDS

| STANDARD GRADE | | | | LD | SD | HD | EHD | UHD | SHD | XD |
|--|--|----------------------|-----------------------------|-----------------------------|---------|-----------|---------|---------|----------|---------|
| GENERAL PROPERTIES OF THERMAL INSULATION | | Method of Test | Unit Measurements | Type as per ASTM C 578 - 09 | | | | | | |
| | | | | Type XI | Type I | Type VIII | Type II | Type IX | Type XIV | Type XV |
| THERMAL PROPERTIES | <p>• THERMAL RESISTANCE (R-VALUE) - Is The resistance to heat transfer through a material by conduction. It can be calculated by dividing the material thickness "d" by its thermal conductivity</p> | | | | | | | | | |
| | R-value, Thermal Resistance of 1.00-in.(25.4-mm) thickness. Mean Temperature: 75 ± 2°F (24 ± 1°C) | C 518 | *F.ft ² -h/Btu | ≥3.1 | ≥3.6 | ≥3.8 | ≥4.0 | ≥4.2 | ≥4.2 | ≥4.3 |
| | | | (K.m ²)/W | ≥0.55 | ≥0.63 | ≥0.67 | ≥0.70 | ≥0.74 | ≥0.74 | ≥0.76 |
| | R-value, Thermal Resistance of 1.00-in.(25.4-mm) thickness. Mean Temperature: 95 ± 2°F (35 ± 2°C) | | (K.m ²)/W | ≥0.53 | ≥0.61 | ≥0.64 | ≥0.67 | ≥0.71 | ≥0.71 | ≥0.731 |
| | <p>• THERMAL CONDUCTIVITY (k value) - is the rate of heat flow through one Square meter area of a 1m thick material in a perpendicular direction to the material surface. induced by 1°K temperature difference between its two surface.</p> | | | | | | | | | |
| | k - value, Thermal conductivity. Mean Temperature: 75 ± 2°F (24 ± 1°C) | C 518 | Blu.in/h.ft ² °F | ≤0.320 | ≤0.279 | ≤0.263 | ≤0.252 | ≤0.238 | ≤0.238 | ≤0.232 |
| | W/(m.K) | | ≤0.0462 | ≤0.0403 | ≤0.0379 | ≤0.0363 | ≤0.0343 | ≤0.0343 | ≤0.0334 | |
| k - value, Thermal conductivity. Mean Temperature: 95 ± 2°F (35 ± 2°C) | | W/(m.K) | ≤0.0482 | ≤0.0419 | ≤0.0394 | ≤0.0377 | ≤0.0356 | ≤0.0356 | ≤0.0347 | |
| MECHANICAL PROPERTIES | <p>FLEXURAL STRENGTH- Is its ability to endure a specific pressure Without cracking or breaking and to recover the original dimensions and size after removal of compressive load.</p> | | | | | | | | | |
| | Flexural Strength | C 203 | psi | ≥10 | ≥25 | ≥30 | ≥35 | ≥50 | ≥60 | ≥75 |
| | | | (kPa) | ≥70 | ≥173 | ≥208 | ≥240 | ≥345 | ≥414 | ≥517 |
| <p>• COMPRESSIVE STRENGTH - the strength of that the rigid Insulation exhibits when exposed to a certain stress.</p> | | | | | | | | | | |
| Compressive resistance at yield or 10% deformation. whichever occurs first (with skin intact) | D1621 | psi | ≥5 | ≥10 | ≥13 | ≥15 | ≥5 | ≥40 | ≥60 | |
| | | (kPa) | ≥35 | ≥69 | ≥90 | ≥104 | ≥173 | ≥276 | ≥414 | |
| FIRE RESISTANCE PROPERTIES | <p>• OXYGEN INDEX* - for measuring the minimum concentration of oxygen, expressed as percent volume, that will just support flaming combustion in a flowing mixture of oxygen and nitrogen.</p> | | | | | | | | | |
| | Oxygen Index | D2863 | volume(%) | ≥24 | | | | | | |
| | <p>• FLAME SPREAD INDEX* - a number or classification indication of oxygen, expressed as percent volume, that just support flaming combustion in a flowing mixture of oxygen and nitrogen.</p> | | | | | | | | | |
| | Flame Spread up to 6.00-in thickness | E84 | Rating | ≤75 | | | | | | |
| | <p>• SMOKE DEVELOPED INDEX* - a number or classification indicating a comparative measure derived from smoke obscuration data collected during the test for surface burning characteristics.</p> | | | | | | | | | |
| Smoke Development up to 6.00-in thickness | E84 | Rating | ≤450 | | | | | | | |
| PHYSICAL PROPERTIES | <p>• DIMENSIONAL STABILITY - the insulation ability to maintain its shape and original dimensions, after applying it for a long time, due to the effects of aging, heat and humidity on the insulation.</p> | | | | | | | | | |
| | Dimensional Stability (change in dimensions) | D 2126 | % | ≤2.0 | | | | | | |
| | <p>• WATER VAPOUR PERMEANCE - measures the amount of moisture that diffuses through the insulation due to the difference in vapour pressure between its two surfaces.</p> | | | | | | | | | |
| | Water Vapour Permeance of 1.00-in. (25.4-mm) thickness | E 96 | perm | ≤5.0 | ≤5.0 | ≤3.5 | ≤3.5 | ≤2.5 | ≤2.5 | ≤2.5 |
| | | | (ng/Pa.s.m ²) | ≤287 | ≤287 | ≤201 | ≤201 | ≤143 | ≤143 | ≤143 |
| | <p>• WATER ABSORPTION - is expressed by the percentage of water (by volume or weight) that the insulation can absorb when it is completely flooded in water.</p> | | | | | | | | | |
| Water Absorption by Total immersion | C 272 | volume (%) | ≤4.0 | ≤4.0 | ≤3.0 | ≤3.0 | ≤2.0 | ≤2.0 | ≤2.0 | |
| <p>• DENSITY - is the weight divided by the volume of material.</p> | | | | | | | | | | |
| Minimum Density | D 1622 | lb/ft ³ | 0.7 | 0.9 | 1.15 | 1.35 | 1.8 | 2.4 | 2.85 | |
| | | (kg/m ³) | 12 | 15 | 18 | 22 | 29 | 28 | 46 | |

As per Dubai Municipality Building Section Our Products are Under 75.00 Series

EXTRUDED POLYSTYRENE THERMAL INSULATION BOARDS

Dubai Jebel Ali

Muhammed Ben Zaid Road

To Dubai

DIC Gate

R/A 1

Petrol Station

Dubai Industrial City

Al Maktoum AirPort

R/A 2

R/A 3

UNIPRO
 UNITED PROFESSIONAL
 FOR BUILDING AND
 CONSTRUCTION MATERIALS

IKK Thermal Insulation Boards

IKK TECH

R/A 4

DEWA Substation

To Sieh Shuaib

Truck Road

Abu Dhabi

To Al faya Road

Seih Shuaib 3, 4 R/D Dubai Industrial City
 Opposite of DEWA Substation P.O.Box 18497, Dubai, UAE
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 e-mail: abed.demachkieh@ikkgroup.com