

Industrial Enterprises (Pvt.) Ltd

- Company Profile



SINCE 1961

**INDUSTRIAL ENTERPRISES
INSULATION EXPERTS**



SINCE 1961

INDUSTRIAL ENTERPRISES
INSULATION EXPERTS

Our concept of insulation

Any good insulation material must possess the following 4 key properties:

- **High R-value to reduce thermal conductivity**

An insulating material's resistance to heat flow is measured in terms of its thermal resistance or R-value – the higher the R-value, the greater the insulating effectiveness. It is measured usually in $\text{ft}^2 \cdot ^\circ\text{F} \cdot \text{h}/\text{Btu}$

- **Compressive Strength**

This is the measure of what pressure than the material bear without getting distorted in terms of structure. Such strength is usually measured in terms of Psi

- **Resistant to water permeability**

The measure of water absorption, in terms of mg/m^2 . Lowest water absorption is preferred for longer durability.

- **Structural stability over time**

The natural change in molecular structure of any material with time.

Good insulation must meet ALL of these 4 properties



SINCE 1961

INDUSTRIAL ENTERPRISES
INSULATION EXPERTS

Why Insulate?

1. **Conserves energy by reducing heat loss/gain** year round, thus reducing energy costs by 40%
2. **Increases life of a building** by controlling surface temperatures and preventing condensation on cold surfaces
3. **Enhances strength of the roof** and reduces greenhouse gas emissions
4. **Is a one-time cost** and does not require regular maintenance, and pays for itself in terms of reduced energy costs within 2-4 years
5. **Provides sound insulation** properties as well





SINCE 1961

INDUSTRIAL ENTERPRISES
INSULATION EXPERTS

About Us

1961

Founded: In 1961 under the leadership of (late) Hussain Mumtaz. His vision was to help create a healthier, more durable, energy efficient and environmentally responsible insulation material.

1982

First manufacturer in Pakistan to produce 25kg/m³ density expanded polystyrene under the brand name of HD-25

1994

Addition of new packing presses to introduce EPS packing for electronics and appliance market

2005

Introduced Polyurethane Spray Foam (PU) insulation, which is regarded as the best insulating material globally, under the brand name Thermospray®

Today

One of the largest and most specialized insulation manufacturers in the country, with capacity to produce more than 60,000 sq. ft insulation per day. IEL is the only company in Pakistan to focus specifically on insulation; thereby becoming true 'insulation experts'

COMPANY STRENGTHS

- **Operating in the insulation industry for more than 52 years**
- **Pioneers of Expanded Polystyrene Insulation sheets in Pakistan**
- **Thermopore® and Thermospray® are our registered trademarks and have become household names throughout the country**
- **Highly efficient research and development setup striving for continuous product improvements**
- **Skilled and qualified sales team**
- **Toxic free products**
- **Recommended by ENERCON and registered as approved vendor for NESPAK**



SINCE 1961

INDUSTRIAL ENTERPRISES
INSULATION EXPERTS

Company Information

Company Name: Industrial Enterprises (Pvt.) Limited

Address: 6-N, Industrial Area
Gulberg-II, Lahore, Pakistan

Telephone: +92-42-35712229
+92-42-35752229

Fax: +92-42-35713119

Email: info@thermopore.com
sales@thermopore.com

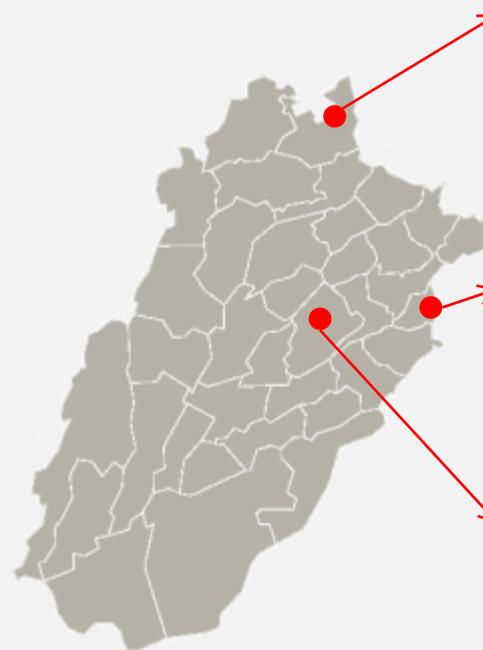
Website: www.thermopore.com

Bankers: 1) MCB Bank
2) United Bank Limited
3) Askari Commercial Bank

Directors: Hassan Mumtaz
Aahyan Mumtaz, CFA

NTN No: 0683664-0

Sales Tax No: 03-06-9404-004-64



Islamabad
Office #5, 3rd Floor
Capital Plaza, G-11
Markaz
+92-51-2290436

Lahore (HO)
6-N, Industrial Area,
Gulberg II
+92-42-3571229

Faisalabad
(site under construction)
+92-321-6654866



SINCE 1961

INDUSTRIAL ENTERPRISES
INSULATION EXPERTS

Company Ownership

Mr. Hassan Mumtaz (CEO)



Mr. Hassan Mumtaz is a graduate of Menlo College, California, and is the CEO of Industrial Enterprises (Pvt.) Limited. He has been with the company for more than 35 years, guiding IEL to its current market standing. He is credited with creating the brand name 'Thermopore®'; a name which is now synonymous with EPS insulation in Pakistan.

Mr. Mumtaz has extensive traveling experience and has a history of introducing new and innovative materials in Pakistan. He is also a keen golfer and a notable sportsman.

Mr. Aahyan Mumtaz, CFA (Director)



Mr. Aahyan Mumtaz graduated from the University of Warwick, UK, with a degree in Industrial Economics, in 2008. He is a CFA charter holder; one of only 250 charter holders in Pakistan. Aahyan joined the business in 2011 after working with prestigious institutions such as MCB Bank Ltd, PACRA, and Dawood Group. He has been entrusted with handling the marketing & strategic affairs of the company.

Aahyan is an avid golfer having represented Pakistan Golf in junior and amateur golf tournaments internationally.



SINCE 1961

INDUSTRIAL ENTERPRISES
INSULATION EXPERTS

Selected Industrial Client List

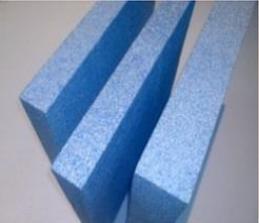
Industries Covered:

- Textiles
- Poultry
- Cold Storages
- Hospitals
- Pharmaceuticals
- Education Institutions
- Sugar
- Chemicals
- Food & Beverages
- Automobiles
- Fertilizers
- Information Technology
- Appliances



... & Many more
all insulated by:



Product	Illustration	Description	Used in	Advantages
Thermopore-BLUE® High Density EPS Sheets		<p>Premium quality insulation sheets produced at a standard high density of 35kg/m³ and with a blue colour pigment that enhances appearance and bonding the sheet. Thermopore-BLUE® is the only insulation product that has a 25 year Life warranty.</p> <p>Sizes available: 8ft x 4ft 6ft x 4ft 4ft x 4ft 2ft x 3ft 1m x 2m 1m x 1m</p>	<ul style="list-style-type: none"> - Residential insulation - Industrial structures - Control Sheds - Commercial buildings 	<ul style="list-style-type: none"> - Guaranteed 7° C to 9° C difference - 25 years life warranty - Highest compressive strength - Easily moulded into sizes - CFC free
Thermopore® EPS Sheets		<p>Expanded Polystyrene sheets made from pre-expanded polystyrene beads. Thermopore® is our registered trademark for EPS products. A wide variety of thicknesses (0.5" to 30") and densities are available (12kg/m³ to 45kg/m³)</p> <p>Sizes available: 8ft x 4ft 6ft x 4ft 4ft x 4ft 2ft x 3ft 1m x 2m 1m x 1m</p>	<ul style="list-style-type: none"> - Residential insulation - Industrial structures - Control Sheds - Commercial buildings - Water Tanks 	<ul style="list-style-type: none"> - Most economical choice - Wide variety available in terms of thickness and densities - Easily moulded into sizes - Very light weight
Thermospray® Polyurethane Spray Foam		<p>Polyurethane Spray foam is applied as a liquid which expands within seconds to form a continuous layer of insulation on any surface. It has excellent adhesion and provides the highest R-value amongst all commercially available insulation materials.</p> <p>Sizes available: All sizes possible</p>	<ul style="list-style-type: none"> - Residential insulation - Industrial structures - Cold Storages 	<ul style="list-style-type: none"> - Highest R-Value - Seamless application - Excellent adhesion to any surface
PU Composite Panels Prefabricated Sandwich Panels		<p>Prefabricated composite panels with Polyurethane Foam sandwiched between layers of plywood/ corrugated metal sheets.</p> <p>Sizes available: 10ft x 3.8ft 8ft x 4ft</p>	<ul style="list-style-type: none"> - Control Sheds - Cold Storages - Prefabricated structures 	<ul style="list-style-type: none"> - Prefabricated panels for quick installation - Excellent strength - High insulation properties
Thermopipe® Water pipe insulation		<p>Pipe insulation made from expanded polystyrene to maintain water temperature and reduce water wastages. Excellent for extreme summers and winters.</p> <p>Sizes available: standard 1m length Dia and wall thickness on customer demand</p>	<ul style="list-style-type: none"> - Residential - Industrial 	<ul style="list-style-type: none"> - Prevents water from getting too hot/cold thus reducing water wastage - Increases life of pipes by minimizing decay, rust and leakage
Thermopack® Packing Material		<p>Packing material made from expanded polystyrene for safe & sturdy handling of goods. Used widely for transport of electrical appliances and as insulated boxes for pharmaceuticals.</p> <p>Sizes available: Customized to customer requirement</p>	<ul style="list-style-type: none"> - Electrical appliances - Food transport - Pharmaceuticals 	<ul style="list-style-type: none"> - Extremely light weight material - Strong packing to provide safe handling of products - Insulated to provide temperature controlled transport/ storage



SINCE 1961

INDUSTRIAL ENTERPRISES

Thermopore[®]
EPS Sheets for roof insulation



SINCE 1961

INDUSTRIAL ENTERPRISES
INSULATION EXPERTS

Insulation Products:

1) Thermopore[®]

Please refer to our product guide
for more product information

What is THERMOPORE[®]?

Material: Expanded Polystyrene (EPS)

What it is: 93.5% Closed-cell foam made from pre-expanded polystyrene beads

Popular Usage:

- Building Insulation
- Moulded Packing
- Lost foam

Density: 12-35 kg/m³

Features:

- Extremely low thermal conductivity
- Exceptionally lightweight yet very strong
- Non-biodegradable and non-toxic; CFC free
- No effect of Bacteria and Fungi
- High compressive strength and ability to hold pressure
- Easily cut, drilled or moulded
- High resistance to water vapour diffusion





SINCE 1961

INDUSTRIAL ENTERPRISES

Thermopore-BLUE[®]

High Density EPS Sheets for insulation



SINCE 1961

INDUSTRIAL ENTERPRISES
INSULATION EXPERTS

Insulation Products:

2) Thermopore-BLUE[®]

Please refer to our product guide
for more product information

What is THERMOPORE-BLUE[®]?

Material: High Density Expanded Polystyrene (EPS) with carbon compound fillers to reduce open-cell space

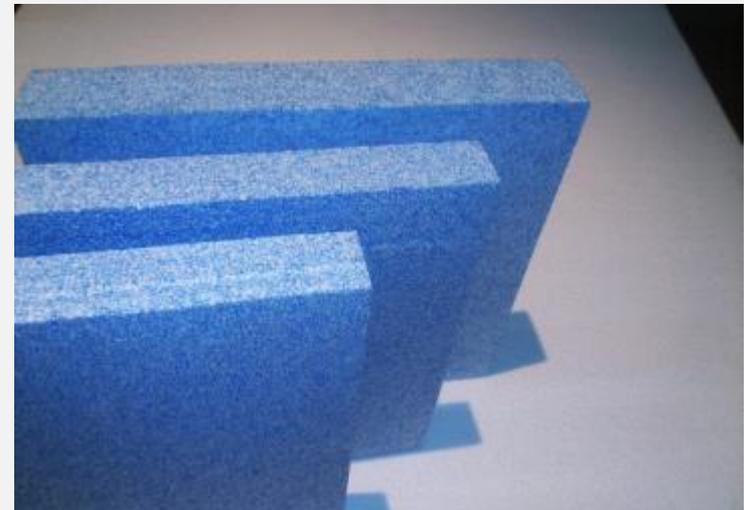
What it is: 97.3% Closed-cell foam made from pre-expanded polystyrene beads

Usage: Recommended specifically for building insulation i.e. roof & wall insulation

Density: 35-45 kg/m³

Features:

- Lowest thermal conductivity amongst all polystyrene materials
- Exceptionally lightweight yet very strong
- Highest compressive strength and bead adhesion due to added carbon chemical compound
- Easily cut, drilled or moulded
- Produced in ship-lap and overlapped sheets to reduce jointed application
- Highest resistance to water vapour diffusion





SINCE 1961

INDUSTRIAL ENTERPRISES
INSULATION EXPERTS

Insulation Products:

2) Thermopore-BLUE[®] - Technical Specifications

Item	Test	Result
Cell structure	N/A	97.3% Closed Cell foam
Density	ASTM C-303	35 kg/m ³ - 45 kg/m ³
Thermal Resistance (R-Value at 1")	ASTM C-518	5.85 F·ft ² ·h/Btu
Thermal Conductivity	ASTM C-518	0.030 W/(m·K)
Water Absorption	ASTM C-578	0.15% Immersion
Water Vapour Permeance	ASTM C-272	0.3 mg/m ²
Compressive Strength	ASTM C-165	270 Kpa
Bending Strength	ASTM C-203	110 Psi
Fire Classification	UL 1256	Fire Retardant B-Grade
Coefficient of linear thermal expansion	BS 4370: Method 13	0.07 mm/mK
Dimension & Density quality control	ASTM C-390	2-3% variation in weight & thickness due to hot wire cutting
Thickness	N/A	12.5mm to 600mm
Edge Profile	N/A	Straight Edge, Ship lap, Tongue & Groove



THERMOSPRAY[®]

**Polyurethane Spray
Foam**



SINCE 1961

INDUSTRIAL ENTERPRISES



SINCE 1961

INDUSTRIAL ENTERPRISES
INSULATION EXPERTS

Insulation Products:

3) Thermospray[®]

Please refer to our product guide
for more product information

What is THERMOSRPAY[®]?

Material: Polyurethane (PU)

What it is: 95.00% closed-cell foam sprayed in liquid form which expands in seconds to many times its volume forming a layer of insulated material on any surface

Usage: Insulation of roofs, pouring for cavity walls, cavity filling, refrigerator walls, automobiles

Density: Standard 32-34 kg/m³

Features:

- Sprayed in liquid form
- Joint less and seamless
- Highest R-value
- Non-toxic and CFC free
- High compressive strength
- Easy adhesion to any surface

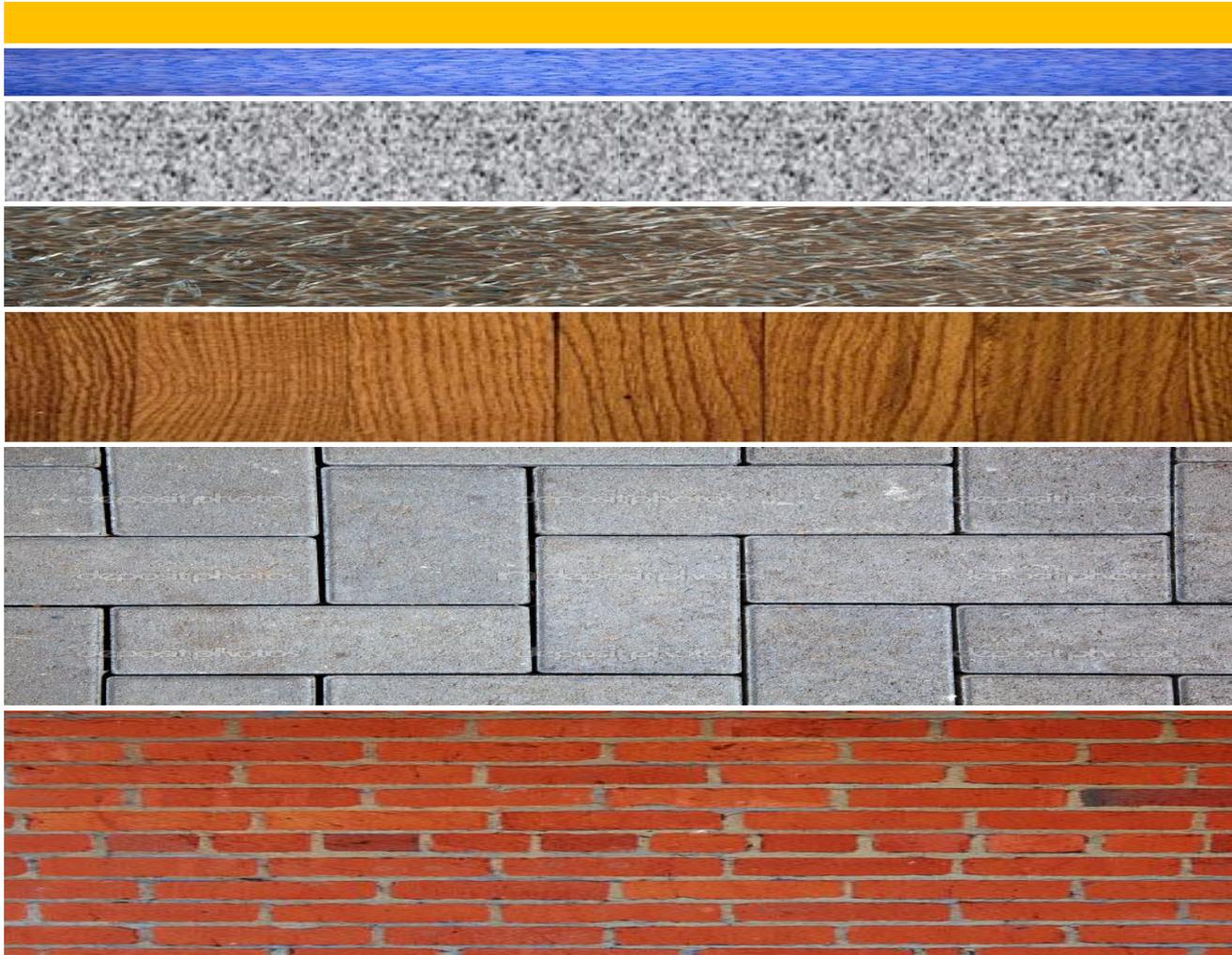




SINCE 1961

INDUSTRIAL ENTERPRISES
INSULATION EXPERTS

Insulation Thickness Equivalent



25mm Polyurethane
40mm High Density EPS

55mm Mineral Wool

65mm Fiberglass

140mm Wood

380mm Concrete

860mm Common Bricks



SINCE 1961

INDUSTRIAL ENTERPRISES
INSULATION EXPERTS

Comparison of Insulation Materials types

Material Comparison



Material	THERMOPORE-BLUE	POLYURETHANE (PU)	JUMBOLON BOARD
R-Value (per inch)	5.85	6.80	5.85
Density	35kg/m ³	32-35kg/m ³	32-35kg/m ³
Compressive strength	270 kpa	210 kpa	300 kpa
Water absorption	0.15% immersion	0.25% immersion	0.15% immersion
Requires waterproofing	YES	YES	YES
Lifetime guarantee	YES	NO	NO
COST (per sft per inch)	Rs. 30/-*	Rs. 48/-*	Rs. 44/-*

* Varying marketing price



SINCE 1961

INDUSTRIAL ENTERPRISES
INSULATION EXPERTS

Comparison of Insulation Material types

Material	R-value per inch	Advantages	Disadvantages	Cost per R-Value* (* variable as per market rates)
High Density Expanded Polystyrene	5.85	Low price, consistent R-value, light weight, CFC free, Easily moulded into various sizes, readily available	Surface finish, Joints (unless ship lapped)	Rs. 4.88
Polyurethane Spray Foam	6.80	High R-value, Strength, Seamless application, Excellent adhesion to any surface	High cost, Variable density, Requires expert application, Deterioration due to UV, poured if applied vertically	Rs. 7.05
Extruded Polystyrene	5.85	Attractive surface finish, High compressive strength, Light weight	High cost, Variable density, Only available in limited sizes, Joints (unless ship lapped)	Rs. 6.41
Polypropylene Rolls	4.25	Lesser joints, can be produced in various thicknesses	High cost, Low R-value, highly water absorbent, very low structural strength, mostly used as carpet underlay	Rs. 6.59
Glass wool	5.50	Not flammable, Low price, Easily moulded into different shapes & sizes	Low R-Value, Readily absorbs water, Loses R-value when wet, needs maintenance	Rs. 4.36
Wood shavings/sawdust	2.22	Easily available, Low cost	Low R-value, Absorbs moisture, Low compressive strength, Loses R-value with time, host to insects	Rs. 5.40



SINCE 1961

INDUSTRIAL ENTERPRISES
INSULATION EXPERTS

Correct specifications of Insulation

As per the “Building Energy Codes of Pakistan” – published by Enercon – the **minimum** R-value (inverse of u-value) is R-10 for roofs/ ceilings and R-2.56 for walls

Accounting for needs of compressive strength and water permeability, the minimum specifications are as follows:

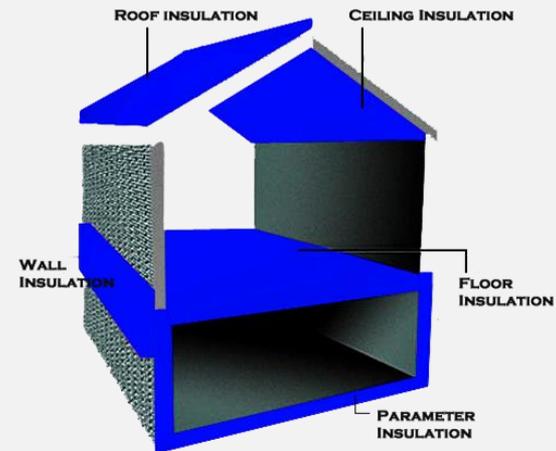
Material	Roof / ceiling	Walls
EPS	2" @ 35kg/m ³	1" @ 35kg/m ³
PU	1.5" @ 32kg/m ³	1" @ 32kg/m ³
XPS	2" @ 32kg/m ³	1" @ 32kg/m ³

Extract from Building Codes of Pakistan:

Table 3.0

Allowable Conductance **and** Resistance Values*

ELEMENT	SYMBOL	UNITS	1	2	3	4	5
Walls	U _o	W/m ²	2.67	2.56	2.22	2.50	2.22
		Btu/hr.ft ²	0.47	0.45	0.39	0.44	0.39
Roofs/Ceilings	U _o	W/m ²	0.58	0.58	0.58	0.58	0.58
		Btu/hr.ft ²	0.10	0.10	0.10	0.10	0.10



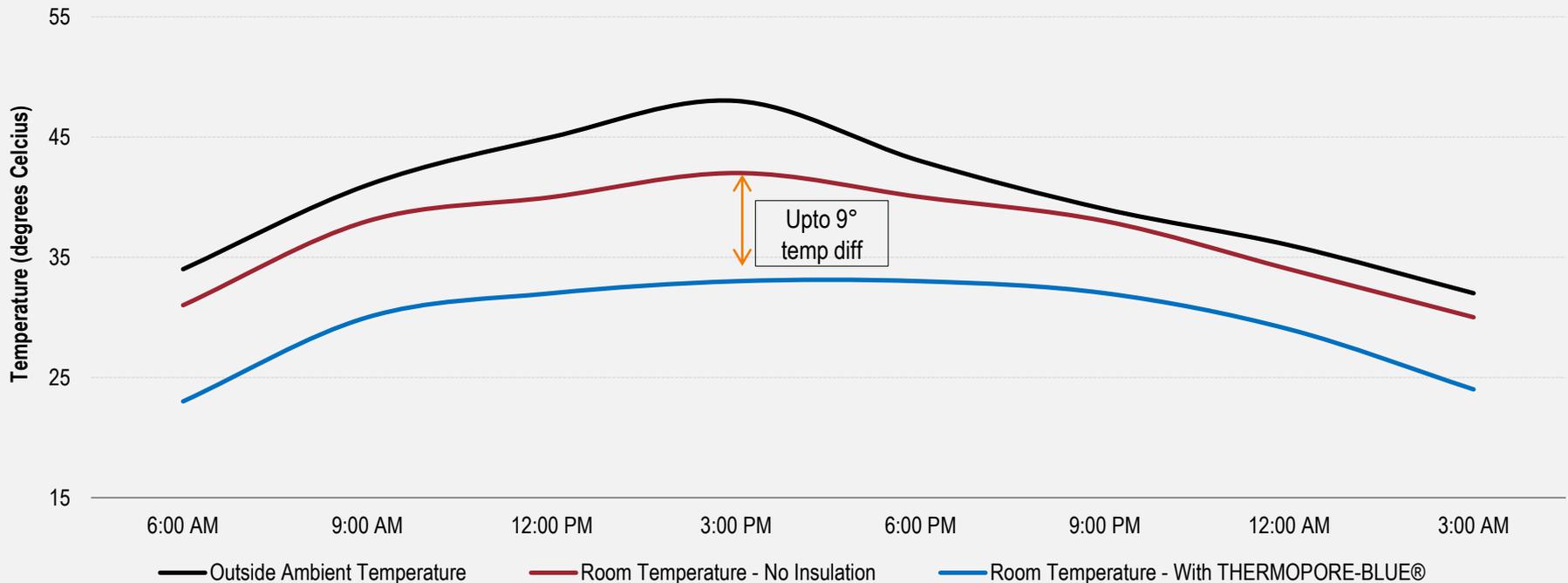


SINCE 1961

INDUSTRIAL ENTERPRISES
INSULATION EXPERTS

Impact of using correct specs for Insulation: test results from 3 days testing in June 2013:

	6:00 AM	9:00 AM	12:00 PM	3:00 PM	6:00 PM	9:00 PM	12:00 AM	3:00 AM
Outside Ambient Temperature	34	41	45	48	43	39	36	32
Room Temperature - No Insulation	31	38	40	42	40	38	34	30
Room Temperature with 2" of Thermopore-BLUE® for roofs and walls	23	30	32	33	33	32	29	24



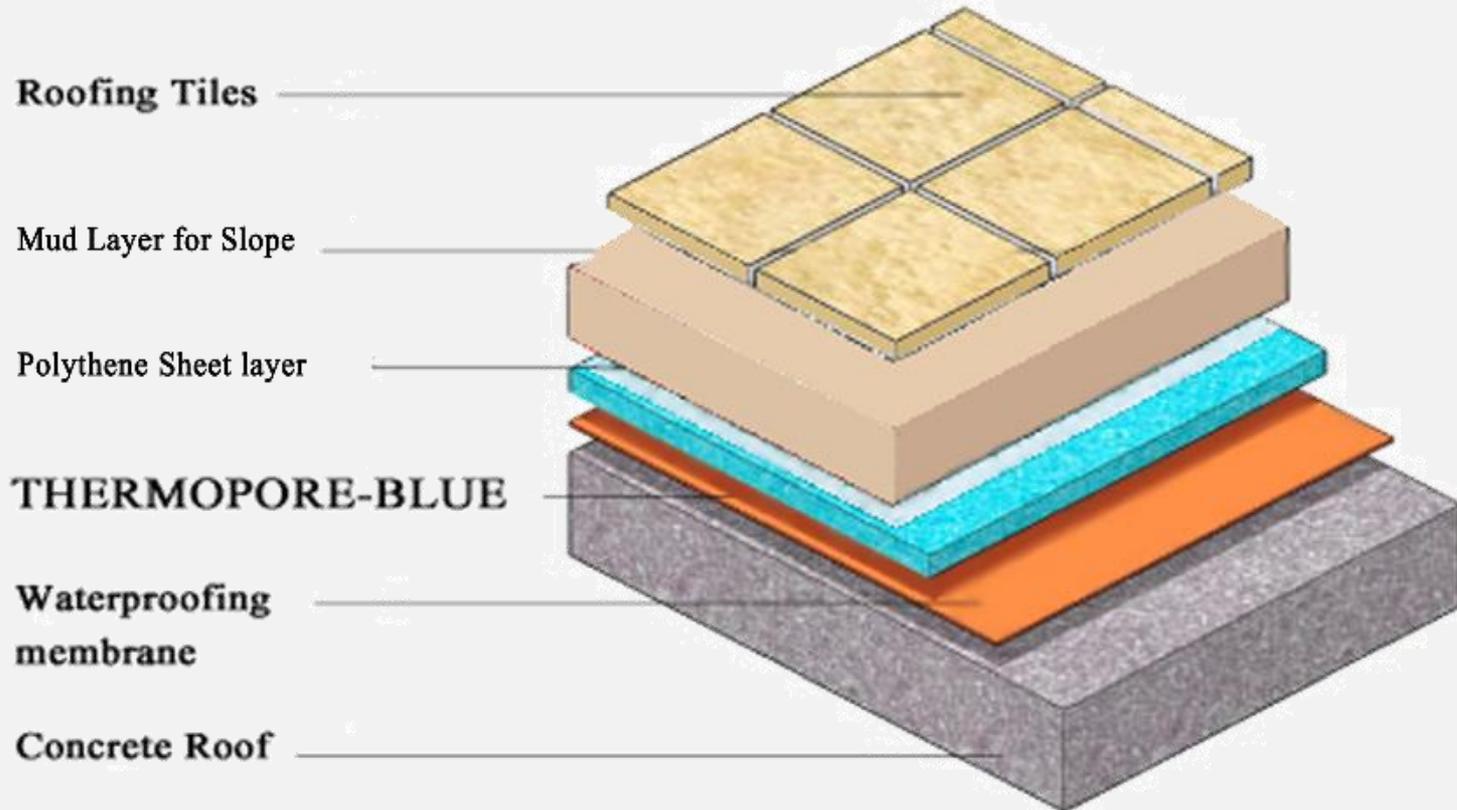


SINCE 1961

INDUSTRIAL ENTERPRISES
INSULATION EXPERTS

Roof application of Thermopore[®] - Method 1

The Thermopore[®] sheet is sandwiched between the waterproofing and mud layer of the roof to provide effective insulation. On top of Thermopore[®], a polythene sheet is laid which prevents excessive moisture from entering the foam, thereby minimizing harmful blistering. The roof is closed with mud or mortar followed by tiling the roof.



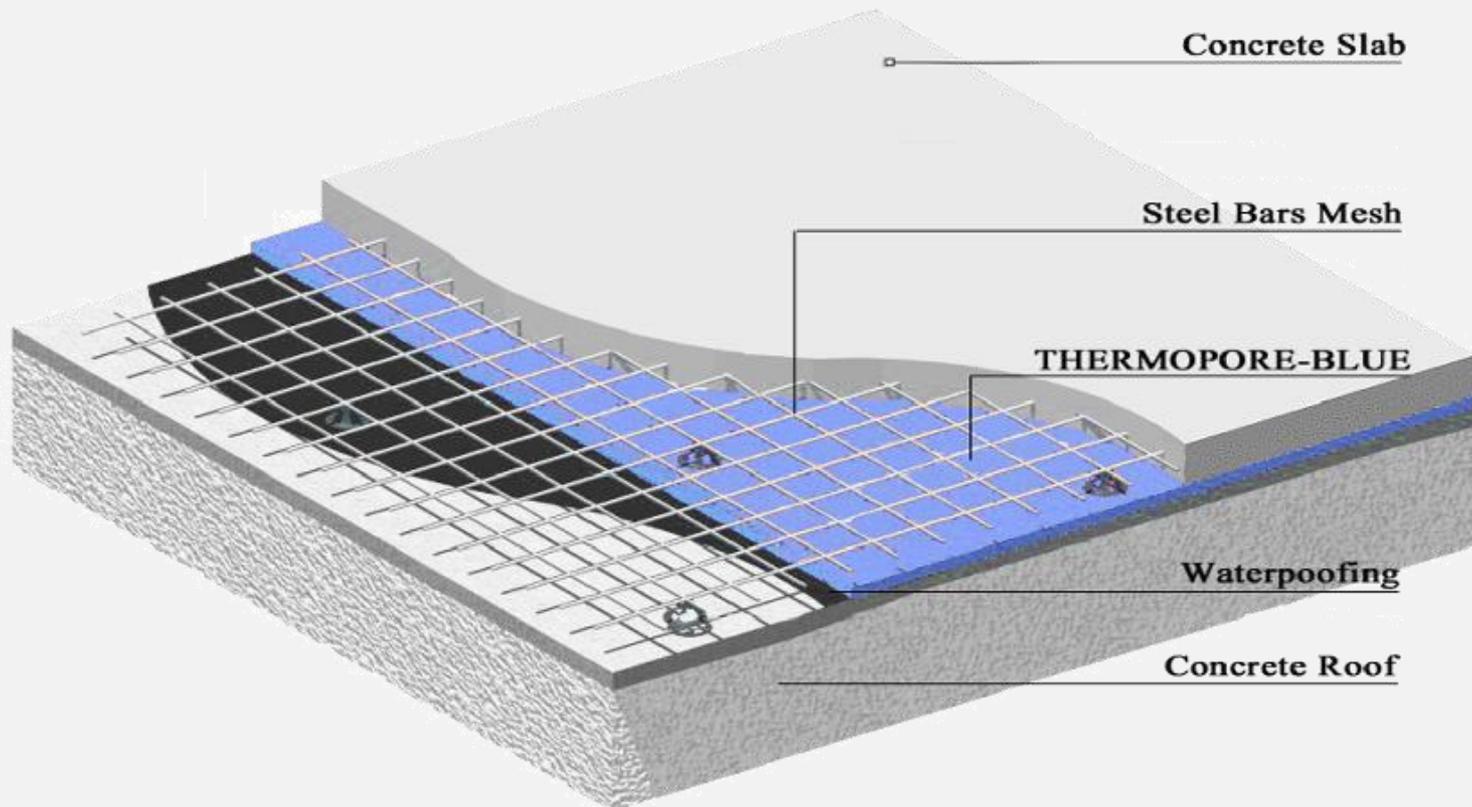


SINCE 1961

INDUSTRIAL ENTERPRISES
INSULATION EXPERTS

Roof application of Thermopore[®] - Method 2

For roofs on which screeding is required, a wire mesh (steel or fibre depending upon the strength required) is laid on top of the Thermopore[®] sheets before concrete is poured to close the roof. The wire mesh is there to provide grip to the concrete. Thermopore[®] does not react with concrete.



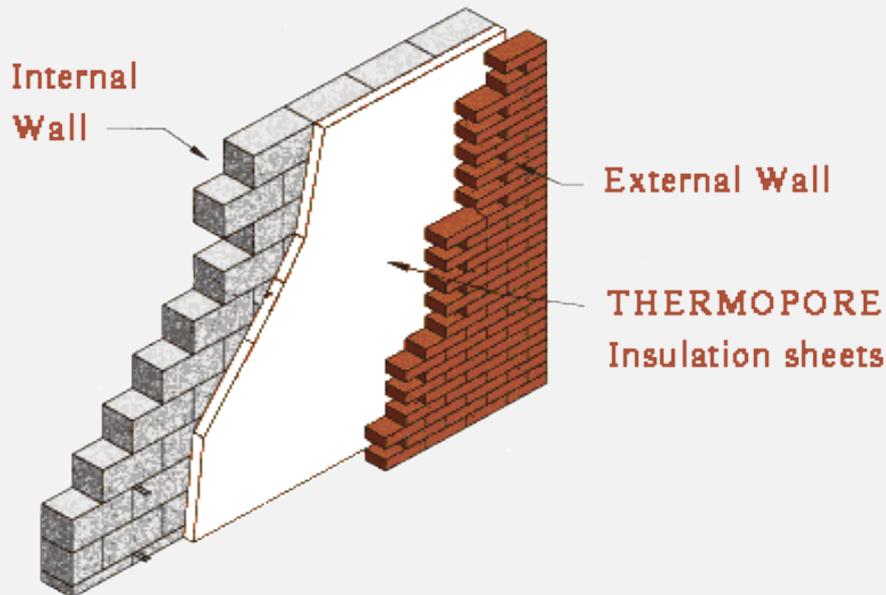


SINCE 1961

INDUSTRIAL ENTERPRISES
INSULATION EXPERTS

Cavity wall application of Thermopore[®]

The most important function of insulation, when used for cavity wall construction, is controlling water vapor transmission and heat loss. The insulation can be placed against the inner vertical surface and secured with wall ties or bonded with a suitable adhesive. For optimum resistance to moisture penetration from exterior sources, maintain a minimum 1/2" air space between the foam insulation and outer vertical surface.



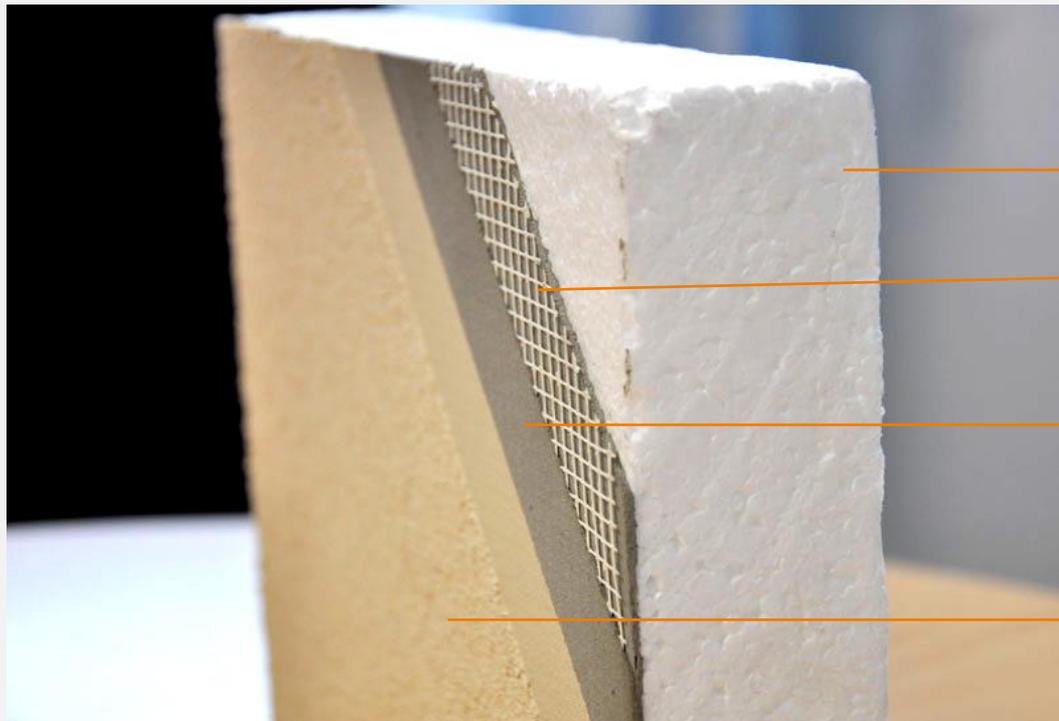


SINCE 1961

INDUSTRIAL ENTERPRISES
INSULATION EXPERTS

External Wall Cladding using of Thermopore®

Thermopore® insulation can be installed on any masonry surface via external retrofitting insulation. This entails fastening the insulation sheet mechanically with the masonry wall and applying fibre mesh onto the external side with primer. Retrofitting is complete by applying plaster and any suitable finish (exterior emulsion, rockwall, or stone cladding) on top of the fibre mesh.



→ Thermopore® insulation

→ Fibre mesh

→ Plaster

→ Any suitable exterior finish



SINCE 1961

INDUSTRIAL ENTERPRISES
INSULATION EXPERTS

Drywall application of Thermopore[®]

Thermopore[®] can be applied directly to any masonry surface. Due to high resistance to moisture transmission, no vapor barrier is required for EPS foam. This application requires fabricated metal channels to be attached on the masonry walls with the Thermopore[®] sheet placed within the frames. Drywall/ gypsum board can be then bolted directly onto the metal channels with a paint coating to provide finishing for the wall.



→ Outer wall surface

→ J-angle steel frame

→ Thermopore[®] (2")

→ Drywall / gypsum board





SINCE 1961

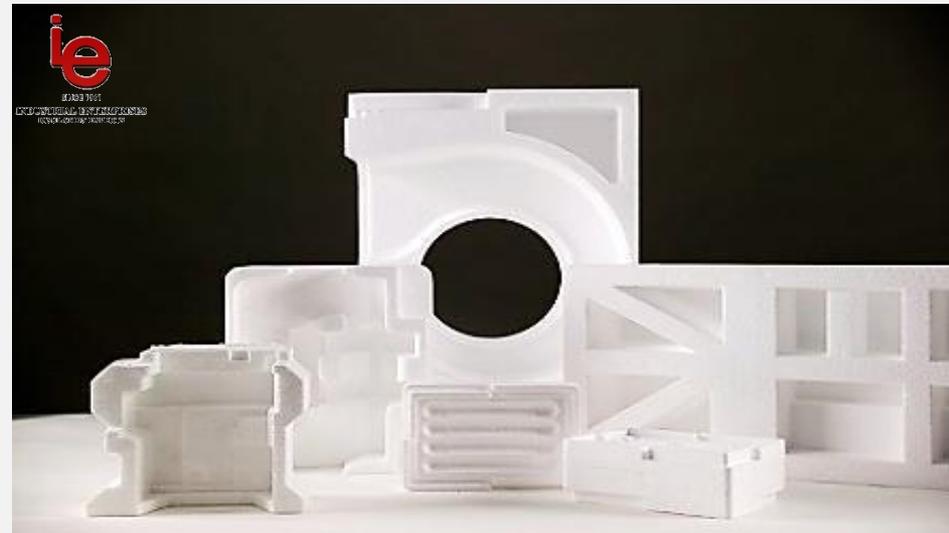
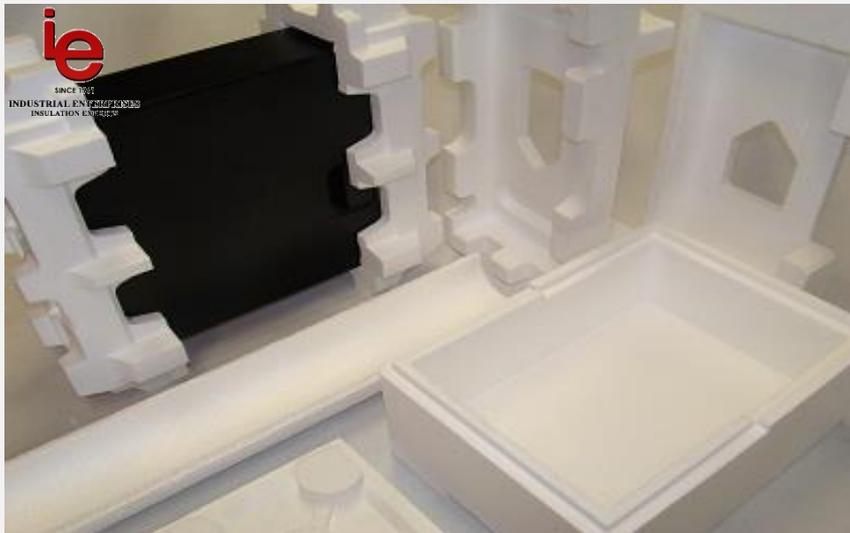
INDUSTRIAL ENTERPRISES
INSULATION EXPERTS

Other Products:

1) Thermopack® EPS Packing

EPS is widely used for packing of electronics, pharmaceutical vials, food containers and automotive spare parts.

Industrial Enterprises (Pvt.) Limited manufactures a wide range of packings which are customized entirely according to customer requirement.





SINCE 1961

INDUSTRIAL ENTERPRISES
INSULATION EXPERTS

Other Products:

1) Thermopipe® EPS Pipe coverings



SINCE 1961

INDUSTRIAL ENTERPRISES
INSULATION EXPERTS



Reduces water wastage
by more than 40%

Uncomfortably hot water
when you open your tap?

Get cooler water in an
instant by insulating your
plumbing with
THERMOPIPE® insulation.



Thermopipe® insulation is a plumbing necessity given the generally extreme climate of Punjab.

Such insulation ensures that the cool water in your water tank reaches outlets at the same temperature, thereby reducing water wastages and ensuring a more comfortable wash.

Thermopipe® is manufactured in standard 25kg/m³ density and from a minimum of 0.5" pipe dia.

PAKISTAN'S **No.1**
INSULATION
MANUFACTURER

Lahore (HO)

6-N, Industrial Area, Gulberg II

Ph: +92-42-35712229

+92-42-35752229

+92-322-8437700

Fax: +92-42-35713199

Email: info@thermopore.com
sales@thermospray.com

Website: www.thermopore.com

Islamabad

Office # 31, 3rd Floor, Capital
Plaza, G-11 Markaz

Ph: +92-51-2290436

+92-300-8555649

Faisalabad

Ph: +92-321-6654866