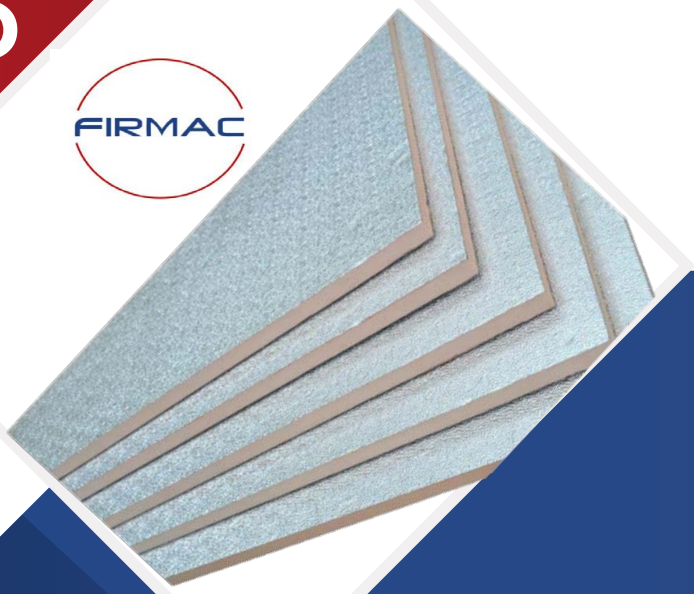
FIRMAC
INDUSTRIES

PRE-INSULATED
DUCTS



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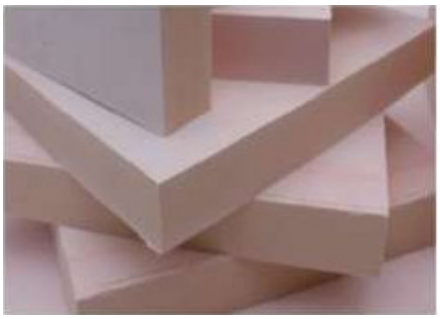
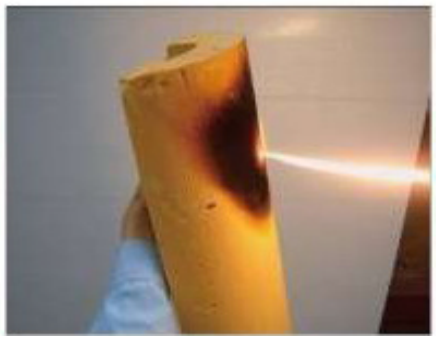
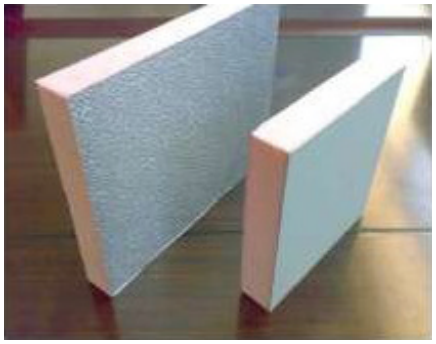
Phenolic Foam Introduction

Phenolic Foam (PF) is a closed cell rigid plastic foam comprising of phenolic resin and other additives. The phenolic foam has been recognized the best insulation materials being for the excellent fire performance, low smoke emission, high temperature resistance, stability, superior thermal performance, extremely sound insulting property and structural strength performance. Therefore, it has been named the Third-Generation insulation material.



The thermal conductivity of Phenolic Foam is very low (0.021 0.032W/mk), Compared with traditional insulation materials such as mineral wool, rock wool, glass wool (0.043— 0.052W/mk) and expanded perlite (0.065 - 0.083W/mk), its energy-saving and insulation performance is double, in common with polyurethane. It being generally acknowledged as the world's top insulation materials.





Insulation Material

Originally, Phenolic foam is a kind of advanced material used in aerospace. When the plane flying over ten thousand meters above sea level, outside of cabin temperature is below -50C (-58 F)
aircraft interior is warm as spring, because phenolic foam is filled in the aircraft bulkhead.
Later it is gradually extended to the building of housing and other public and civil construction field.
The application of phenolic foam in construction can be considered as a major advance in science and technology.
It can fill the detects of other insulation materials: no flame-retardant effect, insulation performance
is poor and service life is short. At the same time, phenolic foam board has light weight and easy to construct,
is an excellent insulation, fire prevention and sound absorption material for IWAC system.

Characteristics of Phenolic Foam

1. Thermal Insulation
2. Durability
3. Fireproof
4. Impervious
5. Less Smoke Emission and Harmfulness
6. Sound Absorption and Noise Reduction
7. Chemical Resistances
8. Small Density Light Weight

Thermal Insulations: The thermal conductivity of Phenolic Foam is very low (0.021-- 0.032W/mk). so it has good temperature convection deterrent, is excellent energy-saving material.

Fireproof: High Oxygen percent requirement. No dropping, no melting under high temperature but carbonized. And in a certain period of time can effectively prevent flame penetration.

Less Smoke Emission and Harmfulness: Low smoke emission under high temperature, good integrity performance in toxic gas test of international standard.

Chemical Resistances: Extreme anti-corrosion for acidity and alkalescency.

Durability: Available working temperature scale -140•C to 1601C. Stable physical feature, good aging resistance and service life can be up to 30 years.

Impervious: Phenolic foam has good closed cell structure, water absorption is low, performance of prevent the penetration of vapor is strong. When it’s used as thermal insulation material, it won 't appear condensation.

Sound Absorption and Noise Reduction: Because of the closed cell foam structure help to absorb sound, phenolic insulation board has excellent sound absorption and noise reduction performance.

Small Density, Light Weight: Phenolic insulation board density is below 100kgte, even as low as 50kg/e. It can reduce the weight of the building and building load, installation of system is simple and fast, and the work efficiency can be improved. Therefore, the project cost can be greatly reduced.

Aluminum Foil Laminated Phenolic Board

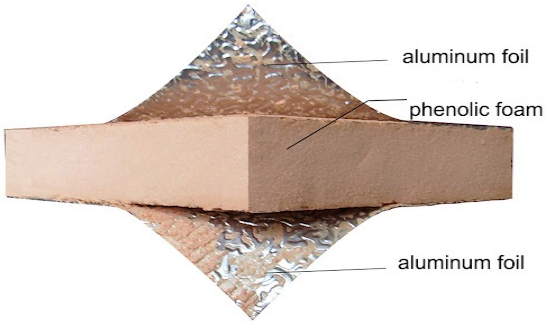
Firmac's Aluminum Foil Laminated Phenolic Foam Insulation Board is a new type of high-tech composite insulation material. This product is composited by embossed aluminum foil and phenolic foam by special one-time continuous production line, with a sandwich structure. Two sides non-woven fabric are special treatment, to ensure good bonding between layers.
Phenolic foam insulation layer adopts advanced foaming technology with fine bubble and uniform density, strength and thermal insulation properties are guaranteed.

Insulation Material

Technical Parameter

Conventional thickness	20mm, 25mm, 30mm
Length x width(mm)	2000x1200, 3000x1200, 4000x4200
Fire rating	Nonflammable B1 class
Density of core material	60-70kg/m1
Water absorption	≤3.7%
Thermal conductivity	0.020 - 0.024W/(mK)
Heat resistance	-150 ~ +150°C
Wind resistance strength	≤1500Pa
Compression strength	≥0.18MPa
Bending strength	≥1.1MPa
Leakage air volume	≤1.2%
Thermal resistance	0.86m'K/W
Smoke density	No toxic gas release
Dimension stability	≤2%(70±2°C, 48h)
Oxygen index	≥45
Duration of fire resistance	>0.5h
Formaldehyde Emission	≤0.5Mg/L
Air flow max	15M/S
Stress and Deformation	Qualified

PS: Can be customized according to customer requirements of various specifications.



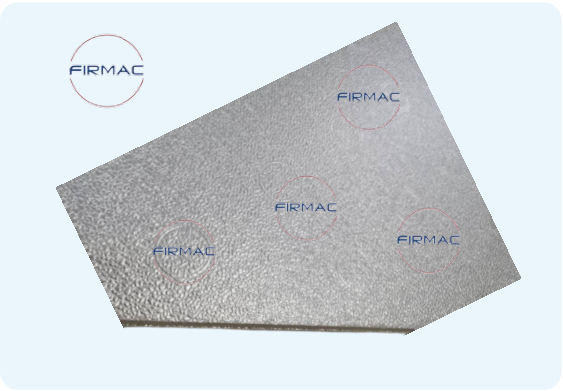
Aluminum Foil Laminated Polyurethane Board

Firmac's Aluminum Foil Laminated Polyurethane Foam Insulation Board Is a new type of high-tech composite insulation material. This product Is composited by embossed aluminum foil and polyurethane foam by special one-time continuous production line, with a sandwich structure. Two sides non-woven fabric are special treatment, to ensure good bonding between layers.

Polyurethane foam insulation layer adopts advanced foaming technology with fine bubble and uniform density, strength and thermal insulation properties are guaranteed.

W.T Aluminum Foil Laminated Polyurethane Foam Insulation Board is manufactured by our company's unique formula, with good flame retardant, good thermal insulation and good sound absorption properties, sanitary, beautiful and light weight easy to use, with a long service life.

Because of the above advantages, W.T Aluminum Foil Laminated Polyurethane Foam Insulation Board has been widely used in the construction of HVAC system in public, civil and Industrial buildings.It was widely welcomed by the engineering design units, construction units and end users.



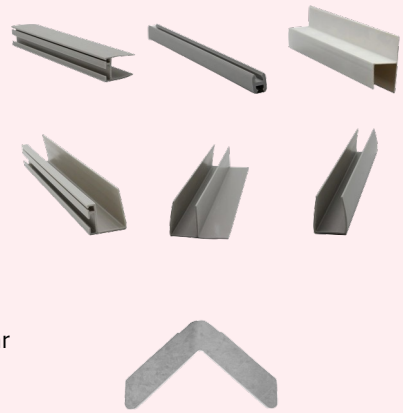
Technical Parameter

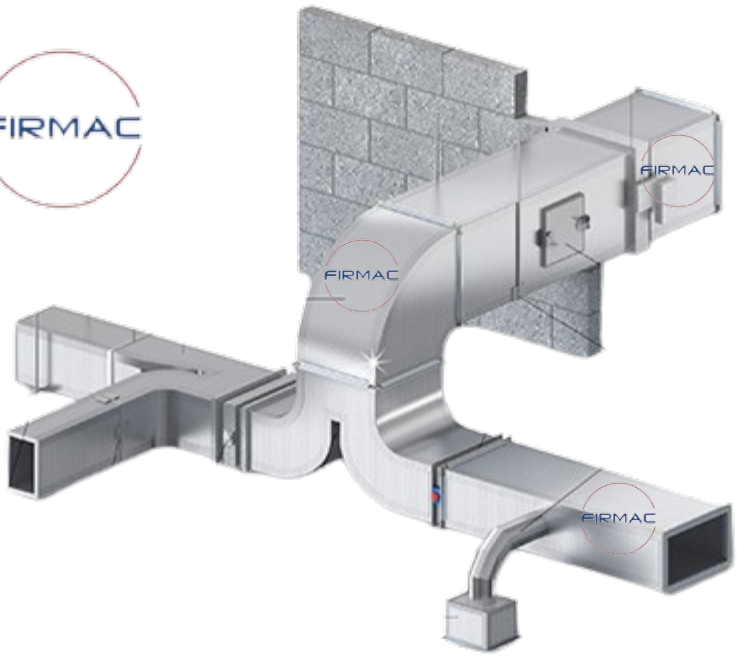
Thickness	20, 25, 30mm
Dimension (Width Length)mm	1200x2000/3000/4000
Fire-Protection Rating (GB8624-2006)	Nonflammable B1 class
Density	40-45 kg/m 3
Water Absorption	≤ 1.9%
Thermal Conductivity	0.018-0.024 W/M.K
Temperature Range	-265 - +190"C
Wind Resistance Strength	≤1500pa
Bonding Strength	0.11
Bending Strength	718KPa
Compressive Strength	144KPa

After-Sale Service

Auxiliary Material

1. PVC Chair Section Bar
2. PVC Covering Angle
3. PVC F Section Bar
4. PVC Invisible Flange Joint
5. PVC Tee Connector Flange Joint
6. PVC U Section Bar
7. Silicone Sealant
8. Special Glue
9. Zinc-coated Steel Angle Bracket
10. Aluminum Adhesive Tape
11. Aluminum Reinforcement Section Bar





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