

Fiberglass Needle Mat

Fiberglass needled mat is a mechanically bonded e-glass glass fiber insulation blanket of uniform density. It is manufactured from a well-controlled assortment of long textile glass fibers to ensure uniform mechanical bonding with no additional binders. The resulting product has excellent insulation efficiency for extended exposure at high temperatures. Also good for sound insulation and filtration applications.



Properties

- **Thermal Properties**
 - Completely incombustible
 - Softening temperature: 850° C
 - Refractive index 25° C: 1.55
- **Mechanical Properties**
 - High tensile strength: 350kg/mm²
 - Modules of elasticity: 7300kg/mm²
 - Elongation at 25° C: 4.8%
 - Flexible - conforms to irregular surfaced
- **Electrical Insulation Properties**
 - Dielectric constant: 10° Hz-6.43, 104Hz-6.32, 1010Hz-6.11
 - Loss tangent: 10²Hz-0.0042, 1010Hz-0.006
 - Volume resistivity: 1010Ω;cm
- **Corrosion Properties** - does not absorb water, rot, mildew, deteriorate or decay
- **Cost** - offers high strength at low cost
- **Density** - 100kg/m³ to 200kg/m³

Applications

- Muffler and exhaust insulation
- Automotive catalytic converter, flooring and front dash insulation
- Removable pads
- Ship turbines
- Marine, industrial, and process piping
- Power generating equipment
- Industrial furnaces and ovens
- Filtration
- Gaskets for air conditioning

Specifications

- Width: up to 2400mm (94")
- Thermal conductivity:0.0300 kcal/mhr°C
- Density: 100kg/m³ to 200m³
- Heat resistance: up to 800°C
- Thickness: 3mm - 26mm (1/8" - 1")

Heat Insulation		Sound Insulation	
Temperature (C°)	Thermal Conducting Coefficient (kal/mhr°C)	Frequency (Hz)	Noise Isolation Coefficient
25	0.030	125	0.32
100	0.037	250	0.76
200	0.048	500	0.94

300	0.058	1,000	0.96
400	0.076	2,000	0.95
500	0.094	4,000	0.98
600	0.112	Needled Mat has an excellent noise isolation capacity; absorbs noise and also vibration.	
700	0.16		

Characteristics of Fiberglass Needle Mat

1. Heat Resistance and Specification

It can resist high temperature of 700, 850 and 1000 and be cut into different thickness (3mm~100mm) according to the requirements of customers.

2. Excellent Heat Insulation

According to physical principle, the thermal conductivity rate of gas is smaller than that of solid. For excellent heat insulation materials, there should be many air pockets inside the materials. As an excellent heat insulation material, the glass fiber cotton has innumerable tiny air pockets, and its fibers are arranged irregularly with a thermal conductivity coefficient between 0.2~0.040 kcal/mhr

3. Noncombustible Material

The main element of glass fiber is silicide (over 50%) which is noncombustible and will not deform or embrittle even under high temperature for 3 consecutive hours.

4. Good Sound Absorption

When the sound wave enters the glass fiber cotton, its energy will be absorbed by the cotton due to the friction between fibers and different sizes of air pockets. Generally speaking, the sound absorbing coefficient of the glass fiber cotton is higher than 90%. Therefore, it is a good material for preventing the interference of noise.

5. High Insulation

Glass fiber is the best insulation material because it is able to resist high temperature and has good mechanical property and high chemical stability.

6. Anticorrosion

Glass fiber can resist corrosion of strong acid and alkali. Its functions will not be diminished after long-term use.

7. Good Restoring Force

Glass fiber contains countless air pockets, so it has excellent restoring force to resist any impact and vibration with a tensile strength over 1.0 kg.

8. Low Moisture Absorption Rate

Its moisture absorption rate is usually close to zero.

9. Lightweight and Soft Material

In comparison with the other heat insulation materials, glass fiber products are the lightest and softest material. If installed on machinery, it can help reduce the burden of weight and vibration.

10. Simple and Easy Construction

It is simple and easy to use glass fiber for all kinds of thermal insulation, heat insulation, refractory

and sound absorbing engineering or products.

Application:

1. **Building:** for roofing, flooring and walls thermal and acoustical insulation, guarantee the building object be the energy-saving type.
2. **Ship and automobiles:** replace the structure and shell body of the metal and pure plastic wooden materials, reduce the needed driving force, save energy, extend the life.
3. **Heat insulation for industry equipment, parts and duct and household electrical appliances**
4. **Aviation and space flight:** thermal and acoustic insulation for thin panel and nail-board by fire-proofing fabrics, used for the thermal insulation and sound absorption of engine system, Absorbing noises and purifies the tail gas.
5. **Traffic:** widely used in railway, highway, sports ground, water construction, environment-protection project, would shorten the construction period, extend the using life.

Fiberglass Chemical CompositionWeight							
SiO ₂	Al ₂ O ₃	CaO	MgO	B ₂ O ₃	Impurity		
					R ₂ O	Fe ₂ O ₃	Other
54.1±0.5	14.6±0.4	16.6±0.3	4.6±0.3	8.8±0.5	0.8	0.5	Allowance

Fiberglass needle mat Thermal Conductivity

Temperature	25°	100°	200°	300°	400°	500°	600°	700°
Thermal Conductivity kcal/mhr	0.030	0.037	0.048	0.058	0.076	0.094	0.112	0.16

Fiberglass needle mat Absorption and Vibration Property

Hz	125	250	500	1000	2000	4000
sound absorption coefficient	0.32	0.76	0.94	0.96	0.95	0.98