

Environment-friendly Thermal Insulating Decorative Plate (PS-3)

1. Product Introduction



Panels



Stiffeners

Environment-friendly thermal insulating decorative plate (PS-3) is a class A non-combustible composite material with a two-layer structure, hard layer and soft layer. The soft layer with longer and softer fibers is made from several natural ores through raw material matching, melting, fiber drawing geometry and needle-weaving processes. The soft layer produced through the new process is resin, residue and dust free, and has no stimulus on human skin like irritation and allergies. The hard layer of high strength consists of multiple inorganic mineral fibers and cured by thermal curing. PS-3 is coated with glass cloth outside of the hard layer and soft layer complex by PSJ type flame-retardant white adhesive. The soft layer is the inner layer which can fit well with steel plates and prevent the condensation of water. It offers good anticorrosion, sound absorption and thermal insulation. The hard layer is the hard and smooth surface with good toughness, impact resistance and compression. As for its flat appearance, putty is unnecessary. PS-3 is a multifunctional environmental friendly insulating material for shipbuilding with good safety.

PS-3, as a kind of multifunctional inner decorative material with thermal insulation, sound insulation and absorption functions, is mainly applicable to the compartments of outer plates of the hull, cabin panels and ceilings, also applicable to T steels, ball steels, cable holds etc. The soft layer can be used as thermal insulation for ventilation ducts and pipes with a service temperature no high than 300 °C.

PS-3 has been approved by Navy Equipment Department and got the certifications of CCS.



2. Technical Specifications

Table 1 PS-3 Technical Parameters

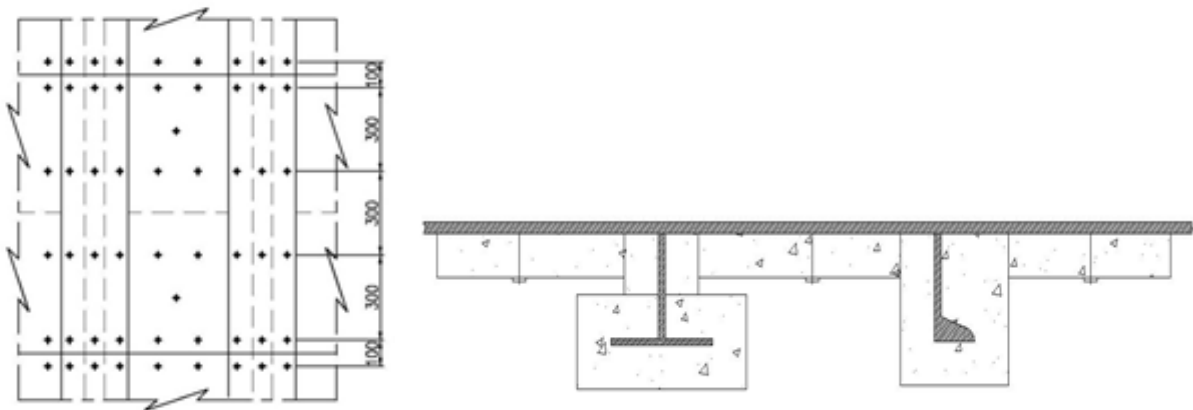
Items	Technical Requirements
Toxicity	Accord with GJB3881, GJB7497 etc.
Non-combustibility	Accord with IMO.2010FTPC Part1
Asbestos test	Accord with <i>Hong Kong International Covention for the Safe and Environmentally Sound Recycling of Ships 2009.</i>
Apparent Density / kg/m ³	Panels: 95 ± 10 (Thickness = 30 mm) 110 ± 10 (Thickness = 20 mm) 120 ± 10 (Thickness = 15 mm) Stiffeners: 110 ± 10 (Thickness = 15 mm)
Moisture Absorption Rate / %	≤ 0.1
Residue Content / % (Φ ≥ 0.25 mm)	0
Thermal Conductivity / W/m·K	25 °C, ≤ 0.030
Thermal Shrinkage Temperature / °C	≥ 670
Organic Compound Content / %	≤ 2.1
Sound Reduction Index / dB	17 (Spec: Thickness = 15 mm, Density = 110)

3. Product Specifications

Table 2 PS-3 Specifications

Scope	Class	Density / kg·m ⁻³	Dimension/mm			Coatings	Fixation	T	Density /kg·m ⁻³	Areal Density /kg·m ⁻²
			L	W	T					
Steel bulk head or deck	Incombustible	Panels: 95 ±10, T=30 110 ±10,T=20 120 ±10,T=15 Stiffeners: 110 ±10,T=15	400~1000	600	15 ~ 30	Glass cloth	Stud pins	15	120	1.8
				500						
				400						
				300			20	110	2.2	
			Stiffeners accord with the stiffener					30	95	2.9

4. Structures



Blocks and Stiffeners Construction Model

5. Advantages

- PS-3 is an inorganic non-combustible composite material with anticorrosion, thermal insulation, sound insulation and absorption, decorative functions. Its service life can be as long as 15 years.
 - PS-3 contains no organic, consists of long and soft fibers, has no stimulus to human skin, has no dust pollution on the machinery and equipment, is environmental friendly.
 - PS-3 shows low areal density after being installed, about 1.92 to 2.97 kilogram per square meter, the weight reduces about 20 percent per square meter compared with Naval Mineral Wool Fireproof Heat-Insulating Product (PS-2).
 - PS-3 is of high security and more environmental friendly. As inorganic non-combustible material, there's no dripping and decomposition at high temperature. Meanwhile, stud pins are used to fix the materials instead of adhesives.
 - Easy to install. Installation process with stud pins is mature and easy to implement. Adhesive and puttying is removed. Adjusting the nut cap to make sure soft layer fits well with steel plate.
 - PS-3 is not only suitable for the insulation of underwater part of vessels, but also suitable for the superstructure. The superstructure is being affected long-termly by illumination and climatic changes. PS-3, as an inorganic material, being fixed by stud pins, has no aging or shrinkage problems, guarantees the long service life.
 - The maximum service temperature increased, service thickness thinned, areal density lowed, the environmental problems such as tickling of inorganic insulating materials are solved.
 - Low comprehensive cost. Construction costs are reduced by removing adhesives and simplifying construction processes.
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