DQS-PIR

Sprayed polyisocyanurate (PIR) thermal insulation system

1. Product description:

DQS-PIR is a two-component thermosetting sprayed thermal insulation system with closed cells and a density of 50 kg/m³, based on rigid seamless polyisocyanurate foam, applied at the construction site. It has a long service life of more than 50 years and minimal water absorption, and is not subject to the destructive action of aggressive chemical media or to decay, including under conditions of high humidity and temperature. It releases no harmful substances under any service conditions, being an environmentally clean and safe building material.

2. Range of use:

Used to produce thermal insulation coatings by spraying, intended for the thermal insulation of all types of building structures (steel, timber, concrete, brick and others) of residential, administrative and industrial buildings, vegetable stores and industrial cold stores, as well as of industrial equipment and pipelines, both newly built and reconstructed. The coating has highly stable characteristics and a long service life. In the Republic of Uzbekistan it has been tested for combustibility group Г1 (low-combustible).

3. Material properties

Colour:	Comp. A: transparent, from yellow to brown Comp. B: dark brown
Packaging:	Comp. A: 220 kg (steel drums) Comp. B: 250 kg (steel drums)
Supplied consistency:	Suitable for spray application
Shelf life:	12 months from the date of delivery, in unopened original packaging in a closed room
Dynamic viscosity at 25 °C, mPa·s, within	Comp. A: 200-600 Comp. B: 150-250

Reaction parameters of the component system

Parameter	Value
Start time, s	2 — 4
Gel time, s	30 — 42
Rise time, s	10 — 130
Component temperature, °C	22 — 24

4. Technical data of PIR

Parameters	Value	Test method
Density (core), kg/m³	50	GOST 17177
Compressive strength, N/mm²	0.1 - 0.6	GOST 17177
Flexural strength, N/mm²	0.1 - 0.8	GOST 17177
Water vapour permeability coefficient, mg/(m·h·Pa)	0.05	GOST 25898
Water absorption by volume after 7 days, %, max	5	GOST 20869
Thermal conductivity, W/(m·°C)	0.021 - 0.035	GOST 7076

Fire performance characteristics

Parameter	Value	Test method
Combustibility group	Г1 (low-combustible)	GOST 30244
Flammability group	В1 (flame-retardant)	GOST 30402
Smoke generation group	Д3 (high smoke generation)	GOST 12.1.044
Toxicity group of combustion products	Т2 (moderately hazardous)	GOST 12.1.044
Flame spread group over the surface	РП1 (non-spreading)	GOST R 51032

Mixing ratio	Comp. A: 100 parts by volume Comp. B: 100 parts by volume
Product yield	10—12 m³ from 1 t of the mixture
Preparation of components	Heat the drums with components A and B to 20-25 °C. After heating, stir component A with a paddle mixer at 500-1000 rpm for 30 minutes.
Substrate temperature:	Min +5 °C, max +40 °C. Spraying is not recommended at an ambient temperature above +40 °C.
Surface preparation	The surface to be sprayed with PIR must be dry, free from dust and degreased.
Application method:	Before starting work, carry out a test spray onto a substrate or onto a surface similar to the one to be insulated. Monitor the reaction profile of the system, which must correspond to the technical data. 15 minutes after spraying, cut the sample and visually assess the PIR structure. The sample must have a fine-cell structure without visible defects (voids, air bubbles, etc.). If the material has not foamed, or the foam is brittle or elastic, check the components (grade, shelf life), the accuracy of the dosing and the set temperature and pressure of the components. Repeat the spraying. Start spraying from places that are hard to reach. Spray from a distance of 0.5–1.0 m. Direct the spray gun perpendicular to the surface being insulated. Spray evenly, in 2-4 layers, without pauses or jerks in the movement of the gun. The thickness of the foamed layer in one pass must not exceed 25 mm. Apply the next layer at a temperature not above 40 °C; measure with a pyrometer if necessary. Continue spraying when the previous PIR layer and the surface being insulated are completely dry. Attention! Do not apply the next PIR layer if the previous one has not foamed. Do not spray PIR in rain or snow.
Cleaning of equipment and tools:	Clean tools, equipment and contaminated surfaces with solvents (acetone, ethyl cellosolve). Remove cured PIR mechanically (wire brush, spatula).
Hygienic	Finished PIR products have no negative effect on the human body or

characteristics	on the environment. Component A: a product of low hazard in terms of its effect on the human body; contact with the skin causes irritation. Contact with the eyes causes irreversible damage. Component B: contact with the skin and eyes causes irritation. Harmful if inhaled.
Safety measures	When working with the components of the system in a closed room, provide ventilation and fire-extinguishing equipment. Use personal protective equipment: special clothing, gloves, footwear, safety goggles and a respirator. If PIR components come into contact with exposed skin, remove them with a cotton swab or a cloth and wash with warm water; if skin reactions appear, consult a doctor. If PIR components get into the eyes, rinse them immediately with plenty of running water for 5-10 minutes, then consult a doctor.
Waste disposal requirements	Solid and liquid waste is disposed of in accordance with the requirements of the applicable legislation.