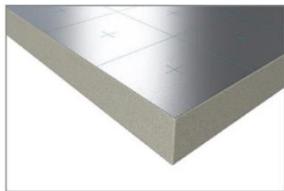


Technical data sheet №1.04

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PIR boards PirroUniversal

TS 5768-001-09151858-2015

PRODUCT DESCRIPTION:

PirroUniversal are insulation boards made of rigid polyisocyanurate (PIR) with double-sided multi-layer aluminum facing. PIR has the lowest thermal conductivity compared to conventional insulation, which significantly reduce the required insulation thickness. PIR consists of a rigid closed cross-linked cells giving strength and rigidity to the board.

Facing diffusion hermetic layers of boards provide low water absorption and vapor permeability, dimensional stability at temperature variations.

PIR boards PirroUniversal has a high fire-resistant properties: exposed to the flame, polyisocyanurate becomes charred and forms a crust that protects intact polymer layers. PIR does not support combustion, does not extend the flame, does not melt and doesn't form burning drops of the melt.

Working with the board doesn't generate fibrous dust, so respiratory protection isn't required.

From the outside facing is marked with a grid 100x100 mm with crosshairs in each grid cell. Marking helps to significantly reduce the time of construction work: it is not necessary to apply the layout to cut and fasten the boards. Boards 1200x600mm, 1200x1200mm, including 1200x2400mm for pitched roofs are used for private housing

Advantages of PirroUniversal in flat roofing:

- You do not need a protective separation layer of glass fiber between the insulation and PVC membrane.
- The low density of the material reduces load on the frame of the existing building, reducing the consumption of materials for designed bearing structures.
- The best ratio of weight to overlapping areas gives significant savings on the cost and timing of work;
- less required thickness reduces the amount of product to transport and costs for installation and fasteners;
- It is allowed to walk of them during installation and operation
- The product is recommended for use in raw season (the rainfall is easily removed from the board surface).

Mechanical method of attachment is used when PIR boards are installing on flat roof, boards with "quarter" end face are used.

FIELD OF APPLICATION:

PirroUniversal boards is universal thermal insulation for private housing construction - for thermal insulation of pitched roofs, layered masonry walls with decorative cladding layers in the floor, including Underfloor heating systems; It is used for thermal insulation of floors, attics. Recommended for insulation of walls and ceilings in rooms with high temperature and humidity - saunas, baths. Effective for the reconstruction of the cold attic into the attic floor by saving living space.

PirroUniversal boards are designed for flat roofs of unexploited industrial and public buildings, warehouses with roof cladding of polymeric PVC membranes, membranes based on EPDM and TPO, as well as to create a thermal insulation loop (Floor, wall) in cold stores.

PirroUniversal boards are efficient for buildings coated with sheeting. It is a part of the PIR roof expert system. Suitable for roofs larger than 10 000 m² without fire separation zones.

PRODUCT CHARACTERISTICS:

Characteristic	Description	Units	Value	Test method/ Standard									
Facings	Upper facing: multi layered alum laminate. Lower facing: multi layered alum laminate.	-	-	TS 5768-001-09151858-2015									
End face profiling	“Tongue and groove” perimeter profiling (for ≥ 40 mm thickness)	mm	10 (depth)	TS 5768-001-09151858-2015									
	“Quarter” perimeter profiling (for ≥ 30 mm thickness)	mm	15 (depth)										
	Without profiling	-	-										
Dimensions of the boards	Width x length	mm	1200x600, 1200x1200, 1200x2400	GOST 17177-94, TS 5768-001-09151858-2015									
	Thickness	mm	30..250										
	Thickness discrete values	mm	10	TS 5768-001-09151858-2015									
Density	Isocyanurate without facings, ρ	kg/m ³	31 \pm 2	GOST 17177-94									
Water absorption	Complete immersion, W	%	<1,0	GOST 17177-94									
Coefficient of thermal conductivity	Isocyanurate without facings, λ_{25}	W/m·K	0,023	GOST 7076-99									
	Isocyanurate without facings, λ_A	W/m·K	0,024	GOST 7076-99, GOST 24816-81, Set of Rules 23-101-2004									
	Isocyanurate without facings, λ_B	W/m·K	0,025										
Calculation data for application conditions A													
Board thickness, mm	30	40	50	60	70	80	90	100	110	120	130	140	150
Thermal resistance $R_T=d/\lambda_A$, m ² ·K/W	1,25	1,67	2,08	2,50	2,92	3,33	3,75	4,17	4,58	5,00	5,42	5,83	6,25
Heat transfer coefficient $K=1/R_T$, W/M ² ·K	0,8	0,6	0,48	0,40	0,34	0,30	0,27	0,24	0,22	0,20	0,18	0,17	0,16
Calculation data for application conditions B													
Board thickness, mm	30	40	50	60	70	80	90	100	110	120	130	140	150
Thermal resistance $R_T=d/\lambda_A$, m ² ·K/W	1,20	1,60	2,00	2,40	2,80	3,20	3,6	4,00	4,40	4,80	5,20	5,60	6,00
Heat transfer coefficient $K=1/R_T$, W/M ² ·K	0,83	0,63	0,50	0,42	0,36	0,31	0,28	0,25	0,23	0,21	0,19	0,18	0,17
Vapor permeability coefficient	Isocyanurate without facings, μ	mg/(m·h·Pa)	0,026	GOST 25898-2012									
Vapor permeability resistance	For facing layer, R	(m ² ·h·Pa)/mg	≥ 123	GOST 25898-2012									
Strength of the board	Compressive strength at 10% deformation, σ_{10}	kPa (kg/cm ²)	≥ 120 (1,2)	GOST 17177-94									
	At bending, σ_{II}	kPa (kg/cm ²)	≥ 350 (3,5)	GOST 17177-94									
	At tension transversely to face surface, σ_p	kPa (kg/cm ²)	≥ 100 (1,0)	GOST EN 1607-2011									
Flammability index	Class of flammability	-	Г1 (KM4)	GOST 30244-94 (Federal law №123)									
Temperature range of application		°C	-70..+120	-									

**PACKAGE:**

Boards are packed in bundles of up to 600mm in height and covered with shrink film.

The bundles are formed in pallets up to 2400mm height. At the bottom of each pallet there are the support for the forklift. Each bundle and pallet is provided with the label.

TRANSPORTATION:

In covered vehicles in a horizontal position. Pack sizes are optimal for standard internal dimensions of road transport. Loading and transportation should comply with current shipping rules for the corresponding kinds of transport.

STORAGE:

Boards are stored on horizontal surface, closed from rain and direct sun exposure. It is necessary to ensure fire safety requirements. Boards should be stored in their original packaging.

When bundles are stored without the support bars, it is recommended to check the absence of sharp edges on the support surface.

WORKS:

In the private house building - according to "manufacturer's Album of technical solutions", in flat roofs - according to the "Album of technical solutions for the use of PIR boards in the flat roof with polymeric membranes," "Technological card for roof mounting using a system PIR Roof Expert", manual on the use of polymer waterproofing PLASTFOIL® and EKSTRARUF® and technical documentation of other manufacturers of polymeric membranes.