

Polystyrene concrete for sloping layers of roofs

Modification: PsB 40, 50, 60, 70, 80 / CEM II 32,5R / Recycled EPS Beads

Data Sheet No. 125

Product: Polystyrene concrete PsB 40-80 series is a cement mixture lightened with polystyrene beads with a fluidity suitable for forming flat roof slopes. It is produced in automatic MS1000 equipment on the construction site or at the concrete plant in standard auto concrete mixers, which need to be thoroughly washed beforehand together with the mixing core of the concrete plant.

Utilisation: To produce cohesive fall layers of flat roofs of civil and industrial buildings with uniform properties over the entire area. Modification PsB 60 is also for levelling layers of profiled roof coverings with a slope of up to 15°. PsB is often combined with a layer of (board) thermal insulation - they together ensure the thermal resistance prescribed by the standard for a flat roof of a given construction category. As a rule, the waterproofing layer is placed above the PsB layer. An authorised designer provides the design of the entire flat roof assembly.

Substrate: Reinforced concrete slab, ceramic ceiling, vapour barrier, trapezoidal sheet, corrugated Eternit. Other absorbent and non-absorbent substrates and coatings of various types. The substrate must be tight against liquid leakage.

Composition: Cement, pure water, additives, admixtures, and EPS beads according to SIRCONTEC recipes and production procedures.

Properties: A mushy substance with an excellent ability to hold the desired shape or flatness, fills unevenness well and is easy to process. After setting, PsB or PsB, combined with board insulation, forms solid and incompressible fire-resistant (class B1) fall layers with high dynamic stiffness at their own low weight and a cohesive surface suitable for glueing or melting waterproofing. During setting, uncontrollable shrinkage cracks may occur in PsB, depending on the type of application and the curing method, even beyond the expansion fields. These do not affect the functionality of the layer or filling and are not considered a defect.

Technical specification:

Polystyrene concrete	PsB	40	50	60	70	80
Minimum substrate&ambient temperature during app *	°C	+15 až +30	+8 až +30	+5 až +30	+5 až +30	+5 až +30
Availability by pumps - Horizontally / Vertically	m	200 / 80	200 / 80	200 / 80	200 / 60	200 / 40
Min. / Max. PBG application thickness (approximate)	mm	60 / 1000	55 / 1000	50 / 1000	50 / 1000	50 / 1000
Walkability at 20°C	hod	< 72	< 36	< 24	< 24	< 24
Plastic density	kg/m³	430 - 500	500 - 600	600 - 700	780 - 850	880 - 950
Density after 28 days	kg/m ³	380 - 450	450 - 550	550 - 650	730 - 800	830 - 900
Natural humidity	% hm.	8 - 12	8 - 12	8 - 12	8 - 12	8 - 12
Min. compressive strength after 28 days/20° - f_c *1	MPa	0.50	0.80	1.10	1.70	2.30
The ability to form a slope, at least	%	2	5	10	10	10
Maximum λ of dry material	W/mK	0.100	0.120	0.140	0.180	0.20

* Minimum external temperature for PsB production, transport and pumping is 0°C and Max. processing time from its production is 120 min.

*1 Requirement for higher compressive strength must always be consulted before starting foam concrete production.

Kontrola kvality:

The Control Procedures and the Control and Test Plan of SIRCONTEC govern the quality control of the produced PsB.

The density and compressive strength are measured on test bodies at 28 days during the proving test.

The most frequently used modifications of foam concrete - PsB 40-60 are certified building materials - [Technical Assessment TSÚS SK TP-14/0118](#) issued on 06.10.2014. The complete Technical Assessment is available upon request.

Installation & Processing:

1. Substrate: Before starting work, verifying its cohesion, tightness, and moisture is necessary. Loose or bulging parts and any leaks must be removed from the substrate. It must be free of coarse dirt and moistened (sprinkled) without standing water.

2. PsB installation:

Fresh PsB mixture is transported to the processing site by a pump.

When making the fall layer, it is possible to build EPS/XPS boards in its lower part to increase the thermal resistance.

During the pouring of the material, the fresh mixture is processed using a shaking rod and a straight edger, followed by smoothing with a smoothing trowel.

3. Maturing: The surface of PsB needs to be protected from premature evaporation of mixing water caused by direct sunlight, drafts and wind, like other cement mixtures. Spraying with water is suitable.

Outdoors, PsB is treated by sprinkling or fogging as long as the daily maximum temperature exceeds 25°C and the relative air humidity reaches less than 55%. It is necessary to start the curing from the moment of sufficient strength and continue for 2-5 days after laying. The curing contributes to achieving the desired properties. Covering the walking material with geotextile is advisable, which helps maintain surface moisture.

4. Construction site features for PBG application when using MS 1000 or Truck mixers:

Electrical connection - MS1000: 400 V/50 Hz, the breaker according to MS1000 configuration - min. 25A-B or 32A-C

Drinking water source - MS1000: min. 3/4" yielding min. 2 l/sec

Access: the road must be passable at least for a light truck (MS1000) or a truck mixer with a weight of up to 25t, and a place for a pump with dimensions of about 4x2m must be available

Cleaning: Tools are cleaned with clean water. Dirty surfaces can be cleaned by wiping off the fresh mixture or removing the hardened mixture mechanically. Residues are disposed of as usual cement waste by recycling or landfilling.

Safety & hygiene:

In its fresh state, it reacts alkaline. When working, it is necessary to protect the eyes and skin. Immediately rinse the affected area with clean water. When complications occur, seek medical help immediately. Keep out of reach of children when it is fresh. After maturity, the mixture is hygienically harmless.

Validity: from 1.02.2023
(the previous DS becomes invalid with the new edition)