Foam concrete for sloping layers of roofs

Modification: **PBG 50, 55, 60** / CEM II 32,5R **Data Sheet No. 135**

Product: Foam concrete PBG 50-60 series is a cement mixture lightened with technical foam with a fluidity suitable for forming flat roof slopes of up to 2.5%. 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.
PBG 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 PBG 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 technical foam according to SIRCONTEC recipes and production procedures.

Properties: A liquid, the easily pumpable mass that can reach slopes of up to 2.5%, is a thermal insulation that perfectly fills the unevenness of the base with processing, as in concrete mixtures. After curing, PBG creates solid, incompressible, non-flammable (class A1) and vapour-permeable fallout layers with a diffusion resistance factor of μ~5.2, high dynamic stiffness and low self-weight. The cohesive surface allows any insulation to be glued or melted.
During setting, uncontrollable shrinkage cracks may occur in PBG, 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:

Foam concrete	**PBG**	**50**	**55**	**60**
Minimum substrate&ambient temperature during app *	°C	+5 až +30	+5 až +30	+5 až +30
Availability by pumps - Horizontally / Vertically	**m**	**300 / 80**	**300 / 50**	**300 / 50**
Min. / Max. PBG application thickness (approximate)	mm	30 / 200	30 / 200	30 / 200
Walkability at 20°C	hod	< 24	< 24	< 24
Plastic density	**kg/m³**	**620 - 670**	**680 - 730**	**710- 770**
Consistency of fresh mixture - spill test	cm	12 - 15	12 - 15	12 - 15
Density after 28 days	**kg/m³**	**480 - 530**	**530 - 580**	**580 - 630**
Natural humidity	% hm.	8 - 12	8 - 12	8 - 12
Min. compressive strength after 28 days/20° - f_c *1	**MPa**	**1.10**	**1.20**	**1.30**
f_c after 3 days / 20°C - Minimally	MPa	0.55	0.60	0.65
Maximum λ of dry material	**W/mK**	**0.130**	**0.150**	**0.170**
Maximum λ of dry material	W/mK	0.130	0.150	0.170

* 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 PBG.
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 - PBG 35-50 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. PBG installation:
A pump delivers Fresh PBG mixture to the installation site. A shaking rod, straight edger, and trowel are used to level the surface according to the pre-installed slope formwork. The PBG never vibrates.

3. Maturing: The surface of PBG 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, PBG 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 4×2m 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.

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E-Mail: info@sircontec.com
www.sircontec.com