Foam concrete for industrial floors

Modification: **PBG 50, PBG 50X** / CEM I 42,5R **Data Sheet No. 147**

Product: Foam concrete PBG 50 / PBG 50X is a liquid cement mixture lightened by technical foam with self-levelling properties to level any unevenness. It is produced in automatic MS1000 equipment on the construction site or at a concrete plant in standard truck concrete mixers, which need to be thoroughly washed in advance together with the mixing core of the concrete plant.

Utilisation: PBG 50 & PBG 50X were developed to produce a layer improving the properties of the base of the upper concrete slab in the construction of industrial floors, sports halls and shopping centres. PBG replaces loose, compacted layers, gravel, and soil with low bearing capacity. In geologically challenging locations, it facilitates the establishment of industrial and transport structures. PBG creates a layer with uniform properties over the entire area, increasing the floor structure's safety.
PBG shortens implementation time and eliminates the risk of insufficient compaction of the loose layers while reducing the demands on the load-bearing capacity of the subsoil. It can also be combined with other thermal board insulations.
PBG 50 and 50X are used in combination with an upper reinforced concrete slab or other spreading layer. The waterproofing layer is placed between the PBG and the slab.
Selection of PBG modification according to the type of application and substrate temperature.

Composition: Cement, clean water, technical foam, admixtures, and additives according to SIRCONTEC recipes and instructions.

Properties: The self-levelling, easily pumpable material with the ability to achieve flatness of ±5mm/2m is a thermal insulation that perfectly fills the unevenness of the substrate/subsoil and strengthens it without the need for extraordinary effort or vibrations.
After setting, PBG forms a solid and incompressible vapour-permeable class-A1 non-flammable cohesive structure with high dynamic stiffness at low self-weight and zero lateral loads on adjacent structures.
As a rule, no expansion joints are necessary. 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:

Foam concrete modification	**PBG**	**50**	**50X**
Minimum substrate&ambient temperature during app *	°C	+5 až +30	+5 až +30
Availability by pumps - Horizontally / Vertically	**m**	**300 / 80**	**300 / 80**
Min. / Max. PBG application thickness (approximate)	mm	100 / 250	100 / 250
Walkability at 20°C	hod	< 24	< 24
Plastic density	**kg/m³**	**620 - 670**	**620 - 670**
Density after 28 days	kg/m³	480 - 530	480 - 530
Natural humidity	% hm.	8 - 15	8 - 15
Min. compressive strength after 28 days/20° - f_c *1	**MPa**	**1.50**	**1.80**
f_c after 7 days / 20°C - Minimally	MPa	1.00	1.20
Maximum λ of dry material	**W/mK**	**0.130**	**0.130**
Calculation value of the coef. of thermal conductivity λ	W/mK	0.200	0.200

***** Minimum external temperature for PBG production, transport and pumping is **-5**°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.

Quality control:
On the construction site, the plastic density and the consistency by spilling are checked (17-19cm) according to the SIRCONTEC Control Procedures. The density and compressive strength are measured on test bodies at 28 days during the proving test.

Processing:

1. Substrate: Substrate of foundations from any material with an Edef2 value according to the authorised floor design. Geofiltex separation geotextile of at least class 63/20 T with or without stainless reinforcement is always placed on the levelled subsoil. Before pouring the PBG, the geotextile must be moistened (sprinkled) without standing water.

2. PBG installation:
The fresh PBG mixture is transported to the installation site by a pump or poured onto it directly from the chute of the truck mixer. As in processing a self-levelling screed, a shaking rod and a screed board are used to level the PBG surface. PBG is never vibrated. Observing PBG's permitted processing and setting time is necessary when processing larger thicknesses.

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. Outdoors, PBG is treated by sprinkling or misting as long as the daily maximum temperature exceeds 25°C and the relative humidity is less than 55%. The curing contributes to achieving the desired properties and must be started from the moment of sufficient strength and continued for 2-5 days after installation. Covering the walking material with geotextile is advisable, which helps maintain surface moisture. After 3 days at 20°C, the surface can be loaded with light construction mechanisation.

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 and 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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