

PANELS FINISHING SPECIFICATION

Single panels type PSM

EMMEDUE single panel, as load bearing element, is finished on site by applying on each side structural shotcrete and sand (spritz beton) with a thickness of about 3,5 cm. The panel will therefore create a double sheet of reinforced concrete with a core of expanded polystyrene. This spritz beton is composed of inerts with a particle size between 0 and 6 mm and, once the seasoning is finished, it will have a characteristic resistance of at least 25MPa. The fresh mixture will have a plastic consistency S2 (adjustment measured with the Abrams cone inferior to 5 cm) so that it can set on the support without falling on the ground.

For each cubic meter of mixture, the indicative quantity of each material composing the spritz beton will be the following:

Cement	350 kg
Inerts	1600 kg
Water	160 litres

The quantity of water can vary according to the specific humidity of the inert; therefore the parameter that must be kept constant is the malleability, to be kept as above indicated.

Volume ratio between cement and sand have to be 1:4
Weight ratio between water and cement = 0.52

Possible malleability problems must be solved without adding water, but rather by using superfluidifying additives dosed according to the supplier's specifications.

The percentage in weight of the higher size fraction of the inerts (made up of sand and crushed stone) must not be superior to 10%.

The inerts will be appropriately washed, and must be without clay or organic substances. Sea sand must not be used, since its use jeopardises the spritz beton durability.

The creation of shrinkage cracking can be avoided also by adding polypropylene fibres to the mixture (in quantity of about 1 kg each m³)

The mesh continuity must always be assured. Close, by using flat meshes and/or mesh pieces, possible necessary cuts.

It is a good rule to check the wall verticality and alignment, to avoid accidental eccentricity that, beside being detrimental from a static point of view, requires heterogeneous spritz beton thicknesses.

With the first layer of spritz beton, applied by casting, the mesh will be covered: the second layer of finishing, and of the necessary thickness, will be applied with pressure. The use of pressure increases the compacting energy and assures the necessary thickening and consequently the needed mechanical resistance.

The waiting time between the spreading of the two layers must be minimum, in particular if there are high temperatures and the possibility of water evaporation in the mixture: the casting of the second layer must be made when the first layer is still humid and has a consistency appropriate to receive the finishing thickness.

It is recommended to keep the wall humid, for at least 48 hours after the casting of the spritz beton.



Single floor panels type PSS1

The compression cape must be made with a concrete finishing casting of a minimum thickness of 4 cm (measured above the mesh) and with a characteristic resistance not inferior to 25 MPa, with inerts of a diameter not superior to 12 mm. (15 mm. with a compression cape of 5 cm.). The use of concretes with thicknesses and resistances inferior to the above indicated is not recommended.

On the inferior part a structural cement-based spritz beton will be applied (lime inferior to 5 % on the cement weight), with a thickness of about 2,5 cm, as the one used for the finishing of the load-bearing single walls.

Double panels type PDM

The EMMEDUE double panel is finished on site with a concrete casting between the two polystyrene sheets. This concrete, which will be the load-bearing element together with the internal reinforcement, must have a Rck not inferior to 25 MPa, the inert particle size must not be superior to 15 mm and must have a good malleability (Slump S5).

Volume ratio between cement and inerts have to be cement:sand:inerts = 1:2:3
Weight ratio between water and cement = 0.52

Externally, on the double panel, as well as on the single panels without a structural function, a traditional or ready-mixed cement-based plaster must be applied (with lime inferior to 5 % on the cement weight).

Floor panels type PSSG

The EMMEDUE floor panels type PSSG are shaped so as to have joist elements to finish on site with fresh concrete and additional steel reinforcement according to calculation.

The compression cape must be made with a finishing concrete casting with a minimum thickness of 4 cm (measured above the mesh) and with a characteristic resistance not inferior to about 25 MPa, with inerts of diameter not superior to 12 mm.

On the inferior part a traditional plaster or ready-mixed cement-based plaster must be applied (with lime inferior to 5 % on the cement weight), with a thickness of about 1,5-2 cm. As alternative, a coating material, such as plasterboard, can be used, since the inferior mesh has not a load-bearing function.

Stairs panels type PSSC

The EMMEDUE stairs panels are shaped so as to create internal joist elements to be finished on site with fresh concrete and additional steel reinforcement according to calculations. The panel is finished on site with concrete casting that will be the load-bearing element together with the internal reinforcement. This concrete must have a Rck not inferior to 25 MPa, the inert particle size must not be superior to 15 mm and must have a good fluidity (Slump S5)

On the external part of the stairs panel a traditional or ready-mixed cement-based plaster (with lime inferior to 5 % on the cement weight) or an alternative coating are to be applied.

