



Průmyslová keramika, spol. s r.o.
Spešovská 627
CZ 679 02 Rájec-Jestřebí
(++420-516 432 197
++420-516 432 251
Fax ++420-516 432 273
e-mail: prumker@prumker.cz
www.prumker.cz

INSULATING CASTABLES PROCESSING IZOBET

Storage:

1. Insulating castable are packed in moisture resistant bags. Yet, they should be stored in a dry place. Storing on a dry impermeable surface will prevent condensation of ground moisture under the plastic pallet wrapping and any wetting of material, which could result in the loss of cold crushing strength.
2 pallets max. should be stacked in piles.

Preparation:

1. Only clean tools should be used for preparation. Any contamination of the mixture may adversely influence the start of setting and reaching due strength of the castable.
2. Surfaces, on which the castable is installed, should be waterproof.
3. Use clean water only fit for drinking.
4. Ambient temperature during mixing, installation and setting/hardening should be 15-25°C.

Mixing:

Manual mixing is the most suitable, but due to the possibilities of installation and volume of mixed material, mixers with rotary mixing blades are used.

Mix only such amount of material that can be immediately processed. Under ideal conditions, material should be worked within 20 minutes /any material left in buckets or troughs can start "false" setting, which could negatively impact concrete laying/.

1. Pour dry material into the mixer /best the whole bag/. After a short mixing, add $\frac{3}{4}$ of the total amount of water.
2. You can add metal fibres during this mixing – slowly and evenly.
3. Overall time of mixing:

Short mixing can make the concrete appear as being of sufficient consistence that can, however, quickly change during working due to aggregate absorbability. Concrete mixture workability will thus worsen as well as resulting parameters of the insulating castable.

Prolonged mixing (mostly materials with bulk density $<1.0 \text{ kg.m}^{-3}$) will break fragile particles – the material will be denser but with worse thermal and insulating properties.

If the material contains perlite or vermiculite, the overall time of mixing should not exceed 2 minutes.

Best divide the mixing into 2 parts:

after $\frac{3}{4}$ of recommended water has been added and after the mixture homogenization (approx. up to 1.5 minute), stop mixing for 1-2 minutes. The porous particles will have absorbed water and won't break unnecessarily during prolonged mixing. You can immediately adjust the suitable consistence of mixture by adding water additionally.

Installation

CASTING/POURING

1. Installation should be done within 20-30 minutes after the proper consistence has been reached.
2. Recommendation: spread the mixture using trowel and in case of need poke the mixture with a bar. In materials with bulk density $>1.3 \text{ kg.m}^{-3}$ auxiliary needle vibrators can be used. If your material is placed in layers, no more than 30 minutes should elapse between the placements of individual layers. Proper bonding between individual layers should be safeguarded. The surface should not be smoothed out overmuch. This will form an impermeable film preventing the escape of moisture during setting and drying time.

GUNNING

A skilled operator will ensure proper adjustment of wet shotcreting. Material is to be applied from below upwards in $0.5\text{-}1 \text{ m}^2$ zones and to full thickness. It is better to make dummy joints than stratified surfaces.

Treatment:

After installation, the castable sets at ambient temperatures $15\text{-}25^\circ\text{C}$ within 5-12 hours. During the time when the heat of hydration is being developed, keep the surface wet by covering it with polyethylene sheeting or by application of a fine film of a treatment agent preventing escaping of water.

By keeping the castable in wet environment, you will achieve sufficient strength of material. On the same reasons the material should not be exposed to extreme temperatures during setting time (24 hours).

Treatment during extreme weather:

1. Extremely cold weather:

- Keep the material and the installation area above 15°C during installation and 24 hours during castable hardening.
- The brickwork must not freeze within 24 hours from concrete setting-up.

After the castable has hardened, the lining may be exposed to freezing conditions, but before the drying process starts, it should be at temperature 15°C again.

2. Extreme heat:

- Prior to mixing, store the dry refractory mixes in a cold area.
- Ensure temperature of material and ambient temperature to be at 30°C during installation and 24 hours during castable hardening.
- Increased ambient temperature will shorten the mixture workability time and can be a cause of castable surface cracking.
- Add cold water in the mixture ($<7^\circ\text{C}$).
- External surface should be cooled during installation.

Drying

Controlled drying is required to avoid any damage of linings during the escape of vapour. Drying can be achieved before or during start-up of the plant.

The speed of drying and tempering of refractory insulating linings depends on the thickness of lining, the evaporation surface, speed of steam withdrawal, castable porosity, etc. The project engineer will determine the drying curve in lining of new plants; in case of repairs proceed in accordance to the below-given curve.

We recommend the following drying curve for lining thickness up to 150 mm and one-sided heating:

20 - 150°C	$25^\circ\text{C} / \text{hrs.}$
at 150°C	hold for 12 hours
150 - 350°C	$35^\circ\text{C} / \text{hrs.}$
at 350°C	hold for 6 hours
350 - 600°C	$35^\circ\text{C} / \text{hrs.}$
600°C – service temperature	$50^\circ\text{C} / \text{hrs.}$

When you notice water evaporation during the drying process, keep the temperature stable until the evaporation ends. Then continue in the drying process as per the recommended procedure.

If the refractory concrete is installed in a steel sheet and evaporated water cannot freely escape (for instance in two-layer brickwork), bore holes into the sheet.