Thermal undercoat plaster insulation.

IS IT:

- [X] *Product*
- [ ] *Technology*
- [ ] *Equipment*

APPLICABLE FOR:

- [X] *Restoration*
- [X] *Rehabilitation*
- [X] *New Construction*

APPLICABLE ON:

- [ ] *1. Foundations and underground structures*
- [ ] *2. Vertical structures*
- [ ] *3. Horizontal structures and vertical connections*
- [ ] *4. Roof and terraces*
- [X] *5. Façade and building envelope*
- [ ] *6. Finishes and completion elements*
- [ ] *7. Integrated services*
- [ ] *8. General strategies for building recovery*

Related companies: *No companies; university research; structural study.*

DESCRIPTION

Thermal insulating plasters (category T1 or T2) are special plasters, i.e., premixed products with added additives e.g., gypsum and expanded perlite. It is suitable for internal application on clay bricks, concrete blocks (regular or aerated), stone and metal lath.

WHY TO USE

This is a product for plastering interior masonry and improving the thermal insulation capacity of the wall. It is ideal for the conservation of older and /or listed buildings.

HOW TO USE AND APPLY

SURFACE PREPARATION:

Before the application of plaster, all substrates should be clean, free of dust, oil or residues of other building materials. The substrate must be sprayed with water before applying the product (e.g. PELELITE BONDING TRICOTE (T2)), especially during hot weather, so as to avoid rapid absorption of the water in the mixture. When applying this material (T2) over high absorbent substrates, it is advisable that these are firstly primed with a suitable product.
In all cases, the substrate with the applied primer should be perfectly dry before applying plaster.

MIXING:

Depending on the desired consistency, a homogeneous mixture free of lumps should be achieved by mixing with clean water. The mixture is prepared using a low-speed electric mixer in an appropriate mixing container. When small quantities are required, mixing can also be done by hand. The addition of the appropriate amount of water should be carried out slowly and dry powder should be added while stirring. Extended mixing should be generally avoided, in order to decrease the possibility of crashing the expanded perlite.

If stirred periodically, the pot life of the mixture should be at least 30 minutes, depending on weather conditions. In case the mixture has started to set before it is used, then it should be disposed immediately without using it. In any case, additional water should not be added for remixing and/or for improving its workability.

APPLICATION:

These special plasters are applied on layers of approximately 10mm. After applying the guides at the desired thickness, one layer should be applied using a steel trowel, or level guides, to create an even surface (depending on the nature of the substrate). The plaster should be allowed to settle and be re-treated if necessary. After the initial setting has been achieved the plaster's surface should be wetted with a sponge and smoothed using a finishing trowel. In cases where a second layer is required, the substrate should be cross-scratched and allowed to settle before application.

In the case of metal lath usage, two layers should be applied, approximately 10mm each. For better bonding results, it is advisable that the first layer penetrates through the metal lath to a depth of at least 10mm, then marked and allowed to settle before the second layer is applied. The setting time of the plaster on metal lath differs than when applied over other substrates, so, it is crucial that the plaster is protected from extreme weather conditions during setting time.

It is advisable to apply the finishing coat on the same day, in order to achieve better adhesion results.

TECHNICAL CHARACTERISTICS

The reference standard is UNI EN 998-1 "Mortars for internal and external plasters", according to which, a thermal insulating plaster is "a guaranteed performance mortar with specific insulating properties". In the label, bearing the CE mark and affixed to the packaging, thermal insulating plasters are indicated with the letter "T". A plaster can be classified as "T" – thermal insulation – for the properties related to thermal conductivity (λ), which must have values lower than 0.2 W/mK.

In turn, the "T" thermal insulating plasters are divided into two categories, T1 and T2:

– category T1 plasters, with $\lambda \leq 0.1$ W/mK;

– category T2 plasters, with $\lambda \leq 0.2$ W/mK.

RECOMMENDATIONS AND OTHER INFORMATION

The plaster is highly susceptible to weather variations during its application. Hot weather or exposure to direct sunlight, may result in premature loss of moisture and/or cracks, so it is advisable that special care is taken to prevent adverse effects. The recommended ambient air temperatures for the application are between +5°C and +35°C. During winter or in periods of low temperatures (5-10°C), it is advisable that warm water (approx. 30°C), is used for the mixing and, if possible, the application to be performed during noon time. On the contrary, cool water (approx. 20°C) should be used for the mixing during summer and generally at ambient temperatures exceeding or expected to exceed 35°C.

Other recommendations:

- Fresh, clean water should be used for both mixing and cleaning.
- Material, which was stored in open containers for a long period of time should be avoided, as it may contain lumps or be contaminated.
- Water or new product should not be added in a mixture that has started to set, in a desire to improve its workability.
- The product should not be used under extreme weather conditions of working, such as direct sunlight or strong winds.

EXAMPLES

NA

REFERENCES / SOURCES AND LITERATURE

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Maia, J., Ramos, N. M. M., De Freitas, V. P., & Sousa, . (2015). Laboratory Tests and Potential of Thermal Insulation Plasters. Energy Procedia, 78, 2724–2729. https://doi.org/10.1016/j.egypro.2015.11.613

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Singh, M., & Garg, M. (1991). Perlite-based building materials—A review of current applications. Construction and Building Materials, 5(2), 75–81. https://doi.org/10.1016/0950-0618(91)90004-5

WEBSITE OF THE COMPANY

https://www.peletico.com/en/

https://www.peletico.com/en/building-materials/gypsum-based-plasters/item/pelelite-bonding-tricote-t2

https://www.mapei.com/ae/en/home-page

https://www.nurkim.com.tr/products/plaster-mortars/thermal-insulation-plaster-silicon-perlite-fiber-white/13

IMAGES AND CAPTIONS

Fig.1-4: Mixing and application process of thermal insulationg plasters.
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