

## Plastering and Rendering Mortars

### 1. Definition

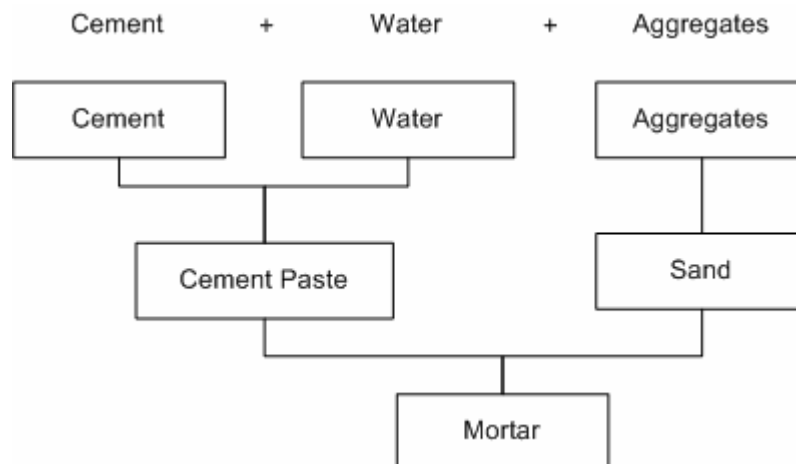
Plastering works are considered the "skin" of the building either from external & internal. It provides the final shape of the building and gives its distinct characteristic.

### 2. Principle Functions of Plasters

- Protecting the building's walls against the direct exposure of shocks and weather conditions as sun, rain, humidity, storms and sands... etc.
- Increasing the value of the internal & external parts of the building. They give the final aspect of the building.

### 3. Constituents

Plastering materials are mainly composed of



### 4. How to make a good plastering mortar?

- Cement:

Good plastering & rendering mortars can be done by:

- Adequate mix design of the constituents.
- Achieving the quality properties of the mortars

Hydraulic cement or any other Portland cement can be used for manufacturing of the plastering mortars, provided that the minimum cement content is 300 Kg/m<sup>3</sup>

for conventional scratch coat (Tartasha), and 150 Kg/m<sup>3</sup> for other plastering types. The maximum cement content must not exceed 450 Kg/m<sup>3</sup> for all plastering mixtures, to avoid cracking caused by mortar shrinkage in case of thin thickness plastering or that occur due to thermal stresses in case of thick plastering.

- Fine Aggregates: Sand

The sand participate about 65% in the mass (46% of volume) of the plastering mortar. The maximum diameter (D) of the fine sand should be less than or equal 4 mm.

Sand can be natural with round shaped granules or mixed with random shapes. The sand are functionally classified with the maximum and minimum dimensions (D/d) of granules. The European Spec. has determined the sand granulometry classes as: 0/1, 0/2, 0/4, 0/8, 2/4 and 2/8mm. The content of the fine particles (passing sieve of 0.063mm) must not exceed 5% in the mass of the dry material. The preparation of the mortars can be relative to some physical characteristics such the density of the particles and water absorption.

Presenting of some chemical constituents in the sand may lead to negative effects of the mortar. Sand should be selected to avoid the constituents which may defect the quality of the plastering walls. As an example the Gypsum and the reactive elements may cause spread cracks (because of expansion) and lead to shortage of the final resistance.

- Mixing Water:

The water used in the plastering mixture should be clean and free of harmful materials as, oils, grease, acids, alkalis, salts, organic materials or any other materials that may harm the mortar.

## 5. Mortars

### Properties of the mortar with a good quality:

The workability of the mortar is not the property which can be regulated only by more or less water. The mortar should be easy to be applied, and has homogenous distribution, without the problem of segregation. Good Mortars should have the following characteristics:

#### Consistency:

The property of the mortar tendency to resist the deformations.

#### Plasticity:

It is the indication of the mortar capability to be deformed under mechanical action.

#### Cohesion:

It is the indication of segregation resistance which lead to the capability of the mortar to maintain its water on the walls.

#### Tixotropia:

The fluidity of the mortar and its ease to be applied.

Capability of Adhesion:

Property of being mortar applicable in vertical or any direction, without cease or break.

Retention of Water:

The capability of keeping the water of the paste after its application, in contrast with evaporation from the supposed parts.

All of these properties which influence the quality, and the facility of the work, are fundamentals either for manual or mechanical applications.

**6. Direction for better usage of plastering mortars:**

- Surfaces must be cleaned from dust, loose particles and grease, which may isolate the plastering coat to be stacked onto the surfaces.
- Smooth concrete surface and walls must be roughened by firstly applying a tartasha coat or applying a bonding liquid.
- In hot weather conditions, wet the surfaces by cleaned water before application.
- Slowly add clean water to the dry plastering mixture, until the texture is like thick cream and no lumps are present.
- Do not mix more quantity than that can be used in approx. 1 hour.
- Leave surface flat and slightly roughened, to be ready for application of rendering material.
- Clean equipment and tools after each mix. Materials from a previous mix must not be added to a new mixture.