ecostucco® sand

Sands should be clean and uncontaminated by clay/silt. These occur in the range from #300 (0.04mm) and below and the most effective method to establish their presence is the wet sieve analysis. Normal dry sieve analysis does not accurately reveal the presence of clay or silt (particles passing #200 (0.075) sieve). This is due to the fact that when the sand is dried before sieving, clay or silt particles can coat some particles and these will not pass the #200 (0.075) sieve. In contact with water, however, these particles will return to colloidal state, retaining moisture and general instability. The result is a much longer drying period, which if winter is approaching, would not allow the mortar to be sufficiently dried to withstand frost.

The fines in sand will demand more water. This is due to much higher surface area to be wetted. A high proportion of fines in sand and the consequent high water content in the mortar will have negative effects in compressive and flexural strength. High moisture will promote shrinkage and could lead to de-bonding especially in mortars applied to low suction areas.

There is a tendency to choose sands because of their color. The fact is that the color of a mortar will be given by the fines contained in the sand and therefore fine sands are chosen for a number of jobs where they are not appropriate. In plasters, for example, **good, well-graded, coarse sharp sand is needed for the base coats (washed, preferably dried plaster or masonry sand).** Finer sand can be chosen for the finishing coat based on its color, when applicable. If, however, the color of the sand is due to clay (earth) presence, as clay is a binder, the quantity of lime will be reduced to avoid producing a binder rich mortar. Fine sands require more water. A high proportion of these sands lead to longer setting time, possibility of shrinkage, lime leaching and more sensitivity to adverse weather conditions.

Sands are mostly responsible for the void structure of a mortar and, therefore, for its vapor permeability, so vital for the performance against accumulation of condensation. It is for this reason that well graded sands are recommended. If sharp, the void structure will be even more efficient.

Mono granular sands (particle size mainly between 1 or 2 grades) will not allow good vapor exchange; they will also diminish workability and therefore increase the danger of too much water addition in order to achieve it. In making NHL mortars with good sand, workability should not be achieved by adding more water but by allowing a little more time for mixing.

It is also advantageous, if time permits, to let the mortar rest for a while. The water will settle between the particles and allow better hydration of the free lime content resulting in a fatter, more homogeneous and workable mortar.

In plastering, sharp and well-graded sands should be used for all coats.

The structural soundness of a plaster depends on the bonding with the background and between coats. Bonding is partly dependant on the capillary suction of the background or the previous coat.

A percentage of finer particles (10-15% between #100 (0.150) and #200 (0.075mm) with 0 below #200 (0.075)) will promote bonding without affecting vapor permeability and capillary suction. Indoor smooth plastering will require fine sands. Particular attention should be given to curing.

In all cases NHL binder quantities should be carefully considered and this should be done in relation to the performance required and the quality of the sand.

There are a vast number of sands, differing in grades and qualities. To be sure that a well-graded sand is being used it is necessary that at least 4 grades form a substantial part of the proposed sand.