

Reworking Mortars

Study on reworked mortars using St. Astier NHL 3.5

Mortar Mixes Prepared:	15.6 lbs/ft ³ (250 kg/m ³) (1:2.5) 21.85 (350) (1:2) 24.97 (400) (1:1.5)
Proctors Preparation	for each of the above dosages a series of proctors were prepared with normal water addition and tested. Others were prepared with the same mortar 18 hours later reworking the mortar and adding extra water until the required workability was obtained.
Remarks	<p>The water added in re-working was approx. 1/6 of the water used initially to mix the mortars The reworked mortars were much fatter with a lower bulk density (less 2.6%-4%) The Compressive Strength of reworked mortars is lower due to the lower bulk density but, if the reworked mortar is compacted more (in practical terms this means that, on a plaster, it would be pressed harder) and its bulk density increased to that of the normal mortar, the compressive strength increases. In reworked mortars with higher dosages the Compressive Strength, is even higher than in standard mortars.</p> <p>The sand used was the standard ISO 658.</p>
Conclusion	<p>It is possible to rework St. Astier NHL mortars. Their performance related to compressive strength will be lower than standard mortars unless the reworked mortar is tightly applied to return to a bulk density similar to the standard mortar. The reworked mortar has an higher workability.</p> <p>It would not be possible to rework the mortars if the St. Astier binders would contain additions of cement, gypsum or would have a higher content of aluminates as all these would promote an irreversible quicker set.</p>

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	Standard	Reworked	Standard	Reworked	Standard	Reworked
NHL 3.5						
DOSAGE lbs/ft3 (kg/m3)	15.6 (250)	15.6 (250)	21.85 (350)	21.85 (350)	24.97 (400)	24.97 (400)
WATER ADD. Gal/ft3 (liters)	2 Gal. (270)	2 (270)	2.2 (290)	2.2 (290)	2.3 (305)	2.3 (305)
EXTRA WATER		0.4 (50)		0.4 (50)		0.4 (50)
TIME FOR REWORK		18 h		18h		18h
DENSITY (28 days) lbs/ft3 (kg/m3)	118.6 (1900)	114.9 (1840)	118.6 (1900)	114.9 (1820)	118.6 (1900)	114.9 (1820)
COMP. STRENGTH psi (N/mm2)	135 (0.93)	81 (0.56)	181 (1.25)	117 (0.81)	226 (1.56)	157 (1.08)
INCREASED DENS. lbs/ft3 (kg/m3)		118.6 (1900)		118.6 (1900)		118.6 (1900)
COMP. STRENGTH ON INC. Density (28 days) psi (N/mm2)		112 (0.77)		215 (1.48)		280 (1.93)