

Compatibility with Seawater

Due to the very low presence of aluminates and other components (gypsum, alkalis), St. Astier limes are suitable to be used in marine climates.

An extreme test has been conducted in our laboratories by using seawater instead of distilled water (ISO norms EN 459.2). The mortar was prepared with ISO sands and the current European Norm ratio of $>31 \text{ lbs./ft}^3$ (500kg/m^3) of binder.

The sea water was simulated by using salt from the Red Sea (as used in sea water aquariums) at a ratio of 4.4oz/gal^{-1} (33gr.l^{-1}). The proctors were cured in the same water for 7, 28 and 90 days.

The lime used was NHL 3.5 and the table below shows results in tensile and compressive strength compared with an identical mortar prepared with the usual water as per EU standards (EN 459-2).

Curing - Days	Seawater proctors		Standard proctors	
	TS	CS	TS	CS
	Psi(N/mm ²) (N/mm ²)	Psi	Psi (N/mm ²) (N/mm ²)	Psi
7	178 (1.23) (3.10)	449	123 (0.85) (2.80)	406
28	536 (3.70) (9.50)	1377	362 (2.50) (8.90)	1290
90	551 (3.80) (15.30)	2218	507 (3.50) (14.60)	2117

Note: the high compressive strength obtained is due to the EU norm standard mortar ratio, which is near to 1:1.

The performances of the 2 mortars are similar at 90 days but the presence of sodium chloride accelerates the early hardening.

The study is conducted to check the passive reaction in the presence of sea salt. It does not consider the possible presence of organic matter or contaminants in the seawater.