

## Certificate of Analysis

**SRM SN strength test 020  
Portland Cement  
(CEM I 52,5 N)**

Distributed by :

**SNL  
(Société Nouvelle Du Littoral)**

Siège social et usine : Zone Artisanale – BP 9 F-11370 LEUCATE  
Tél. (33) 68 40 14 05 – Fax (33) 68 40 92 72 - <http://www.standard-sand.com>

### I – Participation and execution of tests

Each year the “*Association Technique de l’Industrie des Liants Hydrauliques*” (ATILH) organises a round robin test campaign involving the participation of the cement production industry laboratories, the cement end-user laboratories and Research and Inspection Centers within the construction materials sector. This participation is compulsory for laboratories accredited by COFRAC for cement testing. The tests are carried out in accordance with standardised methods where latter exist, otherwise according to everyday traditional methods.

### II – Statistical analysis of the results

Outliers are eliminated via the STUDENT’s test with a confidence level of 98 %. A reiteration is set at this threshold in order to keep only those values which are related to the “Normal or Gaussian” distribution, the latter being entirely defined by 2 parameters: mean and standard deviation. The coefficient of variation symbolised by “V” is the ratio between the standard deviation “ $\sigma$ ” and the mean value  $\bar{X}$  .

### III – Strength test and Hydration Heat test

SN strength test 020	According European standard norms (CEN )		
	Kpi's	Mean	Standard deviation
$\sigma$ (%)			Coefficient of variation
			V (%)
		reproductibility	
Mass of test pieces (CEN 196-1 )	584,8	2,6	0,60
strength test 1 D (CEN 196-1 )	19,2 Mpa	0,6	6,0
strength test 2 D (CEN 196-1 )	31,0 Mpa	0,8	4,9
strength test 7 D (CEN 196-1 )	50,2 Mpa	0,9	3,6
strength test 28 D (CEN 196-1 )	63,9 Mpa	1,2	3,6
Hydration Heat 41h (CEN 196-9 )	336 J	12	6,4
Hydration Heat 3D (CEN 196-9 )	365 J	24	6,2
Hydration Heat 7 D (CEN 196-9 )	383 J	26	6,7

For the calibration of the strength test and Hydration Heat test, follow the requirements of the EN 196-1 and EN 196-9 and 8 standard,

### III – Sample conditioning

The sample of this reference material is packaged in sold in batch of 2 bags of 500 g. Physic-chemical properties of the sample are stable until the bag is open. After opening each bag you must use cement for the test immediately .the cement not use will lose immediately his quality.