

Application Preparation and Testing for Water Sorptivity Test

- 1) Four 150mm cubes surface to be applied was wire brushed and cleaned before application was cleaned and dry.
- 2) A coat of Protectosil® BHN was applied onto the dry clean surface at coverage of 150g/m².
- 3) A second coat at the same coverage was applied once the first was dry (approximately 1 hour later)
- 4) The applied cubes were cure in air for 3 days before the samples of 50mm cores were cored out for the applied surface.
- 5) A layer of epoxy was applied around the side surface of the concrete core leaving only the test surface (applied surface) exposed.
- 6) The concrete core was conditioned in an oven at 40°C for 48 hrs until constant weight was achieved before the test was conducted.
- 7) The test surface of each test specimen was placed on supports in a shallow tray containing water such that the depth of immersion up the sides of each specimen was 2 ± 1 mm at 23°C.
- 8) The cores were removed at interval of 5, 10, 30, 60, 120 and 240 minutes, swabbed dry and weighed. Then immediately placed back on the test bed until all time intervals were completed.
- 9) A total of three (3) treated cores and three (3) control cores were tested for water sorptivity.

Testing Procedure for Depth of Penetration

- 1) One of treated cube was cut open in a plane perpendicular to the applied area.
- 2) The freshly exposed faces were wet with a spray of plain water. The water was absorbed into the inner untreated concrete but not into the effected outer layer, which shows water repellency.
- 3) The penetration depth of Protectosil® BHN was measured with a pair of vernier calipers. Three evenly spaced measurements were taken around the perimeter of one face of each cube. The average value was calculated and reported as the depth of penetration.

Results : 1. The results of the dimensional measurement and water sorptivity test are give in Table 1.
2. The results of the Depth of Penetration of Protectosi® BHN given in Table 2.



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Results:
Table 1: Water Sorptivity of Cores Samples

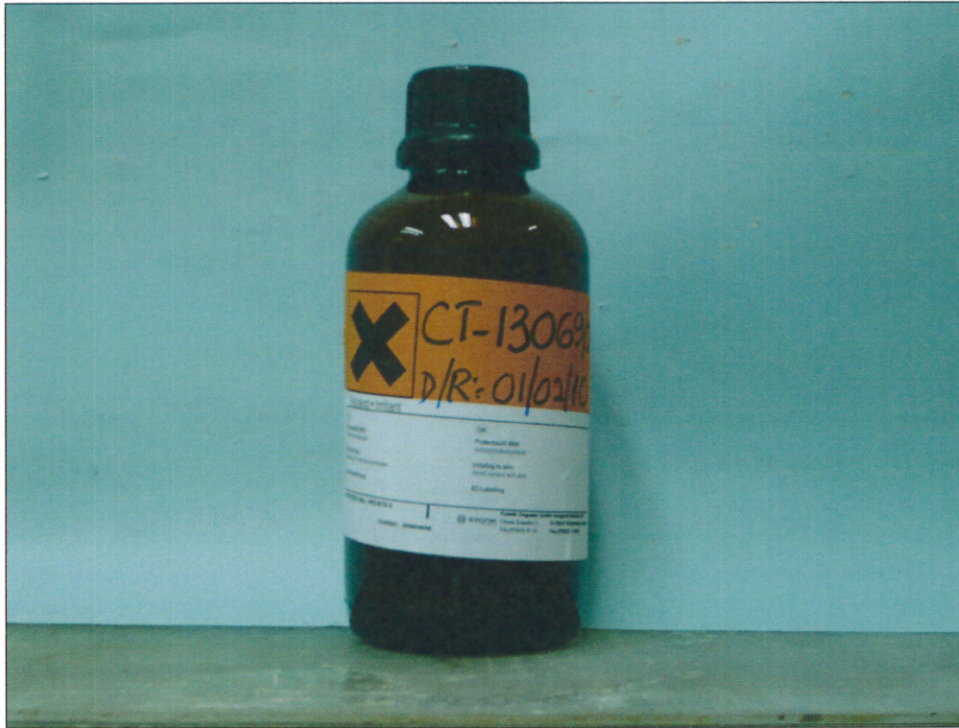
Sample Reference		Control			Protectosil® BHN 72 hours		
It shows that after the Specimen Reference		C1	C2	C3	T1	T2	T3
Surface area of test face (m ²)		0.002	0.002	0.002	0.002	0.003	0.002
Height of specimen (mm)		78.4	76.7	79.0	75.3	78.8	75.2
Time		Water Uptake (kg/m ²)					
(min)	(h ^{0.5})						
0	0	0	0	0	0	0	0
5	0.29	0.2514	0.2133	0.2038	0.0326	0.0395	0.0401
15	0.50	0.3791	0.3446	0.3628	0.0489	0.0473	0.0522
30	0.71	0.5027	0.4636	0.4892	0.0775	0.0592	0.0642
60	1	0.5893	0.5046	0.5218	0.0898	0.0671	0.0802
120	1.41	0.7047	0.5825	0.6115	0.0979	0.0749	0.0923
240	2	0.7253	0.5948	0.6319	0.1142	0.0868	0.1043
Sorption Coefficient (Kg/m ² hr ^{0.5})		0.3428	0.2749	0.2946	0.0541	0.037	0.0472
Ave Sorption Coefficient (Kg/m ² hr ^{0.5})		0.3041			0.0461		
Sorption Coefficient (mm/min ^{0.5})		0.0443	0.0355	0.0380	0.0069	0.0048	0.0061
Ave Sorption Coefficient (mm/min ^{0.5})		0.0393			0.0059		

Table 2: Depth of Penetration of Protectosil® BHN into Concrete Specimens

Sample Reference		Protectosil® BHN 72 hours	
Depth of Penetration of Protectosil® BHN (mm)	1	5.49	5.81
	2	4.89	4.34
	3	3.62	3.85
Average Penetration of Protectosil® BHN (mm)		4.7	

Remarks: The measurements were randomly selected at six evenly spaced points.



Photograph 1 Shows one bottle of Protectosil® BHN as received.

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