



Tellija:

AS Uninaks

Forelli 1
10612 TALLINN

06.06.2016

Experimental Report N° 551/16

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Assignment: Testing of adhesive for tiles of Uninaks AS.

Product designation: Dry mix of adhesive based on cement, marked as „Plaatimisegu Naks 5, 08.03.16 (3. tootmisliin)“.

Forwarded to the laboratory by manufacturer on 15.03.2016 in 25 kg standard package.

Test method: EN 1348 „Adhesives for tiles – Determination of tensile adhesion strength for cementitious adhesives“.

The adhesive was mixed at 06.04.2016 in accordance with EN 1348 using the amount of water 0,24 l/kg and time of mature 10 min, stated by manufacturer.

The adhesive was applied in accordance with EN 1348 to the concrete slab, complied with EN 1323. After 5 min 10 type V1 tiles were placed on adhesive and each tile loaded with (20±0,05) N for 30 s.

Initial adhesion

After preparing the test units were stored a 27 days under standard conditions at a temperature of (23±2) °C and relative humidity of (50±5) % and then the pull head plates were bonded to the tiles. After a further 24 h storage under standard conditions the initial tensile adhesion strength was determined. The test results are given in table 1.

Adhesion strength after water immersion

After preparing the test units were stored for 7 days under standard conditions at a temperature of (23±2) °C and relative humidity of (50±5) % and then immersed in water at the standard temperature. After 20 days the test units were removed from water, wiped with a cloth and the pull head plates were bonded to the tiles. After a further 7 h the test units were immersed in water at the standard temperature. The following day the test units were removed from water and the tensile adhesion strength was determined. The test results are given in table 2.

Adhesion strength after heat ageing

After preparing the test units were stored a 14 days under standard conditions at a temperature of (23±2) °C and relative humidity of (50±5) % and then placed in an aircirculating oven at a temperature of (70±2) °C. After 14 days the test units were removed from the oven and the pull head plates were bonded to the tiles. After a further 24 h storage under standard conditions the tensile adhesion strength was determined. The test results are given in table 3.

Test results:

Table 1: **The initial tensile adhesion strength**
of tile adhesive based on cement, marked as „Plaatimissegu Naks 5, 08.03.16”

No of test units	Preparing date of test units	Testing date	Bonding area A, cm ²	Total load L, kN	Tensile adhesion strength, N/mm ²	
					individual	mean
1	06.04.16	04.05.16	26,0	3,88	1,5	1,6
2			26,0	3,84	1,5	
3			26,1	4,19	1,6	
4			26,0	3,61	1,4	
5			26,0	3,37	1,3	
6			25,7	4,45	1,7	
7			26,1	4,17	1,6	
8			25,6	4,74	1,9	
9			25,8	4,65	1,8	
10			26,4	4,14	1,6	

The mode of failure of test units:

Test units 1-4, 6-8 and 10 - adhesive failure between tile and adhesive.

Test units 5 - adhesive failure between tile and head plate.

Test units 9 - cohesive failure within the adhesive.

Table 2: **The tensile adhesion strength after water immersion**
of tile adhesive based on cement, marked as „Plaatimissegu Naks 5, 08.03.16”

No of test units	Preparing date of test units	Testing date	Bonding area A, cm ²	Total load L, kN	Tensile adhesion strength, N/mm ²	
					individual	mean
1	06.04.16	04.05.16	26,1	1,78	0,7	0,7
2			25,9	1,98	0,8	
3			26,2	1,90	0,7	
4			26,0	1,55	0,6	
5			26,2	1,92	0,7	
6			26,1	1,61	0,6	
7			26,1	1,80	0,7	
8			26,2	1,94	0,7	
9			26,1	2,02	0,8	
10			26,0	2,04	0,8	

The mode of failure:

All test units - adhesive failure between tile and adhesive.

Table 3: **The tensile adhesion strength after heat ageing**
of tile adhesive based on cement, marked as „**Plaatimissegu Naks 5, 08.03.16**”

No of test units	Preparing date of test units	Testing date	Bonding area A, cm ²	Total load L, kN	Tensile adhesion strength, N/mm ²	
					individual	mean
1	06.04.16	05.05.16	26,0	3,96	1,5	1,3
2			26,0	2,96	1,1	
3			25,8	2,84	1,1	
4			26,1	3,86	1,5	
5			25,6	3,84	1,5	
6			25,9	3,18	1,2	
7			25,7	3,08	1,2	
8			26,3	3,06	1,2	
9			25,8	2,92	1,1	
10			26,0	2,72	1,1	

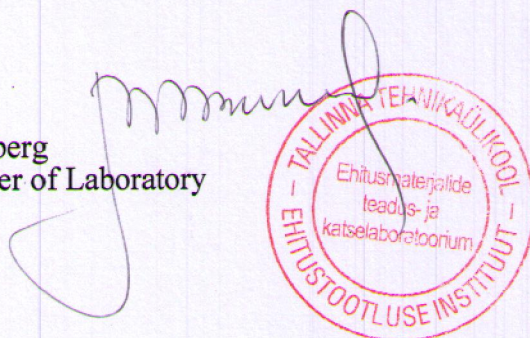
The mode of failure:

Test units 2-7 and 9-10 - adhesive failure between tile and adhesive.

Test units 1 and 8 - cohesive failure within the adhesive

The test results are valid to the described test sample only.

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