



AIT

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EXECUTIVE SUMMARY

The Structural Engineering Laboratory, School of Engineering and Technology, Asian Institute of Technology (AIT) was engaged by the SAINT-GOBAIN WEBER CO., LTD. to conduct the performance test of cementitious tile adhesive. The sample with a trademark of "Weberstone fix" was provided by the SAINT-GOBAIN WEBER CO., LTD. The series of tests were according to ISO 13007 / European Norms (EN 12004:2007+A1:2012) as follows: Specification of cementitious adhesives

Fundamental Characteristics

1a Normal setting adhesives			
Characteristic	Requirement	Test Method	Results
Tensile adhesion strength	$\geq 0.5 \text{ N/mm}^2$	ISO 13007 part 2 4.4.4.2 or EN 1348 § 8.2	1.65 N/mm ² PASS
Tensile adhesion strength after water immersion	$\geq 0.5 \text{ N/mm}^2$	ISO 13007 part 2 4.4.4.3 or EN 1348 § 8.3	1.22 N/mm ² PASS
Open time : tensile adhesion strength	$\geq 0.5 \text{ N/mm}^2$ after not less than 20 min	ISO 13007 part 2 4.1 or EN 1346	1.83 N/mm ² PASS

From test results, it is found that the properties of "Weberstone fix" are conformed to ISO 13007 / European Norms (EN 12004:2007+A1:2012) requirement. These results certify the adequacy and representative characteristic of the test samples only.

Reference No: S0268-18

Issued Date: 17/10/18

Checked & Approved by:



DR. ANAWAT CHOTESUWAN
SENIOR LABORATORY SUPERVISOR
October 17, 2018

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STRUCTURAL ENGINEERING LABORATORY
STRUCTURAL ENGINEERING FIELD OF STUDY
SCHOOL OF ENGINEERING AND TECHNOLOGY

TYPE OF TEST: INITIAL ADHESION STRENGTH (EN 1348:2007)**TEST SPECIMEN:** Ten (10) specimens of ceramic tile of size 50 x 50 x 5 mm. installed by using "Weberstone fix" were prepared in the SE laboratory. The mix proportion of water to "Weberstone fix" ratio was 25.0 % by weight.**CLIENT:** SAINT-GOBAIN WEBER CO., LTD.**DATE OF TEST:** May 17, 2018 **DATE OF PREPARATION :** April 19, 2018**TEST METHOD:** After finish the preparation, the test units were placed in standard conditions for 27 days. Bond the pull head plate to the tile with the high strength epoxy and keep the test units for a further 24 hour in standard condition. Determine the tensile adhesive strength.**TEST RESULTS:**


Specimen No.	Width of Specimen (mm.)	Length of Specimen (mm.)	Area (mm ²)	Maximum Load (N.)	Tensile Adhesion Strength (N/mm ²)	Remarks
1	50	50	2,500	3,934	1.57	Adhesive failure between tile and adhesive
2	50	50	2,500	4,792	1.92	Adhesive failure between tile and adhesive
3	50	50	2,500	3,129	1.25	Adhesive failure between tile and adhesive
4	50	50	2,500	4,428	1.77	Cohesive failure within the adhesive
5	50	50	2,500	4,814	1.93	Cohesive failure within the adhesive
6	50	50	2,500	3,758	1.50	Adhesive failure between tile and adhesive
7	50	50	2,500	4,288	1.72	Cohesive failure within the adhesive
8	50	50	2,500	3,981	1.59	Adhesive failure between tile and adhesive
9	50	50	2,500	3,960	1.58	Adhesive failure between tile and adhesive
10	50	50	2,500	4,047	1.62	Cohesive failure within the adhesive
				Average	1.65	

Note: This report certifies the adequacy and representative character of the test sample(s) only.

TESTED BY:


 MR. RUNGROJ JANGJIT
 TECHNICIAN

CHECKED & APPROVED BY:


 DR. ANAWAT CHOYESUWAN
 SENIOR LABORATOR
 June 8, 2018


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TYPE OF TEST: ADHESIVE STRENGTH AFTER WATER IMMERSION (EN1348:2007)**TEST SPECIMEN:** Ten (10) specimens of ceramic tile of size 50 x 50 x 5 mm. installed by using "Weberstone fix" were prepared in the SE laboratory. The mix proportion of water to "Weberstone fix" ratio was 25.0 % by weight.**CLIENT:** SAINT-GOBAIN WEBER CO., LTD.**DATE OF TEST:** May 21, 2018 **DATE OF PREPARATION :** April 23, 2018**TEST METHOD:** After finish the preparation, the test units were placed in standard conditions for 7 days and stored in water for 20 days. Bond the pull head plate to the tile with the high strength epoxy and keep the test units for a further 24 hour in in water at the standard temperature. Determine the tensile adhesive strength.**TEST RESULTS:**

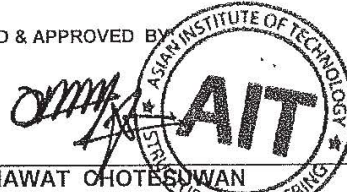
Specimen No.	Width of Specimen (mm.)	Length of Specimen (mm.)	Area (mm ²)	Maximum Load (N.)	Tensile Adhesion Strength (N/mm ²)	Remarks
1	50	50	2,500	2,692	1.08	Adhesive failure between tile and adhesive
2	50	50	2,500	2,845	1.14	Adhesive failure between tile and adhesive
3	50	50	2,500	2,049	0.82	Adhesive failure between tile and adhesive
4	50	50	2,500	2,724	1.09	Adhesive failure between tile and adhesive
5	50	50	2,500	3,320	1.33	Adhesive failure between tile and adhesive
6	50	50	2,500	3,560	1.42	Adhesive failure between tile and adhesive
7	50	50	2,500	2,473	0.99	Adhesive failure between tile and adhesive
8	50	50	2,500	3,281	1.31	Adhesive failure between tile and adhesive
9	50	50	2,500	4,606	1.84	Adhesive failure between tile and adhesive
10	50	50	2,500	2,910	1.16	Adhesive failure between tile and adhesive
				Average	1.22	

Note: This report certifies the adequacy and representative character of the test sample(s) only.

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TYPE OF TEST: OPEN TIME (EN1346)**TEST SPECIMEN:** Forty (40) specimens of Ceramic tile of size 50 x 50 x 5 mm. installed by using "Weberstone fix" were prepared in the SE laboratory. The mix proportion of water to "Weberstone fix" ratio was 25.0 % by weight.**CLIENT:** SAINT-GOBAIN WEBER CO., LTD.**DATE OF TEST:** May 30, 2018**DATE OF PREPARATION :** May 2, 2018**TEST METHOD:** Apply a thin layer of the adhesive to the concrete slab with a straight edge trowel. After 5, 10, 20 and 30 minutes place the tiles on the adhesive and storage them under standard conditions for 27 days. Bond the pull head plates to the tiles with the high strength epoxy and keep the test units for a further 24 hour in standard condition. Determine the tensile adhesive strength.**TEST RESULTS:**

Specimen No.	Tensile adhesion strength of specimen in different open time (N/mm ²)			
	5 (min.)	10 (min.)	20 (min.)	30 (min.)
1	2.57	2.68	2.03	0.84
2	2.58	2.10	1.79	1.70
3	1.81	1.58	1.86	1.16
4	2.42	2.43	1.64	0.95
5	2.04	1.91	1.84	1.52
6	2.24	2.00	1.77	1.62
7	2.23	2.34	1.68	1.22
8	1.98	1.88	1.88	1.09
9	2.26	2.43	1.58	1.42
10	2.11	1.84	2.18	0.97
Average	2.22	2.12	1.83	1.25

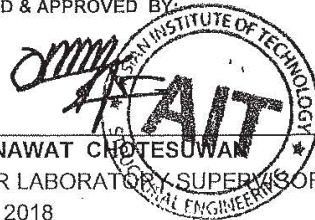
Note: This report certifies the adequacy and representative character of the test sample(s) only.

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**Tests of dry-set cement mortar
according ANSI A118.1:2012 - weber
stone.fix**

Working report N° 315.37004-03/18

Client: **Saint-Gobain Weber Co., Ltd - Thailand**

Contact at client: **Kanchana LOCOLAS**

Contact at CTCV: **J. Valente de Almeida**

Work period: **January - May 2018**

Proj. n° 315.37004

Rep. n° 03

Revision:

Date: June 2018

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Proj. nº 315.37004
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Revision: 0

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Tests of dry-set cement mortar according ANSI A118.1:2012 - weber stone.fix

Saint Gobain Weber Co Ltd - Thailand

Aim

Evaluate compliance of the test results with the requirements of ANSI A118.1: 2012¹.

1. Introduction

Saint Gobain Weber Co Ltd - Thailand requested the CTCV to carry out tests on dry-set cement mortar - weber stone.fix - in accordance with the American Standard ANSI A118.1.

This report presents the methodology of the tests, the results of the tests carried out and their comparison with the applicable regulatory requirements

2. Methodology

The methodology used in the study was the following:

- carrying out the tests
- processing of data
- reporting

2.1. Tests

The tests carried out are presented at table 1.

¹ ANSI A118.1:2012 - American National Standard Specifications for Dry-Set Cement Mortar.



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Table 1 - Tests according ANSI A118.1

Property	Test duration and/or conditions
Glazed wall tile shear strength (A1)	7 days 7 days water immersion
Porcelain mosaic tile shear strength (C)	1 day 7 days 7 days water immersion 28 days 12 weeks

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2.2. Test results

The test results are presented at table 2.



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Table 2 - Test results

Ceramic	Test duration/condition	Specimen	Force (kN)	Tension (MPa)	Average (MPa)
A1	Shear initial, 7d	1	10,71	2,08	2,14
		2	10,53	2,04	
		3	10,04	1,95	
		4	12,98	2,52	
	Shear, after 7 d water immersion	1	12,28	2,38	2,51
		2	14,23	2,76	
		3	11,46	2,22	
		4	13,76	2,67	
C	Shear initial, 1d	1	1,29	0,69	0,70
		2	1,09	0,58	
		3	1,50	0,80	
		4	1,38	0,74	
	Shear initial, 7d	1	3,85	2,06	1,90
		2	4,02	2,15	
		3	3,31	1,77	
		4	3,05	1,63	
	Shear initial, 28d	1	4,33	2,32	2,40
		2	4,33	2,32	
		3	4,97	2,66	
		4	4,30	2,30	
	Shear initial, 12 weeks	1	3,38	1,81	2,41
		2	4,18	2,24	
		3	5,50	2,94	
		4	5,00	2,67	
Shear, after 7 day water immersion	1	3,68	1,97	1,90	
	2	2,93	1,57		
	3	3,87	2,07		
	4	3,72	1,99		

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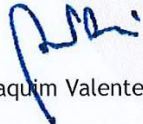
3. Comparison with standard requirements

The comparison of test results with standard requirements is presented at Table 3.

Table 3 - Comparison of test results with standard requirements

Ceramic	Test duration/condition	Test result (MPa)	Requirements (MPa)	Compliance
A1	Shear initial, 7d	2,14	>1,38	Complies
	Shear, after 7 d water immersion	2,51	>1,03	Complies
C	Shear initial, 1d	0,70	>0,34	Complies
	Shear initial, 7d	1,90	>1,03	Complies
	Shear initial, 28d	2,40	>1,03	Complies
	Shear initial, 12 weeks	2,41	>1,03	Complies
	Shear, after 7 day water immersion	1,90	>0,69	Complies

Coimbra, 04 June 2018


Joaquim Valente de Almeida

Testing Materials Laboratory

Os resultados apresentados neste trabalho referem-se apenas às amostras ensaiadas. Não se assume qualquer responsabilidade relativa à exatidão da amostragem, a menos que seja efetuada sob a direta responsabilidade do CTCV. A reprodução deste trabalho é autorizada apenas na sua forma integral. Para qualquer reprodução parcial será indispensável autorização do CTCV por escrito.

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