



PRODUCT TESTING SERVICE

100 Clemson Research Blvd. Anderson, SC 29625 Tel (864) 646-TILE Fax (864) 646-2821
TCNA TEST REPORT NUMBER: TCNA-275-06 PAGE: 1 OF 1

TEST REQUESTED BY: NBRC
Attn: Jim Frederic
100 Clemson Research Blvd.
Anderson, SC 29625


TEST SUBJECT MATERIAL: Identified by client as: NBRC #1263, United Wall Systems

TEST DATE: 8/31/06-9/1/06

TEST PROCEDURE: ASTM C650: "Resistance of Ceramic Tile to Chemical Substances"
-One specimen was tested for each test solution.
-The specimens were exposed to the test solutions for 24 hrs. at 74°F.

TEST RESULTS:

Test Solution	Visual Test (Affected?)	Pencil Test (Affected?)
Common Household and Cleaning Chemicals		
Acetic acid, 3% (v/v)	NO	NO
Acetic acid, 10% (v/v)	NO	NO
Ammonium chloride, 100 g/L	NO	NO
Citric acid solution, 30 g/L	NO	NO
Citric acid solution, 100 g/L	NO	NO
Lactic acid, 5% (v/v)	NO	NO
Phosphoric acid, 3% (v/v)	NO	NO
Phosphoric acid, 10% (v/v)	NO	NO
Sulfamic acid, 3% (v/v)	NO	NO
Sulfamic acid, 10% (v/v)	NO	NO
Swimming Pool Chemicals		
Sodium hypochlorite solution, 20 mg/L	NO	NO
Acids and Bases		
Hydrochloric acid solution, 3% (v/v)	NO	NO
Hydrochloric acid solution, 18% (v/v)	NO	NO
Potassium hydroxide, 30 g/L	NO	NO
Potassium hydroxide, 100 g/L	NO	NO


Virgil Irick
Director of Laboratory Services

9/6/06
Date



The National Brick Research Center
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 Anderson, SC 29625
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 www.brickandtile.org

Results of Tests on Brick Conducted in accordance with ASTM C67-00
 "Standard Method for Sampling and Testing Brick and Structural Clay Tile"

Brick Test Report

Company Name: United Wall Systems
 Brick Type: Thin Brick

Report Number: UWS-0001
 Date Completed: 9/1/2006

NBRC ID	24-hr Absorption (%)	5-hr Absorption (%)	Coefficient of Absorption (c/b)
1	2.14%	3.67%	0.58
2	2.37%	4.26%	0.56
3	2.53%	4.17%	0.61
4	2.06%	3.80%	0.54
5	2.53%	3.68%	0.69
Average	2.33%	3.92%	0.60

Remarks: These units showed No Efflorescence.

Remarks: These units meet the requirements for ASTM C1088, Grade Exterior.

Denis Brosnan
 Director Ph.D, PE
 SC Registration No. 13888

Jim Frederic
 Associate Director



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Brick Test Report

Company Name: United Wall Systems
 Brick Type: Thin Brick

Report Number: UWS-0001
 Date Completed: 9/1/2006

NBRC ID	Breaking Load (lbs/in.)	Modulus of Rupture (psi)
1	93.7	1571.9
2	96.9	1548.5
3	108.8	1870.6
4	99.9	1656.4
5	98.9	1610.8
Average	99.6	1651.6

Remarks: These units were tested in accordance with ASTM C67.

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KERAMISCH-TECHNOLOGISCHES BAUSTOFFLABORATORIUM HAMBURG ^{E.} _{V.}

Staatlich anerkannte Prüfstelle

PRÜFUNG - UNTERSUCHUNG - BEGUTACHTUNG - BERATUNG

KERAMLABOR - Unter den Linden 2 - 21485 Reinbek

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GmbH & Co.
Postfach 11 55

49196 Bad Laer

Telefon 040 / 7 11 822-0
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Sparkasse Stormarn,
Kto. 230 001 159 (BLZ 230 616 10)
Postbank Hamburg
Kto. 244 72 201 (BLZ 200 100 20)
Bahnhstation: 21035 Hamburg-Bergedorf

21485 REINBEK
Unter den Linden 2
06th March 2003 Tw / Hei

Test Certificate No. 33 238 of 06th March 2003

Dear Mr. Feldhaus,
Dear Mr. Thele,

The above mentioned Test Certificate applies to

Red Clinker Slabs
Nominal dimensions: 215 x 15 x 65 mm
Manufacturer's designation: "R335 WDF15 - antic-bunt, geflammt -
Handform genarbt besandet"

However, this Test Certificate also applies to the qualitative characteristics of slabs which have been manufactured in the same way and which are of the same dimensions, but where the surface is of a different colour and structure. This is because the colour and the structure of the surface do not have an effect on the physical measured values.

Therefore the measured values also apply to

Red Clinker Slabs
Nominal dimensions: 215 x 15 x 65 mm
Manufacturer's designation: "R400 WDF15 - rot nuanciert - glatt"
"R440 WDF15 - rot nuanciert - flach genarbt"
"R436 WDF15 - rot-bunt geflammt Handform -
genarbt besandet"
"R303 WDF15 - rot-bunt geflammt, glatt"
"R401 WDF15 - rot-nuanciert, gerauht"
"R313 WDF15 - rotbunt - geflammt, gerauht"
"R387 WDF15 - rot-bunt geflammt, Formback -
aubergine"

Kind regards

KERAMLABOR

(Dr.-Ing. D. Janssen)

Testing of the frost resistance of fair-faced clay bricks and clinker bricks in accordance with
 DIN 52 252 part 1 / Dec. 86

Summary of test procedure

The samples are subjected to direct frost from all sides in a computer controlled freezing cabinet. Afterwards the samples are placed in water to thaw. The freeze-thaw cycles are repeated until either damage can be seen clearly or 25 freeze-thaw cycles have been completed.

Test procedure

The initial condition of the samples is noted, cracks and other damage are marked. The samples are dried, and afterwards are soaked in water. After taking the samples out of the water, they are subjected to the freeze-thaw conditions straight away. This standard defines frost damage as being any cracks, spalling or delamination which are visible.

Determination of the water absorption

Sample No.	dry weight m_d g	wet weight m_w g	water absorption	
			$m_w - m_d$ g	M-%
1	440	452	12	2,7
2	436	451	12	2,7
3	434	447	13	3,0
4	437	450	13	3,0
5	440	452	12	2,7
6	439	451	12	2,7
7	437	449	12	2,7
8	439	451	12	2,7
9	440	452	12	2,7
10	440	453	13	3,0
Mean value:				2,6

Results: After 25 freeze-thaw cycles the samples showed no visible damage in the form of cracks, spalling or delamination. The samples passed the Frost Test in accordance with DIN 52 252 part 1 / Dec. 86.

Final evaluation: The slabs examined have passed the test according to DIN 105, part 1. They fulfill the requirements for

clinker slabs 215 x 15 x 65 mm

The head of the laboratory

D. Janssen

Dr.-Ing. D. Janssen)



The testing official

W. Fischer

(W. Fischer, constr. engineer)

KERAMISCH-TECHNOLOGISCHES BAUSTOFFLABORATORIUM HAMBURG ^{E.}

Staatlich anerkannte Prüfstelle

21465 REINBEK · UNTER DEN LINDEN 2 · TELEFON (040) 711 822-0



Erstmals anerkannt für die Gütesicherung der Erzeugnisse der Ziegelindustrie durch Erlass des Ministers für Arbeit, Soziales und Vertriebs des Landes Schleswig-Holstein vom 30.09.1954 (Amtsblatt Schl.-H. 1954 Nr. 43 S. 440).

Test Certificate No. 33 238 of 06th March 2003
(Translation)

Applicant: Klinkerwerk
B. Feldhaus GmbH & Co.
Postfach 1155
49192 Bad Laer

Date of sampling: ---
Samples taken by: The Applicant

Purpose of application: Testing of slabs in accordance with DIN 105, part 1
Site samples were taken: ---

Definition of samples: Red clinker slabs
nominal dimensions: 215 x 15 x 65 mm

Manufacturer's designation:
"R 335 WDF 15 - antic-bunt, geflammt, Handform - gearbt besandet"

Results:

429-8614	Sample No.	Dimensions			weight dry kg	gross dry density kg/dm ³	net dry density kg/dm ³	compressive strength f _{ST} N/mm ²
		length mm	height mm	thickness mm				
	1	215	65	15	0,440	--	2,10	--
	2	216	65	15	0,439	--	2,08	--
	3	215	64	15	0,434	--	2,10	--
	4	216	65	15	0,437	--	2,08	--
	5	216	65	15	0,440	--	2,09	--
	6	216	64	15	0,439	--	2,12	--
Mean values		216	65	15	0,438	--	2,10	--
Margin t		1	1	0			shape factor:	--
Requirements according to DIN 105	work size	215	65	15	Mean value	IV	≥ 1,90	≥ --
	smallest dimension	206	62	14		IV		
	largest dimension	219	68	16		IV		
	Margin t ≤	9	4	1		IV		
Requirements fulfilled		yes	yes	yes		--	yes	--

holes	maximum size of one hole cm ²	total-amount of holes %	width of a hole k mm	outer surround mm
measured value	--	--	--	--
required value	≤ --	≤ --	≤ --	≥ --
requirements fulfilled	--	--	--	--

Production control system: The manufacture's quality control system is executed in line with the relevant standards.

Frost resistance see page 2