



Huaxia Ceramic Testing Center

TEST REPORT

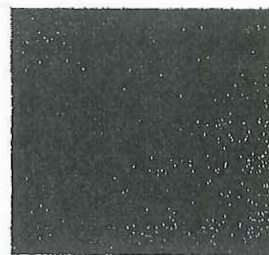
TESTING
CNAS L2778

COMPANY NAME
CONTACT NAME
PRODUCT SERIES
REPORT OF TESTS ON

MR. HUANG
PORCELAIN GLAZED TILE
BASALTINA SERIES

YOUR REFERENCE
SAMPLE NO.
DATE RECEIVED
DATE OF TESTS
DATE OF REPORT

TILE
201207233931
2012-07-23
2012-07-23—07-30
2012-07-30



TESTING OF CERAMIC TILES

Test Specimen

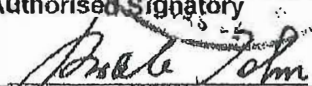
600×600mm Tiles

Accredited Test

BS EN 14411:2006	Ceramic tiles — Definitions, classification, characteristics and marking
BS EN ISO 10545-2:1997	Determination of dimensions and surface quality.
BS EN ISO 10545-3:1995	Determination of water absorption.
BS EN ISO 10545-4:1997	Determination of modulus of rupture and breaking strength.
BS EN ISO 10545-7:1998	Determination of resistance to surface abrasion — glazed floor tiles.
BS EN ISO 10545-8:1996	Determination of linear thermal expansion.
BS EN ISO 10545-9:1996	Determination of resistance to thermal shock.
BS EN ISO 10545-10:1997	Determination of moisture expansion.
BS EN ISO 10545-11:1996	Determination of crazing resistance for glazed tiles.
BS EN ISO 10545-12:1997	Determination of frost resistance.
BS EN ISO 10545-13:1997	Determination of chemical resistance.
BS EN ISO 10545-14:1997	Determination of resistance to stains.
BS EN ISO 10545-15:1997	Determination of lead and cadmium given off by glazed tiles.

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Authorised Signatory


HUAXIA CERAMIC TESTING

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Ceram-Huaxia Ceramics Testing Center

SAMPLE NO.
REPORT OF TESTS ON

201207233931
BASALTINA SERIES

Results

1. Dimensions and Deviations

Length & Breadth

Work (co-ordinating) size is 600×600 mm.

Maximum deviation from work (co-ordinating) size is -0.06% . The permissible deviation is $\pm 0.75\%$ and so the tiles comply with the requirements.

Average size of 10 tiles is 599.66×599.66 mm.

Maximum deviation from average size is 0.00% . The permissible deviation is $\pm 0.5\%$ and so the tiles comply with the requirements.

Thickness

Work size is 9.3 mm.

Maximum deviation from work size is -0.91% . The permissible deviation is $\pm 5\%$ and so the tiles comply with the requirements.

Straightness of sides

Maximum deviation from straightness is 0.02% . The permissible deviation is $\pm 0.5\%$ and so the tiles comply with the requirements.

Rectangularity

Maximum deviation from rectangularity is -0.12% . The permissible deviation is $\pm 0.6\%$ and so the tiles comply with requirements.

Edge Curvature

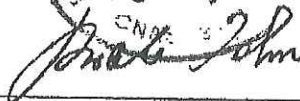
Maximum deviation from flatness is -0.08% . The permissible deviation is $\pm 0.5\%$ and so the tiles comply with the requirements.

Centre Curvature

Maximum deviation from flatness is -0.09% , related to the diagonal. The permissible deviation is $\pm 0.5\%$ and so the tiles comply with the requirements.

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Warpage

Maximum warpage is -0.13 %, related to the diagonal. The permissible deviation is ± 0.5 % and so the tiles comply with the requirements.

Surface Quality

When examine under the standard conditions of the test, not less than 95% of the tiles tested are acceptable and so the tiles comply with the requirements.

2. Water Absorption (Vacuum Method)

Sample No	Water Absorption (%)
1	0.31
2	0.43
3	0.39
4	0.48
5	0.46
Average	0.42

The stipulation for B1a tiles/quarries is that the average value should be ≤ 0.5 % and the individual maximum is ≤ 0.6 %. The tiles therefore comply with the requirements.

3. Modulus of Rupture

Sample No	Thickness(mm)	Breaking Strength(N)	Load(N)	Modulus of Rupture(N/mm ²)
1	8.25	1695.5	1639.0	36.12
2	8.14	1574.5	1522.0	34.46
3	8.51	1787.7	1728.1	35.79
4	8.42	1697.1	1640.5	34.71
5	8.24	1745.9	1687.7	37.28
6	8.16	1778.6	1719.3	38.73
7	8.17	1523.3	1472.5	33.09
Average		1686.1	1629.9	35.74

Thickness of Rubber:5mm, Diameter of Rod:20mm, Overlap:10mm, Span:580mm

The individual value of modulus of rupture should be ≥ 32 N/mm² and average value should be ≥ 35 N/mm². Therefore the tiles comply with the requirements.

The stipulation of average breaking strength should be ≥ 1300 N. Therefore the tiles comply with the requirements.

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4. Surface Abrasion Resistance

The failure visible at revolutions is 1500 revs

So the resistance to surface abrasion of the tile is Class 3

5. Linear Thermal Expansion

Two determinations of the coefficient of linear thermal expansion in mutually perpendicular directions gave the following values:

$$5.84 \times 10^{-6} \text{ } ^\circ\text{C}^{-1} \quad \text{and} \quad 5.84 \times 10^{-6} \text{ } ^\circ\text{C}^{-1}$$

6. Thermal Shock

After testing by total immersion there is no evidence of damage to the tiles.

7. Moisture Expansion

Sample No	Moisture Expansion (%)
1	0.001
2	0.002
3	0.000
4	0.001
5	0.001
Average	0.001

8. Craze Resistance

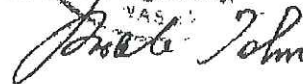
When test according to the standard, none of the five tiles tested show signs of crazing. The tiles comply with the requirements.

9. Frost Resistance

After 100 freeze-thaw cycles the tiles tested show no evidence of damage.

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10. Chemical Resistance (Glazed Tiles)

Test Solutions	Sample Number				
	1	2	3	4	5
1. Ammonium Chloride solution 100g/l	GA	GA	GA	GA	GA
2. Sodium Hypochlorite solution 20mg/l	GA	GA	GA	GA	GA
3. Hydrochloric Acid solution 3% v/v	GLA	GLA	GLA	GLA	GLA
4. Citric Acid solution 100g/l	GLA	GLA	GLA	GLA	GLA
5. Potassium Hydroxide solution 30g/l	GLA	GLA	GLA	GLA	GLA
6. Hydrochloric Acid solution 18% v/v	GHA	GHA	GHA	GHA	GHA
7. Lactic Acid solution 5% v/v	GHA	GHA	GHA	GHA	GHA
8. Potassium Hydroxide solution 100g/l	GHA	GHA	GHA	GHA	GHA

For household chemicals and swimming pool salts (1 and 2), the Class is GA.

The minimum class for solution of 1 and 2 is GB, the sample comply with the requirement.

For low concentration acids and alkalis (3, 4 and 5), the Class is GLA.

For high concentration acids and alkalis (6, 7 and 8), the Class is GHA.

11. Stain Resistance

Staining Agent	Sample Number				
	1	2	3	4	5
1. Green/Red paste in light oil(paste)	5	5	5	5	5
2. Iodine in alcohol, 13g/L(chemical/oxidizing)	5	5	5	5	5
3. Olive Oil(film)	5	5	5	5	5

Ceramic surfaces are divided into five classes; Class 5 corresponds to the greatest ease of removing the particular stain. The minimum class for all staining agent is 3, the sample comply with the requirement.

12. Metal release

Specimens	Leaching volume (ml)	Sample Diameters (dm)	Lead (mg/L)	Cadmium (mg/L)	Lead (mg/dm ²)	Cadmium (mg/dm ²)
1	3600	6×6	0.01	<0.01	0.001	<0.001
2	3600	6×6	<0.01	<0.01	<0.001	<0.001
3	3600	6×6	<0.01	<0.01	<0.001	<0.001

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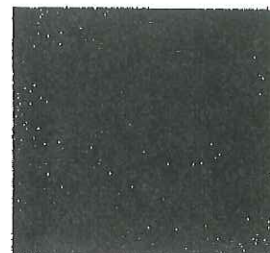
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2012-07-30



DYNAMIC COEFFICIENT OF FRICTION

Test Specimen

4 Pieces of 600×600mm Tile

Accredited Test

WW6:2003

Results

Slider		Surface Condition	Dynamic Coefficient Friction
Material	Configuration		
4S Rubber	Flat & chamfered	Dry	0.68
4S Rubber	Flat & chamfered	Wet	0.66

End of Test Report

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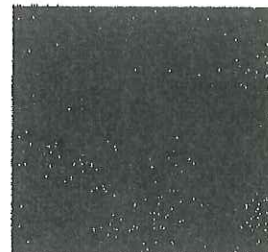
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SLIP RESISTANCE

Test Specimens

2 Pieces of 600*600mm Tile

Accredited Test

DIN 51130

Results :

Reading	Operator 1-Inclined Platform Shod Results(°)	Operator 2-Inclined Platform Shod Results(°)	R Value
1	9	9	R9
2	9	9	
3	9	9	
Average	9		

Classification: R Value

R9
R10
R11
R12
R13

Category

Low
Normal
Above Average
High
Very High

Angle of Inclination

6-10
>10-19
>19-27
>27-35
>35

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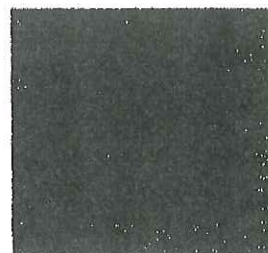


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2012-07-23—07-27
2012-07-30

DETERMINATION OF SCRATCH HARDNESS OF SURFACE ACCORDING TO MOHS

Test Specimen

3 Pieces of 600×600mm Tile

Accredited Test

BS 6431: Part 13: 1986

Results

Sample No.	Result			
	1	2	3	4
1	6.5	6.5	6.5	6.5
2	6.5	6.5	6.5	6.5
3	6.5	6.5	6.5	6.5
Average	6.5			

The Mohs' hardness of the specimen is 6.5.

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