

TEST REPORT

No. : XMML121104472

Date : Dec.12, 2012

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ROMAXX SRL

VIA ARSO 130 36072 CHIAMPO (VI) ITALY

The following sample(s) was/ were submitted and identified on behalf of the client as:

Sample name : QUARTZ STONE

Test required : EN 15285:2008 Agglomerated stone - Modular tiles for flooring and stairs
(internal)

Date of receipt : Nov.27, 2012

Test period : Nov.27, 2012 to Dec.12, 2012

Test result(s) : For further details, please refer to the following page(s)

***** To be continued*****

Signed for and on behalf of
SGS-CSTC Co., Ltd.



Civi Huang
Xiamen Materials Lab Technical Supervisor

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General information:

The following tests have been requested, also according to
EN 15285:2008 Agglomerated stone - Modular tiles for flooring and stairs (internal)
CE harmonized standards for modular tiles for internal flooring and stairs:

- Apparent density and water absorption, according to EN 14617-1:2005
- Flexural strength, according to EN 14617-2:2008
- Slip resistance, according to EN 14231:2003
- Abrasion resistance, according to EN 14617-4:2005
- Impact resistance, according to EN 14617-9:2005
- Chemical resistance, according to EN 14617-10:2005
- Linear thermal expansion coefficient, according to EN 14617-11:2005
- Dimensional stability, according to EN 14617-12:2005
- Dimensions, geometric characteristics and surface quality, according to EN 14617-16:2005

Intend use:

Internal flooring and stairs

Summary of testing:

After testing, the tested items of the sample comply with the specified requirement of standard EN 15285:2008 and client's declaration of conformity.

***** To be continued*****

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Summary of test results:
(Average of results)

Test items	Test methods	Test results	Page
Apparent density	EN 14617-1:2005	2320 kg/m ³	4
Water absorption	EN 14617-1:2005	0.04% Classification: W ₄	4
Flexural strength	EN 14617-2:2008	62.2MPa Classification: F ₄	5
Slip resistance (polished)	EN 14231:2003	SRV "dry": 50 SRV "wet": 5	6
Abrasion resistance	EN 14617-4:2005	17.4mm Classification: A ₄	6
Impact resistance	EN 14617-9:2005	8.40J	7
Chemical resistance	EN 14617-10:2005	Classification: C ₄	8
Linear thermal expansion coefficient	EN 14617-11:2005	23.8×10 ⁻⁶ /°C	9
Dimensional stability	EN 14617-12:2005	Classification: A	9
Dimensions, geometric characteristics and surface quality	EN 14617-16:2005	Dimensions tolerance: Pass Surface quality: No defect	10

***** To be continued*****

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1. Apparent density and water absorption

Test Method:

EN 14617-1:2005 Agglomerated stone - Test methods - Part 1: Determination of apparent density and water absorption

Specimens: 50mm×50mm×20mm, 6pcs, one face polished

Test Result:

Specimens identification No.	1	2	3	4	5	6
Water absorption (%)	0.03	0.04	0.05	0.04	0.04	0.06
Arithmetic mean of the water absorption (%)	0.04					
Apparent density (kg/m ³)	2320	2320	2320	2320	2320	2320
Arithmetic mean of the apparent density (kg/m ³)	2320					

Classification: W₄^{note}

Note: W₁>2.0%, 2.0%≥W₂>0.5%, 0.5%≥W₃>0.05%, W₄≤0.05%

***** To be continued*****

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2. Flexural Strength

Test Method:

EN 14617-2:2008 Agglomerated stone - Test methods - Part 2: Determination of flexural strength (bending)

Specimens: 200mm×50mm×12mm, 6pcs, one face polished

Test Result:

Loading rate: (0.25±0.05)MPa/s

Specimens identification No.	1	2	3	4	5	6
Flexural strength (MPa)	64.1	58.9	62.9	61.3	62.5	63.6
Mean value (MPa)	62.2					
Standard deviation (MPa)	1.9					
Lower expected value (MPa)	57.9					

Classification: F₄^{note}

Note: F₁<12.0MPa, 12.0MPa≤F₂<25.0MPa, 25.0MPa≤F₃<40.0MPa, F₄≥40.0MPa

***** To be continued*****

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3. Slip resistance

Test Method:

EN 14231:2003 Natural stone test methods - Determination of the slip resistance by means of the pendulum tester

Specimens: 200mm×150mm×12mm, 6pcs, one face polished

Testing surface: polished

Test Result:

Specimens identification No.	1	2	3	4	5	6
Mean pendulum value (Dry condition)	51	50	50	50	50	50
Slip resistance value (SRV "dry")	50					
Mean pendulum value (Wet condition)	5	5	5	4	5	4
Slip resistance value (SRV "wet")	5					

4. Abrasion resistance

Test Method:

EN 14617-4:2005 Agglomerated stone - Test methods - Part 4: Determination of abrasion resistance

Specimens: 150mm×100mm×12mm, 6pcs, one face polished

Testing surface: polished

Test Result:

Specimens identification No.	1	2	3	4	5	6
The length of the groove (mm)	17.0	17.5	18.0	18.0	17.0	17.0
Mean value (mm)	17.4					

Classification: A₄^{note}

Note: A₁>36.5mm, 36.5mm≥A₂>33.0mm, 33.0mm≥A₃>29.0mm, A₄≤29.0mm.
 ***** To be continued*****

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5. Impact resistance

Test Method:

EN 14617-9:2005 Agglomerated stone - Test methods - Part 9: Determination of impact resistance

Specimens: 200mm×200mm×19mm, 4pcs, polished face

Test Result:

Specimens identification No.	1	2	3	4
Drop height, h (m)	0.80	0.75	0.90	0.80
Fracture work, L (J)	8.24	7.72	9.27	8.24
Average value (J)	8.40			

Note:

The fracture work L in joule is expressed by the formula

$$L = M \times h \times g$$

Where

M is the sphere mass, 1.050kg,

h is the drop height in meters of the sphere which causes the sample to break,

g is the gravity acceleration equal to 9.806m/s^2 .

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6. Chemical resistance

Test Method:

EN 14617-10:2005 Agglomerated stone - Test methods - Part 10: Determination of chemical resistance

Specimens: 100mm×100mm, 4pcs, polished surface

Water solutions preparation:

- 1) Hydrochloric acid solution, 50% (V/V), prepared from N hydrochloric acid solution
- 2) Sodium hydroxide solution, 50% (V/V), prepared from normal water sodium hydroxide not carbonated solution

Type of glossmeter used and the kind and intensity of the light source: Sheen 260, CIE D65

Reflection direction of the light: 60°

Test Result:

Chemical resistance	Sample NO.	Reference value	Classification
Hydrochloric acid solution (HCl)	1 (1h)	100.5%	C ₄ ^{Note}
	2 (8h)	94.2%	
Sodium hydroxide solution (NaOH)	3 (1h)	96.1%	
	4 (8h)	94.0%	

Note:

C₁: Agglomerated stones which keep below 60 % of the reference reflection values (see EN 14617-10) after 8 h of alkali or acid attack.

C₂: Agglomerated stones which keep between 60 % and 80 % of the reference reflection value (see EN 14617-10) after 8 h of alkali attack and 1 h of acid attack.

C₃: Agglomerated stones which keep between 60 % and 80 % of the reference reflection value (see EN 14617-10) after 8 h of acid attack and 1 h of alkali attack.

C₄: Agglomerated stones which keep at least 80 % of the reference reflection value (see EN 14617-10) after 8 h of acid or alkali attack (or in one case, see EN 14617-10, is between 60 % and 80 %).

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7. Linear thermal expansion coefficient

Test Method:

EN 14617-11:2005 Agglomerated stone - Test methods - Part 11: Determination of linear thermal expansion coefficient

Specimens: 50mm×10mm×10mm, 3pcs

Test Result:

Temperature: from 30°C to 60°C.

Specimens identification No.	1	2	3
Linear thermal expansion coefficient (10 ⁻⁶ /°C)	24.5	24.5	22.3
Mean value(10 ⁻⁶ /°C)	23.8		

8. Dimensional stability

Test Method:

EN 14617-12:2005 Agglomerated stone - Test methods - Part 12: Determination of dimensional stability

Specimens: 300mm×300mm×12mm, 1pcs, one face polished

Test Result:

Vertical displacement after the testing of 12 days: 0.1mm

Classification: A

Annex:

Class	Vertical displacement after test
A	≤0.3mm
B	>0.3mm,≤0.6mm
C	>0.6mm

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9. Dimensions, geometric characteristics and surface quality

Test Method:

EN 14617-16:2005 Agglomerated stone - Test methods - Part 16: Determination of dimensions, geometric characteristics and surface quality of modular tiles

Specimens: 200mm×200mm×12mm, 10pcs, one face polished

Test Result:

Work size: 200mm×200mm×12mm

Test items		Requirements	Test results
Length and width		200± 0.5 mm	Average: 200.5 mm
		Deviation, as a percentage, of the average size of each tile from work size	+0.10%~+0.35%
		Deviation, as a percentage, of the average size of each tile from the average size of the 10 test specimens	-0.15%~+0.10%
Thickness		12 ± 0.7 mm	Average: 12.0mm
		The deviation, as a percentage, of the average thickness of each tile from the work size thickness	-1.67%~+1.67%
Straightness		Maximum deviation from straightness:± 0.3 mm	0.0mm~+0.1mm
rectangularity		Maximum deviation from rectangularity: ± 0.9 mm	-0.1mm~+0.2mm
Flatness	Centre curvature	Maximum centre curvature, as a percentage: ± 2 % referred to length	-0.10%~-0.05%
	Edge curvature	Maximum edge curvature, as a percentage: ± 2 % referred to length	+0.05%~+0.10%
	Warping	Maximum warping, as a percentage: ± 2 % referred to length	-0.25%~+0.10%
Surface quality		Any visual variations are permissible provided that they are characteristic of the relevant type of agglomerated stone and provided that they do not adversely affect the performance of the tiles.	No defects

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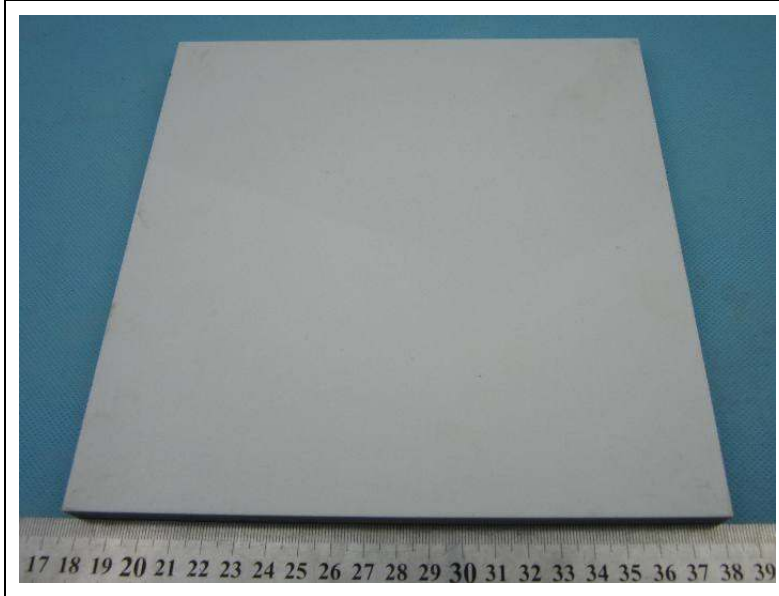
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Specimen photograph:



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