测试报告 TEST REPORT

SGS-CSTC Standards Technical Services Co., Ltd., Industrial Services



No.: XMCCM130600529

Date: Aug.06, 2013

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

Commercial Name

G603

Petrographic Name

MONZONITIC GRANITE

Typical colour

GREY WHITE

Manufacturer

Manufacturer address

DOUBLE

Calliaghstown, Rathcoole, Co. Dublin

Place of origin Name of quarry Address of quarry FUJIAN, CHINA G603 QUARRY FUJIAN, CHINA

Trade mark

Intend use

Internal & external wall, flooring and stair

External uses and road finishes to cover external pedestrian and vehicular

Test required

EN 12057:2004 Natural stone products - Modular tiles - Requirements EN 12058:2004 Natural stone products - Slabs for floors and stairs -

Requirements

EN 1469:2004 Natural stone products - Slabs for cladding - Requirements EN 1341:2012 Slabs of natural stone for external paving - Requirements and

test methods

EN 1342:2012 Setts of natural stone for external paving - Requirements and

test methods

EN 1343:2012 Kerbs of natural stone for external paving - Requirements and

test methods

Date of Receipt

Jun.18, 2013

Test Period

Jun.18, 2013 to Jul.26, 2013

Test result(s)

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

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

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

Civi Huang

Xiamen Materials Lab Technical Supervisor

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Summary of test results:

(Average value)

Test items	Test methods	Test results	Page
Apparent density	EN 1936:2006	2660kg/m ³	3
Open porosity	EN 1936:2006	0.96%	3
Water absorption	EN 13755:2008	0.28%	3
Flexural strength in natural condition	EN 12372:2006	15.5MPa	4
Flexural strength after 12 cycles freeze/thaw	EN 12371:2010 EN 12372:2006	- 15.3MPa	4
Flexural strength after 56 cycles freeze/thaw	EN 12371:2010 EN 12372:2006	15.6MPa	5
Abrasion resistance (sawn)	EN 14157:2004 method A	18.7mm	6
Slip resistance (sawn)	EN 14231:2003	SRV "dry": 68 SRV "wet": 49	6
Compressive strength in natural condition	EN 1926:2006	200MPa	7
Compressive strength after 56 cycles freeze/thaw	EN 12371:2010 EN 1926:2006	201MPa	7
Breaking load at dowel hole	EN 13364:2002	2150N	8
Petrographic description	EN 12407:2007	MONZONITIC GRANITE	9

* To be continued******

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Attention To shock the authenticity of testing Angestion report & certific.



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1. Apparent density and open porosity

Test Method:

EN 1936:2006 Natural stone test methods - determination of real density and apparent density and of total and open porosity

Specimens: 6 cubes having 50mm edge, all specimens are in natural condition with sawn faces

Test Result:

Specimens identification No.	1	2	3	4	5	6
Apparent density (kg/m³)	2660	2660	2660	2660	2660	2660
Arithmetic mean of the apparent density (kg/m³)	150		26	60		59
Open porosity (%)	0.96	0.96	0.95	0.96	0.96	0.96
Arithmetic mean of the open porosity (%)		47	0.9	96	4	

2. Water absorption

Test Method:

EN 13755:2008 Natural stone test methods - Determination of water absorption at atmospheric pressure Specimens: 6 cubes having 50mm edge, all specimens are in natural condition with sawn faces

Test Result:

Specimens identification No.	1	2	3	4	5	6
Water absorption (%)	0.27	0.29	0.29	0.29	0.28	0.28
Arithmetic mean of the water absorption (%)	F.		0.	28		

To be continued*******

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3. Flexural Strength in natural condition and subjected to frost test

Test Method:

EN 12372:2006 Natural stone test methods - Determination of flexural strength under concentrated load

EN 12371:2010 Natural stone test methods - Determination of frost resistance

Specimens: 300mm×50mm×50mm, 30pcs, all specimens are in natural condition with sawn faces

Loading rate: (0.25±0.05)MPa/s

Test Result:

Flexural strength in natural condition

No.	1	2	3	4	5	6	7	8	9	10
Flexural strength (MPa)	14.0	15.4	16.0	16.4	14.6	15.5	15.2	16.0	14.9	17.0
Mean value (MPa)	-6		600		15	5.5				
Standard deviation (MPa)	4				0	.9		T AND	- 4	
Lower expected value (MPa)	-	7	7		13	3.7		9	F	7

Visual inspection after 12 freezing and thawing cycles: Scale 0, sample intact.

Flexural strength after 12 freezing and thawing cycles

No.	1	2	3	4	5	6	7	8	9	10
Flexural strength (MPa)	16.2	15.2	15.3	17.0	16.7	13.7	14.3	14.3	14.4	16.3
Mean value (MPa)					15	5.3			47	
Standard deviation (MPa)			ģ.	F.	1	.2	57.	4	÷ "	6
Lower expected value (MPa)			37		13	3.1	ė,			-

Change in flexural strength after 12 cycles of freeze/thaw: 1.3% ******* To be continued******

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Visual inspection after 56 freezing and thawing cycles: Scale 0, sample intact.

Flexural strength after 56 freezing and thawing cycles

No.	1	2	3	4	5	6	7	8	9	10
Flexural strength (MPa)	16.8	15.2	16.2	15.4	13.7	15.9	15.3	15.1	14.8	17.1
Mean value (MPa)	all?				15	5.6	Y			97
Standard deviation (MPa)	4	7_	97. ₆ ;		1	.0	7 4	r.		
Lower expected value (MPa)		5			13	3.6	3	45	9	J.

Change in flexural strength after 56 cycles of freeze/thaw: -0.6% ****** To be continued******

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4. Abrasion resistance

Test Method:

EN 14157:2004 Natural stone - Determination of abrasion resistance Method A - Wide wheel Abrasion Test

Specimens: 150mm×100mm×20mm, 6pcs, all specimens are in natural condition with sawn faces

Testing surface: sawn

Test Result:

Specimens identification No.	1	2	3	4	5	6
The length of the groove (mm)	18.0	19.5	19.5	18.0	19.0	18.0
Mean value (mm)		e.o	18	3.7		

5. 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×20mm, 6pcs, all specimens are in natural condition with sawn faces

Testing surface: sawn

Test Result:

Specimens identification No.	1	2	3	4	5	6
Mean pendulum value (Dry condition)	68	68	68	67	68	68
Slip resistance value (SRV "dry")			6	8	44	
Mean pendulum value (Wet condition)	48	50	50	48	48	48
Slip resistance value (SRV "wet")	L		4	9		

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

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6. Compressive strength

Test Method:

EN 1926:2006 Natural stone test methods -Determination of uniaxial compressive strength

EN 12371:2010 Natural stone test methods - Determination of frost resistance

Specimens: 50mm×50mm, 21pcs, all specimens are in natural condition with sawn faces

Loading rate: (1±0.5) MPa/s

Test Result:

Compressive strength in natural condition

No.	1	2	3	4	5	6	7	8	9	10
Compressive strength (MPa)	206	190	178	201	206	199	204	206	206	200
Mean value (MPa)					20	00				
Standard deviation (MPa)				1	1	0				ÿ,
Lower expected value (MPa)		F. C.	9		18	81		ŕ		

Visual inspection after 56 freezing and thawing cycles: Scale 0, sample intact.

Compressive strength after 56 freezing and thawing cycles

No.	1	2	3	4	5	6	7	8	9	10
Compressive strength (MPa)	195	206	196	193	202	209	196	204	202	202
Mean value (MPa)					20	00				
Standard deviation (MPa)		4		ď.		6	Ġ.	47	9	÷
Lower expected value (MPa)		5	F.	47	19	90	-	5	-6	4

Change in mean strength after 56 cycles of freeze/thaw: 0.0% ***** To be continued*

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7. Breaking load at dowel hole

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		TEST RE	PURI	No. : XMCCM1306009
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7. Breaking	load at dowel hole			
Test Metho				
	002 Natural stone test	methods - Determina	ation of the breaking	load at dowel hole
		m, spes, 4 noies were	e drilled on each spe	cimen. All specimens are
natural cond	dition with sawn faces			
Diameter of	the hole: 10mm, Diam	eter of the dowel: 8mi	m	
	e: (50±5) N/s	cter of the dower, offi		
Test results				
. oot i oo aite	<u> </u>			
		d4 (mm)	h. (mm)	Breaking load E (N
	s identification No.	d ₁ (mm)	b _A (mm)	2490-000
	s identification No. Hole 1	10	48	2350
	Hole 1 Hole 2	10 10	48	2350 1850
	Hole 1 Hole 2 Hole 3	10 10 10	48 31 38	2350 1850 2250
	Hole 1 Hole 2 Hole 3 Hole 4	10 10 10 10	48 31 38 38	2350 1850 2250 2200
	Hole 1 Hole 2 Hole 3 Hole 4 Hole 1	10 10 10 10 11	48 31 38 38 39	2350 1850 2250 2200 2150
Specimen:	Hole 1 Hole 2 Hole 3 Hole 4 Hole 1 Hole 2	10 10 10 10 11 11	48 31 38 38 39 43	2350 1850 2250 2200 2150 2250
Specimen:	Hole 1 Hole 2 Hole 3 Hole 4 Hole 1 Hole 2 Hole 1 Hole 1 Hole 1 Hole 2	10 10 10 10 11 11 11	48 31 38 38 39 43 37	2350 1850 2250 2200 2150 2250 1650
Specimen:	Hole 1 Hole 2 Hole 3 Hole 4 Hole 1 Hole 2 Hole 1 Hole 2 Hole 1 Hole 2 Hole 1 Hole 2	10 10 10 10 11 11 11 10	48 31 38 38 39 43 37 44	2350 1850 2250 2200 2150 2250 1650 2350
Speciment 1	Hole 1 Hole 2 Hole 3 Hole 4 Hole 1 Hole 2 Hole 1 Hole 2 Hole 3 Hole 3 Hole 3 Hole 3	10 10 10 10 11 11 11 10 10	48 31 38 38 39 43 37 44 43	2350 1850 2250 2200 2150 2250 1650 2350 2250
Speciment 1 2	Hole 1 Hole 2 Hole 3 Hole 4 Hole 1 Hole 2 Hole 1 Hole 2 Hole 3 Hole 4 Hole 3 Hole 4 Hole 1	10 10 10 10 11 11 11 10 10 10	48 31 38 38 39 43 37 44 43 51	2350 1850 2250 2200 2150 2250 1650 2350
Specimens 1 2	Hole 1 Hole 2 Hole 3 Hole 4 Hole 2 Hole 1 Hole 2 Hole 3 Hole 4 Hole 1 Hole 2 Hole 3 Hole 4 Hole 4 Hole 4	10 10 10 10 11 11 11 10 10	48 31 38 38 39 43 37 44 43	1850 2250 2200 2150 2250 1650 2350 2250
Specimens 1 2 Minute of the content of the conte	Hole 1 Hole 2 Hole 3 Hole 4 Hole 1 Hole 2 Hole 1 Hole 2 Hole 3 Hole 4 Hole 3 Hole 4 Hole 1	10 10 10 10 11 11 11 10 10 10	48 31 38 38 39 43 37 44 43 51	2350 1850 2250 2200 2150 2250 1650 2350 2250 2250 2250

d₁: Distance from the hole to the face

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b_A: Maximum distance from the centre of the hole to the edge of the fracture *******To be continued****



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8. Petrographical description

Test Method:

EN 12407:2007 Natural stone test methods - Petrographic examination

Test Result:

CLASSIFICATION: Monzonitic granite

HAND SAMPLE DESCRIPTION

Very strong, fresh, light grey, several dark minerals and opaque particles spreader over the rock fabric in disorder, It is not easily scored with a penknife.

MICROSCOPIC DESCRIPTION

Texture	Granitic texture , Medium-fine grained texture
Structure	Massive structure
Major Minerals	Plagioclase (40%), Potash feldspar (30%), Quartz (20-25%), Biotite(5-10%)
Accessory mineral	Metallic (opaque) particles, Sphene, Apatite, Allanite
Secondary mineral	Kaolinite, Sericite, Chlorite, Epidote

MATERIAL COMPONENT	PETROGRAPHIC DETAILS
Plagioclase	Hypautomorphic platy, which grain sizes are usually 0.2-2mm, partially 2-3.9mm, replaced by kaolinite and sericite inordinately, zonal structure can be seen frequently, the area where contact to potash feldspar shows myrmekitic texture usually, messy distribution.
Potash feldspar	Hypautomorphicr platy, which grain sizes are usually 2-5mm, partially 0.4-2mm, kaolinization slightly, contain few plagioclase inclusions and biotite inclusions, replace some parts of plagioclase, messy distribution.
Quartz	Xenomorphic granular, which grain sizes are usually 0.2-3.2mm, with clean surfurce and obvious undulatory extinction, messy distribution.
Biotite	Flaky, which grain sizes are usually 0.1-1.75mm, replaced by chlorite inordinately and epidote rarely, scattered distribution.

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

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Alterations:

Slightly, kolinization, sericitization, chloritization and epidotization can be seen occasionally in the rock fabric.

The rock fabric is composed of plagioclase, potash feldspar, quartz and biotite. According to content, mineral component and texture of the rock, we named it Medium-fine grained biotite-bearing monzonitic granite.

Photomicrographs



Granitic texture(Crossed polarizers)



Myrmekitic texture(Crossed polarizers)



Zonal texture of plagioclase(Crossed polarizers)



Chloritization and epidotization of biotite(Plain light)

****** To be continued**

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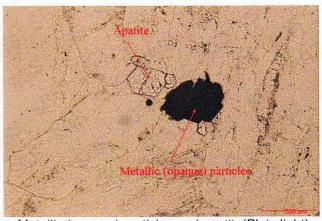
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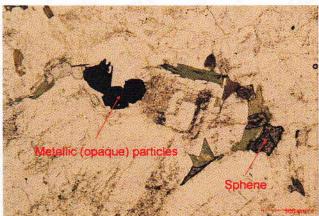
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Metallic (opaque) particles and apatite(Plain light)



Metallic (opaque) particles and sphene(Plain light)



NO PHOTO

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Specimen photograph:



SGS authenticate the photo on original report only *******End of report******

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