TEST REPORT

No. : XMCCM161201716
Date : Jul.18, 2017

CUSTOMER NAME: GONMAR (XIAMEN) TRADING CO., LTD
ADDRESS: ROOM 706, NO.668 XIAHE ROAD, XIAMEN, FUJIAN, CHINA CODE:361004

Commercial Name	:	SLATE
Petrographic Name	:	SERICITE SILTY SLATE
Typical colour	:	BLACK, GREEN, MULTICOLOR
Manufacturer	:	GONMAR (XIAMEN) TRADING CO., LTD
Manufacturer address	:	ROOM 706, NO.668 XIAHE ROAD, XIAMEN, FUJIAN, CHINA CODE:361004
Place of origin	:	CHINA
Name of quarry	:	GONMAR QUARRY
Address of quarry	:	XISHANBEI VILLAGE, YI COUNTY, BAODING CITY, HEBEI PROVINCE, CHINA
Intended use	:	Internal & external wall, flooring and stairs External uses and road finishes to cover external pedestrian and vehicular circulation areas

Above information and sample(s) was/were submitted and confirmed by the client. SGS, however, assumes no responsibility to verify the accuracy, adequacy and completeness of the sample information provided by client.

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Test required	:	EN 12057:2015 Natural stone products - Modular tiles - Requirements EN 12058:2015 Natural stone products - Slabs for floors and stairs - Requirements EN 1469:2015 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	:	Feb.08, 2017
Testing Start Date	:	Feb.08, 2017
Testing End Date	:	Jul.18, 2017
Test result(s)	:	For further details, please refer to the following page(s) (Unless otherwise stated the results shown in this test report refer only to the sample(s) tested)

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

Signed for
SGS-CSTC Standards Technical Services Co., Ltd. XM Branch

Civi Huang Authorized Signatory

SGS-CSTC Standards Technical Services Co.,Ltd. Xiamen Branch Testing Center Commercial Construction Material Laboratory
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TEST REPORT

Summary of test results:

(Average value)

Test items	Test methods	Test results	Page
Apparent density	EN 1936:2006	2810 kg/m^3	3
Open porosity	EN 1936:2006	1.67 %	3
Water absorption	EN 13755:2008	0.54 %	3
Flexural strength in natural condition	EN 12372:2006	52.7 MPa	4
Flexural strength after 56 cycles freeze/thaw	EN 12371:2010 EN 12372:2006	47.2 MPa	4
Abrasion resistance (sawn)	EN 14157:2004 method A	37.2 mm	5
Slip resistance (sawn)	CEN/TS 16165:2012 Annex C EN 14231:2003	SRV “dry”: 74 SRV “wet”: 62	5
Compressive strength in natural condition	EN 1926:2006	69 MPa	6
Compressive strength after 56 cycles freeze/thaw	EN 12371:2010 EN 1926:2006	79 MPa	6
Breaking load at dowel hole	EN 13364:2001	2055 N	7
Petrographic description	EN 12407:2007	SERICITE SILTY SLATE	8

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

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/m^3)	2800	2810	2810	2810	2810	2810
Arithmetic mean of the apparent density (kg/m^3)	2810					
Open porosity (%)	1.96	1.63	1.61	1.61	1.56	1.63
Arithmetic mean of the open porosity (%)	1.67					

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 (%)	0.52	0.47	0.62	0.52	0.63	0.51
Arithmetic mean of the water absorption (%)	0.54					

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

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, 21pcs, all specimens are in natural condition with sawn faces

Loading rate: (0.25±0.05)MPa/s

Test Result:

Flexural strength in natural condition

Specimens identification No.	1	2	3	4	5	6	7	8	9	10
Flexural strength (MPa)	50.6	60.2	54.0	56.5	58.0	37.7	43.9	66.9	48.7	50.7
Mean value (MPa)	52.7									
Standard deviation (MPa)	8.4									
Lower expected value (MPa)	36.9									

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

Flexural strength after 56 freezing and thawing cycles

Specimens identification No.	1	2	3	4	5	6	7	8	9	10
Flexural strength (MPa)	49.8	39.9	42.6	55.4	50.3	41.8	50.4	47.8	48.8	45.5
Mean value (MPa)	47.2									
Standard deviation (MPa)	4.8									
Lower expected value (MPa)	38.0									

Change in flexural strength after 56 cycles of freeze/thaw: 10.4%

******** 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×30mm, 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)	38.5	36.5	38.0	39.0	35.5	36.0
Mean value (mm)	37.2					

5. Slip resistance

Test Method:

CEN/TS 16165:2012 Determination of slip resistance of pedestrian surfaces - Methods of evaluation - Annex C - Pendulum friction test

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

Specimens: 200mm×150mm×30mm, 6pcs, all specimens are in natural condition with sawn faces

Slider material: Slider 55 rubber

Testing surface: sawn

Test Result:

Specimens identification No.	1	2	3	4	5	6
Mean pendulum value (Dry condition)	74	74	74	74	75	75
Slip resistance value (SRV “dry”)	74					
Mean pendulum value (Wet condition)	62	61	62	62	63	63
Slip resistance value (SRV “wet”)	62					

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

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6. Compressive strength in natural condition and subjected to frost test

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×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

Specimens identification No.	1	2	3	4	5	6	7	8	9	10
Compressive strength (MPa)	100	70	72	38	35	46	119	54	50	104
Mean value (MPa)	69									
Standard deviation (MPa)	30									
Lower expected value (MPa)	26									

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

Compressive strength after 56 freezing and thawing cycles

Specimens identification No.	1	2	3	4	5	6	7	8	9	10
Compressive strength (MPa)	56	56	56	112	55	40	91	111	124	92
Mean value (MPa)	79									
Standard deviation (MPa)	31									
Lower expected value (MPa)	32									

Change in compressive strength after 56 cycles of freeze/thaw: -14.5%

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

7. Breaking load at dowel hole

Test Method:

EN 13364:2001 Natural stone test methods - Determination of the breaking load at dowel hole

Specimens: 200mm×200mm×30mm, 3pcs, 4 holes were drilled on each specimen, all specimens are in natural condition with sawn faces

Diameter of the hole: 10mm, Diameter of the dowel: 8mm

Loading rate: (50±5) N/s

Test Result:

Specimens identification No.		d_1 (mm)	b_A (mm)	Breaking load F (N)
1	Hole 1	10	92	1700
	Hole 2	9	33	1300
	Hole 3	9	95	1850
	Hole 4	11	95	1950
2	Hole 1	10	99	2650
	Hole 2	10	75	2350
3	Hole 1	9	100	2950
	Hole 2	9	51	1950
	Hole 3	9	73	1850
	Hole 4	9	99	2000
Mean value		10	81	2055
Lower expected value		/	/	1234
Standard deviation		/	/	477

d_1: Distance from the hole to the face
b_A: Maximum distance from the centre of the hole to the edge of the fracture

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

8. Petrographical description

Test Method:

EN 12407:2007 Natural stone test methods - Petrographic examination

Test Result:

CLASSIFICATION: Sericite Silty Slate

HAND SAMPLE DESCRIPTION

Moderately strong, ash black, moderately hard. It can be scored with a penknife.

MICROSCOPIC DESCRIPTION

Texture	Blastopelitic-silty texture
Structure	Slaty strcture
Major mineral	Terrigenous fine sand (1-5%), Terrigenous silt (60%), Sericite and Chlorite (35%), Calcite(1-5%)
Accessory mineral	Metallic(Opaque) particles, Zircon
Secondary mineral	/

MATERIAL COMPONENT	PETROGRAPHIC DETAILS
Terrigenous fine sand and Terrigenous silt	Composed of feldspar and quartz, recrystallization is obvious, intergranular mosaic distribution. some single-crystal or aggregates still remain the subangular-surbround shape of sandy. the grain sizes are usually 0.01-0.05mm(terrigenous silt), occasionally 0.05-0.1mm(terrigenous fine sand).
Sericite and Chlorite	Flaky, which grain sizes are less than 0.05mm. aggregates take on streak and stripe oriented distribution when they distribute concentration relatively, constitute slaty structure.
Calcite	Xenomorphic granular, which grain sizes are 0.02-0.15mm. scattered distribution.

Alterations:

Decomposed. Clay had been converted into sericite and a few chlorite ect, Terrigenous fine sand and terrigenous silt has recrystallization partially. And almost all minerals take on directional arrangement.

Remaks:

From all the phenomenon of the rock, we can conclude that the rock was transferred by pelitic siltstone. because clay had been converted into sericite and a few chlorite etc, and almost all minerals are direction arrangement, it belongs to parametamorphic rocks. In addition, the strcture of the rock is slaty strcture, so we named it **Sericite silty slate.** The rock is metamorphic rocks.

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

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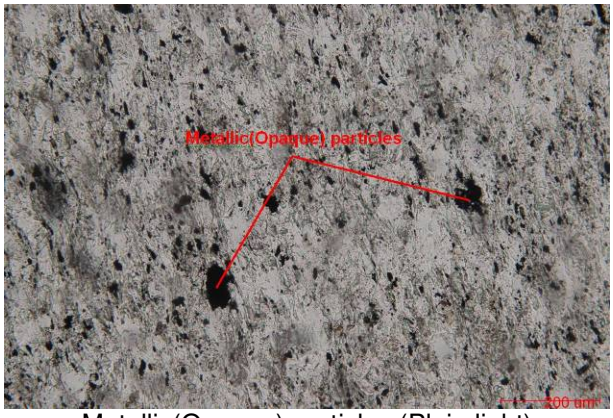
Photomicrographs

Blastopelitic-silty texture, Slaty strcture
(Crossed polarizers)

Blastopelitic-silty texture, Slaty strcture
(Plain light)



Metallic(Opaque) particles (Plain light)

Note: The test was carried out by an external laboratory assessed as competent.

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

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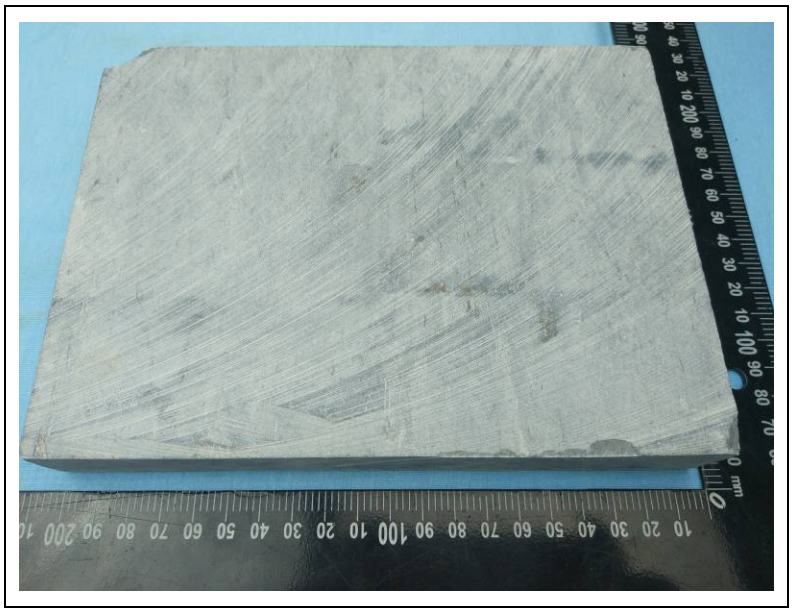
Specimen photograph:



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

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