

TEST REPORT

No. : XMIN2211009416CM

Date : Dec 16, 2022

Page: 1 of 9

scan to see the report



XMIN2211009416CM

CUSTOMER NAME: XIAMEN GLOBAL STONE IMPORT & EXPORT CO., LTD
ADDRESS: RM 1203, B TOWER ITG CENTER BUILDING, NO.4686 XIANYUE ROAD, HULI DISTRICT, XIAMEN, FUJIAN, CHINA 361016

Sample Name : NATURAL QUARTZITE

Material and Mark : Quartzite

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.

Date of Receipt : Nov 28, 2022

Testing Start Date : Nov 28, 2022

Testing End Date : Dec 16, 2022

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)

Signed for
SGS-CSTC Standards Technical
Services Co. , Ltd Xiamen Branch
Testing Center

Bryan Hong
Authorized signatory



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

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Summary of Results:

No.	Test Item	Test Method	Result
1	Compressive Strength	Refer to ASTM C170/C170M-17	Dry Condition: 267 MPa Wet Condition: 256 MPa
2	Absorption by weight and Density	Refer to ASTM C97/C97M-18	Water absorption: 0.18% Density: 2584 kg/m ³
3	Stain Resistance Test	Refer to ANSI Z124.6-2007 Clause 5.2	Stain resistance total rating: 42 The maximum stain depth: 0.06mm
4	Moh's Hardness	GB/T 9966.5-2020 Section 3	Mohs' hardness: 6
5	Chemical analysis*	GB/T 14506.28-2010	See result
6	Petrographic description*	ASTM C1721-22	See result

Note: * test project/method was carried out by subcontractors.

Original Sample Photo:



Sample



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1. Test Item: Compressive Strength

Sample Description: See photo

Test Method: Refer to ASTM C170/C170M-17

Test Condition:

Specimen: 50mm×50mm×20mm, 10pcs

Dry Condition: Dry in an oven at 60±2°C for 48h→Cool them to room temperature in a desiccator

Wet Condition: Immerse in distilled water at 22±2°C for 48h

Testing speed: 0.5MPa/s

Test Result:

Dry Condition:

Specimen No.	1	2	3	4	5
Individual compressive strength value (MPa)	281	280	261	248	267
Mean compressive strength value (MPa)	267				
Standard deviation (MPa)	14				

Wet Condition:

Specimen No.	1	2	3	4	5
Individual compressive strength value (MPa)	268	253	244	250	266
Mean compressive strength value (MPa)	256				
Standard deviation (MPa)	11				



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2. Test Item: Absorption by weight and Density

Sample Description: See photo

Test Method: Refer to ASTM C97/C97M-18

Test Condition:

Specimen: 50mm×50mm×20mm, 5pcs

Condition: Dry in an oven at 60±2°C for 48h → Cool them to room temperature in a desiccator → Immerse in distilled water at 22±2°C for 48h

Test Result:

Specimen No.	1	2	3	4	5
Absorption by weight (%)	0.17	0.19	0.17	0.21	0.15
Mean water absorption (%)	0.18				
Standard deviation (%)	0.03				
Density (kg/m ³)	2580	2593	2589	2561	2598
Mean density (kg/m ³)	2584				
Standard deviation (kg/m ³)	15				

3. Test Item: Stain Resistance Test

Sample Description: See photo

Test Method: Refer to ANSI Z124.6-2007 Clause 5.2

Test Condition:

Specimen: 100mm×100mm×20 mm

Test reagents: see table 1

Contact time: 16h

Test Result:

Stain resistance total rating: 42; The maximum stain depth: 0.06mm



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Table 1: Test result of stain resistance test

Reagent	Rating	
	Covered	Uncovered
Black crayon	1	1
Black liquid shoe polish	2	2
Blue washable Ink	1	1
Gentian violet solution	5(stain depth:0.02mm)	5(stain depth:0.02mm)
Beet juice	1	1
Grape juice	1	1
Lipstick	1	1
Hair dye	1	1
Iodine solution	5(stain depth:0.06mm)	5(stain depth:0.06mm)
Wet tea bag	1	1
Total rating	42 (The maximum stain depth: 0.06mm)	

Note: Cleaning procedures:

1. The specimen shall be washed with tap water and cheesecloth or soft bristle brush using 20 scrub cycles with normal hand pressure and dried by blotting. A stain shall be defined as a change in surface texture or a change in color. Specimens not staining at this point shall have a rating of 1-non-staining.
2. Stains present after initial wash with water shall be washed with alcohol or naphtha using cheesecloth or soft bristle brush for 20 cycles using normal hand pressure. The specimens shall be washed with tap water and dried by blotting. Specimens not staining at this point shall have a rating of 2-removable by alcohol or naphtha.
3. Stains present after the aforementioned cleanings shall be scrubbed 20 scrub cycles with standard scouring powder and wet cheesecloth or soft bristle brush using normal hand pressure. The specimens shall be washed with tap water and dried by blotting. Reduction of gloss due to scrubbing with standard scouring power shall not constitute staining. Specimens whose stain is removed by the standard scouring powder shall have a rating of 3-removable by first application of standard scouring powder.



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4. Stains present after the aforementioned cleanings shall be scrubbed 40 scrub cycles with standard scouring powder and wet cheesecloth or soft bristle brush using normal hand pressure. The specimens shall be washed with tap water and dried by blotting. Reduction of gloss due to scrubbing with standard scouring power shall not constitute staining. Specimens whose stain is removed by this additional shall have a rating of 4-removable by two standard scouring powder scrubbing.
5. Any specimen with stain remaining after the aforementioned cleanings shall have a rating of 5. Any specimen with stain remaining after the above cleanings shall be tested to determine the depth of staining. The affected area shall be cut and lightly sanded with 600 grit abrasive cloth until the stain is removed. The depth shall be measured to the nearest 0.025mm.

4. Test Item: Mohs' Hardness

Sample Description: See photo

Test Method: GB/T 9966.5-2020 Section 3

Test Condition:

Specimen: 100mm×100mm, 3pcs

Testing surface: sawn

Test Result:

Specimen No.	1	2	3
No scratch	5	5	5
Scratch	6	6	6
Mohs' hardness	6		

Scale: 1- Talc; 2- Gypsum; 3- Calcite; 4- Fluorspar; 5- Apatite; 6- Feldspar; 7- Quartz; 8- Topaz; 9- Corundum; 10- Diamond.



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5. Chemical analysis

Test method:

GB/T 14506.28-2010

Test results:

Test item	Test results, %
SiO ₂	95.80
Al ₂ O ₃	1.92
CaO	0.11
MgO	0.08
K ₂ O	0.29
Na ₂ O	0.04
TiO ₂	0.05
MnO	0.00
P ₂ O ₅	0.01
TFe ₂ O ₃	0.06
Loss on ignition	1.62



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6. Petrographic description

Test Method:

ASTM C1721-22

Test Result:

CLASSIFICATION: Cataclastic quartzite

HAND SAMPLE DESCRIPTION

Strong, fresh, white, hard. It is not easily scored with a penknife.

MICROSCOPIC DESCRIPTION

Texture	Granular blastic texture, Cataclastic texture
Structure	Massive structure
Major mineral	Quartz(100%)
Accessory mineral	Metallic(Opaque) particles
Secondary mineral	Sericite ect.

MATERIAL COMPONENT	PETROGRAPHIC DETAILS
Quartz	Xenomorphic granular, which grain sizes are usually 0.2~2.7mm. Recrystallization phenomenon, mosaic granular morphic structure between particles, messy distribution. orientation arrange. undulatory extinction.

Alterations:

Note. Quartz has recrystallization phenomenon. The rock is broken by force at a later stage, broken in the shape of breccia, with irregular fissures, and the cracks were filled with siliceous and sericite.

Remarks:

The rock is composed of quartz. According to the content of ingredient and texture of the rock, we named it **Cataclastic quartzite**.



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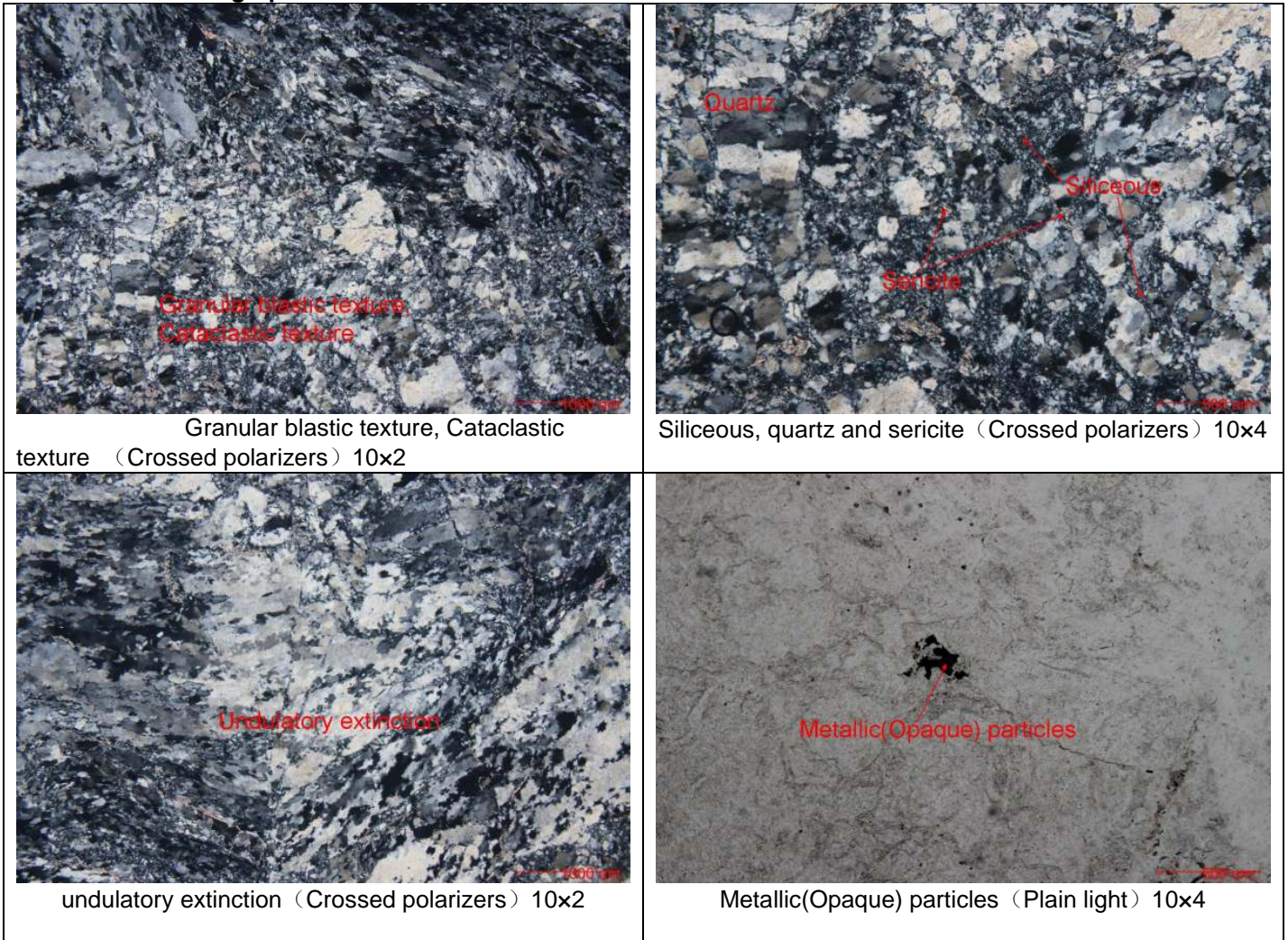
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Photomicrographs



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