



Pietra Smeralda cross-cut

> 02 Catalogue

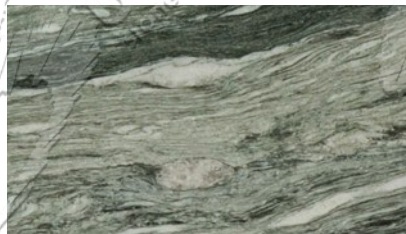


> 04 Technical sheets



Pietra Smeralda cross-cut

POLISHED



DISK CUT



TECHNICAL TESTS - AVERAGE VALUES
SURFACE: RESINED & HONED
BACK: RESINED WITH FIBREGLASS NET

Apparent Density UNI EN 1936:2007
2680 kg/m³

Open Porosity UNI EN 1936:2007
0,8 %

Water Absorption at atmospheric pressure
UNI EN 13755:2008
0,3 %

Abrasion Resistance UNI EN 14157:2017
13,5 mm

Flexural Strength UNI EN 12372:2007

4,7 MPa
load applied parallel to the planes of anisotropy

16,9 MPa
load applied perpendicular to the planes of anisotropy

Frost Resistance: flexural strength
after 14 freeze/thaw cycles
UNI EN 12371:2010 - UNI EN 12372:2007

3,9 MPa
load applied parallel to the planes of anisotropy

18,2 MPa
load applied perpendicular to the planes of anisotropy

Breaking Load at dowel hole UNI EN 13364:2003

1300 N
load applied parallel to the planes of anisotropy

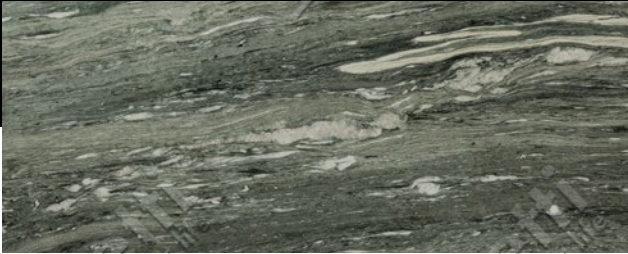
1350 N
load applied perpendicular to the planes of anisotropy

Resistance to Ageing: flexural strength
after thermal shock cycles
UNI EN 14066:2013 - UNI EN 12372:2007

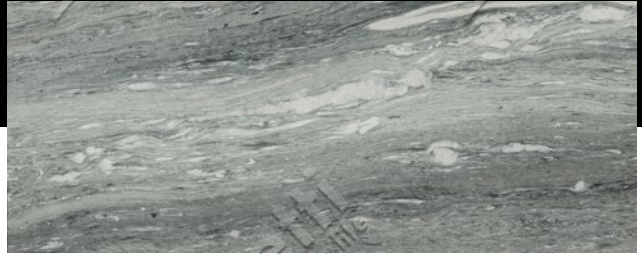
4,7 MPa
load applied parallel to the planes of anisotropy

16,8 MPa
load applied perpendicular to the planes of anisotropy

POLISHED



DISK CUT

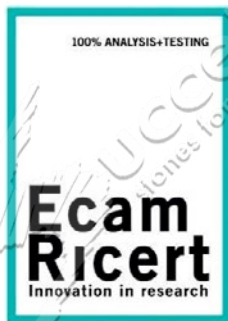


Slab
78,7x31,5"

Detail
13,8x31,5"

Technical sheets

uccetti
stones for your life



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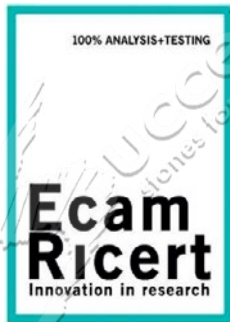
LAB N° 0699

Test Report n° 18-4260-001/E

Issue date, 07/30/2018

Client	SUC CETTI LUCIANO S.R.L. VIA REZIA N.30 23022 - CHIAVENNA, SO ITALIA
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Sample description	PIETRA SMERALDA #
Origin	CUSTOMER PLANT
Kind of sample	SLABS OF NATURAL STONE FOR CUTTING
Sampling by	CUSTOMER
Sampling date	NOT DECLARED
Taken from	COURIER
Delivery date	05/17/2018
Acceptance number	18-4260
Acceptance date	05/17/2018
Test start date	05/21/2018
Test end date	07/30/2018
Object	ITT TESTS FOR CE MARKING ACCORDING TO: UNI EN 1469 UNI EN 12058



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PETROGRAPHIC EXAMINATION **

Test according to: UNI EN 12407: 2007

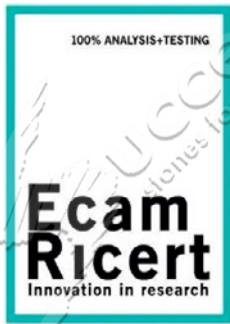
Macroscopic description by lens (10X), diluted hydrochloric acid at 10%

Metamorphic rock of quartz-muscovite composition, non-reactive to cold hydrochloric acid. The rock presents an alternation of granoblastic quartz (white) and lepidoblastic muscovite (green) levels.

**Petrographic microscopic analysis in thin section by polarizing microscope (thin section at 30 microns) -
Microchemical test with Alizarina S coloring solution (red Alizarina)**

	Components	%	Grain
Mains	Quartz	65	Medium grained granoblasts
	Muscovite	30	Fine grained lepidoblasts
Lessers	Calcite	5	Coarse grained
	-	-	-
	-	-	-

Equipement: Cropper Micromet Remet
Microscope Olympus BX 41
Digital Camera Canon EOS 450D
Remote control and image management Eos Utility
Magnifying glass 10x



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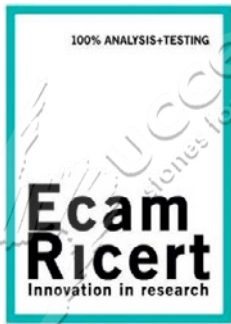
Issue date, 07/30/2018

PETROGRAPHIC EXAMINATION **

Test according to: UNI EN 12407: 2007

**Petrographic microscopic analysis in thin section by polarizing microscope (thin section at 30 microns) -
Microchemical test with Alizarina S coloring solution (red Alizarina)**

Intergranular texture	Alternation of granoblastic quartz and lepidoblastic muscovite levels.
Intragranular texture	No internal schistosity
Porosity observable under the microscope	No observable porosity
Residual	Absent
Grain	Medium-fine
Metamorphic level	Medium
Classification	Quartz and muscovite schist
Commercial name	Pietra Smeralda



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PHOTOGRAPHIC DOCUMENTATION

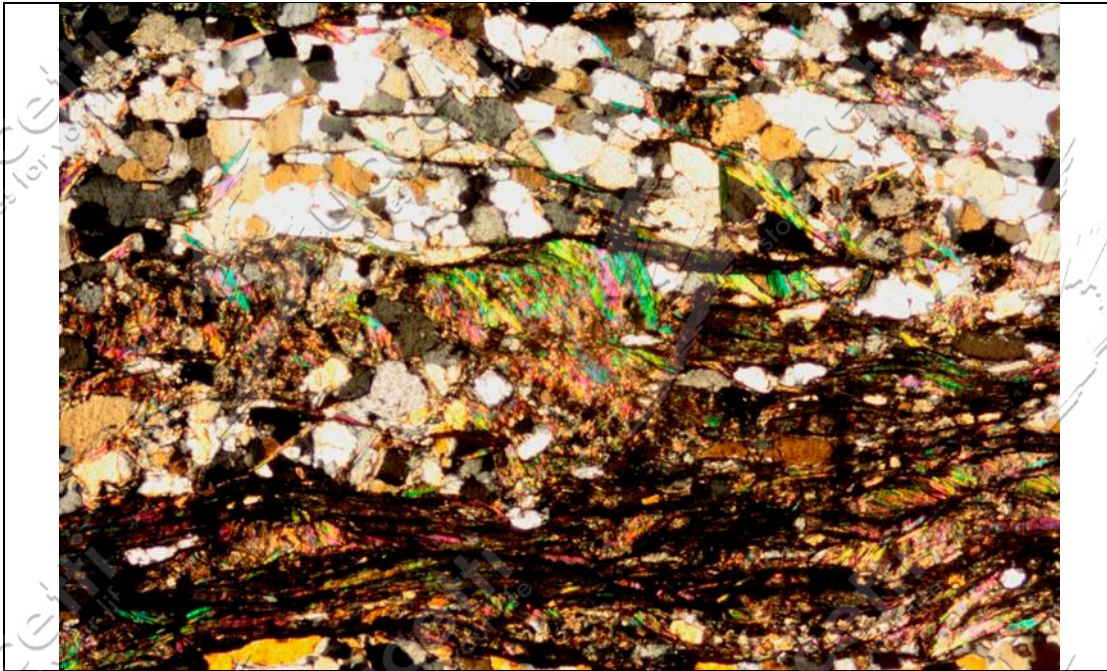


Photo 1: Photo under an optical microscope, thin section, transmitted light, 20 magnifications, cross nicols



Photo 2: Photo under an optical microscope, thin section, transmitted light, 20 magnifications, cross nicols

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DETERMINATION OF WATER ABSORPTION AT ATMOSPHERIC PRESSURE (UNI EN 13755:2008)

SPECIMEN	specimen dimensions (mm)			Mass of the dry specimen (g)	Mass of the saturated specimen (g)	Absorption (%)	
	n.	L	l	h	m _d	m _s	A _p
ASS - 1		99,8	100,1	27,5	724,52	726,71	0,3
ASS - 2		100,1	99,9	27,3	721,82	723,88	0,3
ASS - 3		100,1	100,6	26,9	722,60	724,68	0,3
ASS - 4		100,5	99,9	26,9	715,57	717,63	0,3
ASS - 5		99,9	100,2	27,0	715,75	717,68	0,3
ASS - 6		100,1	100,3	27,0	716,33	718,61	0,3
Average absorption (%)							0,3±0,1

Note: measurement uncertainty reported in extended form with k = 2.57 corresponding to a confidence level of 95%

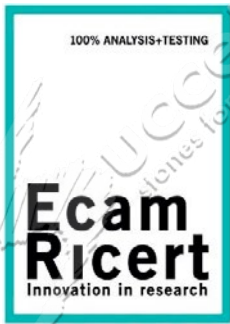
DETERMINATION OF APPARENT DENSITY (UNI EN 1936:2007)*

SPECIMEN	Mass of the dry specimen (g)	Mass of the saturated specimen (g)	Mass of the specimen in water (g)	Apparent density (kg/m ³)
ASS - 1	724,52	726,71	455,56	2666,7
ASS - 2	721,82	723,88	454,81	2677,3
ASS - 3	722,60	724,68	456,43	2688,4
ASS - 4	715,57	717,63	450,42	2672,6
ASS - 5	715,75	717,78	450,94	2677,0
ASS - 6	716,33	718,61	451,23	2673,7
Apparent density (kg/m³)				2680,0

DETERMINATION OF OPEN POROSITY (1936:2007)*

SPECIMEN	- Mass of the dry specimen (g)	Mass of the saturated specimen (g)	Mass of the specimen in water (g)	Open porosity (%)
ASS - 1	724,52	726,71	455,56	0,8
ASS - 2	721,82	723,88	454,81	0,8
ASS - 3	722,6	724,68	456,43	0,8
ASS - 4	715,57	717,63	450,42	0,8
ASS - 5	715,57	717,78	450,94	0,8
ASS - 6	716,33	718,61	451,23	0,9
Average open porosity (%)				0,8

Director of Geotechnical and Costruction Products Sector **Geologist Dr. Massimo Bonato**



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Sample description	PIETRA SMERALDA #
Origin	CUSTOMER PLANT
Kind of sample	SLABS OF NATURAL STONE FOR CUTTING
Sampling by	CUSTOMER
Sampling date	NOT DECLARED
Taken from	COURIER
Delivery date	05/17/2018
Acceptance number	18-4260
Acceptance date	05/17/2018
Test start date	05/21/2018
Test end date	07/30/2018
Object	ITT TESTS FOR CE MARKING ACCORDING TO: UNI EN 1469 UNI EN 12058 – for internal use

DISPOSITION OF ANISOTROPY PLANS COMPARED TO THE DIMENSIONS OF THE SPECIMENS:

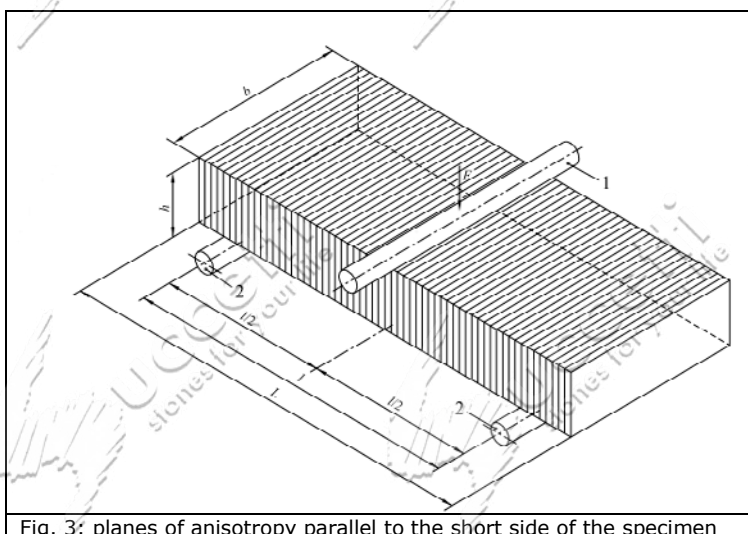


Fig. 3: planes of anisotropy parallel to the short side of the specimen

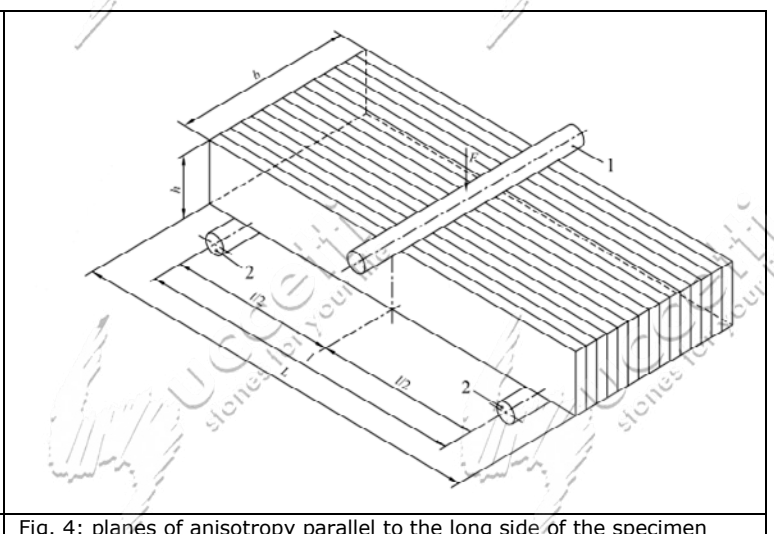


Fig. 4: planes of anisotropy parallel to the long side of the specimen



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Issue date, 07/30/2018

**DETERMINATION OF THE ABRASION RESISTANCE (UNI EN 14157:2017)
Method A with abrasive disk**

Surface finish:	Resined-honed #
Abrasion surface:	ORTHOGONAL TO THE PLAN OF USE – VEIN PARALLEL ON THE LONG SIDE (fig. 4)
¹ Correction value :	- 0,5 mm

specimen number	groove width (mm)	correct groove width (mm) ¹	average correct value (mm)
1	14,6	14,0	13,5 ± 2,0
2	13,4	13,0	
3	13,1	12,5	
4	13,2	12,5	
5	14,3	14,0	
6	14,2	13,5	

Note: measurement uncertainty on the average value reported in extended form with $k = 2,57$ corresponding to a confidence level of 95%



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DETERMINATION OF FLEXURAL STRENGTH UNDER CONCENTRATED LOAD (UNI EN 12372:2007)

- Speed of load's application:	0,26 MPa/s
- Surface finish:	resined-honed with resined-reinforced (with net) back side #
- Direction of load's application:	orthogonal to the plan of use (cross cut, parallel to the vein, fig. 3)

SPECIMEN	Dimensions (mm)				Breaking load (N)	Type of breaking	Flexural strength (Mpa)
	n.	Total Length L	Distance supports I	b			
1-PS-ort C	180,5	154,0	90,6	30,8	1462	-	3,9
2-PS-ort C	180,2	154,0	90,1	30,1	1622	-	4,6
3-PS-ort C	180,7	154,0	90,2	30,7	1832	-	5,0
4-PS-ort C	180,4	154,0	90,1	30,7	1650	-	4,5
5-PS-ort C	180,1	154,0	90,4	30,6	1627	-	4,4
6-PS-ort C	180,1	154,0	90,4	30,0	1897	-	5,4
7-PS-ort C	180,2	154,0	90,3	32,4	2166	-	5,3
8-PS-ort C	180,2	154,0	90,2	32,2	1455	-	3,6
9-PS-ort C	180,3	154,0	90,3	30,8	1992	-	5,4
10-PS-ort C	180,1	154,0	90,4	30,4	1971	-	5,5
Average flexural strength (MPa):							4,7 ± 0,3

number of specimens	10
Average flexural strength (MPa)	4,7 ± 2,9
Standard deviation (MPa)	0,7
Coefficient of variation	0,1
Logarithmic mean	1,55
logarithmic standard deviation (MPa)	0,15
Minimun value (MPa)	3,6
Maximun value (MPa)	5,5
Lower expected value (MPa)	3,5
Quantile factor K _s	2,10

Note: measurement uncertainty on the average value reported in extended form with k = 2,23 corresponding to a confidence level of 95%

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DETERMINATION OF FLEXURAL STRENGTH UNDER CONCENTRATED LOAD (UNI EN 12372-2007)

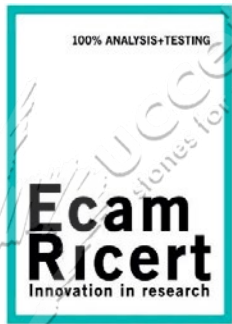
- Speed of load's application:	0,22 MPa/s
- Surface finish:	resined-honed with resined-reinforced (with net) back side #
- Direction of load's application	orthogonal to the plan of use (cross cut, perpendicular to the vein, fig. 4)

SPECIMEN	Dimensions (mm)				Breaking load (N)	Type of breaking	Flexural strength (Mpa)
	n,	Total Length L	Distance supports I	b			
1-PS-ORTOL		180,7	153,0	90,4	30,5	6886	18,8
2-PS-ORTOL		180,5	153,0	90,2	31,2	7206	18,8
3-PS-ORTOL		180,4	153,0	90,1	30,4	6454	17,8
4-PS-ORTOL		180,5	153,0	90,3	30,2	5033	14,0
5-PS-ORTOL		180,6	153,0	90,4	30,8	6125	16,4
6-PS-ORTOL		180,7	153,0	90,2	30,6	5983	16,3
7-PS-ORTOL		180,4	153,0	90,4	31,0	6545	17,3
8-PS-ORTOL		180,3	153,0	90,2	31,1	7112	18,7
9-PS-ORTOL		180,0	153,0	90,2	30,8	5326	14,3
10-PS-ORTOL		180,6	153,0	90,0	30,3	6015	16,7
Average flexural strength (MPa):							16,9 ± 1,0

1) Note: the fracture occurred at more than 15% of the distance between the supporting rollers and the middle

number of specimens	10
Average flexural strength (MPa)	16,9 ± 1,0
Standard deviation (MPa)	1,7
Coefficient of variation	0,1
Logarithmic mean	2,82
logarithmic standard deviation (MPa)	0,11
Minimun value (MPa)	14,0
Maximun value (MPa)	18,8
Lower expected value (MPa)	13,5
Quantile factor K _s	2,10

Note: measurement uncertainty on the average value reported in extended form with k = 2,31 corresponding to a confidence level of 95%



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**DETERMINATION OF FROST RESISTANCE (UNI EN 12371:2010)*
by changing of the flexural strength (UNI EN 12372:2007)**

- Number of cycles: 14
- Visible deterioration^x: 0
- Surface finish: resined-honed with resined-reinforced (with net) back side #
- Direction of load's application: orthogonal to the plan of use (cross cut, perpendicular to the vein, fig. 3)

^x Note (see par. 7.3.2.1 UNI EN 12371:2010):

0	specimen intact.
1	very minor damage (minor rounding of corners and edges) which does not compromise the integrity of the specimen.
2	one or several minor cracks ($\leq 0,1$ mm width) or detachment of small fragments (≤ 30 mm ² per fragment).
3	one or several cracks, holes or detachment of fragments larger than those defined for the '2' rating, or alteration of material in veins, or the specimen shows important signs of crumble or dissolution.
4	specimen with major cracks or broken in two or more or disintegrated.

Average value of flexural strength (R_{TF}) of specimens not subjected to freezing and thawing cycles:

R_{TF} (MPa)	4,7
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Average value of flexural strength (R_{TF}) of specimens subjected to freezing and thawing cycles (14 cycles):

R_{TF} (MPa)	3,9
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DETERMINATION OF FLEXURAL STRENGTH UNDER CONCENTRATED LOAD (UNI EN 12372:2007)

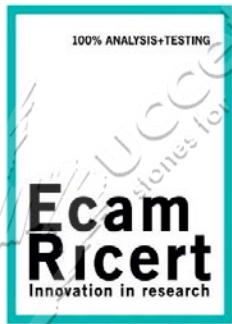
- Speed of load's application:	0,22 MPa/s
- Surface finish:	resined-honed with resined-reinforced (with net) back side #
- Direction of load's application	orthogonal to the plan of use (cross cut, perpendicular to the vein, fig. 3)

SPECIMEN	Dimensions (mm)				Breaking load (N)	Type of breaking	Flexural strength (Mpa)
	n.	Total Length L	Distance supports I	b			
PS-ORTOc-1	180,5	155,0	90,3	30,5	1189		3,3
PS-ORTOc-2	180,6	155,0	90,2	31,8	1281		3,3
PS-ORTOc-3	180,8	155,0	90,4	32,0	1145	1	2,9
PS-ORTOc-4	181,1	155,0	90,4	30,5	1798		5,0
PS-ORTOc-5	180,5	155,0	90,3	30,5	2017		5,6
PS-ORTOc-6	180,6	155,0	90,2	30,6	1694		4,7
PS-ORTOc-7	180,4	155,0	90,4	30,5	1385		3,8
PS-ORTOc-8	180,6	155,0	90,5	30,8	1296	1	3,5
PS-ORTOc-9	181,0	155,0	90,4	31,1	1589		4,2
PS-ORTOc-10	180,7	155,0	90,1	31,4	1224	1	3,2
Average flexural strength (MPa):							3,9 ± 0,4

1) Note: the fracture occurred at more than 15% of the distance between the supporting rollers and the middle

number of specimens	10
Average flexural strength (MPa)	3,9 ± 0,4
Standard deviation (MPa)	0,9
Coefficient of variation	0,2
Logarithmic mean	1,35
logarithmic standard deviation (MPa)	0,22
Minimun value (MPa)	2,9
Maximun value (MPa)	5,6
Lower expected value (MPa)	2,4
Quantile factor K _s	2,10

Note: measurement uncertainty on the average value reported in extended form with k = 2,36 corresponding to a confidence level of 95%



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LAB N° 0699

Test Report n° 18-4260-003/E

Issue date, 07/30/2018

**DETERMINATION OF FROST RESISTANCE (UNI EN 12371:2010)*
 by changing of the flexural strength (UNI EN 12372:2007)**

- Number of cycles: 14
- Visible deterioration^x: 0
- Surface finish: resined-honed with resined-reinforced (with net) back side #
- Direction of load's application: orthogonal to the plan of use (cross cut, perpendicular to the vein, fig. 4)

^x Note (see par. 7.3.2.1 UNI EN 12371:2010):

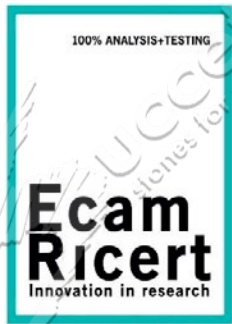
0	specimen intact.
1	very minor damage (minor rounding of corners and edges) which does not compromise the integrity of the specimen.
2	one or several minor cracks ($\leq 0,1$ mm width) or detachment of small fragments (≤ 30 mm ² per fragment).
3	one or several cracks, holes or detachment of fragments larger than those defined for the '2' rating, or alteration of material in veins, or the specimen shows important signs of crumble or dissolution.
4	specimen with major cracks or broken in two or more or disintegrated.

Average value of flexural strength (R_{TF}) of specimens not subjected to freezing and thawing cycles :

R_{TF} (MPa)	16,9
----------------	------

Average value of flexural strength (R_{TF}) of specimens subjected to freezing and thawing cycles (14 cycles) :

R_{TF} (MPa)	18,2
----------------	------



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LAB N° 0699

Test Report n° 18-4260-003/E

Issue date, 07/30/2018

DETERMINATION OF FLEXURAL STRENGTH UNDER CONCENTRATED LOAD (UNI EN 12372:2007)

- Speed of load's application:	0,23 MPa/s
- Surface finish:	resined-honed with resined-reinforced (with net) back side #
- Direction of load's application	orthogonal to the plan of use (cross cut, perpendicular to the vein, fig. 4)

SPECIMEN	Dimensions (mm)				Breaking load (N)	Type of breaking	Flexural strength (Mpa)
	n.	Total Length L	Distance supports I	b			
PS-ORTOL-1	181,2	153,0	90,6	30,2	7127	1	19,8
PS-ORTOL-2	180,8	153,0	90,4	31,1	8206		21,5
PS-ORTOL-3	180,6	153,0	90,4	30,5	5780		15,8
PS-ORTOL-4	180,6	153,0	90,0	30,1	5623		15,8
PS-ORTOL-5	180,6	153,0	90,3	30,8	7112		19,1
PS-ORTOL-6	180,7	153,0	90,2	30,5	6235		17,1
PS-ORTOL-7	180,5	153,0	90,5	30,8	6890	1	18,4
PS-ORTOL-8	180,3	153,0	90,4	31,1	7347		19,3
PS-ORTOL-9	181,1	153,0	90,3	30,8	5589	1	15,0
PS-ORTOL-10	180,6	153,0	90,0	30,1	7015		19,7
Average flexural strength (MPa):							18,2 ± 1,2

1) Note: the fracture occurred at more than 15% of the distance between the supporting rollers and the middle

number of specimens	10
Average flexural strength (MPa)	18,2 ± 1,2
Standard deviation (MPa)	2,1
Coefficient of variation	0,1
Logarithmic mean	2,89
logarithmic standard deviation (MPa)	0,12
Minimun value (MPa)	15,0
Maximun value (MPa)	21,5
Lower expected value (MPa)	14,0
Quantile factor K _s	2,10

Note: measurement uncertainty on the average value reported in extended form with k = 2,36 corresponding to a confidence level of 95%

**DETERMINATION OF BREAKING LOAD
AT DOWEL HOLE (UNI EN 13364:2003)***

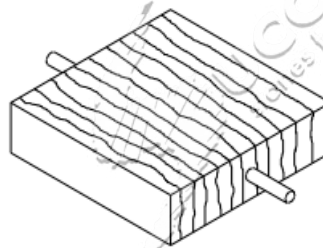


Fig. 5 Test system for a specimen with the direction of application of the load parallel to the anisotropy plans (type IIa)

TEST DATA

Type of test:	IIa
Number of specimens:	5
Conditioning specimens	In ventilated oven at $70 \pm 5 \text{ }^\circ\text{C}$ to constant mass
Type of cement used:	Cement Mortar CEM I 52,5 R
Surface finish:	resined-honed with resined-reinforced (with net) back side #
Hole's diameter [mm]	10
Pin's diameter [mm]	6,1

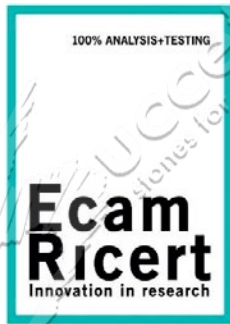
TEST RESULTS:

Definitions

d: specimen's thickness

d_1 : distance from the hole to the face in the direction of the force

b_A : maximum distance of the center of the hole to the edge of the fracture



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Test Report n° 18-4260-003/E

Issue date, 07/30/2018

DIRECTION OF APPLICATION OF THE LOAD: parallel to the anisotropy planes (type IIa)							
Specimen n°	Specimen's dimension [mm]			Test n°	d ₁ [mm]	b _A [mm]	Breaking load F [N]
	L ₁	L ₂	d				
1	200,1	200,3	30,0	1	11	37	850
				2	11	7	1550
2	199,8	200,1	30,8	3	11	7	1550
				4	11	17	1550
3	200,2	200,3	30,7	5	10	17	1000
				6	11	17	1600
4	200,1	199,9	30,1	7	11	19	1100
				8	10	7	1350
5	200,0	199,9	31,3	9	11	7	1100
				10	11	12	1550

Average value of d ₁ [mm]:	11
Average value of b _A [mm]:	15
Average breaking load F [N]:	1300
Standard Deviation [N]:	281
Coefficient of variation:	0,22
Logarithmic average grade:	7,17
Standard logarithmic deviation:	0,23
Minimum value [N]:	850
Maximum Value [N]:	1600
Lower expected value [N]:	800
Quantile factor K _s :	2,10

**DETERMINATION OF BREAKING LOAD
AT DOWEL HOLE (UNI EN 13364:2003)***

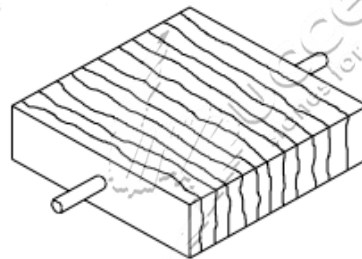


Fig. 6 Test system for a specimen with the direction of application of the load parallel to the anisotropy plans (type IIb)

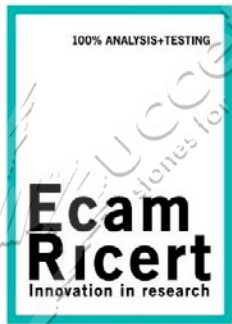
TEST DATA

Type of test:	IIb
Number of specimens:	5
Conditioning specimens	In ventilated oven at 70 ± 5 ° C to constant mass
Type of cement used:	Cement Mortar CEM I 52,5 R
Surface finish:	resined-honed with resined-reinforced (with net) back side #
Hole's diameter [mm]	10
Pin's diameter [mm]	6,1

TEST RESULTS:

Definitions

d: specimen's thickness
 d_1 : distance from the hole to the face in the direction of the force
 b_A : maximum distance of the center of the hole to the edge of the fracture



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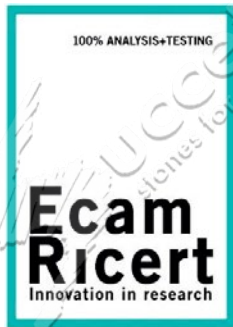
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Test Report n° 18-4260-003/E

Issue date, 07/30/2018

DIRECTION OF APPLICATION OF THE LOAD: parallel to the edges of the anisotropy planes (type IIb)							
Specimen n°	Specimen's dimension [mm]			Test n°	d ₁ [mm]	b _A [mm]	Breaking load F [N]
	L ₁	L ₂	d				
1	200,1	200,3	30,2	1	11	39	1700
				2	11	43	1400
2	199,8	200,1	30,4	3	11	31	1400
				4	11	54	1100
3	200,2	200,3	30,8	5	11	33	1100
				6	11	38	1250
4	200,1	199,9	30,1	7	10	21	1500
				8	11	40	1400
5	200,0	199,9	30,9	9	10	38	1750
				10	10	30	1100

Average value of d ₁ [mm]:	11
Average value of b _A [mm]:	37
Average breaking load F [N]:	1350
Standard Deviation [N]:	237
Coefficient of variation:	0,18
Logarithmic average grade:	7,21
Standard logarithmic deviation:	0,17
Minimum value [N]:	1100
Maximum Value [N]:	1750
Lower expected value [N]:	950
Quantile factor K _s :	2,10



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LAB N° 0699

Test Report n° 18-4260-003/E

Issue date, 07/30/2018

DETERMINATION OF ACCELERATED AGEING BY THERMAL SHOCK (UNI EN 14066:2013)*

Specimen's conditioning

Specimens previously dried with constant mass are subject to temperature variations according to the following procedure: 18 h in a ventilated oven at 70°C immediately followed by 6 h completely immersed in tap water at a temperature of 20 ° C. The total number of the cycles are 20.

At the end of the cycles, specimens are dried with constant mass at 70°C and they are tested for the determination of open porosity (according to UNI EN 1936:2007) and flexural strength under concentrated load (according to UNI EN 12372:2007).

Following the thermal shock cycles, the specimens do not show appreciable surface changes.

OPEN POROSITY BEFORE THERMAL SHOCK CYCLES (SEE RDP 18-4260-001):	0,8 %
OPEN POROSITY AFTER THERMAL SHOCK CYCLES (average value of the tested specimens):	0,8 %
VARIATION OF THE OPEN POROSITY AFTER THERMAL SHOCK CYCLES (%):	0,0 %

FLEXURAL STRENGTH BEFORE THERMAL SHOCK CYCLES:	4,7 MPa
FLEXURAL STRENGTH AFTER THERMAL SHOCK CYCLES:	4,7 MPa
VARIATION OF THE FLEXURAL STRENGTH AFTER THERMAL SHOCK CYCLES (%):	0,0 %



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Test Report n° 18-4260-003/E

Issue date, 07/30/2018

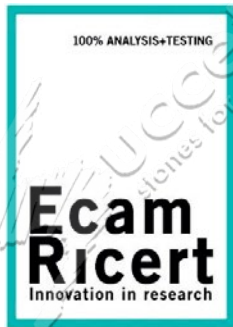
DETERMINATION OF FLEXURAL STRENGTH UNDER CONCENTRATED LOAD (UNI EN 12372:2007)

- Speed of load's application:	0,23 MPa/s
- Surface finish:	resined-honed with resined-reinforced (with net) back side #
- Direction of load's application	orthogonal to the plan of use (cross cut, perpendicular to the vein, fig. 3)

SPECIMEN	Dimensions (mm)				Breaking load (N)	Type of breaking	Flexural strength (Mpa)
	n.	Total Length L	Distance supports I	b			
1 - ST	180,9	156,0	90,6	30,7	1753	-	4,8
2 - ST	180,7	156,0	90,3	31,1	1832	-	4,9
3 - ST	179,8	156,0	90,5	32,2	1721	-	4,3
4 - ST	180,7	156,0	90,4	30,7	1341	-	3,7
5 - ST	180,3	156,0	90,8	30,0	1698	-	4,9
6 - ST	179,9	156,0	90,4	32,0	1883	-	4,8
7 - ST	180,9	156,0	90,3	30,7	2750	-	7,5
8 - ST	180,0	156,0	90,3	32,2	1158	-	2,9
9 - ST	179,6	156,0	90,5	32,0	2054	-	5,2
10 - ST	180,8	156,0	90,0	30,8	1390	-	3,8
Average flexural strength (MPa):							4,7 ± 0,6

number of specimens	10
Average flexural strength (MPa)	4,7 ± 0,6
Standard deviation (MPa)	1,2
Coefficient of variation	0,3
Logarithmic mean	1,51
logarithmic standard deviation (MPa)	0,25
Minimun value (MPa)	2,9
Maximun value (MPa)	7,5
Lower expected value (MPa)	2,7
Quantile factor K _s	2,10

Note: measurement uncertainty on the average value reported in extended form with k = 2,36 corresponding to a confidence level of 95%



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LAB N° 0699

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DETERMINATION OF ACCELERATED AGEING BY THERMAL SHOCK (UNI EN 14066:2013)*

Specimen's conditioning

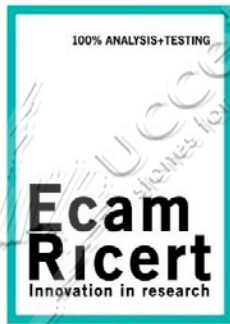
Specimens previously dried with constant mass are subject to temperature variations according to the following procedure: 18 h in a ventilated oven at 70°C immediately followed by 6 h completely immersed in tap water at a temperature of 20 ° C. The total number of the cycles are 20.

At the end of the cycles, specimens are dried with constant mass at 70°C and they are tested for the determination of open porosity (according to UNI EN 1936:2007) and flexural strength under concentrated load (according to UNI EN 12372:2007).

Following the thermal shock cycles, the specimens do not show appreciable surface changes.

OPEN POROSITY BEFORE THERMAL SHOCK CYCLES (SEE RDP 18-4260-001):	0,8 %
OPEN POROSITY AFTER THERMAL SHOCK CYCLES (average value of the tested specimens):	0,7 %
VARIATION OF THE OPEN POROSITY AFTER THERMAL SHOCK CYCLES (%):	-12,5 %

FLEXURAL STRENGTH BEFORE THERMAL SHOCK CYCLES:	16,9 MPa
FLEXURAL STRENGTH AFTER THERMAL SHOCK CYCLES:	16,9 MPa
VARIATION OF THE FLEXURAL STRENGTH AFTER THERMAL SHOCK CYCLES (%):	-0,6 %



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DETERMINATION OF FLEXURAL STRENGTH UNDER CONCENTRATED LOAD (UNI EN 12372:2007)

- Speed of load's application:	0,23 MPa/s
- Surface finish:	resined-honed with resined-reinforced (with net) back side #
- Direction of load's application	orthogonal to the plan of use (cross cut, perpendicular to the vein, fig. 4)

SPECIMEN	Dimensions (mm)				Breaking load (N)	Type of breaking	Flexural strength (Mpa)
	n.	Total Length L	Distance supports I	b			
1 - ST	180,3	153,0	90,6	31,2	3261		8,5
2 - ST	180,5	153,0	90,8	30,5	6266		17,0
3 - ST	180,4	153,0	89,2	30,2	6264		17,7
4 - ST	180,4	153,0	89,4	30,0	7198		20,5
5 - ST	180,7	153,0	90,4	30,1	5848		16,3
6 - ST	180,4	153,0	90,2	31,5	4138		10,6
7 - ST	180,6	153,0	90,5	30,5	7167		19,6
8 - ST	180,8	153,0	90,4	30,2	7109		19,8
9 - ST	180,2	153,0	90,1	31,8	8607		21,7
10 - ST	180,4	153,0	90,4	30,3	6072		16,8
Average flexural strength (MPa):							16,8 ± 2,0

number of specimens	10
Average flexural strength (MPa)	16,8 ± 2,0
Standard deviation (MPa)	4,3
Coefficient of variation	0,3
Logarithmic mean	2,79
logarithmic standard deviation (MPa)	0,30
Minimun value (MPa)	8,5
Maximun value (MPa)	21,7
Lower expected value (MPa)	8,6
Quantile factor K _s	2,10

Note: measurement uncertainty on the average value reported in extended form with k = 2,36 corresponding to a confidence level of 95%

Director of Geotechnical and Construction Products Sector Geologist **Dr. Massimo Bonato**



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