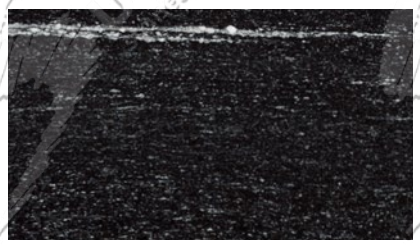
Succetti
stones for your life

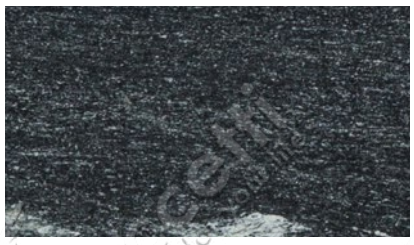
Dubino cross-cut

Dubino cross-cut

POLISHED



HONED



TECHNICAL TESTS - AVERAGE VALUES
SURFACE: RESINED & HONED

Apparent Density UNI EN 1936:2007
2840 kg/m^3

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
15 mm

Flexural Strength UNI EN 12372:2007
8,6 MPa
load applied parallel to the planes of anisotropy
24,7 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
8,0 MPa
load applied parallel to the planes of anisotropy
25,7 MPa
load applied perpendicular to the planes of anisotropy

Breaking Load at dowel hole UNI EN 13364:2003
1900 N
load applied parallel to the planes of anisotropy
2000 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
8,7 MPa
load applied parallel to the planes of anisotropy
26,5 MPa
load applied perpendicular to the planes of anisotropy

POLISHED

HONED

Slab
78,7x31,5"

Detail
13,8x31,5"

Technical sheets

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ACCREDIA
L'ENTE ITALIANO DI ACCREDITAMENTO
LAB N° 0699

Test Report n° 18-4260-006/E **Issue date, 07/31/2018**

Client	**SUCCETTI LUCIANO S.R.L.** **VIA REZIA N.30** **23022 - CHIAVENNA, SO** **ITALIA**

Sample description	**DUBINO #**
Origin	CUSTOMER PLANT
Kind of sample	SLABS OF NATURAL STONE FOR CUTTING
Sampling by	CLIENT
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 1341 UNI EN 1469 UNI EN 12057 UNI EN 12058

Test Report n° 18-4260-006/E **Issue date, 07/31/2018**

PETROGRAPHIC EXAMINATION **
Test according to: UNI EN 12407: 2007

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

Rock of intrusive magmatic origin with weakly laminated intermediate chemism, non-reactive to cold hydrochloric acid. The rock presents a sensitive same orientation of the crystals highlighting a weakly grain-polyblastic-lepidoblastic-porfiroblastic structure

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	Plagioclase	40	Regular crystals oriented to close polysynthetic gemination
	Hornblend	25	Regular crystals oriented
	Orthoclase	10	Regular crystals oriented
	Biotite	15	Regular crystals oriented
	-	-	-
	-	-	-
Lessers	Epidoto	2	Small anaedral crystals
	Quartz	8	Small crystals
	-	-	-

Equipment: 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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Test Report n° 18-4260-006/E **Issue date, 07/31/2018**

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	Slight granoblastic-lepidoblastic and porfiroblastic texture
Intergranular texture	No internal schistosity
Porosity observable under the microscope	No porosity observable
Residual	Absent
Grain	Medium-coarse
Metamorphic level	Low
Classification	Quartz-diorite (epidotic quartz diorite) oriented: low-grade Ortogneiss
Commercial name	Dubino

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PHOTOGRAPHIC DOCUMENTATION

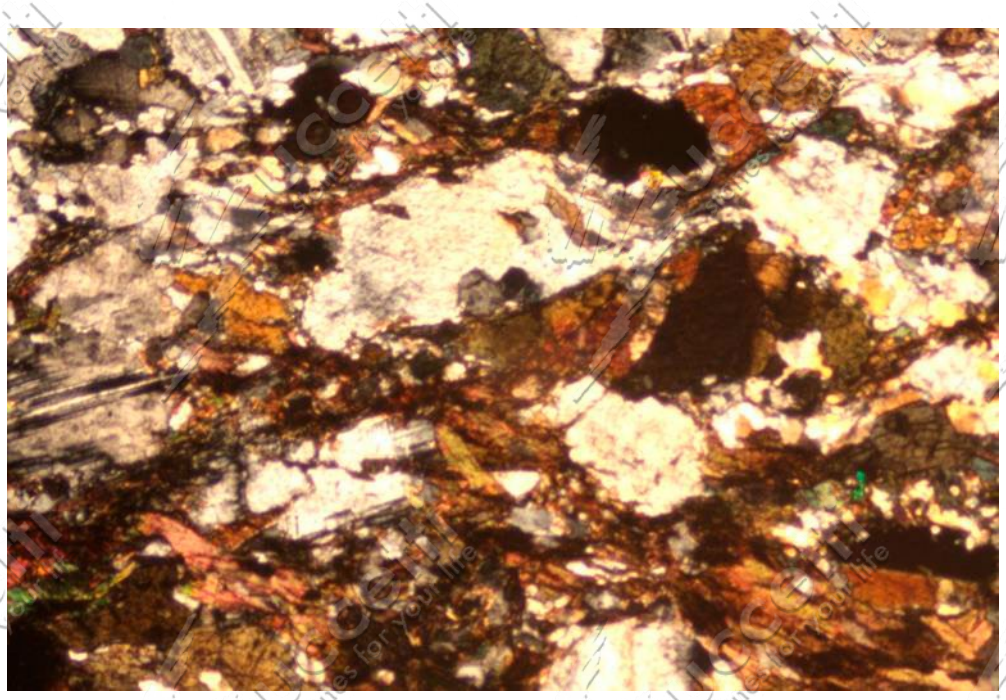

Photo n. 1 - Photo under an optical microscope, thin section, trasmitted light, 20 magnifications, cross nicols

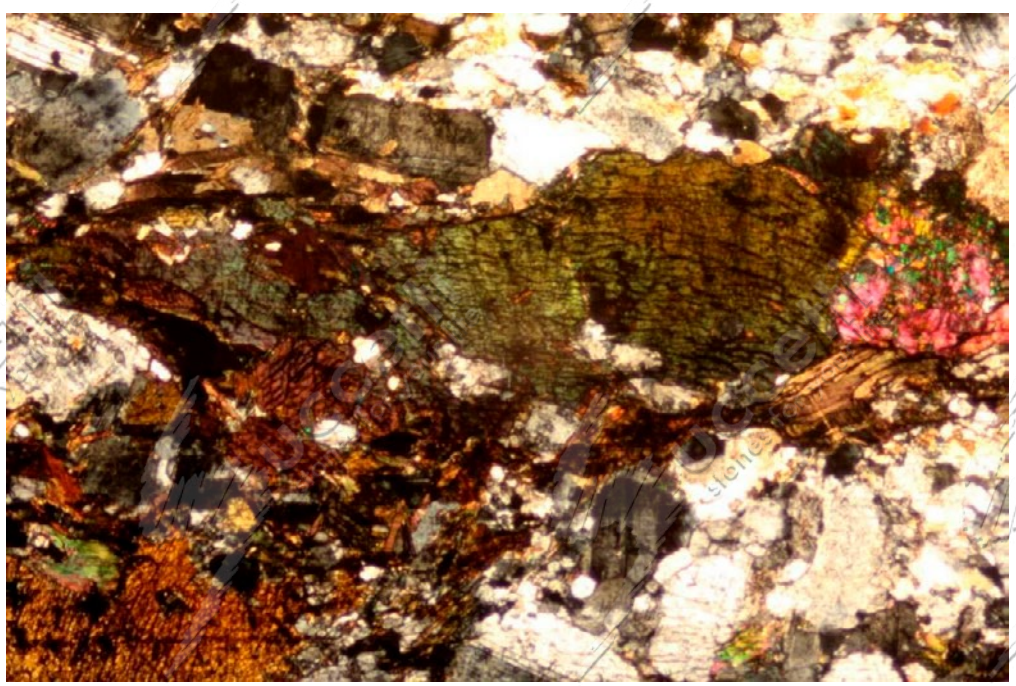

Photo 2 - Photo under an optical microscope, thin section, trasmitted light, 20 magnifications, cross nicols

Test Report n° 18-4260-006/E **Issue date, 07/31/2018**

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_b
ASS - 1	100,5	100,4	25,7	733,79	735,94	0,3
ASS - 2	101,0	100,4	25,7	731,87	733,86	0,3
ASS - 3	101,4	100,7	25,4	729,07	731,27	0,3
ASS - 4	100,6	100,4	25,7	730,01	732,18	0,3
ASS - 5	100,6	100,5	25,6	732,61	734,67	0,3
ASS - 6	100,5	100,1	25,6	733,55	735,63	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 THE 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	733,79	735,94	476,92	2827,3
ASS - 2	731,87	733,86	474,33	2814,3
ASS - 3	729,07	731,27	476,00	2850,4
ASS - 4	730,01	732,18	475,73	2840,9
ASS - 5	732,61	734,67	476,75	2834,8
ASS - 6	733,55	735,63	478,55	2847,7
			Apparent density (kg/m^3)	**2840,0**

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	733,79	735,94	476,92	0,8
ASS - 2	731,87	733,86	474,33	0,8
ASS - 3	729,07	731,27	476,00	0,9
ASS - 4	730,01	732,18	475,73	0,8
ASS - 5	732,61	734,67	476,75	0,8
ASS - 6	733,55	735,63	478,55	0,8
			Average open porosity (%)	**0,8**

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

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ACCREDIA
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LAB N° 0699

Test Report n° 18-4260-008/E **Issue date, 07/30/2018**

Client	**SUCCETTI LUCIANO S.R.L.** **VIA REZIA N.30** **23022 - CHIAVENNA, SO** **ITALIA**

Sample description	**DUBINO #**
Origin	CUSTOMER PLANT
Kind of sample	SLABS OF NATURAL STONE FOR CUTTING
Sampling by	CLIENT
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:

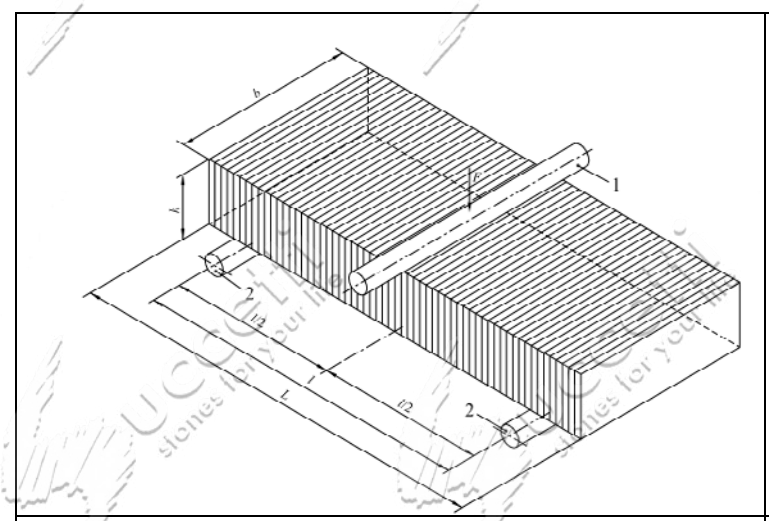

Fig. 3: planes of anisotropy parallel to the short side of the specimen

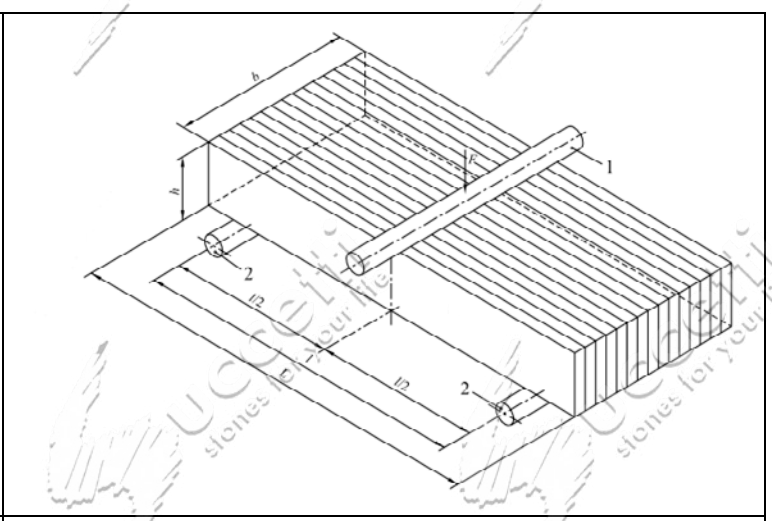

Fig. 4: planes of anisotropy parallel to the long side of the specimen

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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 TO 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	16,2	15,5	15,0 ± 1,5
2	15,4	15,0	
3	14,7	14,0	
4	14,8	14,5	
5	15,0	14,5	
6	15,7	15,0	

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

Test Report n° 18-4260-008/E **Issue date, 07/30/2018**

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

- Speed of load's application: - Surface finish: - Direction of load's application:	0,26 MPa/s Resined-honed # 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	d	W	-	R_{TF}
1-SD-TQ ort C	180,1	153,0	90,3	31,0	2230	1	5,9
2-SD-TQ ort C	180,2	153,0	90,1	30,9	3553		9,5
3-SD-TQ ort C	180,1	153,0	90,4	30,6	2955		8,0
4-SD-TQ ort C	180,3	153,0	90,0	30,7	4346		11,8
5-SD-TQ ort C	180,1	153,0	90,4	30,4	2999		8,3
6-SD-TQ ort C	180,1	153,0	90,2	30,4	2901		8,0
7-SD-TQ ort C	180,2	153,0	90,1	30,7	3056		8,3
8-SD-TQ ort C	180,1	153,0	90,4	31,0	2687		7,1
9-SD-TQ ort C	180,2	153,0	90,7	30,5	3011		8,2
10-SD-TQ ort C	180,8	153,0	90,5	30,6	3995		10,8
					Average flexural strength (MPa):		**8,6 ± 0,8**

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)	**8,6 ± 0,8**
Standard deviation (MPa)	1,7
Coefficient of variation	0,2
Logarithmic mean	2,13
Logarithmic standard deviation (MPa)	0,20
Minimun value (MPa)	**5,9**
Maximun value (MPa)	**11,8**
Lower expected value (MPa)	**5,6**
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%

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Test Report n° 18-4260-008/E **Issue date, 07/30/2018**

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

- Speed of load's application:	0,22 MPa/s
- Surface finish:	Resined-honed #
- 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	d	W	-	R_{TF}
1-SD-TQ ort C	180,5	152,0	90,5	29,7	8686		24,8
2-SD-TQ ort C	180,6	152,0	90,3	31,1	10362		27,1
3-SD-TQ ort C	180,1	152,0	90,4	30,3	9078		25,0
4-SD-TQ ort C	180,6	152,0	90,7	29,7	8278		23,6
5-SD-TQ ort C	180,9	152,0	90,5	30,4	7846		21,5
6-SD-TQ ort C	180,2	152,0	89,9	30,2	8374		23,3
7-SD-TQ ort C	180,3	152,0	90,3	31,5	9258		23,5
8-SD-TQ ort C	180,5	152,0	90,2	29,3	8619		25,5
9-SD-TQ ort C	180,5	152,0	90,3	30,8	10476		27,8
10-SD-TQ ort C	180,4	152,0	90,5	31,2	9435		24,4
					Average flexural strength (MPa):		**24,7 ± 1,3**

number of specimens	10
Average flexural strength (MPa)	**24,7 ± 1,3**
Standard deviation (MPa)	1,9
Coefficient of variation	0,1
Logarithmic mean	3,20
logarithmic standard deviation (MPa)	0,08
Minimun value (MPa)	**21,5**
Maximun value (MPa)	**27,8**
Lower expected value (MPa)	**21,0**
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%

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

- Number of cycles: 14
- Visible deteriorationX: 0
- Surface finish: resined-honed #
- Direction of load's application: orthogonal to the plan of use (cross cut, parallel 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 (≤ 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)	**8,6**

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

R_{TF} (MPa)	**8,0**

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

- Speed of load's application:	0,26 MPa/s
- Surface finish:	Resined-honed #
- 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	d	W	-	R_{TF}
1-SD-14 ort C	179,8	154,0	90,2	31,2	3085		8,1
2-SD-14 ort C	179,9	154,0	90,2	31,1	2972		7,9
3-SD-14 ort C	180,1	154,0	90,2	30,4	3038		8,4
4-SD-14 ort C	179,8	154,0	90,3	31,1	2971		7,8
5-SD-14 ort C	179,9	154,0	90,5	31,1	2786		7,4
6-SD-14 ort C	180,1	154,0	90,1	31,1	2754		7,3
7-SD-14 ort C	180,2	154,0	90,2	30,9	3148		8,4
8-SD-14 ort C	179,8	154,0	90,3	30,5	2812	1	7,7
9-SD-14 ort C	179,9	154,0	90,4	30,6	2944		8,0
10-SD-14 ort C	180,2	154,0	90,2	30,8	3145		8,5
					Average flexural strength (MPa):		**8,0 ± 0,2**

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)	**8,0 ± 0,2**
Standard deviation (MPa)	0,4
Coefficient of variation	0,1
Logarithmic mean	2,07
Logarithmic standard deviation (MPa)	0,05
Minimun value (MPa)	**7,3**
Maximun value (MPa)	**8,5**
Lower expected value (MPa)	**7,1**
Quantile factor K_s	2,10

Note: measurement uncertainty on the average value reported in extended form with k = 2,26 corresponding to a confidence level of 95%

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

- Number of cycles: 14
- Visible deteriorationX: 0
- Surface finish: resined-honed #
- 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 (≤ 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)	**24,7**

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

R_{TF} (MPa)	**25,7**

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

- Speed of load's application: - Surface finish: - Direction of load's application:	0,24 MPa/s Resined-honed # 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	d	W	-	R_{TF}
1-SD-14 ort L	180,6	151,0	90,0	28,9	8496		25,6
2-SD-14 ort L	180,9	151,0	90,5	31,2	9947		25,6
3-SD-14 ort L	180,7	151,0	89,9	29,9	9443		26,6
4-SD-14 ort L	180,5	151,0	90,3	28,7	9494		28,9
5-SD-14 ort L	180,2	151,0	90,2	30,6	9874		26,5
6-SD-14 ort L	180,1	151,0	89,9	30,7	9785		26,2
7-SD-14 ort L	180,3	151,0	90,1	31,1	9813		25,5
8-SD-14 ort L	180,5	151,0	90,5	30,1	8329	1	23,0
9-SD-14 ort L	180,4	151,0	90,2	30,3	8544		23,4
10-SD-14 ort L	180,3	151,0	90,0	30,9	9655		25,4
					Average flexural strength (MPa):		**25,7 ± 1,1**

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)	**25,7 ± 1,1**
Standard deviation (MPa)	1,7
Coefficient of variation	0,1
logarithmic mean	3,24
Logarithmic standard deviation (MPa)	0,06
Minimun value (MPa)	**23,0**
Maximun value (MPa)	**28,9**
Lower expected value (MPa)	**22,4**
Quantile factor K_s	2,10

Note: measurement uncertainty on the average value reported in extended form with k = 2,09 corresponding to a confidence level of 95%

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

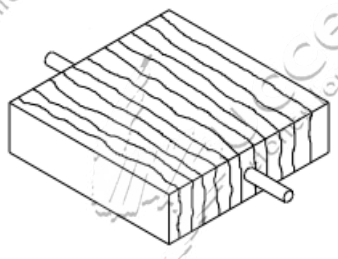


Fig. 5 **Test system for a specimen with the direction of application of the load parallel to the anisotropy planes (type IIa)**

TEST DATA:

Type of test:	IIa
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 #
Hole's diameter [mm]	10
Pin's diameter [mm]	6,1

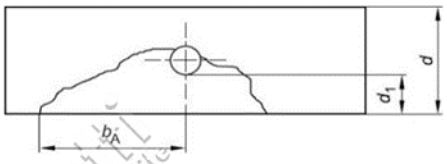
TEST RESULTS:

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° 18-4260-008/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	200,3	199,9	29,8	1	11	35	1750
				2	10	33	1300
2	200,1	201,1	29,8	3	10	38	2050
				4	10	52	2400
3	200,2	200,4	29,8	5	11	37	2150
				6	9	40	1650
4	200,3	200,8	29,8	7	11	43	2050
				8	9	41	1650
5	200,4	199,8	29,7	9	10	38	1800
				10	9	42	2050

Average value of d_1 [mm]:	10
Average value of b_A [mm]:	40
Average breaking load F [N]:	1900
Standard Deviation [N]:	315
Coefficient of variation:	0,17
Logarithmic average grade:	7,55
Standard logarithmic deviation:	0,18
Minimun value [N]:	1300
Maximun Value [N]:	2400
Expected minimun value [N]:	1300
Quantile factor K_S:	2,10

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

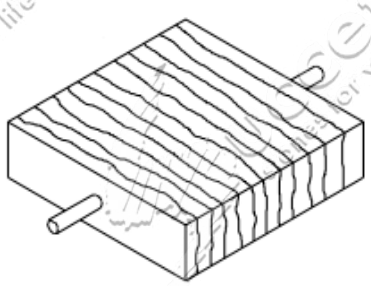


Fig. 6 **Test system for a specimen with the direction of application of the load parallel to the edges of the anisotropy planes (type IIb)**

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 #
Hole's diameter [mm]	10
Pin's diameter [mm]	6,1

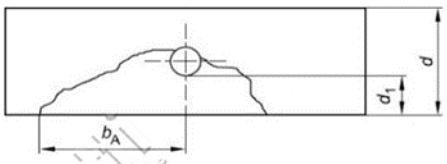
TEST RESULTS:

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° 18-4260-008/E **Issue date, 07/30/2018**

DIRECTION OF APPLICATION OF THE LOAD: parallel to 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	200,3	199,9	29,9	1	10	46	2500
				2	10	33	2550
2	200,1	201,1	29,9	3	10	69	1350
				4	10	37	2650
3	200,2	200,4	29,8	5	10	58	1200
				6	10	41	1600
4	200,3	200,8	29,9	7	11	54	2400
				8	11	61	1800
5	200,4	199,8	29,8	9	10	30	1600
				10	10	58	2100

Average value of d_1 [mm]:	10
Average value of b_A [mm]:	49
Average breaking load F [N]:	2000
Standard Deviation [N]:	533
Coefficient of variation:	0,27
Logarithmic average grade:	7,60
Standard logarithmic deviation:	0,28
Minimun value [N]:	1200
Maximun Value [N]:	2650
Expected minimun value [N]:	1100
Quantile factor K_S:	2,10

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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 stove 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 costant 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 18-4260-006):	0,8 %
OPEN POROSITY AFTER THERMAL SHOCK CYCLES (average value of the tested specimens):	1,0 %
VARIATION OF THE OPEN POROSITY AFTER TERMAL SHOCK CYCLES (%):	+ 25,0 %

FLEXURAL STRENGTH BEFORE THERMAL SHOCK CYCLES:	8,6 MPa
FLEXURAL STRENGTH AFTER THERMAL SHOCK CYCLES:	8,7 MPa
VARIATION OF THE FLEXURAL STRENGTH AFTER THERMAL SHOCK CYCLES (%):	+ 1,2 %

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

- Speed of load's application: - Surface finish: - Direction of load's application:	0,23 MPa/s Resined-honed # 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	d	W	-	R_{TF}
1	179,9	154,0	90,2	30,7	2805		7,6
2	180,2	154,0	90,4	31,5	2621	1	6,7
3	180,0	154,0	90,3	31,0	3237		8,6
4	180,6	154,0	90,5	30,8	4305		11,6
5	180,2	154,0	90,4	30,6	3001		8,2
6	180,5	154,0	90,5	30,7	2968		8,1
7	180,3	154,0	90,4	31,2	3701		9,7
8	180,2	154,0	90,6	31,0	2888		7,6
9	180,0	154,0	90,5	30,5	3052		8,4
10	180,8	154,0	90,4	30,6	3911		10,7
					Average flexural strength (MPa):		**8,7 ± 0,7**

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

number of specimens	10
Average flexural strength (MPa)	**8,7 ± 0,7**
Standard deviation (MPa)	1,5
Coefficient of variation	0,2
Logarithmic mean	2,15
logarithmic standard deviation (MPa)	0,17
Minimun value (MPa)	**6,7**
Maximun value (MPa)	**11,6**
Lower expected value (MPa)	**6,1**
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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The total number of the cycles are 20.
At the end of the cycles, specimens are dried with costant 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 18-4260-006):	0,8 %
OPEN POROSITY AFTER THERMAL SHOCK CYCLES (average value of the tested specimens):	0,9 %
VARIATION OF THE OPEN POROSITY AFTER TERMAL SHOCK CYCLES (%):	+ 12,5 %

FLEXURAL STRENGTH BEFORE THERMAL SHOCK CYCLES:	24,7 MPa
FLEXURAL STRENGTH AFTER THERMAL SHOCK CYCLES:	26,5 MPa
VARIATION OF THE FLEXURAL STRENGTH AFTER THERMAL SHOCK CYCLES (%):	+ 7,3 %

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

- Speed of load's application:	0,27 MPa/s
- Surface finish:	Resined-honed #
- 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	d	W	-	R_{TF}
1 – ST	180,9	154,0	90,6	31,2	10473		27,5
2 – ST	180,8	154,0	90,2	30,5	10687		29,4
3 – ST	180,6	154,0	90,3	30,2	8697		24,4
4 – ST	180,6	154,0	90,3	30,1	8950		25,3
5 – ST	180,5	154,0	90,2	30,1	9204		26,1
6 –ST	180,9	154,0	90,5	31,1	11415		30,2
7 – ST	180,3	154,0	90,6	31,2	10854		28,4
8 – ST	180,4	154,0	90,5	31,1	10111		26,8
9 - ST	180,7	154,0	90,3	30,6	8906		24,4
10 - ST	180,5	154,0	90,5	31,4	8747		22,7
					Average flexural strength (MPa):		**26,5 ± 1,4**

number of specimens	10
Average flexural strength (MPa)	**26,5 ± 1,4**
Standard deviation (MPa)	2,4
Coefficient of variation	0,1
Logarithmic mean	3,27
Logarithmic standard deviation (MPa)	0,09
Minimun value (MPa)	**22,7**
Maximun value (MPa)	**30,2**
Lower expected value (MPa)	**21,8**
Quantile factor K_s	2,10

Note: measurement uncertainty on the average value reported in extended form with k = 2,26 corresponding to a confidence level of 95%

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