

**MODENA CENTRO PROVE s.r.l.**

Sede legale e Laboratori: 41123 Modena (Italy) - Via Sallustio, 78
Tel. 059 822417 r.a. - Fax 059380281 - e-mail : info@modenacentroprove.it - www.modenacentroprove.com
C.C.I.A.A. Modena n. 228587 - Tribunale di Modena n° 2231 - C.F. e P. IVA n. 01592020364

MECCANICA

ECOLOGIA

CERAMICA

ALIMENTARE

Modena, 19/12/19

To **BRETON SPA**
VIA GARIBALDI 27
31030 CASTELLO DI GODEGO TV

Attn. **SIG. RUZZANTE M.**
SIG.- CARRON

MATERIAL and/or SAMPLE to be tested	Denomination of the Sample	Client Reference – Your delivery	date
SINTERED STONE	MERIDIO	-	25/11/19

Here attached, you will receive the Test Report of Serial No. **20199037**/n, which shows the results of tests required.

MODENA CENTRO PROVE

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Director
Sant'Unione dr. Giuseppe

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TEST REPORT: 20199037/1

Modena, 19/12/19

CUSTOMER

BRETON SPA - - VIA GARIBALDI 27 - 31030 - CASTELLO DI GODEGO - TV

MATERIAL and/o SAMPLE to be tested

SINTERED STONE;

Denomination

MERIDIO;

Date of sample reception

25/11/2019;

Kind of test executed

Determination of Slipperiness

Referring standards

D.M. 236 - 89 Rif.B.C.R.

Shifting from standards

No one

Equipment

Pullmeter Tortus cod. MCP C142

Subcontracted phases

No one

Sampling made by

Customer

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Examiner

p.i. Bortolai Alberto

MODENA CENTRO PROVE

Ceramic Dept. Responsible
P.I. De Pasquale Roberto

MODENA CENTRO PROVE

Director
Sant'Unione dr. Giuseppe



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DETERMINATION OF SLIPPERINESS

Beginning date : 13/12/2019

Analysis ending date : 13/12/2019

SAMPLE : marked « **MERIDIO** »

The test has been performed using the TORTUS floor friction tester, that measures the dynamic coefficient of friction between a loaded slider and the surface under test.

OPERATING CONDITIONS

- Speed of travel (mm/s) : 17
- Load applied to slider (q) : 200g
- Slider's diameter (\varnothing) mm : 9

RESULTS

Surface Conditions	Type of course	Coefficient of Friction (COFd) μ
Dry (d) Leather	Straight	0.64
	Oblique right side	0.65
	Oblique left side	0.65

- Average coefficient of friction COFd (μ)** : 0.65

Surface Conditions	Type of course	COEFFICIENT of FRICTION (COFw) μ
Wet (water + wetting agent) (w) Hard shoe – heeled rubber 4S	Straight	0.63
	Oblique right side	0.62
	Oblique left side	0.63

- Average coefficient of friction COFw (μ)** : 0.63

REQUIREMENTS

- D.M. 236 - 14/06/1989** : $> 0.40 \mu$ it is for dry ground/leather for is bathed/rubber

RECOMMENDED VALUES

(B.C.R. Rep. CEC 6/81)

- $\mu < 0.19$: Dangerous
- $0.20 < \mu < 0.39$: Excessive
- $0.40 < \mu < 0.74$: Satisfactory
- $\mu > 0.75$: Excellent

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TEST REPORT: 20199037/2

Modena, 21/01/20

CUSTOMER

BRETON SPA - - VIA GARIBALDI 27 - 31030 - CASTELLO DI GODEGO - TV

MATERIAL and/o SAMPLE to be tested

SINTERED STONE;

Denomination

MERIDIO;

Date of sample reception

25/11/2019;

Date of sample acceptance

25/11/2019;

Kind of test executed

Determination of the anti-slip property – Walking method – Ramp test

Referring standards

DIN 51130:2014 (Escluso capitoli 4.2
6 Raccolta di volume)

Shifting from standards

No one

Equipment

Pullmeter with ramp cod. MCP C150

Subcontracted phases

No one

Sampling made by

Customer

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DETERMINATION OF THE ANTI-SLIP PROPERTY – WALKING METHOD – RAMP TEST

Beginning date : 12/12/2019

Analysis ending date : 13/12/2019

SAMPLE : marked « **MERIDIO** »

RESULTS

Mean inclination angle α_{ges} : 25,4
Classification: R11

CLASSIFICATION

Mean value α_{ges}	Class
$6^\circ \leq \alpha_{ges} \leq 10^\circ$	R 9
$10^\circ < \alpha_{ges} \leq 19^\circ$	R 10
$19^\circ < \alpha_{ges} \leq 27^\circ$	R 11
$27^\circ < \alpha_{ges} \leq 35^\circ$	R 12
$\alpha_{ges} > 35^\circ$	R 13

Note : The group classification give the parameter for determine the sliding resistance: the group R 9 is less anti-slip, the group R 13 as the maximum effectiveness anti-slip.

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TEST REPORT: 20199037/3

Modena, 21/01/20

CUSTOMER

BRETON SPA - - VIA GARIBALDI 27 - 31030 - CASTELLO DI GODEGO - TV

MATERIAL and/o SAMPLE to be tested

SINTERED STONE;

Denomination

MERIDIO;

Date of sample reception

25/11/2019;

Date of sample acceptance

25/11/2019;

Kind of test executed

Determination of the anti-slip properties – Wet-loaded barefoot areas; Walking method – Ramp test

Referring standards

DIN 51097:1992

Shifting from standards

No one

Equipment

Pullmeter with ramp cod. MCP C150

Subcontracted phases

No one

Sampling made by

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DETERMINATION OF THE ANTI-SLIP PROPERTIES – WET-LOADED BAREFOOT AREAS; WALKING METHOD – RAMP TEST

Beginning date : 12/12/2019

Analysis ending date : 13/12/2019

SAMPLE : marked « **MERIDIO** »

RESULTS

Sample dimensions (length, width) : 1x0.5 m
Width of joints : 5 (mm)
Grounding substance : mortar
Direction of profiles : no one

SLIP ANGLE : 32
CLASSIFICATION : C

CLASSIFICATION

Total Average Values	Group Classification
< 12	0
≥ 12°	A
≥ 18°	B
≥ 24°	C

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TEST REPORT: 20199037/4

Modena, 21/01/20

CUSTOMER	BRETON SPA - - VIA GARIBALDI 27 - 31030 - CASTELLO DI GODEGO - TV
MATERIAL and/o SAMPLE to be tested	SINTERED STONE;
Denomination	MERIDIO;
Date of sample reception	25/11/2019;
Kind of test executed	Determination of Dynamic Coefficient of Friction (DCOF)
Referring standards	ANSI A326.3-2017
Shifting from standards	No one
Equipment	Tribometer BOT3000E cod. MCP C143
Subcontracted phases	No one
Sampling made by	Customer

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DETERMINATION OF DYNAMIC COEFFICIENT OF FRICTION

Beginning date : 13/12/2019

Analysis ending date : 13/12/2019

SAMPLE : marked « **MERIDIO** »

The test has been carried out using the instrument BOT 3000, tribometer of the coefficient of dynamic friction (DCOF) between a sliding SBR sensor and the surface of test.

WET OPERATING CONDITION

All test specimens shall be cleaned prior to testing. Place three specimens on a solid surface in a row. Wet the path that the sensor will follow with 0,05% SLS (*Sodium-Lauryl Sulfate*) water.

Make a total of four dynamic measurement on the center tile. Make one measurement then turn the BOT 3000 180° and make the second measurement. Then turn the tile 90° and make the final two measurements in the same fashion above.

Record all four dynamic measurements and take an average.

Repeat on other two additional pieces. For textured tile, the three pieces of tile shall be representative of the different texture variations. If the tile is known to have more than three texture variations, test a representative tile of each texture.

SENSOR VERIFICATION

Values of DCOF on standard tile before testing test specimens	0.30
Values of DCOF on standard tile after testing test specimens	0.29

RESULTS

Test Condition	Measure 1	Measure 2	Measure 3	Measure 4	Average
Wet DCOF - tile 1	0.67	0.68	0.67	0.66	0.67
Wet DCOF - tile 2	0.66	0.66	0.66	0.67	0.66
Wet DCOF - tile 3	0.68	0.67	0.67	0.66	0.67

REFERENCE VALUES

ANSI A137.1:2017 prescribe a minimum threshold of 0,42 for level interior spaces expected to be walked upon when wet.

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TEST REPORT: 20199037/5

Modena, 21/01/20

CUSTOMER

BRETON SPA - - VIA GARIBALDI 27 - 31030 - CASTELLO DI GODEGO - TV

MATERIAL and/o SAMPLE to be tested

SINTERED STONE;

Denomination

MERIDIO;

Date of sample reception

25/11/2019;

Kind of test executed

Slip resistance of pedestrian surfaces with Pendulum Testers

Referring standards

BS 7976-2:2002+A1:2013

Shifting from standards

No one

Equipment

Pendulum cod. MCP C45

Subcontracted phases

No one

Sampling made by

Customer

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SLIP RESISTANCE OF PEDESTRIAN SURFACES WITH PENDULUM TESTERS

Beginning date : 09/12/2019

Analysis ending date : 09/12/2019

SAMPLE : sample marked " MERIDIO "

The friction characteristics of each specimen shall be assessed by determining dynamic friction between the specimen and the slider of a pendulum swinging in a vertical plane.

RESULTS

Rubber used

(hardness): 4S(96)

PTV - DRY TEST

SAMPLE	1	2	3	4	5	Average value
1	60	60	61	61	60	60
2	61	61	60	61	61	61
3	61	60	60	61	60	60
4	60	60	61	60	61	60
5	60	60	61	60	60	60
					PTV average value	60

PTV - WET TEST

SAMPLE	1	2	3	4	5	Average value
1	49	48	49	48	49	49
2	50	50	50	48	50	50
3	49	49	48	49	49	49
4	50	50	49	48	48	49
5	49	48	48	48	50	49
					PTV average value	49

REFERENCE VALUES – UK Slip Resistance Group Guidelines Issue 5 2016

Classe	PTV (pendulum test value)
High slip potential	0 ÷ 24
Moderate slip potential	25 ÷ 35
Low slip potential	≥ 36

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TEST REPORT: 20199037/6

Modena, 21/01/20

CUSTOMER

BRETON SPA - - VIA GARIBALDI 27 - 31030 - CASTELLO DI GODEGO - TV

MATERIAL and/o SAMPLE to be tested

SINTERED STONE;

Denomination

MERIDIO;

Date of sample reception

25/11/2019;

Kind of test executed

Determination of Unpolished and Polished slip/skip Resistance Value

Referring standards

UNI ENV 12633:2006

Shifting from standards

None

Equipment

Pendulum cod. MCP C45

Subcontracted phases

None

Sampling made by

Customer

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DETERMINATION OF UNPOLISHED AND POLISHED SLIP\SKIP RESISTANCE VALUE

Beginning date : 09/12/2019

Analysis ending date : 09/12/2019

SAMPLE : marked « **MERIDIO** »

The friction characteristics of each specimen shall be assessed by determining the wet dynamic friction between the specimen and the slider of a pendulum swinging in a vertical plane.

RESULTS

Sample	Average value (USRV)
1	55
2	55
3	55
4	55

- Average value (USRV) : 55 (Class 3)

CLASSIFICATION

(Supplemento del BOE N° 74 28/03/2006)

RESISTANCE VALUE Rd	CLASS
$Rd \leq 15$	0
$15 < Rd \leq 35$	1
$35 < Rd \leq 45$	2
$Rd > 45$	3

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TEST REPORT: 20199037/7

Modena, 21/01/20

CUSTOMER	BRETON SPA - - VIA GARIBALDI 27 - 31030 - CASTELLO DI GODEGO - TV
MATERIAL and/o SAMPLE to be tested	SINTERED STONE;
Denomination	MERIDIO;
Date of sample reception	25/11/2019;
Kind of test executed	Determination of Slip Resistance
Referring standards	UNI EN 14231:2004
Shifting from standards	None
Equipment	Pendulum cod. MCP C45
Subcontracted phases	None
Sampling made by	Customer

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DETERMINATION OF SLIP RESISTANCE

Beginning date : 13/12/2019

Analysis ending date : 13/12/2019

SAMPLE : Natural stone sample marked " **MERIDIO** "

The test was performed measuring friction resistance between standard rubber surface and the upper side of test specimens.

RESULTS

Dry slipping element and samples used.

Sample N°	Single values(USRV) two directions average
1	85
2	85
3	86
4	86
5	85
6	85
Average	86

RESULTS

Wet slipping element and samples used.

Sample N°	Single values(USRV) two directions average
1	56
2	55
3	55
4	56
5	55
6	55
Average	55

REQUIREMENTS
(Norm EN 1341)

Safety surface with USRV values > **35**

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