Infrastructure Technology

Materials Science & Engineering, Graham Road (PO Box 56), Highett, Victoria, Australia 3190

Telephone: 61 3 9252 6000 Facsimile: 61 3 9252 6244 Email: tiles@csiro.au Web: http://www.cmse.csiro.au

Registered Testing Authority - CSIRO

9 August 2013 Our Ref. EN13 / 2274 03/0212

TEST REPORT No. 6787s

Requested by: YDL Australia Pty Ltd
221 Settlement Road
Thomastown
VIC 3074
on (date): 5 August 2013
Manufacturer: YDL STONE
Product Desc.: YDL #1011 BIANCO GENTAL, QUARTZ STONE (ENGINEERED STONE), MAN-MADE STONE 110x15MM
Sampling details:
Where: Delivered
Date: 5 August 2013
By whom: Courier
How (methods): N/A

This test report consists of 5 pages

SUMMARY OF SLIP RESISTANCE TESTS PERFORMED:

		Result	Class
AS/NZS 4586:2004	Slip resistance classification of new pedestrian surface materials		
	Appendix A: WET Pendulum (Four S). Mean BPN:	22	Z [HIGH*]
	Appendix B: DRY (FFT). Mean COF:	0.50	F
	Appendix A,B: Dual classification:		Z [HIGH*]F
AS/NZS 4586:2004	Slip resistance classification of new pedestrian surface materials, Appendix D: OIL-WET Ramp		
	Mean overall acceptance angle:	4.9°	N/A

* = CSIRO classification

In order to interpret the classifications, please refer to Standards Australia Handbook 197, An Introductory Guide to the Slip Resistance of Pedestrian Surface Materials, which recommends minimum classifications for a wide variety of locations.

It is important to realise that test results obtained on unused factory-fresh samples may not be directly applicable in service, where proprietary surface coatings, contamination, wear and subsequent cleaning all influence the behaviour of the pedestrian surface.

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SLIP RESISTANCE CLASSIFICATION OF NEW PEDESTRIAN SURFACE MATERIALS

WET PENDULUM TEST METHOD

TEST CARRIED OUT IN ACCORDANCE WITH
AS/NZS 4586:2004 (Appendix A)

Test Date: 7 August 2013

RESULTS: Location: Slip Resistance Laboratory
Rubber slider used: Four S
Conditioned with grade P400 paper, dry

Sample: Unfixed
Cleaning: Deionized water
Temperature: 23℃

Pendulum Friction Tester: Munro-Stanley (S/N: 9234, calibrated 18/04/2013)
Test conducted by: Andy Giang

	Specimen 1	2	3	4	5
Last 3 swings	**22**	**24**	**22**	**21**	**23**
	22	**24**	**21**	**20**	**23**
	21	**23**	**21**	**20**	**23**
Averages	**22**	**24**	**21**	**20**	**23**

Mean BPN : 22

CLASS : Z [HIGH*]

* = CSIRO classification

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SLIP RESISTANCE CLASSIFICATION OF NEW PEDESTRIAN SURFACE MATERIALS

DRY FLOOR FRICTION TEST METHOD

TEST CARRIED OUT IN ACCORDANCE WITH
AS/NZS 4586:2004 (Appendix B) Test Date: 7 August 2013

RESULTS
Location: Slip Resistance Laboratory
Sample Sample Unfixed
Cleaning: Dry el/static cloth
Temperature: 23℃
FFT measurements taken over 2 passes of 800mm each

Rubber Type: Four S
Conditioned with grade P400 paper, dry

Floor Friction Tester: Tortus Mk II (S/N: 224)
Test conducted by: Khanh Ho

Run 1: Average COF: 0.54

Run 2: Average COF: 0.46

Mean COF: 0.50

According to AS/NZS 4586 the Dry Coefficient of Friction shall be reported as : **0.50**
(mean rounded to the nearest 0.05)

CLASS : F

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SLIP RESISTANCE CLASSIFICATION OF NEW PEDESTRIAN SURFACE MATERIALS

OIL-WET RAMP TEST METHOD

TEST CARRIED OUT IN ACCORDANCE WITH
AS/NZS 4586:2004 (Appendix D) Test Date: 8 August 2013

Location: Slip Resistance Laboratory

Sample Fixed

Joint width: 0 mm

Surface structure:
[X] Smooth
[ ] Profiled
[ ] Structured

RESULTS

Mean overall acceptance angle: 4.9 °

Displacement space: not tested

CLASSIFICATION:

Slip Resistance Assessment Group: N/A

Displacement Space Assessment Group: -

To achieve an 'R' classification the overall acceptance angle must be greater or equal to 6 degrees.

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Date and Place 9 August 2013, Highett, Vic

Name, Title and Digital Signature:

ANDY GIANG
Technical Officer
Tel: 61 3 92526000
Fax: 61 3 92526244
Email: Andy.Giang@csiro.au

***CSIRO recommended classification of Slip Resistance as determined from:**
AS/NZS 4586: 2004 Slip Resistance Classification of New Pedestrian Surface Materials (Appendices A & D).

Wet Pendulum Class	BPN 4S Rubber	CSIRO Class LOW	CSIRO Class MEDIUM	CSIRO Class HIGH
V	>54	54-57	58-61	>61
W	45-54	45-48	49-51	52-54
X	35-44	35-38	39-41	42-44
Y	25-34	25-28	29-31	32-34
Z	<25	<18	18-21	22-25
Oil Wet Ramp Class	**Angle (degrees)**	**CSIRO Class LOW**	**CSIRO Class MEDIUM**	**CSIRO Class HIGH**
R9	≥6 to <10	≥6 to 7.5	7.6 to 9	9.1 to 9.9
R10	≥10 to <19	≥10 to 12	12.1 to 15	15.1 to 18.9
R11	≥19 to <27	≥19 to 21	21.1 to 24	24.1 to 26.9
R12	≥27 to <35	≥27 to 29	29.1 to 32	32.1 to 34.9
R13	≥35	≥35 to 36	36.1 to 38	≥38.1
This table should not be read or relied upon without reference to the CSIRO/Standards Australia publication: AS/NZS 4586 Slip Resistance Classification of New Pedestrian Surface Materials (Appendices A & D).				

CSIRO has categorized the AS4586 classifications into sub-groups Low, Medium & High. The slip resistance test classification is still determined according to AS 4586 Australian Standard (Appendices A & D). The added information of Low, Medium and High allows professionals to make a better judgement of pedestrian floor requirements.