



# Industrial Research Services

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Registered Testing Authority - CSIRO

24 November 2008

Our Ref. ES13 / 1729 03/0212

## TEST REPORT No. SY4634-2

Requested by: CaesarStone Australia Pty. Ltd.  
on (date): 4 November 2008  
Manufacturer: CaesarStone (Israel)  
Product Desc.: 2000 Series (colour: white)

Sampling details:  
Where: Delivered  
Date: 20 November 2008  
By whom: Courier  
How (methods): N/A

The results reported relate only to the sample(s) tested and the information received. No responsibility is taken for the accuracy of the sampling unless it is done under our own supervision. CSIRO cannot accept responsibility for deviations in the manufactured quality and performance of the product. While CSIRO takes care in preparing the reports it provides to clients, it does not warrant that the information in this particular report will be free of errors or omissions or that it will be suitable for the client's purposes. CSIRO will not be responsible for the results of any actions taken by the client or any other person on the basis of the information contained in the report or any opinions expressed in it. The reproduction of this test report is only authorised in the form of a complete photographic facsimile. Our written approval is necessary for any partial reproduction.

This test report consists of 3 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 slider): Mean BPN:	30	Y [MEDIUM*]

\* = 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: 24 November 2008

RESULTS: Location: North Ryde Slip Resistance Laboratory Rubber slider used: Four S  
 Conditioned with grade P400 paper, dry  
 Sample: Unfixed  
 Cleaning: Distilled water  
 Temperature: 23°C

Pendulum Friction Tester: Stanley (S/N: 0312, calibrated 28/02/07)  
 Test conducted by: Hugh McMullen

	Specimen 1	2	3	4	5
<b>Last 3 swings</b>	<b>30</b>	<b>31</b>	<b>32</b>	<b>29</b>	<b>33</b>
	<b>30</b>	<b>30</b>	<b>31</b>	<b>29</b>	<b>31</b>
	<b>30</b>	<b>30</b>	<b>30</b>	<b>29</b>	<b>31</b>
<b>Averages</b>	<b>30</b>	<b>30</b>	<b>31</b>	<b>29</b>	<b>32</b>

**Mean BPN : 30**

**CLASS :**

**Y [MEDIUM\*]**

\* = CSIRO classification

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Date and Place 24 November 2008, North Ryde, NSW

Name, Title and Digital Signature:



**HUGH MCMULLEN**  
**Laboratory Manager**  
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**\*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.



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Addendum

### DETERMINATION OF Rz SURFACE ROUGHNESS

(Using a Taylor-Hobson Surtronic 10 Rz roughness meter using a 0.8mm cut off length)

Test Date: 24 November 2008

#### RESULTS

Location: Slip Resistance Laboratory

#### Rz values

1	3.5
2	7.2
3	4.9
4	3.2
5	2.6
6	2.1
7	5.2
8	2.3
9	3.7
10	2.2

**Surface Roughness (Rz) mean = 3.7 microns**

BS 7976:2002, Pendulum Testers, requires a different test foot preparation (lapping paper) for pedestrian surfaces that have a Rz roughness of less than 15 microns. This lapping paper tends to reduce the pendulum result, sometimes appreciably. CSIRO recommends the use of this procedure (CSIRO COF1) as an adjunct to AS/NZS 4586. It helps to discriminate among products that have marginal wet slip resistance and to identify those that may be dangerous if wet.

The measurement of the various aspects of surface roughness is complex given the number of potential roughness parameters. While there is still some uncertainty as to exactly what type of roughness needs to be measured, peak-to-trough roughness (Rz) gives a useful guide to the likely slip resistance in wet conditions. Research has suggested that hard floors need to have a slightly higher Rz roughness than polymeric floors for the same degree of safety in wet conditions, but whatever flooring material is used an Rz roughness value of at least 10 microns is required where wet slip resistance may be required. In circumstances where wetness is normal or expected, this figure should be increased by a factor of 2 or more.

Greater peak surface roughnesses are likely to be required where floors slope or where the floor is likely to become contaminated with high viscosity liquids.