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## Report

<b>Report ref</b> 12/16/01	
<b>Title:</b> Slip Resistance Testing of The Mosaic Factory London 48x48 Collection	
<b>Client:</b>  <b>The Mosaic Factory</b> UCI Union Ceramics International B.V. Industrieweg 20A 6871 KA RENKUM The Netherlands  FAO Bastiaan Beun	<b>Client ref.</b>
<b>Date Received</b> 24 <sup>th</sup> November 2016	<b>Order no</b> To follow
<b>Report by:</b>  Paul Quinn	<b>Issue date</b> 2 <sup>nd</sup> December 2016

## 1. INTRODUCTION:

1.1 The client submitted three tiled panels assembled with tiles representing "The Mosaic Factory London 48x48 Collection". It was requested that samples be assessed for slip resistance by the pendulum test in accordance with BS 7976.

## 2. SAMPLES SUBMITTED

*Table 1 Description of samples submitted*

Ensurtec reference	Description
MF/1/16	Approx. 460mm x 460mm panel comprising a 15mm thick plywood base faced with 48mm x 48mm x5mm unglazed mosaic tiles. The tile joints were grouted.
MF/2/16	As above
MF/3/16	AS above

## 3. EXPERIMENTAL

3.1 Surface roughness testing was carried out all of the samples using a Surtronic Duo surface roughness gauge. Ten local readings were taken in each case.

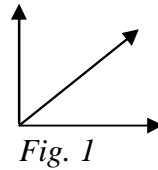
3.2 The samples were tested for slip resistance with the pendulum tester based on that in BS 7976:2002. Testing was carried out in accordance with BS 7976 Part 2: 2002 with due additional regard for the procedures detailed in the UK Slip Resistance Group (UKSRG) Guidelines, Issue 5, October 2016. The test instrument used was a Stanley Portable Skid Resistance Tester; Ser. No. 8635 with Calibration Certificate no. CN 401 dated 30<sup>th</sup> September 2016. The samples were tested under both wet and dry conditions using the following test sliders

- Slider 96 with Conformity Certificate ref. 603/16 dated 31<sup>st</sup> May 2016.
- Slider 55 with Conformity Certificate ref. 43/16 dated 31<sup>st</sup> May 2016.

3.3 Following preparation of the test slider 96 in accordance with UKSRG guidelines, validation of the pendulum was carried out on the following surfaces:

1. 3M lapping film aluminium oxide 261X3µm.
2. Float glass
3. Pavigres tile with certificate of conformity KSS 432 dated 30<sup>th</sup> September 2016.

**3.4** Testing was carried out on each of the samples under dry conditions. The test was repeated under wet conditions. Testing was carried out at separate locations to ensure that fresh untested surfaces were available for each subsequent test. In the case of each sample, three separate sets of pendulum determinations were carried out along the directions shown in Fig. 1



## 4. RESULTS

**4.1** Average pendulum verification readings were as given in Table 2:

*Table 2 Summary of verification results*

Verification surface	Result (average PTV)	Requirement
1	62	59-64
2	6	5-10
3	35	34 ± 2

**4.2** Average surface roughness together with individual and average pendulum test values (PTV) obtained under dry and wet conditions were as given in Table 3:

*Table 3 Surface roughness and PTV results*

Sample	Slider 96		Slider 55		Surface roughness (R <sub>z</sub> μm)
	PTV dry	PTV wet	PTV dry	PTV wet	
1	Test 1 64	Test 1 47	Test 1 97	Test 1 43	30.6
	Test 2 60	Test 2 45	Test 2 96	Test 2 43	
	Test 3 64	Test 3 49	Test 3 94	Test 3 44	
2	Test 1 62	Test 1 51	Test 1 97	Test 1 39	33.2
	Test 2 59	Test 2 46	Test 2 92	Test 2 40	
	Test 3 64	Test 3 47	Test 3 95	Test 3 41	
3	Test 1 64	Test 1 50	Test 1 95	Test 1 44	32.8
	Test 2 59	Test 2 48	Test 2 94	Test 2 42	
	Test 3 62	Test 3 48	Test 3 96	Test 3 44	
<b>Overall average</b>	<b>Slider 96 dry = 62</b>	<b>Slider 96 wet = 48</b>	<b>Slider 55 dry = 95</b>	<b>Slider 55 wet = 42</b>	<b>R<sub>z</sub> = 32.2 μm</b>

## 5. DISCUSSION

**5.1** BS 7976 does not provide guidance in the interpretation of pendulum test results. This is however provided by the UK Slip Resistance Group (UKSRG). Based on the interpretation guidelines of the UKSRG – Issue 5 2016, the slip resistance of a surface for able bodied pedestrians, when tested with the Pendulum may be interpreted using Table 4 with due consideration to the roughness as stated in Table 5. In Borderline regions  $R_z$  may be an important factor.

*Table 4 ex “The assessment of floor Slip Resistance – The UK Slip Resistance Group Guidelines ”Issue 5 2016*

Pendulum Test Value	Potential for slip under wet conditions
0 to 24	High
25 to 35	Moderate
36 +	Low

*Table 5 ex “The assessment of floor Slip Resistance – The UK Slip Resistance Group Guidelines ”Issue 5 2016*

The surface roughness values applicable for water wet low activity pedestrian areas	
$R_z$ Surface Roughness	Potential for slip
Below 10 $\mu$ m	High
Between 10 and 20 $\mu$ m	Moderate
Above 20 $\mu$ m	Low

## 6. CONCLUSIONS

**6.1** The summary of test results as shown in the lower row of Table 3 are as follows

- PTV slider 96: dry = 62, wet = 48
- PTV slider 55: dry = 95, wet = 42
- Surface roughness  $R_z = 32.2\mu$ m

**6.2** Based on the UKSRG guidelines relating to PTV and roughness values, the samples are considered to present a low risk of slip under both wet and dry conditions for either shod or barefoot use.