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Flash Session - Slip resistance - Slider 55 O ring

UKSRG WG

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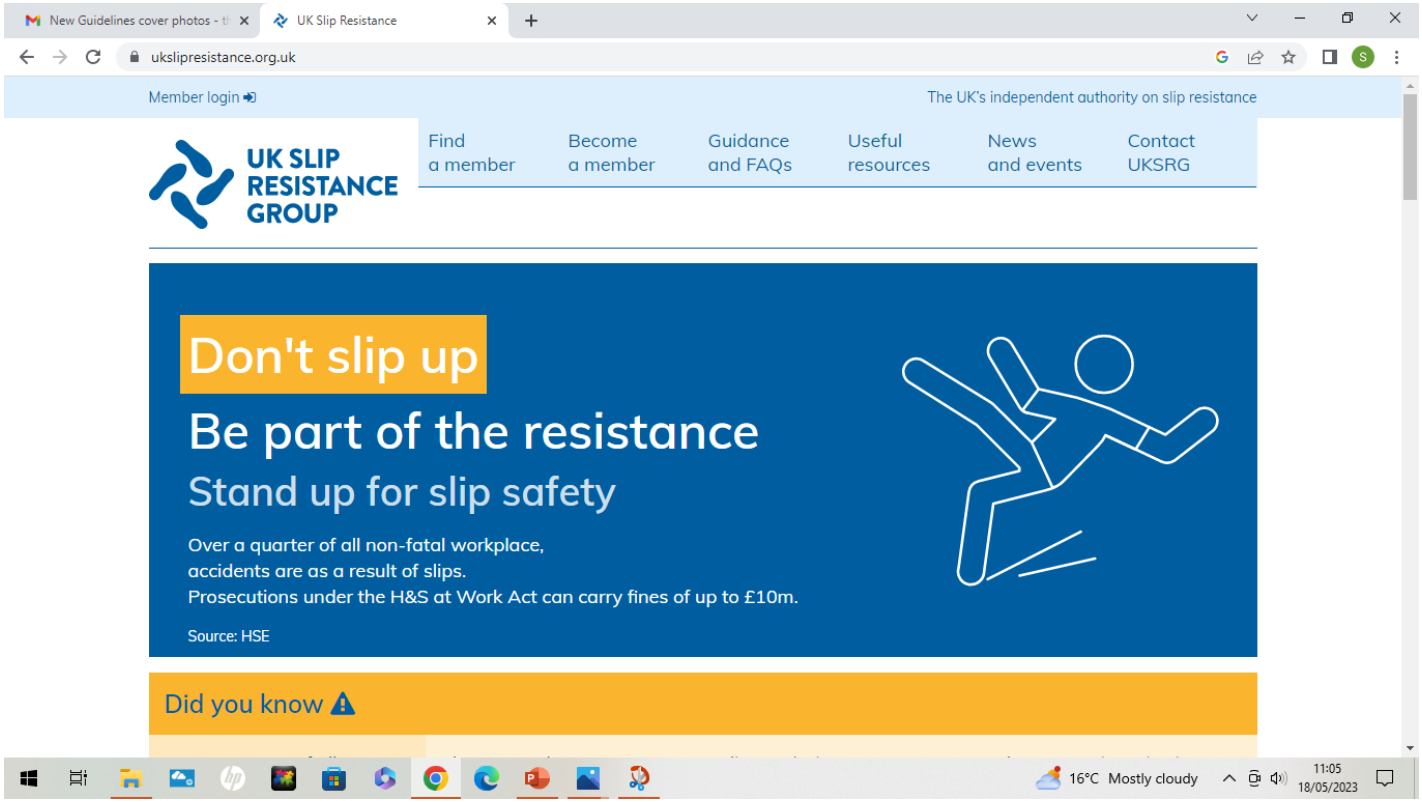

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Introduction

Slider 96 is the most often used slider in the UK.

Slider 96 is used to evaluate shod pedestrian slip risk.

Slider 55 is used on road surfaces (Skid risk).

Slider 55 is used to evaluate barefoot pedestrian slip risk.

UKSRG experience more spread in Slider 55 data than Slider 96 data.

HSE and UKSRG recommend both sliders are used when evaluating profiled surfaces.

Slider 55 working edge

Preparation and repreparation on dry P400 paper and wet pink lapping film (PLF) EN 16165:2021.

EN 16165:2021 Slider 55 maximum edge length reduced from 4 mm to 2.5 mm.

The preparation (repreparation) may produce curvature of the working edge.

Curvature of the edge may also occur when it is used to evaluate surfaces.

Curvature can occur when working at the bench or working on site.

The way the Slider 55 rubber abrades produces burr which must be carefully removed before use.

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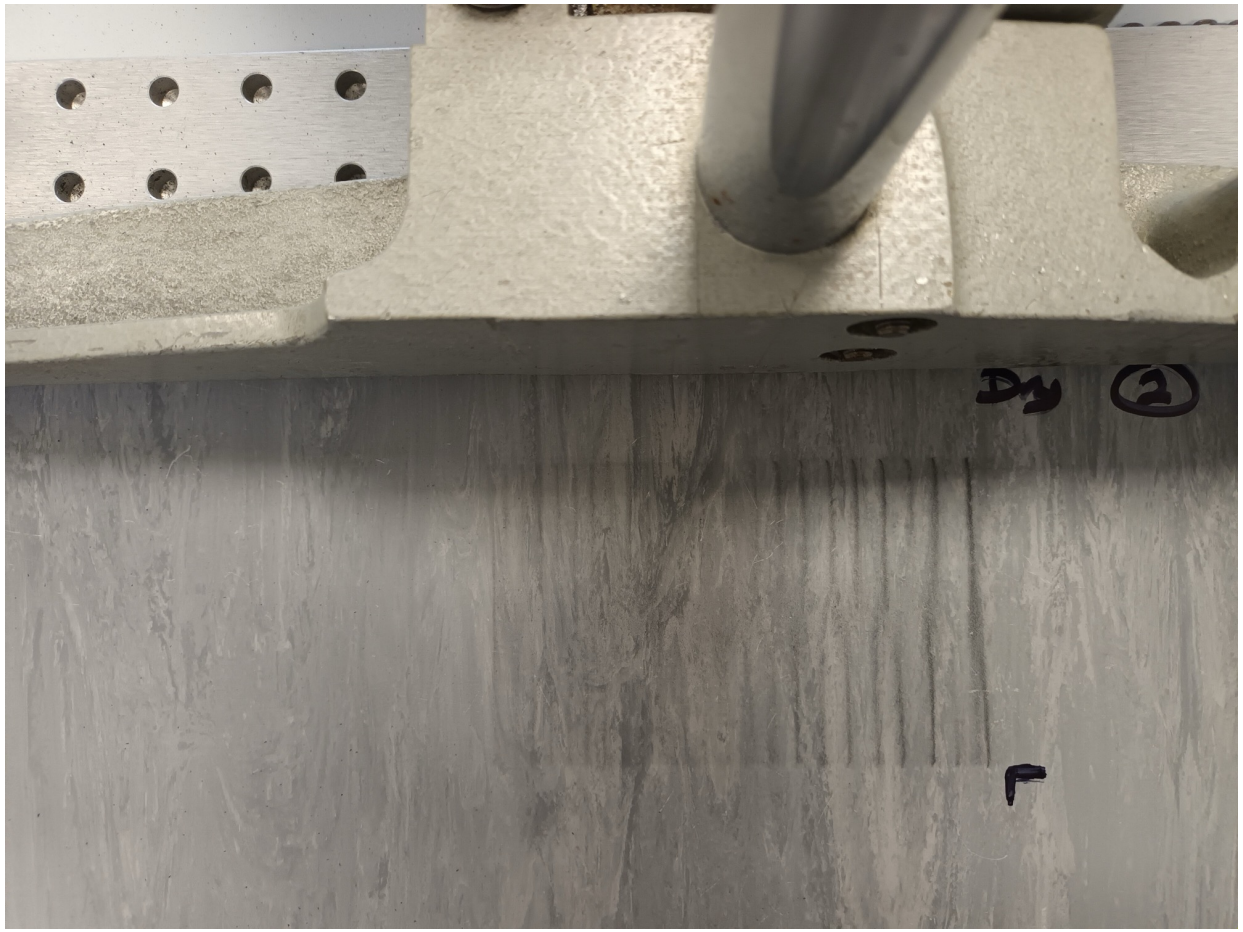
A typical zebra pattern on a test surface



Usually associated with ‘chatter’.

In this example the pattern formed on a sample under test.

Can also occur when working on installed flooring.

Can also occur during edge preparation procedure.

(Updated from IEA 2022).

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A Slider 55 assembly with O rings fitted

A possible way to reduce these effects? (From IEA 2022 and 2023).

A standard slider assembly can move (in 2 planes) when fitted to the stud of the pendulum.

The O rings reduce this movement which appears to result in more uniform wear of the slider edge.

This more uniform wear extends the life of the slider.

To date O ring has small effect on wet PTV data.

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Slider Edge

1. Slider 55 curvature to edge.

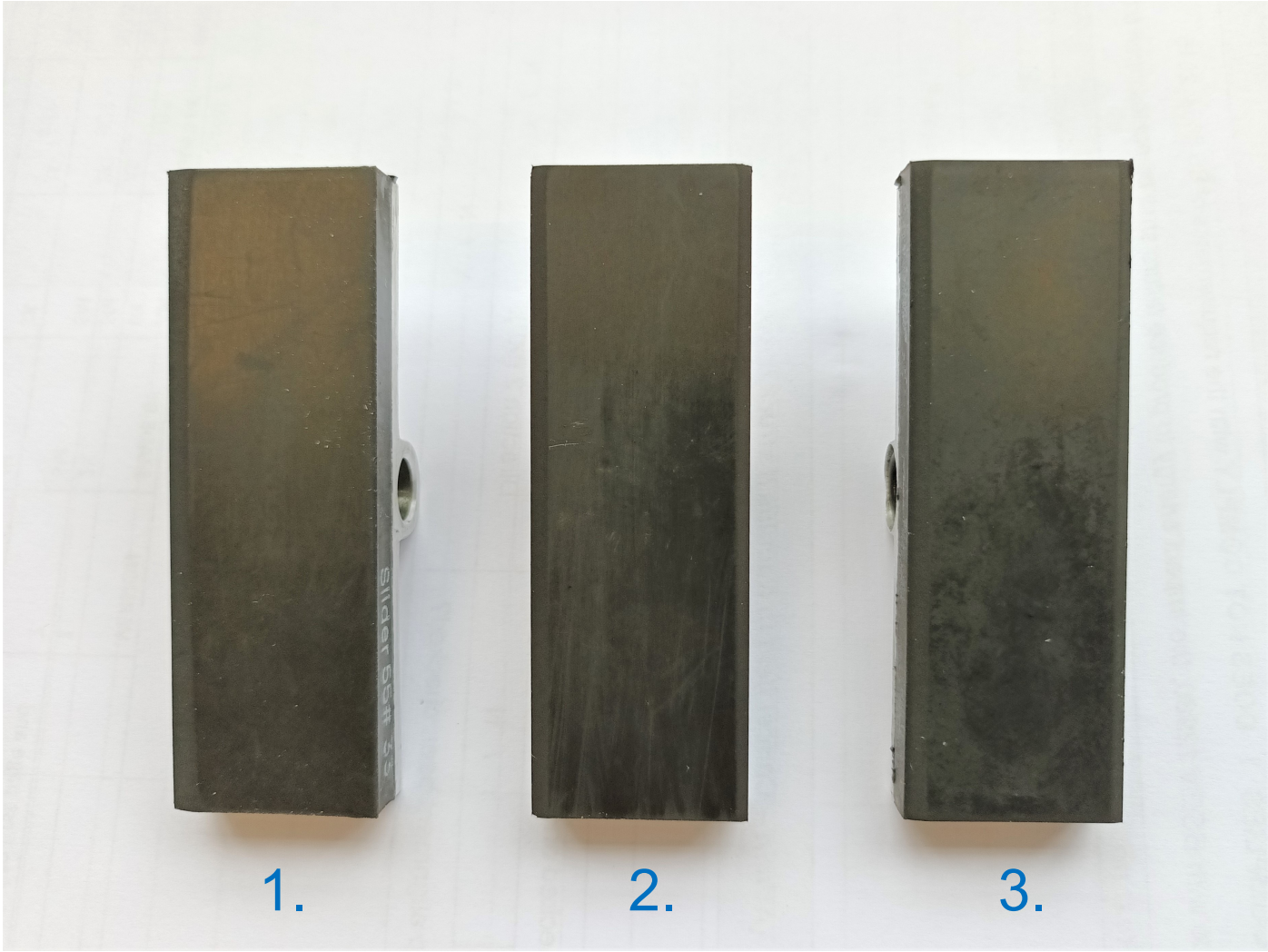
2. O ring Slider 55 square edge.

3. O ring BAM square edge.

Significant reduction in chatter and curvature when using O ring slider.

Wet PTV recorded using O ring slider 1 or 2 points higher.

Pendulum stud diameter is not defined in EN 16165.



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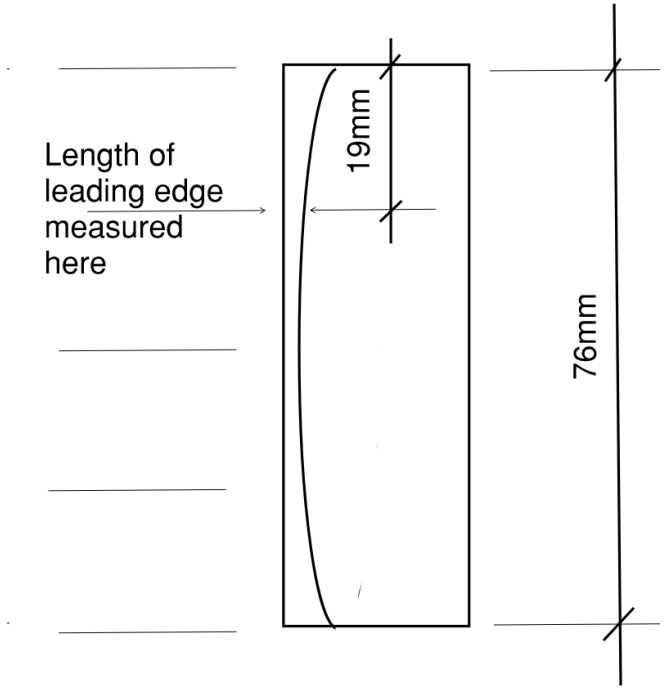
Slider curvature and edge length measurement



The slider edge length was measured at the mid-point between the centre and the end of the long axis of the slider rubber i.e. approximately 19 mm from one end of the slider. All the length measurements were made in the same way.

Where the measurement is made is not defined in EN 16165

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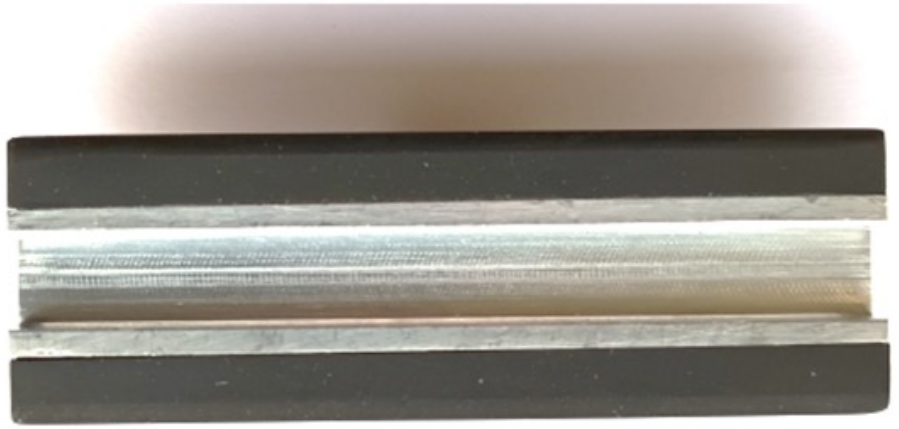
Comments on screening work with MBP

MBP with no O ring some chatter



MBP with O ring no chatter

In both cases the wet PTVs tend to be higher

Typically +4 points

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O rings on pendulum stud – a recent development

WG discussing next steps

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Future work

Generate more site-based data to compare the standard and the O ring slider.

Generate more site-based data to compare the modified and the O ring slider.

Repeat the slider edge length and wet PTV exercise using O ring sliders.

Investigate the O ring on the pendulum stud.

We plan to continue our work to develop a Slider 55 verification surface. We suggest:

- Float glass is a useful substrate.
- Any surface should undergo a conditioning (or wear) process before use.
- The footprint area and orientation of the surface used should be controlled.

UKSRG members will continue to participate in proficiency testing work.

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Slider 55 edge length – observations and comments

- During this work the Slider 55 data generated beyond 2.5 mm up to 4 mm is not greatly affected.
- No clear trend in the data as the edge length increases.
- However, we note 3 of 4 operators recorded the lowest value using the (1.5 mm) other edge.
- That lowest value was also recorded on the edge worn to 4 mm by all operators.
- Observation suggests wear from 2.5 mm to 4 mm takes longer than from 1 mm to 2.5 mm.
- The current limit of 2.5 mm reduces the life of the slider by a factor of more than 2.
- Considering the (often) curved edge of the Slider 55 slider - where is the measurement made?
- In a recent CEN TC/339 meeting the Spanish delegation proposed to amend the standard to: Initial preparation 5 swings with P400 paper (1.4 mm edge)* and a maximum edge length 3.5 mm.

- **This work suggests the maximum edge length could be restored to 4 mm in EN 16165.**

*The edge would then be finished with 20 swings across wet PLF.

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Comments on Hans recent work

We note his comments on Slider 96

Slider 96 was developed at as typical shoe rubber

UKSRG always prepare (condition) the Pavigres tile

Caution on S57 data generated on lapping films

Important to remove any burr from the Slider 57 working edge

Was all data generated in controlled ambient conditions?

2.5 - 3.5 mm slider length small range, where is measurement made?

UK will propose where that measurement is made

No data (temperature / resilience) for BAM rubber

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Comparison of in-service flooring PTV wet* using different sliders.

Area	1	2	3	4	5
Standard Slider 55	33	22	32	15	31
O ring Slider 55	36	25	33	18	31
O ring Slider BAM	34	24	33	16	30
O ring Slider 55 (2)	34	23	33	-	-
O ring Slider BAM (2)	36	24	33	-	-
Standard Slider 55	32	22	31	-	-

- O ring 55 data slightly higher than standard 55 slider data.
- (2) repeat values using a colleague's sliders.
- Slider 55 and BAM data very similar.

*Pendulum verified before use (UKSRG methodology using Slider 96). Slider edges prepared / reprepared (Dry P400 / wet PLF) before each set of tests. Dry test before wet test.

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Comments and observations

- O ring 55 data slightly higher than standard 55 slider data. (2) repeat values using a colleague's sliders. Slider 55 and BAM data very similar.

- KSS have noticed the values recorded on wet PLF with the O ring 55 slider can be 6 – 10 points higher than the standard 55 slider. The nature of the lapping film surface may be a factor in this effect. Other operators suggest an unusual batch of PLF may be in use.

- A modified backing plate to improve the wear characteristics of Slider 55 is also under development: