

Anti-Slip Testing

RELINEA

Test Data Analysis

Anti-Slip Properties of Flooring

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Location:

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Date of Testing:

19th October 2009.

Test Undertaken by:

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Test Background and Procedure:

Four specimens of anti-slip flooring, each bonded with different types of grit - Grit 14, Grit 16, Grit 20 and Grit 40 - **were assessed** for their dry and wet slip resistance properties using a pendulum test rig (**as specified in BS 7976-2**). TRL rubber and 4S rubber were used to on the pendulum test rig to measure the dry and wet slip resistance properties of the flooring samples.

Figure 6.1 shows the pendulum test rig. The operator presses the switch as shown in the diagram and the pendulum is released. The rate at which the pendulum slows down is directly proportional to the slip resistance of the plate and this is how we can measure the slip resistance.



Figure 6.1 - Pendulum Test Rig

Results:

Table 6.1 summarises the test data obtained.

Table 6.1 - Summary of slip resistance data

Sample Ref	Slip resistance value using TRL rubber		Slip resistance value using 4S rubber	
	Dry	Wet	Dry	Wet
Grit 14	95	73	75	68
Grit 16	90	72	75	67
Grit 20	97	76	75	71
Grit 40	97	79	79	75

Discussion:

Table C.1 from BS 4592-0:2006 'Industrial type flooring and stair treads' states that a Coefficient of Friction (CoF) can be estimated using the pendulum test by dividing the slip resistance value by 100.

The found data are all classified as having enhanced slip resistance.

Table C.1 **Slip classification**

Slip classification	CoF ^{A)} %
Unsuitable for wet conditions	Less than 0.4
Slip resistant	0.4 to less than 0.6
Enhanced slip resistant	0.6 or more

^{A)} CoF can be estimated using the pendulum test (specified in BS 7976-2) by dividing the slip resistance value (also known as PTV) by 100 (approximately).

NOTE Table C.2 gives examples of various industrial type flooring with anti-slip results.

Table 1 below from the HSE document 'The assessment of pedestrian slip risk' is shown below.

The found data are all classified as having extremely low slip risk.

Pendulum classifications given in Table 1 are based on the use of a standardised soling material, known as Four-S rubber ('standard simulated shoe sole'), developed by HSL and the UKSRG). This material was designed to represent footwear materials of 'average' slip resistance; use of more or less slippery soling materials may affect the overall potential for slip.

Table 1 Slip risk classification, based on pendulum test values

Pendulum value	Slip risk
0-24	High
25-35	Moderate
36-64	Low
65 +	Extremely low

Conclusion

Based on recommendations given in BS 4592 and by the HSE it is concluded that **the four anti-slip composite surfaces enhanced slip resistance and are an extremely low pedestrian slip risk.**

