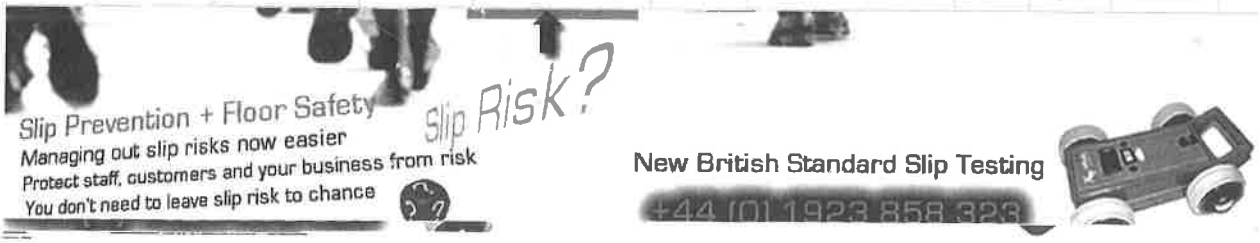


German Ramp Test: R Numbers

R-Numbers DIN 51130

The following table show the level of slip risk associate with different R-Numbers as defined by the Gernman Ramp Test and DIN 51330. If a floor is likely to be wet then r13 is best. Only R12 or R13 should be considered for swimming pool surrounds or changing areas. R11 may be suitable for transitional areas of floor i.e. floors that can become wet despite efforts to keep it dry such as the entrance to a shopping mall or dry changing room floor. R10 may be suitable for areas of floor that can normally be kept dry and R9, the lowest value should only be considered for floors that can never become wet or have very few people using them.

DIN51130	R13	R12	R11	R10	R9
Slip Angle	35+	27-35 deg	19-27 deg	10 - 19 deg	6 - 10 deg
SlipAlert Test Value (STV)	< 130	130 - 136	137 - 160	161 - 179	> 180
Wet Slip Risk	**Low Risk**	**Low Risk**	**Manageable**	**Manageable**	**High Risk**
Suitable for	Very Wet	Wet Areas	Transitional Areas - can occasionally become wet	Areas kept largely dry	Dry Areas

For more information on R numbers or the German Ramp Test, or the Wet Foot Ramp Test, please contact Dr. Malcolm Bailey.

Note: The German Ramp Test standard uses a cleated work boot and oil as the contaminant. If this is not representative of the area where you wish to install a floor, the data may be misleading.

Note: SlipAlert numbers, correlate well with PTV and measures of slip resistance, but they are expressed in terms of risk. A lower value of STV represents a lower risk of slipping.

UK HSE Compare R Numbers to PTV

The UK HSE suggest the following conversion. However, this table would suggest that R12 and R13 will definitely be safe. Bear in mind, the test is made with a man wearing cleated boots on a oily surface.

For ease of interpretation, CoF values have been added to the table. As a rule of thumb, floors with a CoF of less than 0.25 are likely to have a high slip potential and floors with a CoF above 0.36 are likely to have a low slip potential.

DIN51130	R9	R10	R11	R12	R13
Slip Angle	6 - 10 deg	10 - 19 deg	19-27 deg	27-35 deg	35+
Equivalent CoF / PTV	0.11- 0.18	0.18 - 0.34	0.34 - 0.51	0.51 - 0.70	0.70+
SlipAlert Test Value (STV)	> 180	179 - 135	134 - 122	122 - 113	< 113
Slip Risk	**High Risk**				**Low Risk**

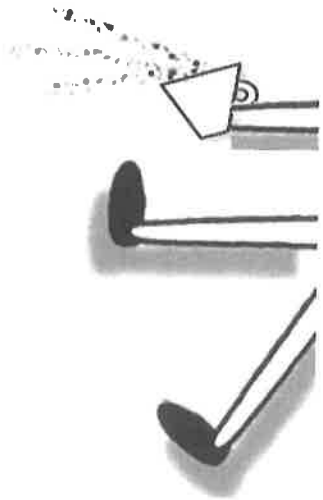
Search Page

SlipAlert or let people fall

Check your floor each time there is a minor slip and you could prevent hundreds of accidents.

SlipAlert in every building

keep a SlipAlert in the cleaning cupboard and save serious slip accidents. Click here for a ist of **SlipAlert alternatives.**



SlipAlert... where do you keep yours?

Note: SlipAlert numbers, correlate well with PTV but they are expressed in terms of risk. So A lowwet STV represents a lower risk of slipping.

Strengths of R Number and Ramp testing

The ramp test can produce very consistent results. Even the man walking on the ramp is trained to walk with a specified gait to avoid variations in te result.

Ramp testing can be used to test bath mats.

The wet foot ramp test is the only test that actually uses wet feet and as such it provides valuable information. Wet foot results correspond well with Pendulum measures taken with TRL slider or with SlipAlert Test Values measured using a TRL slider. SlipAlert or the Pendulum can be used on actual floors such as swimming pools to assess the slip risk in situ.

Problems of R Numbers and Ramp tests

Measuring the R number of a sample of floor in a lab is relatively easy, if quite expensive. However, a lab test tells only a part of the story and may be misleading. It is easy to be misled by a lab test value that does not reflect how the floor will behave when laid. A flooring supplier may make false claims relating to the floor R number rating 9either by accident or design), and the actual value of slip risk once the floor is laid may differ from the "factory tested" R number.

Another common problem, accoring to the UK HSE is interpreting the data produced. Each 'R' value contains a range of possible, results making it difficult to ascertain how slippery a floor is. The table above suggests that floors need a PTV of 70 or better to match R13, in fact we know that PTV of 36+ is low risk and PTV of 40+ is considered perfectly safe for pedestrian walking.

Many paople assume R9 is good, but many floors that gain R9 certification are not safe for use in wet conditions.

Other testers and slip measurement machines

- **English XI**
- British Pendulum
- **GMG slip test**
- Tortus Tortus2 Tortus3
- **FSC2000, FSC 2000**
- American Slip Meter ASM825
- **BOT, BOT2000, BOT 2000 BOT3000 BOT 3000**
- Rz microroughness, and SAT Slips Assessment Tool
- **Sigler Pendulum Tester or TRL Pendulum skid tester**
- German Ramp test
- The James Machine
- Slip Guardian
- Brungraber, Mk I, Mk 2
- SlipAlert outperforms all of these slip test machines and is the **best slip tester.**

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SlipAlert better than the best and far better than the rest

below we compare the features of different slip tests their ease of use and ability to measure wet and dry slip resistance accurately and reliably. You will see that SlipAlert outperforms the best is far better than most slip testers.

A step change in floor safety

SlipAlert represents a step change in floor safety. In seconds anyone can measure the slip risk of a floor with greater accuracy and consistency than has been possible even in laboratory tests.

A step change in pedestrian slip prevention

With SlipAlert you can measure and monitor the slip risk of all new and legacy floors thus avoiding costly slip-ups. You can also measure:

- the effectiveness of your cleaning regime
- the effect of wear on the slip resistance of your floors (may be good news)
- changes to floors caused by spills, wear, paint, anti-slip coatings etc

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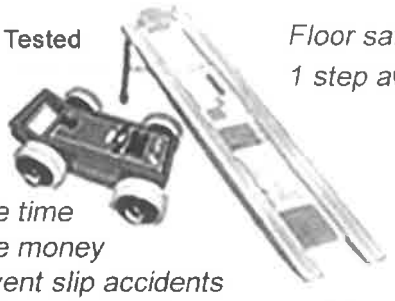
BOT-3000, TORTUS, GMG, FSC2000 and legal slip cases in court

Some will argue that slip test measures like the BOT-3000 are useful in court cases because they provide a credible measure of slip resistance and a printout of coefficient of friction of the floor. If you wish to contest evidence in a courtroom from the BOT-3000 or other slip testers such as the TORTUS, GMG, GSC200 then you should conduct a simple slip test on smooth tiled floors. Measure the slip risk of the dry floor, the wet floor, and the floor with a coating of grease or oil plus water. Many slip testers like the BOT-3000 will show the floor to be safer when wet than it is when dry. This is clearly counter to actual slip experience where most slip accidents occur on wet or contaminated floors.

Reduce slip accidents With SlipAlert = Guaranteed

Use SlipAlert as part of an approved floor safety regime and we guarantee that you will reduce slip accidents and slip injuries, saving you time, money and inconvenience.

HSE Tested



Floor safety is just 1 step away

Save time
Save money
Prevent slip accidents

Be Proactive: take control of floor safety

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Feature	SlipAlert
Good indication of floor slip risk	•
Instant results on digital display – possible to test a whole building very quickly	•
Works on all hard floors including profiled surfaces	•
Detects contamination (water, grease, dust, and combinations of contamination)	•
Tests both wet and dry slip risk (and can be used to determine how quickly dry slip risk is restored after cleaning)	•
Detects changes to slip risk caused by wear or contamination build up	•
Easy to use without training	•
Self-calibration facility = always dependable results	•
Reliable and consistent results can be used to monitor changes to slip risk over time	•
Portable and easy to use on any flooring surface indoors or outdoors	•
Can be used at floor manufacturer and by architects to specify required level of slip resistance	•
Can be used at time of floor installation	•
Can be used to test effectiveness of cleaning	•
Can be used to monitor cleaning/floor maintenance	•
Results from testing can be easily verified against benchmark measures	•
Results can be converted to co-efficient of friction or to PTV (Pendulum Test Values	•
More than 3 times as sensitive for measuring floor slip risk than TRL Pendulum	•
Proven to work (HSE tests + field trials + manufacturer guarantee)	•

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SlipAlert Features	Benefits for you
Quick and easy	Saves you time and more thorough. Floors can be tested in a trice and different areas of floor can be tested to check for wear or poor cleaning.
Reliable test for all floors	Saves you money. Management information to prevent you buying poor flooring or poor cleaning products.
Tests slip risk wet and dry	Easy to manage slip risk on all floors in all conditions. Most slips occur on wet floors.

Visual and intuitive	No training for use, easy to see if floor is safe, easy to spot anomalies.
Detects contamination	Shows if your floors are being cleaned properly. Easy to detect risk from spills or polish or other contaminants.
Detects changes to slip risk caused by wear.	Helps you understand the effects that wear will have on slip resistance of your floors and plan for future.
Comes complete with carry case, ramp and support to help you understand and manage slip risk.	You and your team will quickly learn how to measure and manage slip risk and you can develop a floor safety regime to reduce slip accidents and reduce slip injuries.
Test new floors, test changes, test the effectiveness of cleaning, test for wear, and test after slip incidents.	Fast, effective testing. Inexpensive options to test yourself or using a local test service. Establish and maintain safe levels for every floor. Eliminate slip injuries.

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Testing wet slip risk matters

Most slip accidents occur on wet floors. The GMG trundles acrosss the floor meauring the resistance between the floor and a small rubber pad. The science of wet slip resistance is complex but the key features relate to weight and speed. When your heel slips on a wet floor it is being lifted off the floor surface by a aqueeze film of water between the shoe heel and the floor surface. The GMG moves too slowly to simulate that aqua-planing effect.

What the HSE say about the GMG, Tortus, FSC2000 and Brungraber

The UK HSE tests of the GMG reveal it to be a reasonable measure of dry slip risk. It measures the coefficient of friction on dry floors reasonably well. However, according to the HSE,

"It is important to note that the HSE does not accept these tests as a valid method for assessing the slip resistance of floor surfaces as they provide inaccurate data in contaminated conditions."

BOT-3000 and legal slip cases in court

Some will argue that slip test measures like the BOT-3000 are useful in court cases because they provide a credible measure of slip resistance and a printout of coefficient of friction of the floor. If you wish to contest evidence from the BOT-3000 or other slip testers such as the TORTUS, GMG, GSC200 then you should conduct a simple slip test on smooth tiled floors. Measure the slip risk of the dry floor, the wet floor, and the floor with a coating of grease or oil plus water. Many slip testers like the BOT-3000 will show the floor to be safer when wet than it is when dry. This is clearly counter to actual slip experience where most slip accidents occur on wet or contaminated floors.

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Watch the HSE video of SlipAlert on wet and dry floors...

SlipAlert alternatives... (our competition)

SlipAlert is the world's best dynamic slip test machine. There are alternatives: some good, some bad, some very ugly.

- **SlipAlert vs Pendulum** (the world benchmark for slip testing)
- **SlipAlert vs Tortus** (works on dust but not in the wet)
- **SlipAlert vs Rz Micro roughness** (no contest)
- **SlipAert vs people slipping** (you can prevent acciddents)
- **SlipAlert vs apathy** (over 30% of accidents are slips)
- **SlipAlert vs accidents** (together we can reduce accidents)

Slips account for 600,000 hospital bed days in the UK each year.

There are 40 minor slips for every serious slip accident.

Slips and trips are responsible for nearly 40% of all serious accidents.

Every three minutes, in the UK alone, there is a serious injury caused by a slip.

Some UK pools report having had as many as 8 slip accidents per day.

Most slip accidents are preventable.

"SlipAlert should be regarded as a good indication of available friction, lending itself to risk assessment, monitoring of floor surfaces and evaluating & monitoring cleaning regimes"
UK HSE

Mopping up spills can make the floor more prone to slips.

40% of industrial accidents start with a slip.

A SlipAlert Test Value STV of less than 136 means there is less than 1 in a million chance of somebody slipping on your floor.

When people walk fast or turn, they are more likely to slip.

People mostly stand with 2 feet on the ground. When we walk we usually have one foor on the ground. When we run we will at times have no feet on the ground. You can improve floor safety by changing the way people move on high risk floors.

Employers Duty of Care
"Your employer has a 'duty of care' to ensure, as far as possible, your health, safety and welfare while you're at work."
www.dlrectgov.co.uk

Many floors last for 20 year or more. during that time, parts of the floor may become accident black spots if a spill has not been cleaned properly.

When pushing a trolley you require greater traction. That is why it is often difficult to get a grip on the floor when pushing a heavily laden supermarket trolley.

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- **Free Pocket Guide**
- **Back to slip prevention, floor safety + risk assessment**
- **Contact SlipAlert**
- **Phone 01923 858323**

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how safe are your floors?
21st Century Slip Testing

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