



## Get a GRIP

HSL's new footwear rating scheme to help you reduce workplace slips



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# Introduction

The Health and Safety Laboratory (HSL) is one of the world's leading providers of health and safety solutions to industry, government and professional bodies.

We are an independent agency of the Health and Safety Executive (HSE), and working with the regulator gives us a unique insight into workplace health and safety.

At HSL, we have been developing health and safety solutions for over 100 years. Our long history means that we're well-placed to understand the changing health and safety landscape, and anticipate future issues.

The main focus of our work today is on understanding and reducing health and safety risks and we employ over 350 scientific, medical and technical specialists, who help make working environments and working lives safer, in the UK and around the world.

From our base in Buxton, we focus on the development of practical solutions to workplace health and safety problems. We offer health and safety research, expert advice and consultancy, specialist training and products.

GRIP is a new footwear rating scheme that has been developed by HSL's Falls Prevention experts to help health and safety professionals make more informed decisions when purchasing slip resistant footwear.

This document explains why slips occur, the limitations of current standards for slip resistance and how you can identify better slip resistant properties to prevent slips.



## About the author

### Rob Shaw

Rob Shaw leads the Falls Prevention Team at HSL and has a wide range of practical experience in the field of pedestrian slip assessment and stair fall assessment in many different industries.

Rob has served as the key investigator and project leader on a diverse range of major HSE research projects into falls prevention. He has produced numerous reports for both HSE and HSL detailing the results of research into the causes, and means of prevention, of falls.

Rob has over a decade of experience in developing and delivering training which has resulted in invitations to speak internationally on falls prevention.



## Background

**Choosing the right footwear for the workers that you look after can be difficult. Quite rightly, staff demand a lot from the footwear they work in; comfort, durability, protection for their feet; even what they look like!**



But how easy is it to select footwear that is going to protect them from slipping in the workplace? Will this footwear also protect their legs, arms, hands and head?

These might seem strange requirements for footwear, but given the prevalence of slipping accidents, and the common types of injuries that result, maybe we need to consider the wider protective context that suitable footwear would provide?

For many businesses, the biggest cause of injury at work is slips, trips and falls.

New statistics for Great Britain published by HSE in October 2014, show that slips and trips were again the most common cause of major injuries to employees and together with falls were responsible for 57% of all major injuries reportable under RIDDOR.

A staggering 1.5 million working days are lost every year, meaning slips, trips and falls are costing employers a fortune.

Have you ever stopped to think about what these issues are costing your business?

## Get a GRIP

### Is footwear really the answer to slips?

There are three main factors to consider if you want to control slips: the surface, any contamination that is on it and the footwear.

Some factors are easier to control than others. For example if the flooring becomes slippery when it gets wet, you could improve the flooring, but for many health and safety managers, that's not always a possibility or the most practical or cost-effective option.

You could make more effort to keep it dry, but again that might not be so practical or realistic. Or you could use footwear that isn't slippery on wet surfaces.

The sole of your shoe is your only contact with the ground when you walk around the workplace. To prevent a slip, the sole of your shoe needs to be compatible with the flooring you walk on and any contamination that lies on it.

Many businesses have dramatically reduced the number of accidents their staff suffer by providing their employees with slip resistant footwear.

### Surely there's a standard that deals with this?

The Personal Protective Equipment (PPE) directive recognises the need for slip resistance as a protective property of footwear, and this is typically addressed through the use of mechanical footwear tests in a laboratory.

One such mechanical test (BS EN ISO 13287: 2012) forms the basis of the commonly used standards BS EN ISO 20345:2011, BS EN ISO 20346:2004 + A1: 2007 and BS EN ISO 20347:2012, giving you classes SRA, SRB & SRC.

Given this, you would have thought that it would just be a case of choosing between the classes in order to easily identify the slip resistance properties of footwear.

Unfortunately it's not that straightforward.

There are concerns amongst the scientific community that this test does not closely replicate the critical point of the walking step at which grip is lost when you slip.

Indeed, laboratory work at the University of Southern California (Blanchette & Powers, 2014) has questioned the validity of the test, due to its inability to predict slip potential.

Therefore, it is more helpful to think of the standard as the minimum requirement for footwear to be sold, but as a control measure to stop slips, it doesn't tell you what you need to know.



# So how do you identify footwear that will stop slips?

**Determined to help customers make the right purchasing decision and reduce accidents from slips, HSL, over a period of years, has refined proven ramp test methodology to develop the GRIP footwear rating scheme.**

Footwear is tested on a slippery wet ceramic tile that is deliberately challenging for the footwear, in order to find out what happens when you really push the limits of grip.

The ramp (Figure 1) consists of an adjustable platform (1), upon which the test flooring material is positioned. A fall arrest device (2) is

attached to an overhead frame (3) to prevent injury to the operator during a test.

The test operator walks back and forth, increasing the angle of inclination of the platform until a slip occurs. The process is repeated until the operator generates a number of slip angles, which is followed by

a second operator repeating this process.

In order to ensure reproducibility of the results, three different pairs of the same footwear in total are used to generate the rating.

## How does the scheme operate?

The scheme is designed for footwear manufacturers who wish to demonstrate to their customers that the footwear they produce performs better than the 'standard'. Manufacturers of slip resistant footwear therefore pay to participate in the scheme.

Like many rating schemes, participation in the GRIP scheme is voluntary, but given that the scheme is based on years of laboratory work at HSL and is independently operated, GRIP ratings help manufacturers to objectively distinguish the performance of the slip resistant properties of their footwear from other products on the market.

Footwear that has been awarded a GRIP rating will be displayed on the HSL website, and available to view by the general public for free.

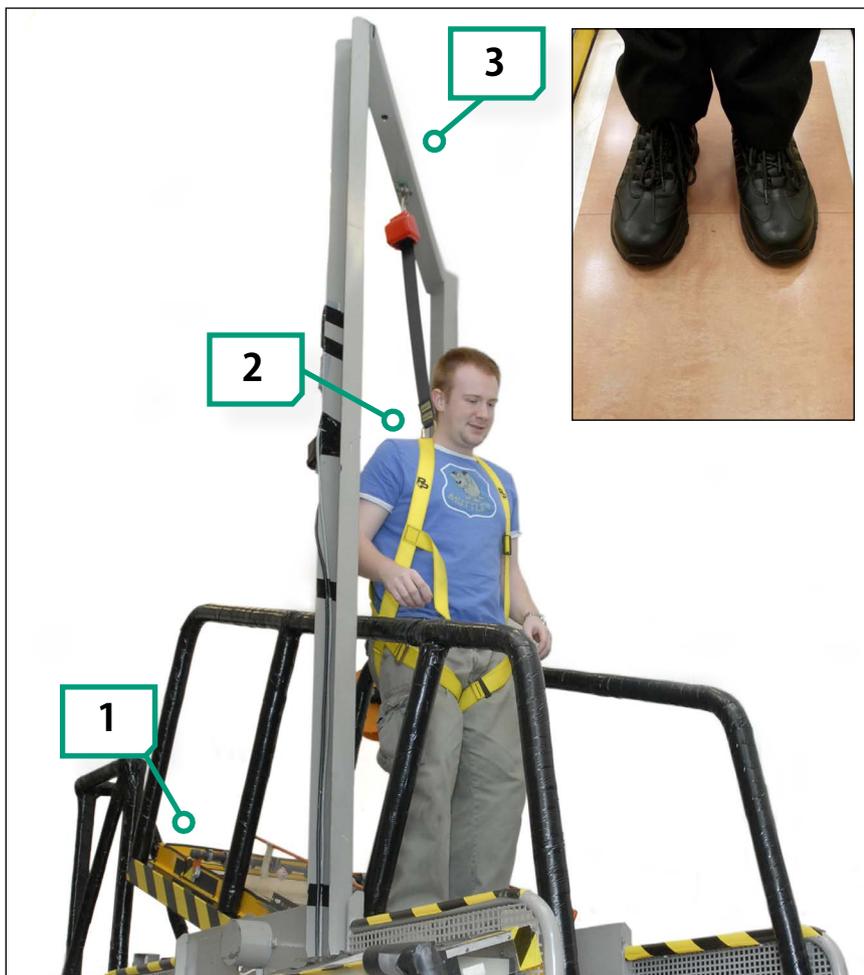


Figure 1. The ramp test

# How do you use the GRIP ratings?

**Put simply, the higher the GRIP rating, the lower the risk of slipping.**

The GRIP ratings can be seen in Figure 2. Footwear is classified by the amount of grip generated, known as coefficient of friction or CoF. The test is done using water, which is the cause of most slips, and glycerol, a thicker contaminant which simulates oil. The 1 to 3 star ratings require an increasing level of grip on the wet tile. 4 and 5 star footwear also has to achieve a certain level of grip with glycerol.

But before you automatically reach for that 5 star shoe, remember that footwear selection should always be informed by a risk assessment - **you don't necessarily always need the highest performing footwear!**

For low hazard environments, 1 star or 2 star footwear would be a sensible way to protect your staff from slips.

Where slips are known to occur, 3 star or 4 star footwear would reduce the occurrence of slipping.

In the most challenging workplaces, 5 star footwear may be necessary to adequately control slip risk.

The effectiveness of rated footwear should be monitored as part of the risk assessment review process. If, for example, slips continue to occur in 2 star footwear, you should consider upgrading to footwear with a higher rating.

It is also worth remembering that the GRIP scheme only deals with the slip resistance of footwear. Whilst slips are a major issue, other safety requirements arising from risk assessments, such as toe protection, should be considered in parallel with the GRIP ratings when selecting footwear for use as PPE.



Figure 2. The GRIP ratings

## GRIP enables manufacturers to:

- Clearly show the level of slip resistance at point of sale,
- Improve slip resistance during the design and development process,
- Gain competitive advantage over non-rated footwear.

## GRIP helps footwear buyers to:

- Choose the right slip resistant footwear for their employees,
- Reduce slipping accidents,
- Reduce business costs associated with slips.

## Where do I find more information?

Information about footwear rated using HSL's GRIP scheme will be published on the HSL website from December 2014.

Visit [www.hsl.gov.uk/products/grip](http://www.hsl.gov.uk/products/grip) for further information.

## Contact

**For advice, consultancy or training on selecting the right footwear for your workforce, or on any other slips and falls issues please contact:**

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