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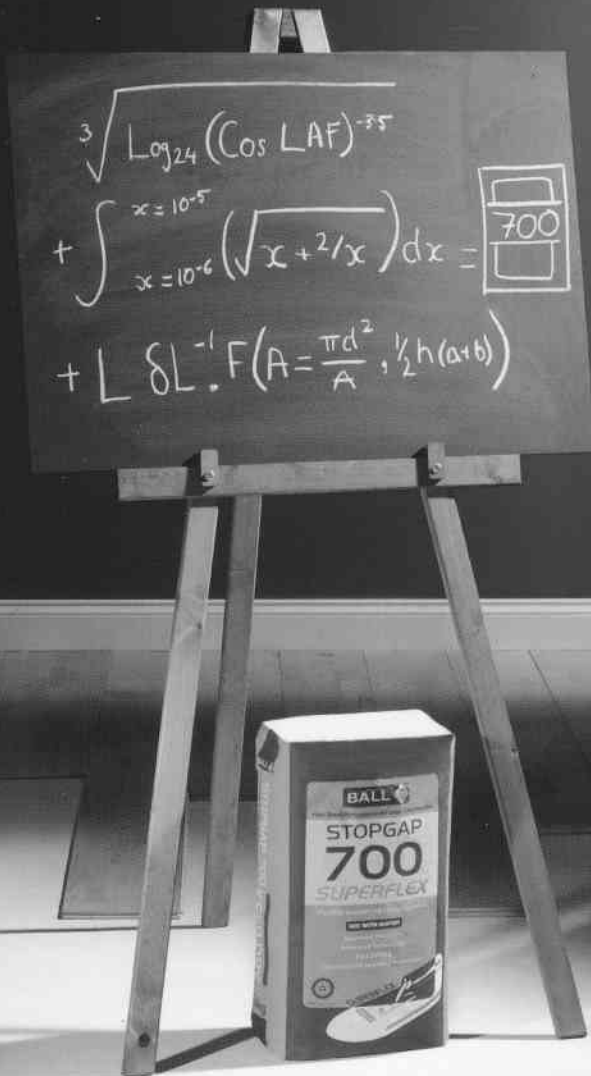
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audited circulation

'Those who promote roughness as a slip test are deceiving you'



Andrew Stewart,
of Slip-Alert, joins
the slip testing
debate on the
side of Dr Malcolm Bailey :

'Rz test catastrophic for floor safety in UK'

MY thanks to Paul Lemon and Brian Newell (*CFJ* September 2010) for bringing the debate about roughness into the public domain. Roughness as a measure of pedestrian slip risk was an optimistic idea 10 years ago that has long since been disproven.

Sadly businesses and local authorities are still being advised to monitor slip risk of floors using Rz microroughness and the result is catastrophic for floor safety in the UK. Slip injuries have been rising steadily in relation to all other causes of serious injuries and slips are now the biggest cause of serious injuries in the UK.

Paul Lemon is misleading *CFJ* readers when he says, 'no one is suggesting that surface roughness is ever used in isolation.' People are suggesting the use of Rz roughness in isolation and Paul knows it.

Paul was at the Health & Safety Laboratory when the HSE launched the STEP website (full of pages suggesting users monitor change to slip risk with roughness) and he contributed to the slipstd.PAS document which quite clearly recommends using Rz micro roughness alone for monitoring floors.

'The consortium therefore recommends adopting the measurement of Rz with tactile 2D devices as a routine maintenance parameter for monitoring in-use changes to hard floor coverings.'

Misleading claims for roughness should be illegal: 'Surface microroughness data can provide an indication of the slip resistance of a floor when contaminated; regularly collecting this data is a good way of monitoring changes in the flooring surface.' HSE STEP website Beware! Read the words carefully. It does not actually say roughness measures the contaminated floor, or that roughness will monitor changes to the slip risk, for those would be obvious lies. This type of misleading statement on a commercial website would be illegal. Ask Trading Standards.

HSL Data proves roughness cannot measure slip risk: Measuring Rz does not measure slip risk. Roughness cannot detect contamination and roughness cannot detect change to slip risk of floors caused by wear, poor cleaning, contamination or any of the other causes of change to slip risk. Since 2005, several HSL (Health & Safety Laboratory) studies on roughness such as RR549 (you can Google them) show that Rz does not match PTV, does not detect contamination and cannot monitor change to slip risk.

In each of these papers, the authors express surprise at the poor correlation on surfaces such as tiles, wood, or metal. When you put the collective data from these tests together you get a graph similar to this one supplied by HSL. If there was any correlation then the points on the graph would appear along the straight line and they clearly do not. Take a value of Rz say 12 and use the graph to predict PTV and you will see that it could be any value of PTV from 10 (high slip risk) to 60 (very low slip risk).

HSE should stop selling Kenny the fake slip test: The HSE has unique dominance of the

floor safety market. They spend £millions each year, influencing managers in businesses and local authorities across the UK. HSE influence has created a virtual monopoly for a slip test method that doesn't work.

Roughness meters are designed to measure tiny imperfections in smooth metal. They are not suited for measuring floors and the manufacturers do not claim their product measures pedestrian slip risk. We do not ask HSE to unfairly promote SlipAlert, we just want them to drop 'Kenny the fake slip test' and start to promote real slip testing. We'd like an independent inquiry to consider how many serious accidents could be prevented by promoting the sensible use of real PTV-correlated slip tests.

SAT works better with real slip tests: We have shown the HSE that SAT (paper available on SlipAlert website) works far better with real PTV-correlated slip test data but they continue to promote the Slips Assessment Tool exclusively with roughness. This is wrong, and it has created a multi-million pound market for a fake slip test that confuses people and contributes to the high rate of slip injuries in the UK.

Slipstd.PAS advice on roughness is pointless nonsense: The roughness advice in slipstd.PAS is nonsense akin to asking an apprentice to go and find a left handed screwdriver. The document advises, 'it is advisable to compare measurements of Rz taken in a lowly trafficked area with those for the same floor covering taken in a highly trafficked area' It has been shown that there is no correlation between change to Rz roughness and change to slip risk. If you follow the advice in slipstd.PAS you will have a series of random numbers that tell you nothing about slip risk and nothing about how the slip risk is changing. Has anyone tried this?

Don't be fooled by Rz Roughness: Rz is just one aspect of micro roughness and cannot alone predict slip risk of a real floor. Supporters of roughness confuse the unwary by making claims that roughness has a large bearing on slip resistance. But beware... Rz alone does not. There are at least 11 characteristics of micro roughness Rt, Ra, Rp, Rq etc described in HSL paper RR549. No one has yet found a way to measure and cross-relate all of these micro roughness characteristics to give a reliable indication of slip risk.

Many other un-related factors also influence floor slip risk: material of the floor, macro roughness, hardness, porosity, absorbency, and most importantly contamination including water, oil, polish and dry contaminants. The point here is that ordinary people are being advised to measure only Rz micro roughness, and Rz alone gives no indication of the slip risk of a floor.

Mis-selling of roughness: If you have purchased a roughness meter believing it can be used to monitor the changing slip risk of your floor then you have been misled. Rz micro roughness measurements cannot detect contamination or

change to slip risk. If you read the HSE advice carefully, they recommend taking roughness measures on a clean dry floor. The theory that this will predict wet slip risk has long been disproven and it is clearly impossible for a device that cannot detect contamination to be used as a monitoring tool.

Real slip testing would prevent accidents:

If people were encouraged to monitor floors with PTV-correlated slip measures then useful data would be gathered and best practice in floor safety could be shared. It would become possible to understand how the slip risk changes in different flooring situations: kitchens, swimming pools, factory floors, shower rooms, decking, sports halls, and all places where people slip. Real slip measures would advance the understanding of the effects of wear and different cleaning on different floor surfaces and it would quickly reduce slip accidents and prevent many needless slip injuries. None of this can be achieved with roughness.

Questions for Paul Lemon:

1. How can Rz micro roughness give a measure of wet slip risk when tests are taken on clean dry floors and the correlation with real slip measures (PTV-correlated measures) is close to zero? (see HSL graph)

2. How can Rz be a useful way of monitoring the slip risk of floors when it cannot detect contamination or any other cause of change to the slip risk of a floor?

3. If Rz microroughness is such a useful measure when taken alongside a real measure of slip risk then why is there no guidance as to how the Rz measure should be used along with a PTV measure. HSE/HSL reports tend to ignore the Rz measure if it disagrees with the PTV measure. How is that useful?

We challenge Paul Lemon and the UK Surface Roughness Group to suggest anything useful that can be done with Rz measures apart from measuring smooth metal (the intended use for roughness) or predicting random Lotto numbers.

Dr Bailey stands against roughness:

William Wilberforce stood against slavery and Samuel Plimsoll stood against shipping magnates determined to put lives at risk by overloading ships. Dr Malcolm Bailey stands against roughness, a fake slip test that is confusing people and contributing to the high level of slip injuries in the UK.

He has shown scientific theory and test data that demonstrates Rz micro roughness is no measure of floor slip risk. He has resigned his position on the UK Slip Resistance Group because they would not heed his warnings. His recent article in *CFJ* will help people to understand that Rz micro roughness should never be used to monitor slip risk.

Real measures of slip risk will make floors safer and will prevent thousands of needless slip injuries. Follow Dr Bailey in driving out this dangerous obsession with Rz microroughness that is causing rather than preventing slip injuries. *CFJ*

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