

Ceramic Tiles

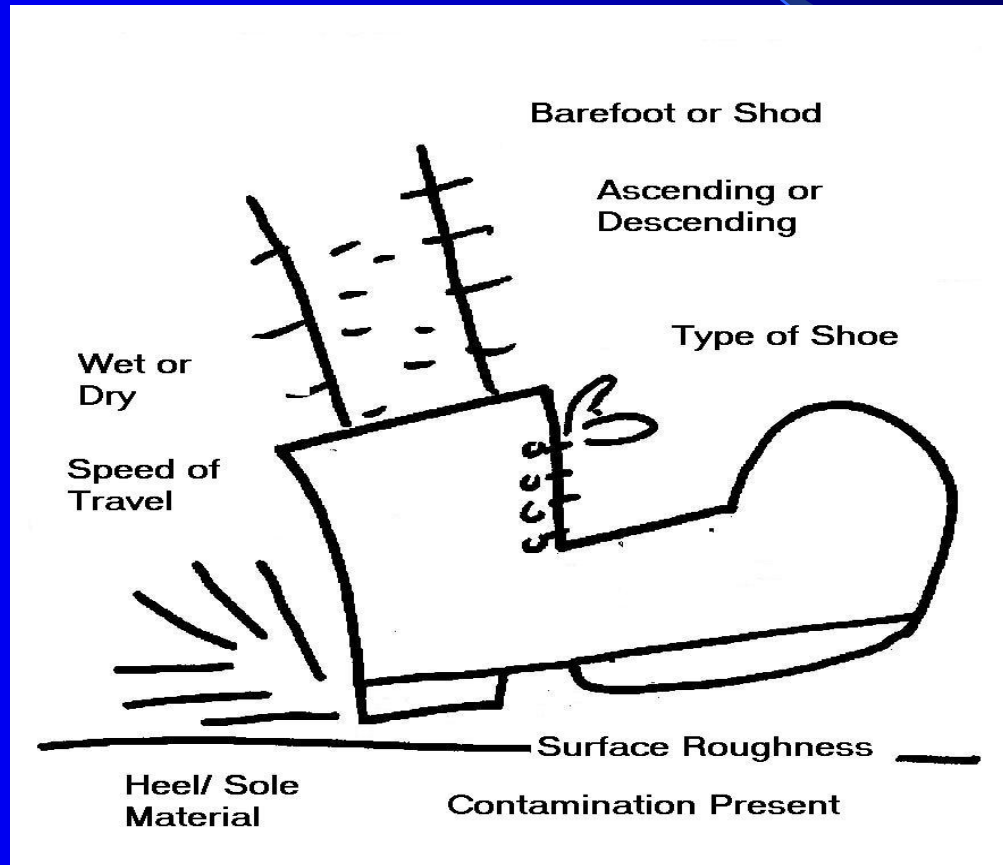
Slip, Slip Resistance, Its Specification And Maintenance

Approved CPD Network Presentation

The problem with slipping !

- ? It is the resultant of a complex and constantly changing set of variables
- ? It is a highly subjective phenomena
- ? There is no single suitable test method
- ? There are no ISO, Pan European or British Standards for testing or specification of slip resistance

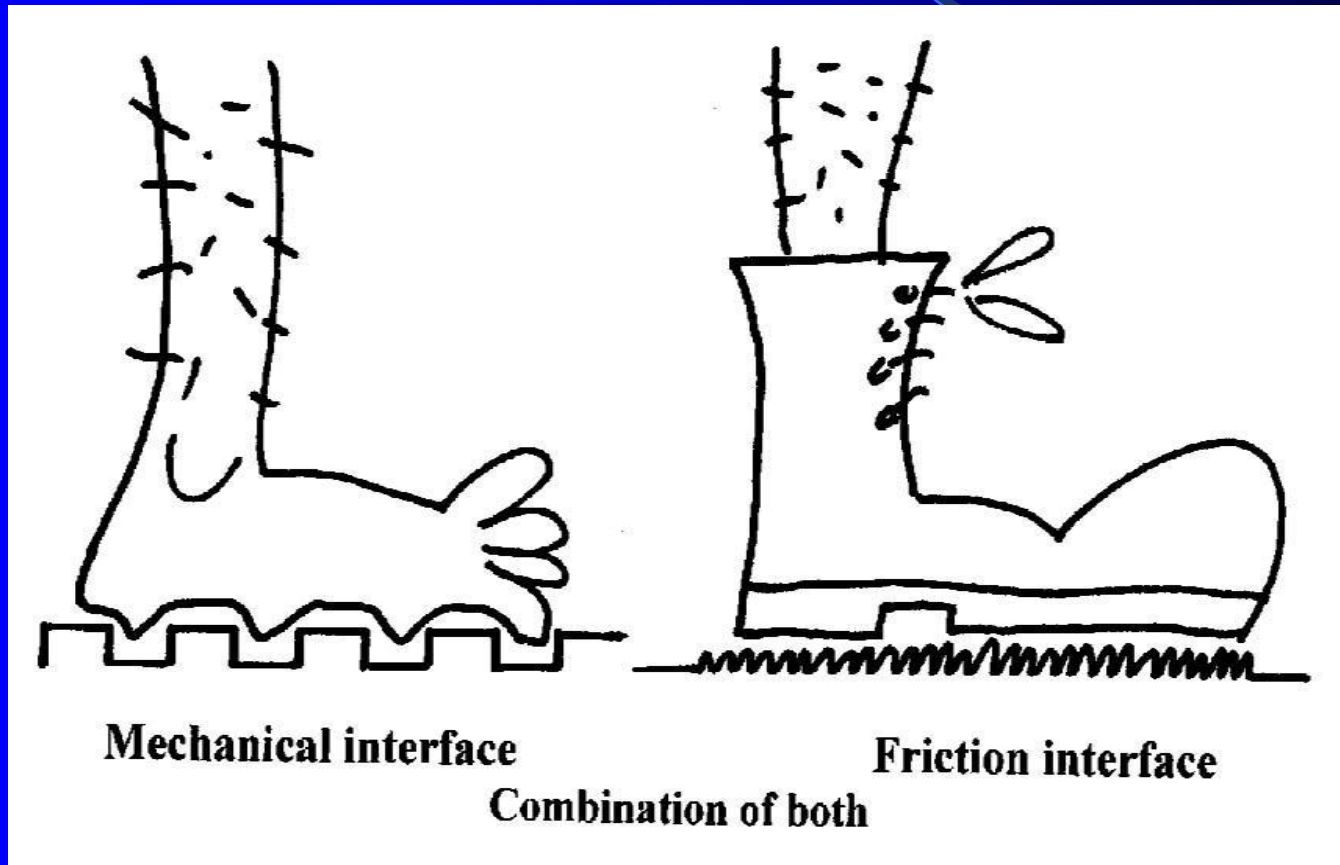
The factors that influence slip



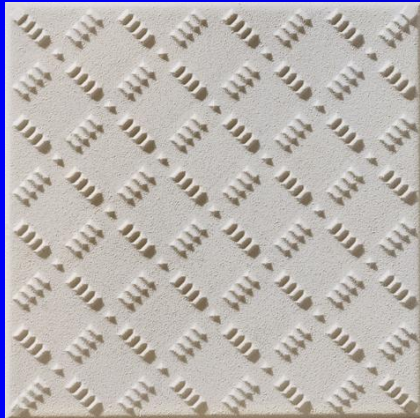
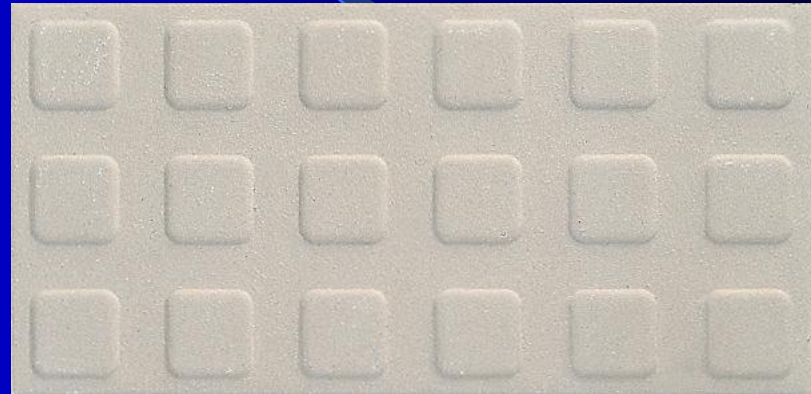
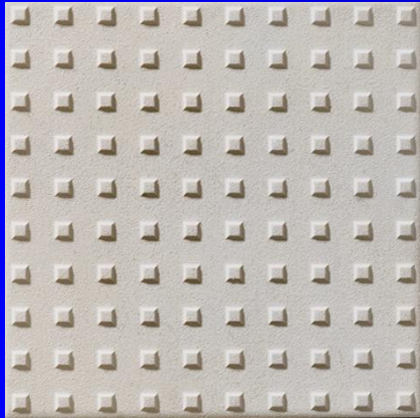
Brief summary of the main factors likely to affect slip resistance

<u>Application</u>	<u>Flooring</u>	<u>User</u>
Wet/ dry/ ice	Surface roughness	Age of user
Clean/ dirty	Surface design (riven/ profiled)	Infirmity/ disability
If dirty, type	Change of surface	Distracted
Shod/ bare foot	Contamination	Expectation
Speed of travel	Cleaning/ maintenance	Type of shoe
Stops & starts		Type of heel/soling material used
Steps/ slopes		Walking/ pushing/ carrying objects
Type of traffic		
Likely activities		

How does slip resistance work ?



Examples of Profiled Tiles



Examples of Enhanced Friction Tiles



Hospital Application



Dry internal application

- ✓ Low speed of travel
- ✓ Low activity level
- ✓ Cleanability critical
- ? Risk if liquid spillage
- ? Effective cleaning regime required

Shopping Mall



Internal application

- ✓ Moderate speed of travel
- ✓ Straight line of travel (?)
- ✓ Flat, level surfaces
- ? Users distracted
- ? Users carrying bags, etc.
- ? Sudden changes in direction
- ? Wet entrance areas

Commercial Kitchen



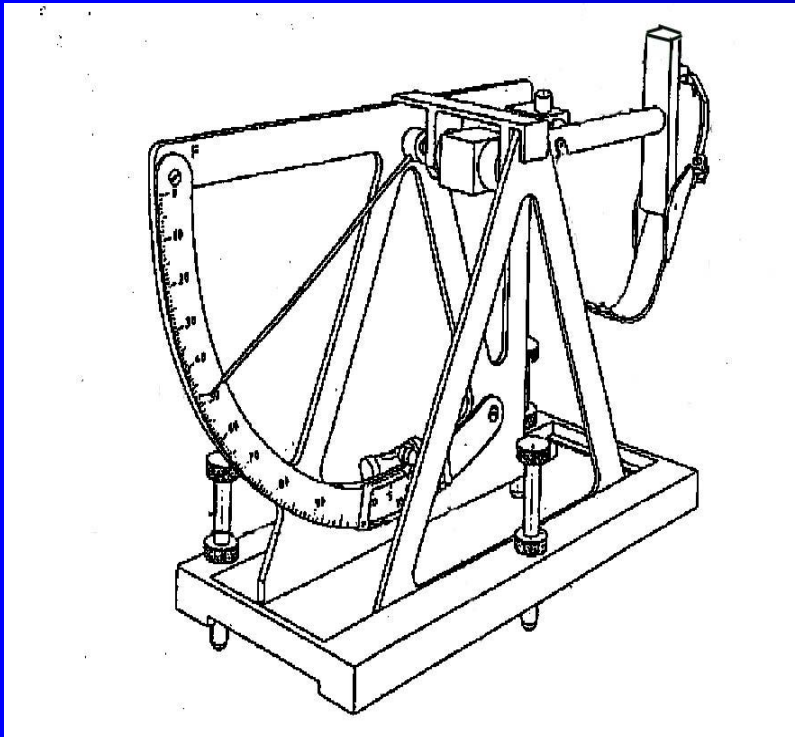
- ? Wet processes
- ? Spillage liquids, fats, etc.
- ? Physical work activities
- ? High risk environment
- ? Shod foot area
- ? Must be readily cleanable
- ✓ Consider tiles with tiles with small but well spaced studs

Motor Vehicle Workshop



- ? Oil spillage
- ? Wet working areas
- ? Vehicular/ pedestrian slip resistance
- ? Cleanability
- ? Moderate risk work activities
- ✓ Consider tiles with a grit inclusion

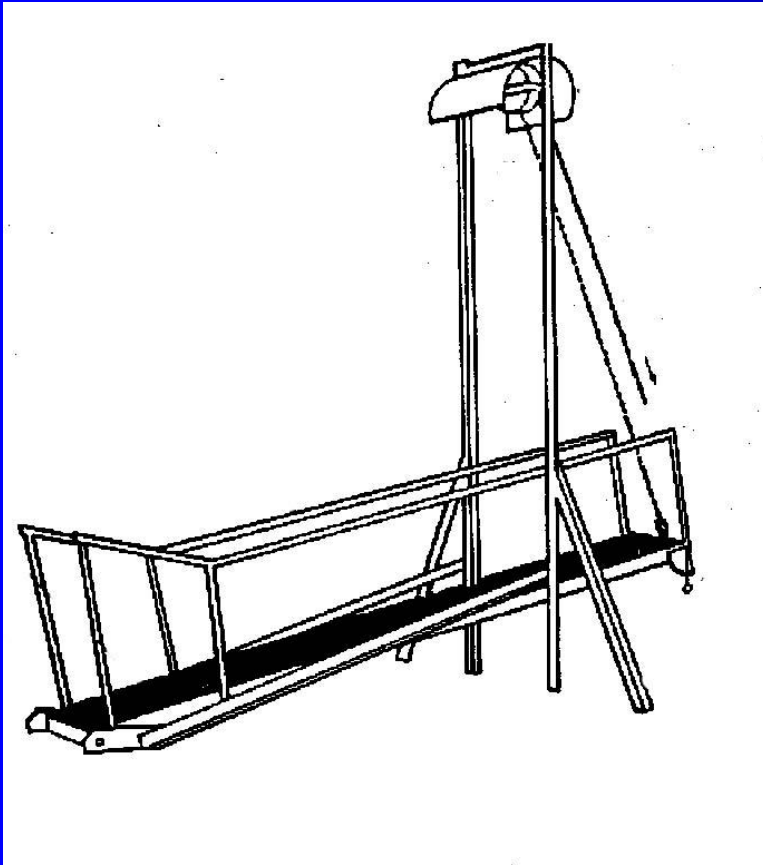
UK test method for measuring slip resistance



Pendulum Tester

- ✓ Portable
- ✓ Lab & insitu applications
- ✓ Heel strike slips
- ✗ Results vary with rubber compound used
- ✗ Not good on profiled tiles
- ✗ Poor differentiation at mid range

DIN test method for measuring slip resistance



DIN Ramp Test

- ✓ Established national standard test method
- ✓ Suitable all floor surfaces
- ✓ Test bare foot and specific shoe/ contamination/ surface combinations
- ✗ Laboratory use only
- ✗ Results of an empirical nature

DIN Slip Resistance Classification

DIN Slip Resistance Class	Ramp Inclination	Typical Applications	
R9	$< 9^\circ$	Low risk	Reception areas
R10	10 to 19°		Self serve cafeterias
R11	20 to 27°		Dish washing areas
R12	28 to 35°		Commercial kitchens
R13	$> 35^\circ$	High risk	Slopes, liquid spillage

Specification of surface drainage to assist slip resistance

Slip Resistance Class	V4	V6	V8	V10
Drainage capacity	4 Cm^3/dm^2	6 Cm^3/dm^2	8 Cm^3/dm^2	10 Cm^3/dm^2
Least Drainage Capacity Most				

DIN Specification for Slip Resistance

DIN Specification	Typical Applications
R9V. R10V.	General internal applications (dry conditions, low risk activities)
R11V. R11V4	Moderate risk applications (e.g. some spillage, commercial kitchens)
R12V4 R12V8	Wet & high risk applications (e.g. frequently wet, industrial, speed)
R13V10	Very high risk applications (e.g. Fish processing, abattoirs)

The effect of Surface Drainage on Slip Resistance



Summary: To select the correct anti slip tile for the job

- How will the floor be used
- Is slip resistance a key consideration
- Specify the reasons/ user requirements
- Any applicable guidelines available
- Tile manufacturer verify suitability

Maintaining slip resistance in service

- It is important that ceramic floor tiles are cleaned effectively to maintain their slip resistant properties.
- The frequency & cleaning materials needed will be determined by the application and the type of contamination the floor is exposed to.
- In addition to daily cleaning, regular “deep” cleaning is recommended to remove the build up of cleaning material residue.