GUIDANCE

The Resin Flooring Association

MINIMISING SLIPS IN THE WORKPLACE WITH THE USE OF INDUSTRIAL RESIN FLOORS

FeRFA Guidance Note: No. 1

www.ferfa.org.uk

INTRODUCTION

Well-formulated and correctly applied synthetic resin flooring has proved an effective method of protecting concrete and providing an excellent slip resistant finish in dry or wet conditions, specifically in food processing and bottling facilities.

Pre-planning at design stage to evaluate the environment and the use of the floor is critical. The following criteria should be examined before proceeding with the design of the floor, to ensure the causes of slips are minimised.

- Type and concentration of likely spillage
- Free draining or flat floor design
- Drainage and sumps to be provided
- Regular cleaning procedures
- Safety footwear

While avoidance of wet contamination is the first approach, there may be occasions when wet or greasy floors cannot be avoided and reliance on adequate slip resistance becomes more important.

The floor's slip resistance in such conditions may now be assessed by an established suite of measurements.

MEASURING COEFFICIENT OF FRICTION

Measurement of floor surface roughness and slip resistance were documented in the guidelines produced by the United Kingdom Slip Resistance Group (UKSRG). The direct measurement of slip resistance, the dynamic coefficient of friction, is best carried out using the swinging 'pendulum' equipment originally developed by the Transport & Road Research Laboratory (TRRL). This method has since been adopted by BSI for the British Standards in the BS 8204 series dealing with in-situ floorings.

This equipment and technique of measurement to assess slip resistance are specified and used by the Health & Safety Executive (HSE) Laboratories, Sheffield.

No single measure or piece of information can be used to assess a floor. All information from instruments, conditions of use and environments should be taken into account before a categorisation or a type of floor is specified to be installed.

LEVELS OF SLIP RESISTANCE

The UKSRG provided guidance on the significance of slip resistance values in relation to users' perception of slipperiness of the floor.

Table 1: Slip resistance values and the risk of slipping

TRRL Pendulum Value	Potential For Slip
19 and below	High
20 - 39	Moderate
40 - 74	Low
Above 75	Extremely Low

In line with this assessment, the British Standards of the BS 8204 series (including BS 8204-6 concerning synthetic resin flooring) specify a minimum slip resistance value of 40, with the proviso that a lower limit of 33 may be acceptable where special slip resistant footwear is worn.

IMPORTANCE OF CONTAMINANT VISCOSITY

HSE information Sheet No 22 (Preventing Slips in the Food Industry) prioritises contaminants and identifies the roughness or depth of the floor profile needed to prevent squeeze-film formation.

Table 2: Minimum Levels of Profile/Roughness Required to Allow Satisfactory Coefficient Values

Contaminant Viscosity cps	Typical Contaminant	Minimum Floor Roughness Profile
< 1	Clean Water	20 µm
1 - 5	Milk	45 µm
5 - 30	Stock	60 µm
30 - 50	Olive Oil	70 µm
> 50	Margarine	> 70 µm

In areas where the level of contamination cannot be controlled, the surface roughness of the flooring material must be sufficient to penetrate any squeeze-films formed and so provide direct contact between footwear and flooring. The level of roughness required to do this is governed largely by the viscosity of the liquid contaminant present. Greater levels of roughness may be necessary in some situations to assure sufficient slip resistance.

SURFACE REGULARITY

Due to their method of application, synthetic resin flooring will inevitably follow the profile of the underlying substrate. The degree of flatness to reduce ponding of liquids should therefore be defined in advance both on new-build or refurbishment projects.

The straight edge method given in BS8204-1 is generally satisfactory for the majority of floor uses and the design should specify an appropriate class of local surface regularity.

Table 3: Classification of Surface Regularity for Wearing Surfaces

Class	Maximum Permissible Departure from a 3m Straight Edge - mm	Application
SR1	3mm	High Standard: Special floors
SR2	5mm	Normal Standard: Normal use in commercial and industrial buildings
SR3	10mm	Utility Standard: Other floors where surface regularity is less critical

Where free draining floors are required in wet environments, a minimum slope of 1 in 80 should be specified. However, a textured surface may require a higher slope to shed water.

REGULAR CLEANING PROCEDURES

If the incorrect cleaning regime is used on contaminated floors, a build up of oils and greases may quickly form, thereby reducing the slip resistance of the floor to an unacceptable level.

The use of scrubber/dryer machines with advice from cleaning chemical suppliers should be sought to establish the recommended frequency of cleaning and the most suitable cleaning agents to disperse oils, greases and contaminants and provide the necessary level of hygiene.

Failure to clean floors correctly will affect the slip resistance. It is therefore important to implement an effective cleaning regime in conjunction with the client.

CONCLUSION

FeRFA manufacturers and contractors should be consulted in the early part of planning and designing a floor that requires slip resistance.

FeRFA members can produce synthetic resin floorings that meet the HSE and BSI criteria for effective slip resistance under a variety of conditions.

References and Further Reading

1) ***The Measurement of Floor Slip Resistance***
Guidelines recommended by the UK Slip Resistance Group 1966
RAPRA Technology Ltd, Shawbury, Shropshire SY4 4NR

2) ***HSE Information Sheet - Food Sheet 22***
Preventing Slips in the Food and Drink Industries
HSE Books, P O Box 1999, Sudbury, Suffolk CO10 6FS

3) ***FeRFA Guide to the Specification and Application of Synthetic Resin Flooring***
FeRFA, The Resin Flooring Association,

4) ***BS 8204-6: Synthetic resin floorings – Code of practice***
BSI, 389 Chiswick High Road, London W4 4AL

FeRFA

FeRFA, the Resin Flooring Association represents resin flooring product manufacturers, specialist contractors and allied trades. Established in 1969, FeRFA now represents over 60 UK based companies. The Association has established Codes of Practice for full members. It takes an active role in promoting resin flooring and in developing both national and international standards.

All FeRFA publications are freely downloadable from the website at www.ferfa.org.uk
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