

GUIDE TO THE SELECTION OF SYNTHETIC RESIN FLOORING



The Resin Flooring Association

SELECTION OF FLOORING TO BE APPLIED

The new BS 8204-6 (following the FeRFA Guide) states in section 4.2 that:

"It is essential that, in the design and construction stages, there should be full consultation with the manufacturer of the synthetic resin flooring to ensure that the product to be selected is entirely suited for the conditions both during application and in subsequent service".

Consideration should therefore be given to whichever of the following are applicable:

- a) intended use of the synthetic resin flooring including the type, extent and frequency of trafficking;
this can be categorised, as follows
 - Light duty (LD) light foot traffic, occasional rubber tyred vehicles
 - Medium duty (MD) regular foot traffic, frequent fork lift truck traffic, occasional hard plastic-wheeled trolleys,
 - Heavy duty (HD) constant fork lift truck traffic, hard plastic wheeled trolleys, some impact
 - Very heavy duty (VHD) severe heavily loaded traffic and impact
- b) type of loading, static or dynamic, and severity of impact;
- c) details of all chemicals, including those used for cleaning or sterilising, which could come into contact with the floor, and extent, frequency and temperature of spillage;
- d) temperatures that the flooring is required to withstand in normal service or as part of the cleaning operations and whether exposure is by radiant or conductive heat or by direct contact;
- e) colour, uniformity and retention, aesthetics and decorative effects;
- f) extent to which the flooring will be exposed to direct sunlight or ultra-violet light;
- g) appearance and quality of finish;
- h) need to reduce risk of osmosis;
- i) compliance with hygiene or food industry requirements;
- j) special requirements, such as slip resistance or static controlled characteristics;
- k) expected life of the flooring;
- l) thickness of flooring to be installed;
- m) time available for the application and curing of the flooring;
- n) age, specification where known and nature of the base, including information about any previous use of the floor which could affect adhesion, and any preparatory treatment required.

TYPES OF SYNTHETIC RESIN FLOORING

Synthetic resin flooring is classified into eight specific types, each exhibiting its own particular performance characteristics. A variety of synthetic resins, typically epoxy, polyurethane and methacrylate, can be formulated to produce the different resin types.

BS 8204-6, Section 6.2 (following the FERFA scheme) classifies the types, varying in thickness and surface finish, as follows:

Table 1 — Types of synthetic resin flooring

Type	Name	Description	Duty	Typical thickness
1	Floor seal	Applied in two or more coats. Generally solvent or water borne.	LD	up to 150 µm
2	Floor coating	Applied in two or more coats. Generally solvent free.	LD/MD	150 µm to 300 µm
3	High build Floor coating	Applied in two or more coats. Generally solvent free.	MD	300 µm to 1000 µm
4	Multi-layer flooring	Aggregate dressed systems based on multiple layers of floor coatings or flow-applied floorings, often described as 'sandwich' systems.	MD/HD	> 2 mm
5	Flow applied flooring	Often referred to as 'self-smoothing' or 'self-levelling' flooring and having a smooth surface.	MD/HD	2 mm to 3 mm
6	Resin screed flooring	Trowel-finished, heavily filled systems, generally incorporating a surface seal coat to minimize porosity.	MD/HD	> 4 mm
7	Heavy duty flowable flooring	Having a smooth surface.	HD/VHD	4 mm to 6 mm
8	Heavy duty Resin flooring	Trowel-finished, aggregate filled systems effectively impervious throughout their thickness.	VHD	> 6 mm

Some of these types of flooring may be produced with special decorative effects by the incorporation of coloured particles or flakes in the surface. Terrazzo-like finishes (ground exposed aggregate) may be produced from certain trowel-applied floorings of Types 6 and 8. Slip resistant or anti-static/conductive versions of all these categories may also be available.

The following tables have been produced to explain the relationship between the properties available within a particular flooring type and the conditions under which that flooring type will be applied and used in service.

TYPE 1: FLOOR SEAL

Feature	Typical Characteristics
Description	Applied in 2 or more coats Generally solvent or water-borne
Typical thickness	up to 150 µm total
Intended use	Light duty dust-proofing and sealing of concrete
Anticipated life **	LD: 1 to 2 years: localised over-coating may be required MD: up to 1 year
Application method	brush or roller
Loading	no noticeable improvement to substrate liable to impact damage
Chemicals	protection only against occasional spillage of mild chemicals
Colour	uniform single colour or clear
U-V resistance	grades available offering increased UV resistance
Appearance	gloss silk or matt finish thin film follows floor profile
Cleaning methods	wash & vacuum dry
Hygiene / cleanability	not recommended, but some improvement in cleanability over concrete
Suitability for food processing areas	not recommended for food processing areas
Slip resistance in wet conditions	high slip potential on smooth surfaces: may be reduced with matt or silk grades
Static controlled	not available

** actual life will depend on product thickness, quality of the substrate and service conditions

- LD (Light duty) light foot traffic, occasional rubber tyred vehicles
- MD (Medium duty) regular foot traffic, frequent fork lift truck traffic, occasional hard plastic-wheeled trolleys,
- HD (Heavy duty) constant fork lift truck traffic, hard plastic wheeled trolleys, some impact
- VHD (Very heavy duty) severe heavily loaded traffic and impact

TYPE 2: FLOOR COATING

Feature	Typical Characteristics
Description	applied in 2 or more coats generally solvent-free or water-borne
Typical thickness	150 – 300 µm
Intended use	light to medium duty
Anticipated life **	LD: 2 to 3 years MD: 1 to 2 years: localised over-coating may be required
Application method	brush, roller or squeegee
Loading	no noticeable improvement to substrate liable to impact damage
Chemicals	protection only against occasional spillage of mild chemicals
Colour	uniform single colour or clear
U-V resistance	grades available offering increasing UV resistance
Appearance	gloss silk or matt finish thin film follows floor profile
Cleaning methods	wash & vacuum dry
Hygiene / cleanability	improved cleanability over concrete
Suitability for food processing areas	food grades available
Slip resistance in wet conditions	high slip potential on smooth surfaces: may be reduced with matt or silk grades, or with a light aggregate scatter
Static controlled	not recommended, poor appearance

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- LD (Light duty) light foot traffic, occasional rubber tyred vehicles
- MD (Medium duty) regular foot traffic, frequent fork lift truck traffic, occasional hard plastic-wheeled trolleys,
- HD (Heavy duty) constant fork lift truck traffic, hard plastic wheeled trolleys, some impact
- VHD (Very heavy duty) severe heavily loaded traffic and impact

TYPE 3: HIGH BUILD FLOOR COATING

Feature	Typical Characteristics
Description	applied in 2 or more coats solvent-free
Typical thickness	300 to 1000 µm total thickness
Intended use	medium duty
Anticipated life **	LD: 5 to 7 years MD: 2 to 4 years HD: not recommended
Application method	roller, squeegee or spray
Loading	some improvement to substrate limited resistance to impact damage
Chemicals	good resistance to occasional spillage of some chemicals in the absence of mechanical damage
Colour	uniform single colour or clear
U-V resistance	grades available offering increased UV resistance
Appearance	gloss silk or matt finish follows undulations but reduces profile
Cleaning methods	mechanical scrubber/dryers satisfactory but not with regular use of abrasive pads
Hygiene / cleanability	good, smooth sealed surface, readily cleaned
Suitability for food processing areas	food grades available
Slip resistance in wet conditions	high slip potential on smooth surfaces: may be reduced with an aggregate scatter
Static controlled	grades available

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MD (Medium duty)	regular foot traffic, frequent fork lift truck traffic, occasional hard plastic-wheeled trolleys,
HD (Heavy duty)	constant fork lift truck traffic, hard plastic wheeled trolleys, some impact
VHD (Very heavy duty)	severe heavily loaded traffic and impact

TYPE 4: MULTI-LAYER FLOORING

Feature	Typical Characteristics
Description	multi-layers of floor coatings or flow applied floorings with intermediate aggregate dressing(s). often known as 'sandwich' systems
Typical thickness	2 mm upwards, depending on specification
Intended use	medium to heavy duty
Anticipated life **	MD: 3 to 5 years HD: 2 to 3 years (for 2.5 mm system)
Application method	specialist application techniques necessary
Loading	improved resistance to wear and impact damage
Chemicals	good resistance to occasional spillage
Colour	single or multi-coloured, also aggregate dependent
U-V resistance	grades available offering increased UV resistance
Appearance	textured or profiled surface in gloss or matt finish
Cleaning methods	requires rotary brush/vacuum machine
Hygiene / cleanability	subject to surface texture
Suitability for food processing areas	food grades available: limited use in permanently wet areas
Slip resistance in wet conditions	low slip potential, but dependent on profile of aggregate dressing
Static controlled	grades available

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- MD (Medium duty) regular foot traffic, frequent fork lift truck traffic, occasional hard plastic-wheeled trolleys,
- HD (Heavy duty) constant fork lift truck traffic, hard plastic wheeled trolleys, some impact
- VHD (Very heavy duty) severe heavily loaded traffic and impact

TYPE 5: FLOW APPLIED FLOORING

Feature	Typical Characteristics
Description	often known as self-levelling or self-smoothing flooring: may be given a surface dressing
Typical thickness	2 to 3 mm
Intended use	medium to heavy duty
Anticipated life **	MD: 6 to 8 years HD: 3 to 4 years
Application method	trowel, pin rake, notched squeegee spike roller to finish
Loading	good resistance to impact damage
Chemicals	very good resistance
Colour	uniform single colour or decorative effects
U-V resistance	grades available offering increased UV resistance
Appearance	very smooth gloss or matt finish
Cleaning methods	gloss finish: wash & vacuum dry matt finish: scrubber/dryer
Hygiene / cleanability	gloss finish: excellent matt finish: good
Suitability for food processing areas	food grades available.
Slip resistance in wet conditions	high slip potential on smooth surfaces: may be reduced with matt or silk grades or with an aggregate scatter.
Static controlled	grades available

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- LD (Light duty) light foot traffic, occasional rubber tyred vehicles
- MD (Medium duty) regular foot traffic, frequent fork lift truck traffic, occasional hard plastic-wheeled trolleys,
- HD (Heavy duty) constant fork lift truck traffic, hard plastic wheeled trolleys, some impact
- VHD (Very heavy duty) severe heavily loaded traffic and impact

TYPE 6: SCREED FLOORING

Feature	Typical Characteristics
Description	heavily-filled trowel finished system, generally incorporating a surface seal coat to minimise porosity
Typical thickness	4 mm upwards
Intended use	medium to heavy duty
Anticipated life **	MD: 10 to 12 years HD: 5 to 7 years, provided seal coats are maintained regularly
Application method	trowel or sledge spread and trowel-finished
Loading	moderate impact resistance
Chemicals	not recommended for wet processing or chemical exposure areas
Colour	uniform single colour or decorative effect
U-V resistance	grades available offering increased UV resistance
Appearance	fine texture or smooth surface depending on seal coats
Cleaning methods	scrubber / dryer
Hygiene / cleanability	good, whilst surface seal is intact, otherwise poor
Suitability for food processing areas	food grades available
Slip resistance in wet conditions	moderate to good depending on selection of seal coat
Static controlled	grades available

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MD (Medium duty)	regular foot traffic, frequent fork lift truck traffic, occasional hard plastic-wheeled trolleys,
HD (Heavy duty)	constant fork lift truck traffic, hard plastic wheeled trolleys, some impact
VHD (Very heavy duty)	severe heavily loaded traffic and impact

TYPE 7: HEAVY DUTY FLOWABLE FLOORING

Feature	Typical Characteristics
Description	aggregate filled system having a self-smoothing surface, or may be given a surface dressing
Typical thickness	4 – 6 mm
Intended use	heavy to very heavy duty
Anticipated life*	HD: 8 to 10 years VHD: 5 to 8 years
Application method	trowel or pin rake, with spiked roller
Loading	excellent impact resistance
Chemicals	very good resistance to chemical attack
Colour	uniform single colour or decorative effect
U-V resistance	grades available offering increased UV resistance
Appearance	very smooth gloss or matt finish
Cleaning methods	scrubber dryer
Hygiene / cleanability	excellent cleanability
Suitability for food processing areas	food grades available
Slip resistance in wet conditions	high slip potential: may be reduced with matt or silk grades or with a surface scatter
Static controlled	grades available

** actual life will depend on product thickness, quality of the substrate and service conditions

- LD (Light duty) light foot traffic, occasional rubber tyred vehicles
- MD (Medium duty) regular foot traffic, frequent fork lift truck traffic, occasional hard plastic-wheeled trolleys,
- HD (Heavy duty) constant fork lift truck traffic, hard plastic wheeled trolleys, some impact
- VHD (Very heavy duty) severe heavily loaded traffic and impact

TYPE 8: HEAVY DUTY SCREED FLOORING

Feature	Typical Characteristics
Description	trowel-finished, aggregate-filled system, effectively impervious throughout its thickness.
Typical thickness	6 mm upwards
Intended use	very heavy duty
Anticipated life*	VHD: 10 – 12 years
Application method	trowel or sledge spread and trowel-finished
Loading	excellent impact resistance
Chemicals	excellent resistance to chemical attack
Colour	speckled uniform finish
U-V exposure	grades available
Appearance	textured matt finish.
Cleaning methods	high pressure washer/cleaner/scrubber
Hygiene / cleanability	excellent
Suitability for food processing areas	highly recommended for food processing areas
Slip resistance in wet conditions	low slip potential, dependent on surface profile
Static controlled	grades available

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- HD (Heavy duty) constant fork lift truck traffic, hard plastic wheeled trolleys, some impact
- VHD (Very heavy duty) severe heavily loaded traffic and impact

FERFA PUBLICATIONS

All FeRFA publications (listed below) are freely downloadable from FeRFA's web site at www.ferfa.org.uk

- FeRFA Guide to the selection of synthetic resin floors
- FeRFA Guide to the specification & application of synthetic resin floors (RIBA CPD Approved)
- Static controlled flooring
- Chemical resistance of resin flooring
- Osmosis in resin flooring
- Assessing the slip resistance of resin floors
- FeRFA Guide to installing resin flooring systems onto substrates with a high moisture content
- Cleaning resin floors
- Guide to PPE for use with in situ resin floors and floor preparation
- Guide to seamless resin terrazzo
- Flowable polymer screeds as underlayments for resin floor finishes



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 for further information, contact FeRFA at: 16 Edward Road, Farnham, Surrey, GU9 8NP
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