

GUIDE TO THE SELECTION OF SYNTHETIC RESIN FLOORING



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SELECTION OF FLOORING TO BE APPLIED

BS 8204-6 section 4.2 states:

"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.

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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 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 coating to minimize porosity and provide a wearing surface.	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 the 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 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. The guidance of the manufacturer should always be sought before specifying any type of resin floor.

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TYPE 1: FLOOR SEAL

Feature	Typical Characteristics
Description	Applied in two 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 ⁽¹⁾	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
Chemical Resistance ⁽²⁾	Protection against occasional spillage of mild chemicals only
Colour	Uniform single colour or clear
UV 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 ⁽³⁾	High slip potential on smooth surfaces
Static controlled	Not available

⁽¹⁾ Actual life will depend on product thickness, quality of the substrate and service conditions

⁽²⁾ There are several different ways in which chemicals may affect resin flooring e.g. some chemicals may affect the pigment component only and not the binder resulting a purely aesthetic colour change/stain with no deterioration in physical properties. The manufacturer's guidance should always be sought.

⁽³⁾ Refer to the FeRFA guidance note "Measuring and Managing the level of Slip Resistance provided by Resin Floors"

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 two or more coats. Generally solvent-free
Typical thickness	150 – 300 µm
Intended use	Light to medium duty
Anticipated life ⁽¹⁾	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
Chemical Resistance ⁽²⁾	Protection against occasional spillage of mild chemicals only
Colour	Uniform single colour or clear
UV 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 ⁽³⁾	High slip potential on smooth surfaces which may be reduced with an aggregate scatter
Static controlled	Not recommended, poor appearance

(1) Actual life will depend on product thickness, quality of the substrate and service conditions

(2) There are several different ways in which chemicals may affect resin flooring e.g. some chemicals may affect the pigment component only and not the binder resulting a purely aesthetic colour change/stain with no deterioration in physical properties. The manufacturer's guidance should always be sought.

(3) Refer to the FeRFA guidance note "Measuring and Managing the level of Slip Resistance provided by Resin Floors"

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

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TYPE 3: HIGH BUILD FLOOR COATING

Feature	Typical Characteristics
Description	Applied in two or more coats. Generally solvent-free
Typical thickness	300 to 1000 µm total thickness
Intended use	Medium duty
Anticipated life ⁽¹⁾	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
Chemical Resistance ⁽²⁾	Good resistance to occasional spillage of some chemicals in the absence of mechanical damage
Colour	Uniform single colour or clear
UV 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 ⁽³⁾	High slip potential on smooth surfaces which may be reduced with an aggregate scatter
Static controlled	Grades available

⁽¹⁾ Actual life will depend on product thickness, quality of the substrate and service conditions

⁽²⁾ There are several different ways in which chemicals may affect resin flooring e.g. some chemicals may affect the pigment component only and not the binder resulting a purely aesthetic colour change/stain with no deterioration in physical properties. The manufacturer's guidance should always be sought.

⁽³⁾ Refer to the FeRFA guidance note "Measuring and Managing the level of Slip Resistance provided by Resin Floors"

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 4: MULTI-LAYER FLOORING

Feature	Typical Characteristics
Description	Aggregate dressed systems based on multiple layers of floor coatings or flow-applied floorings, often described as 'sandwich' systems.
Typical thickness	2 mm upwards, depending on specification
Intended use	Medium to heavy duty
Anticipated life ⁽¹⁾	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
Chemical Resistance ⁽²⁾	Good resistance to occasional spillage
Colour	Single or multi-coloured, also aggregate dependent
UV 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 ⁽³⁾	Low slip potential but dependent on profile of aggregate dressing
Static controlled	Grades available

⁽¹⁾ Actual life will depend on product thickness, quality of the substrate and service conditions

⁽²⁾ There are several different ways in which chemicals may affect resin flooring e.g. some chemicals may affect the pigment component only and not the binder resulting a purely aesthetic colour change/stain with no deterioration in physical properties. The manufacturer's guidance should always be sought.

⁽³⁾ Refer to the FeRFA guidance note "Measuring and Managing the level of Slip Resistance provided by Resin Floors"

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

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TYPE 5: FLOW APPLIED FLOORING

Feature	Typical Characteristics
Description	Often referred to as 'self-smoothing' or 'self-levelling' flooring and having a smooth surface. May be given a surface dressing
Typical thickness	2 to 3 mm
Intended use	Medium to heavy duty
Anticipated life ⁽¹⁾	MD: 6 to 8 years HD: 3 to 4 years
Application method	Trowel, pin rake, notched squeegee. Finished with a spiked roller
Loading	Good resistance to impact damage
Chemical Resistance ⁽²⁾	Very good resistance
Colour	Uniform single colour or decorative effects
UV 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 ⁽³⁾	High slip potential on smooth surfaces which may be reduced with an aggregate scatter
Static controlled	Grades available

⁽¹⁾ Actual life will depend on product thickness, quality of the substrate and service conditions

⁽²⁾ There are several different ways in which chemicals may affect resin flooring e.g. some chemicals may affect the pigment component only and not the binder resulting a purely aesthetic colour change/stain with no deterioration in physical properties. The manufacturer's guidance should always be sought.

⁽³⁾ Refer to the FeRFA guidance note "Measuring and Managing the level of Slip Resistance provided by Resin Floors"

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	Trowel-finished, heavily filled systems, generally incorporating a surface coating to minimize porosity and provide a wearing surface.
Typical thickness	4 mm upwards
Intended use	Medium to heavy duty
Anticipated life ⁽¹⁾	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
Chemical Resistance ⁽²⁾	Not recommended for wet processing or chemical exposure areas
Colour	Uniform single colour or decorative effect
UV 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 ⁽³⁾	Moderate slip potential depending on selection of seal coat
Static controlled	Grades available

(1) Actual life will depend on product thickness, quality of the substrate and service conditions

(2) There are several different ways in which chemicals may affect resin flooring e.g. some chemicals may affect the pigment component only and not the binder resulting a purely aesthetic colour change/stain with no deterioration in physical properties. The manufacturer’s guidance should always be sought.

(3) Refer to the FeRFA guidance note “Measuring and Managing the level of Slip Resistance provided by Resin Floors”

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

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TYPE 7: HEAVY DUTY FLOWABLE FLOORING

Description	Typical Characteristics
Typical thickness	Aggregate filled system having a self-smoothing surface. May be given a surface dressing
Intended use	4 – 6 mm
Anticipated life ⁽¹⁾	Heavy to very heavy duty
Application method	HD: 8 to 10 years VHD: 5 to 8 years
Loading	Trowel or pin rake. Finished with a spiked roller
Chemical Resistance ⁽²⁾	Excellent impact resistance
Colour	Very good resistance to chemical attack
UV resistance	Uniform single colour or decorative effect
Appearance	Grades available offering increased UV resistance
Cleaning methods	Very smooth gloss or matt finish
Hygiene / cleanability	Scrubber dryer
Suitability for food processing areas	Excellent cleanability
Slip resistance in wet conditions ⁽³⁾	Food grades available
Static controlled	High slip potential which may be reduced with an aggregate scatter
Description	Grades available

⁽¹⁾ Actual life will depend on product thickness, quality of the substrate and service conditions

⁽²⁾ There are several different ways in which chemicals may affect resin flooring e.g. some chemicals may affect the pigment component only and not the binder resulting a purely aesthetic colour change/stain with no deterioration in physical properties. The manufacturer's guidance should always be sought.

⁽³⁾ Refer to the FeRFA guidance note "Measuring and Managing the level of Slip Resistance provided by Resin Floors"

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 systems effectively impervious throughout their thickness
Typical thickness	6 mm upwards
Intended use	Very heavy duty
Anticipated life ⁽¹⁾	VHD: 10 – 12 years
Application method	Trowel or sledge spread and trowel-finished
Loading	Excellent impact resistance
Chemical Resistance ⁽²⁾	Excellent resistance to chemical attack
Colour	Speckled uniform finish
UV resistance	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 ⁽³⁾	Low slip potential dependent on surface profile
Static controlled	Grades available

(1) Actual life will depend on product thickness, quality of the substrate and service conditions

(2) There are several different ways in which chemicals may affect resin flooring e.g. some chemicals may affect the pigment component only and not the binder resulting a purely aesthetic colour change/stain with no deterioration in physical properties. The manufacturer's guidance should always be sought.

(3) Refer to the FeRFA guidance note "Measuring and Managing the level of Slip Resistance provided by Resin Floors"

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

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APPENDIX

PERFORMANCE CATEGORISATION MATRIX

This performance matrix is intended only as a guide to the selection of a suitable resin flooring type based on the severity and frequency of trafficking. The guide is based on many years of experience with rigid synthetic resin flooring materials. Please note, wear characteristics for flexible floorings (Shore D < 60 according to BS EN ISO 868) may differ. Always consult with the resin flooring manufacturer before specification and/or selection of resin flooring type.

		Frequency of use/trafficking				
		Very rarely (per week)	Rarely (per day)	Occasionally (per shift)	Frequently (per hour)	Very frequently (per minute)
Severity of traffic/abrasion/wear	Low to moderate abrasion; foot traffic, rubber-tyre traffic	Type 1	Type 1	Type 2	Type 3	Type 4,5
	Moderate to high abrasion; steel or hard plastic wheeled traffic	Type 1	Type 2	Type 3	Type 4, 5	Type 6
	High abrasion; steel or hard plastic wheeled traffic and some impact, moderate loadings	Type 3	Type 3	Type 4, 5	Type 6	Type 7
	Very high abrasion from steel or hard plastics wheeled traffic and/or scoring by dragged metal objects, some impact, heavy loadings	Type 3	Type 4, 5	Type 6	Type 7	Type 8
	Severe abrasion from steel or hard plastics wheeled traffic and/or scoring by dragged metal objects, some impact, heavy loadings, aggressive environment	Type 4,5	Type 6	Type 7	Type 8	Type 8

Please refer to BS EN 1504-2 for a definition on loadings.

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FeRFA PUBLICATIONS

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

- Guide to the Specification and Application of Synthetic Resin Flooring (RIBA CPD Approved)
- Guide to the Selection of Synthetic Resin Flooring
- Measuring and Managing the level of Slip Resistance provided by Resin Floors (TGN 01)
- Osmosis in Resin Flooring (TGN 02)
- Chemical Resistance of Resin flooring (TGN 03)
- Static Controlled Flooring (TGN 04)
- Guide to Installing Resin Flooring Systems onto Substrates with a High Moisture Content (TGN 05)
- Guide to Cleaning Resin Floors (TGN 06)
- Guide to Seamless Resin Terrazzo (TGN 07)
- Guide to Flowable Polymer Screeds as Underlayments for Resin Floor Finishes (TGN08)
- Guide to the Selection of Deck Waterproofing and Wearing Surfaces for Car Parks (TGN09) RIBA CPD Approved
- FeRFA Environmental Guide (TGN10)
- Guide to Preparing Substrates to Receive Resin Flooring and Finishing of Resin Terrazzo Systems (TGN11)
- Comfort Resin Flooring Systems (TGN12)
- Resin Bonded Surfacing Systems for External Applications (TGN13)
- Resin Bound Systems for External Applications (TGN14)
- FeRFA Guide to the Specification and Application of Screeds (TGN15) RIBA CPD Approved
- Guide to Personal Protective Equipment for use with In Situ Resin Floors and Surface Preparation



ABOUT FeRFA

FeRFA, the Resin Flooring Association represents the major product manufacturers, specialist contractors and surface preparation companies, raw material suppliers and specialist service providers within the UK Resin Flooring Industry. 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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ISBN: 0 9538020 3 5
 First published: September 2001 (Revised November 2018)
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