FeRFA GUIDE TO CLEANING RESIN FLOORS

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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.

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1. INTRODUCTION

A variety of different types of synthetic resin systems are available which can form the binder of a flooring system. These include typically epoxy, polyurethane and methacrylate resins.

Resin flooring systems are used in a wide variety of situations, for each particular situation there is an optimal specification which takes into account the required performance parameters.

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 end user and contractor and 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". (refer to FeRFA Selection Guide for Synthetic Flooring)

Resin floors are tough resilient systems, however, for the performance characteristics of the floor to be maintained, an appropriate cleaning regime should be agreed in advance.

The cleaning regime will itself be determined by a number of factors, the type of resin flooring installed, the type and frequency of traffic, the degree and type of soiling and specific hygiene requirements.

2. CLEANING

Flooring cleaning can be thought of as having two components, a mechanical component and chemical component, these two components should work together to mutual advantage.

The mechanical component – energy – may be applied to the floor by hand with a scrubbing motion. Usually the input is by mechanical agitation, a floor scrubber. High energy inputs may also be achieved by using high pressure washers, hot water washers and steam cleaners.

The chemical component, cleaning solution, will dissolve or emulsify the type of soil or contamination present. Once this has taken place the removal of the dirty water and rinsing of the floor are key to successful cleaning. It is important that clean water is used for rinsing.

Resin flooring will not be affected by most generally available special purpose cleaning materials, when these are used in accordance with the Chemical Cleaning Manufacturers' instructions and the floor rinsed properly with clean water. Specific cleaning instructions should also be sought from the resin flooring manufacturer.

A small spot test in an inconspicuous area is a worthwhile precaution before applying any new cleaning product.

The cleaning regime should specify the type of equipment to be used, the type of cleaning chemicals to be used and the frequency of the cleaning.

Each cleaning regime will be specific for a particular set of conditions. Should any of the factors vary e.g. the type of soiling, then a change in the cleaning chemicals may be required. In order that the floor continues to provide the intended performance and meets the hygiene requirements, then it is essential that the user implements the appropriate cleaning regime

2.1 General cleaning

Resin floors will not dust. However, dust will settle on the floor from other sources (e.g. dusty beams above, blown from outside, from processes, brought in on goods).

Floors which are kept clean will last longer. Fine particles of dust, dirt, debris, act as abrasives with traffic unless the floor is cleaned regularly. For the pharmaceutical, cosmetic and food industries it is particularly important to maintain hygienic surfaces, proper cleaning techniques are essential. In engineering works, metal swarf is particularly abrasive and if not removed from the floor, can cause damage in a short space of time.

Thus, to maintain a clean, safe and healthy environment, proper management is required including suitable cleaning/vacuum removal and dust control systems (e.g. mats), in addition to routine manual/mechanical sweeping as required.

3. TYPICAL CLEANING METHODS

3.1 Mop and Bucket

Over 300,000 cleaners daily in the UK still use the mop and bucket

This should be the cleaning method for dealing with spillages, but is not for routinely cleaning the floor. In normal every day usage the mop and bucket may remove heavy soiling but typically the water is changed infrequently with the result that the floor is usually wiped with dirty water and a film of dirt spread uniformly across the floor

3.2 Scrubbing – Manual

- Sweep floor to remove loose debris and accumulations of soil.
- Use the appropriate cleaning agent - detergent, deodorizer, degreaser, emulsifier.
- Apply cleaning agent diluted as required and in accordance with manufacturer's instructions, and allow it to react on the surface.
  - Agitate by hand using a stiff brush.
- Flood with clean water and scrub.
- Remove dirty water with wet vacuum or squeegee to floor drains.
- Contaminated water may be required to be disposed of as hazardous waste.
  - Observe all regulations, which prohibit introduction of certain chemical cleaners, solvents and wastes into surface water drains, sewer systems, open bodies of water or into the soil.
    Rinse again and remove.

3.3 Scrubbing - mechanical

This is the preferred method for cleaning resin floors, to ensure:

- Controlled application of cleaning agent
- Effective scrubbing action
- Continuous supply of clean water
- Continuous removal of dirty water
- Continuous drying of the floor

A number of specialist mechanical scrubbing machines are available, such as combined vacuum scrubber and rotary type scrubber machines

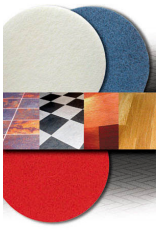
- Sweep floor to remove loose debris and accumulations of soil.
- Use the appropriate cleaning agent - detergent, deodorizer, degreaser, emulsifier, etc., or combination of agents. Regular washing with a suitable washer/drier machine should normally be carried out using a low foam neutral detergent.

- Apply cleaning agent (or combination of agents) diluted as required in the on board detergent tank and allow it to react on surface.
- Agitate by mechanically using the floor scrubber.
- Remove dirty water with wet vacuum.
- Observe all regulations, which prohibit introduction of certain chemical cleaners, solvents and wastes into surface water drains, sewer systems, open bodies of water or into the soil.
- Rinse and scrub again and vacuum clean and dry.

The choice of using brushes or pads will usually be determined by the profile of the floor and the degree of soiling. Brushes are normally better on floors with raised non slip finish, and floors with a significant texture. However care should be taken by the operator to raise abrasive pads or brushes off the floor when stationary since permanent ring marks may result when the machine stops in one position.

A wide range of pads are available for specific tasks.



BLACK	Heavy duty stripping, quickly removes dirt, wax, floor finish and sealers. For use with any stripping agent.
GREEN	Light stripping and wet scrubbing. Thoroughly removes dirt and scuff marks.
BLUE	Wet scrubbing or heavy duty spray cleaning. Gives the floor a thorough scrubbing removing dirt and scuffs. Will remove top of surface finish ready for re-coating.
RED	Use for smooth shiny finish whilst removing light dirt. The typical spray cleaning/buffing pad.
TAN	Dry polishing/buffing pad. Removes light dirt whilst shining floors. Especially good in light traffic areas.
WHITE	Supreme fine pad for polishing dry floors. Use with soft finishes for superior polish. Excellent on softly waxed floors. Produces high gloss finish. Also suitable as ultra high speed cleaning pad with exceptional dimensional stability for use with ultra high speed machines. Will remove light dirt whilst maintaining high gloss finish

3.4 Pressure Washers or Steam Cleaning Equipment

Care should be taken to select suitable equipment. These pieces of equipment can be extremely powerful, proper training should be given to ensure they are used safely.

- Sweep floor to remove loose debris and accumulations of soil. Pre-wet floor.
- Use the appropriate cleaning agent - detergent, deodorizer, degreaser, emulsifier, bactericide.
- Steam cleaners may require special cleaning agents.
  Apply cleaning agent (or combination of agents) diluted as required and allow it to react on surface.
- Using the pressure washer or steam cleaner, work the entire surface of the floor in a planned sequence. This will agitate and loosen hard-to-remove soil or contamination.
- Flood with clean water and work over the floor surface once again.
- Observe all regulations, which prohibit introduction of certain chemical cleaners, solvents and wastes into surface water drains, sewer systems, open bodies of water or into the soil.
- Rinse again and remove.
- For food processing areas reference should be made to the recommendations of CCFRA, (Camden and Chorley Wood Food Research Association)

It should be clearly understood, particularly when steam cleaning, that it is advisable always to check with the contractor/manufacturer as to the suitability of the floor for constant steam cleaning – Heavy Duty Polyurethane Flooring at 9mm (FeRFA Type 8) in accordance with BS 8204-6 is a system designed to withstand steam cleaning. Care should be taken to ensure the steam lance is not allowed to discharge onto a single area for more than a few seconds sufficient to remove contamination.

4. STATIC CONTROLLED FLOORING

Routine cleaning and wear may alter the electrical properties of flooring. Therefore, routine test methods and frequency of tests should be agreed before completion, as should the agency responsible for these tests. The manufacturer should be contacted for their recommendations regarding cleaning methods, materials, polishes etc. In particular, selection of polishes should be done with care as some may act as insulators. The use of inappropriate cleaning regimes may compromise the antistatic performance of the floor.

5. CLEANING MATERIALS

There is a wide range of materials available in the market-place for the cleaning of floors; many of these are complex blends of chemicals some of which have very specific application requirements

Most cleaning products are formulated to be effective against a range of materials. Some, however are very specific in terms of the types of contamination that they are designed to remove. This is more often the case with the bio-products which are targeted against specific contaminants such as fats or oils. Similarly, some cleaning materials

may have an adverse effect on a specific surface if used in the wrong concentration, giving rise to etching, softening or other damage to the surface or body of the finish. This can be a one off effect or cumulative as a result of repeated activity. It is therefore recommended to check suitability of cleaning materials with the resin flooring manufacturer or to choose from their recommended range of cleaning products.

5.1 General Cleaning Materials

Commercial products may contain one or more of the following groups:

Surfactants

Organic molecular materials that are surface active agents, with one end being oleophilic (oil attracting), and are designed to encompass contamination and allow it to be taken into the cleaning water and washed away from the surface.

These mainly fall into the types Cationic(+) Anionic (-) and Non-ionic (often ammonium salts).

Within each of these groups are a wide range of individual chemicals which offer a range of properties.

Surfactant	Primary use	Effect
Anionic	Detergency	Good for generation of foams and stabilising dirt in solution
Cationic	Used in control of charge and wetting out onto surfaces	Used in antistatic cleaners and for wetting out onto difficult surfaces
Nonionic	Emulsification	Effective in taking oils and Greases into the aqueous phase and stabilising emulsions

Acid/Alkali Cleaners

Alkali cleaners are used for grease and film removers for hard surfaces. Acid based cleaners are used for the removal of scale and water deposits.

Conditioning Agents

Materials that modify the wash water such as sequestering agents, pH control agents, water softening or conditioning agents. These move the aqueous environment into the conditions that allow the active materials to work most effectively. This may be in the form of acid or alkali, complex phosphate or pH buffering mixtures

Specific Additives

These will include either conventional solvents such as iso-propanol or more specialised materials such as citrus oils and pine oils that have multifunctional benefits by providing both solvency and also perfume to the product. Enzymes can also be added which are designed to attack some specific materials or contaminants Colourants and synthetic perfumes and re-odourants are also added to products.

Biologically Based Products

There are also ranges of products in the market place based on a wide variety of materials some of which are labelled as containing or based on natural products, with claims for environmentally friendly properties. These can be derived from natural surfactants, colloidal materials, natural oils and plant extracts and enzymes which are blended together to achieve specific performance.

Specialist Products

Specialist products exist for a wide variety of applications including the cleaning of antistatic surfaces, the removal of polishes, chewing gum, tyre marks, stains, oils, fats and greases etc. In addition there are products that are designed to have a specific effect such as sterilisation, bactericidal activity, disinfection.

6. WASTE DISPOSAL

Due consideration should be given to the disposal route for waste water produced during the floor cleaning process. Even though environmentally friendly products may have been used it should not be assumed that the waste water generated is able to be disposed of through the normal drainage system. This will depend on the level and type of contamination present in the solution, the disposal point and the quantities being produced.

7. MAINTENANCE

If the correct cleaning and maintenance schedule is used, the appearance of your floor can be easily maintained.

For floors with a high gloss finish it is acceptable practice to lay a sacrificial layer of an acrylic polish, which will keep the high gloss finish, give a hard wearing surface, have the ability to allow for the removal of surface scratches or blemishes, and where carefully selected, will maintain slip resistant characteristics. Once applied, this seal should be maintained using a product designed to clean your floor along with carrying properties to re-enhance and protect the finish.

It may be necessary to occasionally remove the polish and start a fresh. This can be achieved by using a stripping product. This should be selected to ensure removal of any existing polish without detrimental effect upon the flooring system.

8. SPILLAGES

Spillages of any liquid should be wiped up or absorbed and removed as soon as possible. Not only is this a responsible action as far as Health and Safety is concerned, it will also help you to keep your floor in good condition. Once the spillage is removed the area should be cleaned as usual with a standard floor cleaner. If a sacrificial coat has been previously applied the floor should be inspected to see if this remains. If the acrylic coating has been damaged this should be stripped and re-applied.

9. TYPES OF RESIN FLOORING AND TYPICAL CLEANING METHOD

Type	Name	Description	Duty	Typical thickness	Typical Cleaning
1	Floor seal	Applied in two or more coats. Generally solvent or water borne	LD	Up to 150 µm	Wash and vacuum dry
2	Floor coating	Applied in two or more coats. Generally solvent free.	LD/MD	150 µm to 300 µm	Wash and vacuum dry
3	High build Floor coating	Applied in two or more coats. Generally solvent free.	MD	300 µm to 1000 µm	Mechanical scrubber / dryers satisfactory but not with regular use of abrasive pads
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	Requires rotary brush vacuum machine
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	Gloss – wash & vacuum Matt – scrubber drier
6	Resin screed flooring	Trowel-finished, heavily filled systems, generally incorporating a surface seal coat to minimize porosity.	MD/HD	> 4 mm	Scrubber drier
7	Heavy Duty Flowable flooring	Having a smooth surface.	HD/VHD	4 mm to 6 mm	Scrubber drier
8	Heavy Duty resin flooring	Trowel-finished, aggregate filled systems effectively impervious throughout their thickness.	VHD	> 6 mm	High pressure washer Cleaner / scrubber

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

10. GENERAL TIPS & ADVICE

DO

- Initial clean before use and take care when installing equipment
- Clean regularly
- Consider giving a higher frequency of maintenance to heavily trafficked areas (e.g. entrances) where the levels of grit, dirt and wear are highest. Heavily trafficked areas need more attention
- Clean up spillages immediately.
- Remove traces of oil and grease immediately with an aqueous solution of alkaline detergent.
- Ensure that cleaning and maintenance levels are higher in areas subject to accidental contamination by chemicals or bacteriological or radioactive materials.
- If your resin floor has a textured surface - do use brushes - not mops.
- Use the best quality equipment available to you.
- Ensure that cleaning equipment is regularly cleaned.
- Follow the instructions provided by the manufacturers of chemicals and equipment.

DON'T

- Use excess concentrations of cleaning agents - exceeding the manufacturers' recommended dosage is at best pointless and expensive and at worst harmful.
- Mix cleaning chemicals and agents - this can also be harmful.
- Use excessive water.
- Use solvents.
- Use synthetic scrubbing pads on textured resin floor finishes. These industrial finishes will cause rapid destruction of the pads.
- Use phenol based cleaning chemicals -they will cause degradation of resin floor surfaces.

11. REFERENCES AND SOURCES OF INFORMATION

BS8204-6:2008 Screeds, bases and in situ floorings – Part 6 Synthetic resin floorings – Code of Practice www.bsi-global.com

CCFRA (Camden and Chorleywood Food Research Group) www.campden.co.uk

CIEH (Chartered Institute of Environmental Health) www.cieh.org

ICCMA (Industrial Cleaning Machine Manufacturers' Association) www.icmma.org.uk

FeRFA Associate members are pleased to assist with cleaning and maintenance of resin floors. Please go to the members list in the FeRFA website and select Associate members for further details.

All 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
- Minimising slips in the work place with the use of industrial resin floors
- Osmosis in Resin Flooring
- Chemical Resistance of Resin flooring
- Anti-static Flooring
- The Effective Use of Surface Damp Membranes
- Guide to Cleaning Resin Floors
- Guide to PPE for use with in-situ resin floors and surface preparation