



RSL

**GUIDE TO CLEANING
OF RESIN FLOORS**

The UK's leading
Resin Manufacturer

Right Resin. Right People.

CONTENTS

- 3 Introduction
- 6 Considerations for Cleaning Regimes
- 8 Types of Cleaning Regimes
- 11 Static Controlled Surfaces
- 12 Cleaning Materials
- 14 Disposal of Cleaning Waste
- 15 Maintenance
- 16 Types of Resin Flooring and Recommended Cleaning



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GUIDE TO CLEANING OF RESIN FLOORS



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INTRODUCTION

Having invested in a new resin based flooring system it is essential to understand that there are a number of things that will need to be considered in order to get the best from this investment. It is not unusual to find that the previous method, materials and processes are no longer effective or acceptable, or do not achieve the level of cleanliness that is now being required of the floor and area. This guide has been prepared to assist you in reaching the right solution for your floor.

Resin floors are formed from a range of base polymers, including Epoxy and Polyurethane, and can be provided in a wide range of finishes and textures, each of which may be specified to achieve a particular purpose or set of properties. On occasions there can be conflicts between the various properties and requirements, and among the most common are the conflict between slip resistance and clean-ability. It is therefore important that the requirements are identified in the pre-contract documentation set out in BS 8204 Pt 6 which will help to guide and inform the choice of floor and the requirements for the floor. The standard also sets out in Part 6 the various classes or categories of finish that may be achieved in both thickness and also environment. This is helpful in forming a framework for this document.

It should be appreciated that there are often a number of possible specifications for a given floor surface and a balanced judgement is made to provide the best possible finish for the environment within the time frame and budget available. It should however be born in mind at the specification stage that the solution selected may have implications on the downstream processes such as cleaning and hygiene, and consideration of these requirements should be factored into the decision making process. Non-slip textured floor finishes achieved by incorporating an aggregate will usually require a more intensive cleaning regime than that for a smooth seamless finish. A Matt finish for this same reason will usually require a more thorough cleaning regime than a Gloss finish as it has a micro texture. The cleaning regime will itself be determined by a number of factors, the type of resin flooring installed, the nature and degree of contamination of the floor surface and the type, frequency and characteristics of any traffic in the area.

1.1 THE CLEANING PROCESS

For the most part the process of cleaning has not changed for many years, and the concept of a mop and bucket is still widely entrenched in industrial applications. It has been described as “a process to more evenly distribute the dirt on a floor surface”, and this is not recommended by RSL as a suitable method of cleaning, since it rarely fully removes contamination from a floor surface.

Floor cleaning can be described in two parts - a mechanical process and a chemical process.

3



↪ BACK TO CONTENTS

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1.2 THE MECHANICAL PROCESS

The mechanical process is about how the surface is agitated to achieve a breakdown and removal of the deposits on the floor and the type of process that this is achieved by. The simplest form of this is a scrubbing brush, but most environments are now using mechanically driven cleaning machines. These can be fitted with either Pads or Brushes. Both pads and brushes can vary in their specification and are designed for specific types of cleaning. It is therefore important that the right medium is selected to work the surface and achieve a level of cleaning that will remove the soiling.

RSL generally recommend the use of soft to medium bristle brushes, as these work well on most floor surfaces. For flat surfaces the use of the right grade of pad can be effective, however it is important to appreciate that pads will track across the high spots and may not be effective in cleaning the low points. Over time this may result in the burnishing of high points and the failure to properly clean low points particularly in surfaces that are not level or even.

For profiled or textured surface pads are not effective and on some surface will simply be destroyed. The only effective solution is for the use of brushes which follow the profile of the floor, and dependant on the nature of the soiling and contamination the choice falls between soft and medium bristles.

There are two basic types of machine, those with a cylinder, and those with a flat brush. Both offer advantages in specific environments, and consideration should be given to the size, areas and accessibility as well as the efficiency of the action in the selection of these machines.

In the case of very coarse profiles the use of a pressure washer and in rare cases when the floor has been suitably specified and laid, the use of steam cleaning, can be an effective method of getting into the profile and removing the soiling. However it must be recognised that both of these processes are open to abuse and may result in damage to both the surface finish and the integrity of the floor surface. This can be due to the effect of concentrated pressure or heat damaging the surface.

4



↪ BACK TO CONTENTS

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1.3 THE CHEMICAL PROCESS

The selection of the right cleaning materials will substantially aid the cleaning process in several ways. The right materials can help to break down the soiling, and lift this from the floor surface. This can be achieved by softening the soil, or improving the wetting out of the water / solution onto the floor. The cleaning solutions can also assist in the cleaning process by breaking down and maintaining in suspension the dirt lifted from the floor surface. This makes it easier to remove the soil from the floor surface.

It therefore follows that for a specific environment the choice of the most appropriate cleaning solution is a major part of the process of cleaning, and previous materials used may no longer be relevant. In order for this chemical process to be effective it is essential that the cleaning solution is allowed to work on the surface, this can require a residence time, with agitation, before the removal of the solution. All cleaning solutions should be washed from the floor with clean water to prevent a build-up of the surfactants and other materials on the floor surface.

RSL recommend the use of RS Industrial Floor Cleaner, a mild alkaline cleaner effective in removing a wide range of contaminants from resin based floor finishes without damage to the surface. This can also be used in conjunction with other materials from the RSL specialist cleaning products range.

Resin flooring systems are generally resistant to most of the commercially available cleaning materials, however it is essential that these are used at the correct dilution and properly and evenly applied to the surface. It is wise to ensure that localised trials are undertaken in nonvisible areas to establish the suitability and performance of cleaning solutions before changes are made.

When working with scrubber drier machines low foam detergents are most frequently required.

5



↶ BACK TO CONTENTS

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CONSIDERATIONS FOR CLEANING REGIMES

All new floors should be cleaned before bringing into service, to ensure that any construction or installation residues are removed and that the surface is clean and uniform.

When setting up a cleaning regime, consideration should be given to the materials and processes required, and the time frame for the effective cleaning of the floor. It will be necessary to assess the residence time for the cleaning solution to make sure that this has sufficient time to penetrate and lift the contamination from the floor surface. Where machines are being used these should be assessed to make sure that they are being effective and not just going through the motions, this is particularly important with ride-on scrubber driers where there is a tendency to run these too fast, and not allow time for the proper cleaning process to occur.

6



[↶ BACK TO CONTENTS](#)

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2.1 CONTAMINATION

Consideration should be given to the nature of contamination in the environment, and the nature of this should inform the decision making process at the specification stage. The type of the contamination, whether it is dry powders, water based materials or greasy films, will affect the selection of the degree of gloss and profile in the floor finish. Where there are powders spilt on the floor, these can result in slip risks with shiny floor finishes, and slip resistant surfaces may be required. Where there are things such as vegetable pulps which are primarily water based and cause the clogging of surfaces, a textured but glossy surface may be desirable. Where it is just water spillage a matt finish may be required, but this may not be suitable in areas where there is grease, and also grease and water combinations.

There is a direct relationship between the clean-ability and the level of gloss on a surface. This is due to the micro-profile of matt surfaces. The more matt a surface the more likely it is that the surface will be less easy to clean than a corresponding gloss finish, this is because the contaminants get down into the matt profile and are less easy to remove. This will be particularly true of dyes and greases, as these penetrate to the deepest level of the matt surface, and therefore there is a very restricted level of access to the contaminant for the cleaning process, both chemical and physical, to work.

It is also the case that some pigments and dyes are able to be adsorbed (chemically interact with) onto the surface of some resin systems, and can prove difficult to remove. In most cases these do reduce with time, and with the use of specific cleaning solutions. It should also be noted that in these cases the floor surface remains unaffected in terms of function and this would not be considered to be a failure of the floor finish.

2.2 GENERAL CLEANING

Clean floors last longer! Resin flooring systems do not dust, however, dust will settle on the floor from other sources such as working processes, the environment, traffic etc. Fine particles of dust, etc. can act as abrasives grinding the floor surface with the traffic passing over it. It therefore follows that the removal of this dust is an important factor in the life expectancy of the floor. This is most easily done by the use of regular brushing, and or vacuuming to pick up the dust. In engineering environments the presence of metal swarf, and grinding abrasives can bring about rapid damage to a surface if not regularly removed. The use of wet cleaning methods in these environments may not be required on a frequent basis but it needs to be effective when used to remove any contamination from the floor surface.

7



↶ BACK TO CONTENTS

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TYPICAL CLEANING REGIMES

In each case the frequency will be determined by the site requirements, the nature and volume of traffic and the level of contamination of the surface.

3.1 MOP AND BUCKET

The use of a mop and bucket for emergency use is understandable and efficient in terms of the time taken to respond to an incident or spillage etc., but is not considered to be an effective method for the clearing of a floor. In order to make this more effective the water needs to be changed frequently, and the floor rinsed with clean water. This will rarely remove particulate matter effectively, and often spreads low level contamination over a wider area. It is therefore recommended that the floor should be thoroughly cleaned as soon as practical after the cleaning up of spillages.

The response to spillages and localised contamination should be swift and effective, it is therefore important that suitable materials and equipment are readily available.

3.2 SCRUBBING – MANUAL

Suitable for small areas and areas where there is localised soiling

- Sweep floor to remove loose debris and dry materials
- Use a suitable cleaning agent for the environment - detergent, deodorizer, degreaser, and emulsifier.
- Pre-dilute the cleaning agent to the required strength and in accordance with manufacturer's instructions, and apply evenly to the area to be cleaned and allow it to react on the surface.
- Agitate by hand using a stiff brush, working into the surface contamination.
- Remove dirty water with wet vacuum, or squeegee to floor drains.
- Rinse the floor thoroughly with clean water to remove residues of the soiling and cleaning materials.

8



[↶ BACK TO CONTENTS](#)

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3.3 SCRUBBING - MECHANICAL

This is the preferred method for cleaning resin floors, in that it ensures the controlled application of cleaning agents coupled with an effective scrubbing action.

- Sweep floor to remove loose debris and dry materials.
- Use a suitable cleaning agent for the environment - detergent, deodorizer, degreaser, and emulsifier.
- Pre-dilute the cleaning agent to the required strength and in accordance with the manufacturer's instructions apply evenly either manually or through a machine to the area to be cleaned and allow it to react on the surface.
- Use the machine in accordance with the manufacturer's instructions to work the surface in a consistent and systematic manner to apply and scrub the surface before vacuuming up the contaminated water.
- The machine should then be refilled with clean water to rinse the surface and the rinsed water be removed by vacuum.

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 strongly recommended and are better on floors with matt or non-slip finish, and floors with a significant texture.

Where pads are being used the operator must raise the pad from the surface when the machine is static, to prevent local abrasion leading to surface marking (Rings in the surface).

A wide range of pads are available for specific surface, contamination and tasks.

Colour	Type	Action	Usage	
Black	Heavy duty	Stripping and abrading	Harsh cleaning heavy contamination	Risk of surface damage
Green	Medium duty	Light strip and scrub	General cleaning of medium contamination on smooth floors	Good general cleaning pad
Red	Light/medium	Light to medium cleaning	Light contamination and low traffic areas	Light use areas
Buff	Light	Dry buffing and polishing	Light traffic areas and gloss finishes	Gloss finish
White	Very light	Polishing	Cleaning and polishing of sensitive and softer surfaces	Polished surfaces

The above is a general guide only; the user must determine that these are suitable for use with their specific machine. Pads may vary from different manufacturers, and should be checked for suitability. It should also be noted that a new pad will be more abrasive than a well-used one.

Cleaning machines are not maintenance free, and require regular cleaning and replacement of brushes or pads and vacuum rubbers to ensure that they operate efficiently. Users should ensure that pads are inspected on a regular basis to ensure that no hard stones etc. have become embedded in the pad.

9



↪ BACK TO CONTENTS

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3.4 PRESSURE WASHERS OR STEAM CLEANING EQUIPMENT

Care should be taken to select suitable equipment. Water jets can be used to cut steel and stone, and therefore the use of this type of equipment must be a properly controlled process, with the appropriate safety training and equipment.

- Sweep floor to remove loose debris and accumulations of soil. Pre-wet floor.
- Pre-dilute the cleaning agent to the required strength and in accordance with manufacturer's instructions and apply evenly to the area to be cleaned and allow it to react on the surface. (Steam cleaners may require special cleaning agents).
- Using the pressure washer or steam cleaner, work the entire surface of the floor with a fan pattern in a planned sequence, working toward the drains or take off point. This will agitate and loosen hard-to-remove soil or contamination.
- Remove the contaminated water from the surface and then flood with clean water and work over the floor surface once again, removing the rinsed water.

Only floors specified for this type of cleaning should be treated in this way. These are often laid to falls, and are generally laid at a minimum 9 mm thickness to minimise the risk of thermal shock. These floors can still be damaged by the inappropriate use of the equipment, and where ever these machines are used a sweeping motion with a fan pattern should be utilised avoiding any direct point treatments.

3.5 SPECIAL ENVIRONMENTS

When used in food processing areas the advice of CCFRA, (Camden and Chorley Wood Food Research Association) should be considered, similarly for medical, veterinary or pharmaceutical environments, a detailed cleaning regime should be established to meet the particular requirements for that situation.

3.6 SPILLAGES

The control of spillages is often considered under Health and Safety policy, and must take account of the principles and requirements for personal safety. The procedures adopted do not always act in the best interest of the floor. Relatively minor adjustments to procedures can sometimes provide significant benefits to the longevity of the floor.

There are a wide range of materials that can come into contact with resin floors, and it is not possible to address each type of material that could be found on a floor surface. The key elements of the treatment of spillages are: That they should be dealt with as soon as possible, and as safely as possible. Care should be taken to not spread spillages further than necessary in the process of cleaning up, and where ever possible this should be removed in the most concentrated form, working toward the middle of the spillage, before washing away any residues. Consideration also needs to be given to the safe handling and disposal of any materials removed.

Following a spillage, and dependant on the nature of that spillage, an inspection of the floor surface should take place to ensure that there is no damage, and that any sacrificial coatings such as polishes or seals are present and intact. In the event that remedial actions are required these are easiest to undertake when the damage is small and localised.

10



↪ BACK TO CONTENTS

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STATIC CONTROLLED SURFACES.

The cleaning and wear of this type of floor will over time affect the electrical properties of surface. It is therefore important to put in place a cleaning regime that does not damage the surface and a regular programme of test to ensure that the performance of the floor finish is being maintained within the parameters that are required for the specific environment.

The cleaning of floors should be undertaken with the use of mild alkaline cleaning solutions correctly diluted to the lowest dilution rate recommended, and the surface must be thoroughly cleaned to remove all residues.

No additional coatings or polishes should be applied to the surface without first establishing the effect that this has on the performance of the floor in that specific environment.

11



[↶ BACK TO CONTENTS](#)

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CLEANING MATERIALS

There are numerous manufacturers of floor cleaning materials each with ranges of products specifically tailored to market places and industries. These formulations are often complex blends of chemicals some of which are derived from natural materials. In addition to these general products there are ranges of specific materials, to treat and remove specific forms of contamination.

Some materials have very specific application and usage instructions, and if misused on unsuitable surfaces, or left in contact for too long, can result in serious and irreversible damage to surfaces. This damage may be cumulative and appear in the form of loss of surface finish or gloss, etching, staining or ultimately the disruption of the surface.

RSL supply a range of cleaning materials which are formulated for use in a variety of industries for general cleaning and also for specific or topical application to deal with specific issues. Information on these materials is available in the RSL Cleaning materials brochure.

General Cleaning Materials

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

5.1 SURFACTANTS

These are surface active agents, generally organic chemicals, with one end being oleophilic (oil attracting), the other hydrophilic (water attracting). These interact with oily contamination and allow it to be taken into the cleaning water and then to be washed away from the surface.

There are three types: Cationic(+) Anionic (-) and Non-ionic (often ammonium salts).

Each group contains a wide range of individual chemicals which offer a range of properties.

Surfactant	Primary use	Usage
Anionic	Good foaming Dirt stabilisation	General purpose cleaners
Cationic	Surface wetting	Antistatic cleaners and hard surface cleaners
Non-ionic	Emulsification of oils and greases	Food and catering cleaners

These surfactants are often used with acidic or alkaline materials to improve their efficiency in specific environments with Acid based materials used for de-scalers and etching effects or the removal of water deposits. Alkaline cleaners for emulsifying oils and greases particularly on hard surfaces in addition to these other conditioning agents are used to control the pH and ability of the cleaner to handle specific contaminants.

12



↪ BACK TO CONTENTS

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5.2 OTHER ADDITIVES

Solvents and more specialised materials such as citrus oils and pine oils may also be used to improve the ability of a product to penetrate greases, and also to provide a fragrance to the product. It is often the presence of these solvents that can cause damage when the product is used in too high a concentration. Enzymes can also be added to attack some specific materials or contaminants

5.3 BIOLOGICALLY BASED PRODUCTS

RSL offer several products that are blends of materials derived from natural sources. These offer specialist performance with materials that are more environmentally acceptable.

5.4 SPECIALIST PRODUCTS

In addition to RS Industrial Floor Cleaner general purpose cleaner RSL also offer products specifically designed for topical use on things such as the removal of fats and greases, oils, tyre marks polishes, chewing gum, stains, etc. Other products in the market places include materials that are designed to have a specific effect such as sterilisation, bactericidal activity, and disinfection.

These formulated products are designed for use at specific concentrations and the use of excessive materials is often unnecessary, is no more effective and sometimes harmful to the floor and the environment. These materials should not be mixed, as this can result in the reduction in the efficiency of the product and may lead to the deposition of materials on, or damage to the floor surface.

13



↪ BACK TO CONTENTS

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DISPOSAL OF WASTE

The waste generated may contain materials that are hazardous either from the environment or from the specific cleaning materials used. It is therefore important that cleaning staff understand the correct route for disposal for the waste water generated in the cleaning process. It is important that all relevant regulations are understood and adhered to, as these may prohibit introduction of specific chemical cleaners, solvents and wastes into surface water drains, sewer systems, and open bodies of water or into the soil.

14



[↶ BACK TO CONTENTS](#)

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MAINTENANCE

With the use of the correct cleaning and a planned cleaning regime, the appearance of your floor can be easily maintained. With some high gloss finishes it can be desirable to apply a sacrificial coating of an acrylic polish such as the RS Super Polish 25, which will keep the high gloss finish. This provides a hard wearing surface with the ability to allow for the easier removal of surface scratches or blemishes. Other products may also allow for the maintenance of the slip resistance or antistatic properties, but these should be checked for performance with the specific surface before extensive use. It should be appreciated that these maintenance finishes are short term in nature and from time to time will need to be stripped and refinished to maintain the overall appearance. This may require stripping solutions which should also be tested against the floor finish to make sure that they do not damage the underlying surface. These should be reviewed before the first application of polish.

15



[↶ BACK TO CONTENTS](#)

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TYPES OF RESIN FLOORING AND TYPICAL CLEANING METHODS

The British Standard BS 8204 provides a framework of products in the Resin flooring market place and the table below links these to the typical cleaning regime required. It must however be borne in mind that the nature and degree of soiling will dictate the frequency and materials required to achieve cleaning to the required standard.

Type	Product	Thickness	Typical surface	Cleaning
1	Floor seal 2 coats water or solvent borne	To 150 microns	Gloss or matt	Wash and vacuum Scrubber drier Brush or fine pad
2	Floor coating 2 coats water or solvent borne	150-300 microns	Gloss or matt	Wash and Vacuum Scrubber drier Brush or fine pad
3	High build coating	300-1000 microns	Gloss	Scrubber drier Brush or fine pad
4	Aggregate dressed system , multilayer	>2 mm Generally textured or profiled finish	Gloss profiled	Scrubber drier Brush
5	Flow applied system	Smooth finish 2-4 mm	Gloss or matt	Scrubber drier Brush
6	Troweled screed with surface seal coats	>4 mm Surface may be textured	Gloss or matt dependant on seal coats	Scrubber drier Brush
7	Heavy duty flow applied system	4-6 mm	Gloss or matt	Scrubber drier Brush
8	Heavy Duty Trowel applied screed	>6 mm	Gloss or matt profiled	Scrubber drier Brush, pressure wash if textured

DEFINITIONS OF FLOOR TRAFFIC AND RECOMMENDED FLOOR TYPES

Type 1-2 Light duty (LD) light foot traffic, occasional rubber tyre vehicles

Type 2-6 Medium duty (MD) regular foot traffic, frequent fork lift truck traffic, occasional hard plastic-wheeled trolleys

Type 4-7 Heavy duty (HD) constant fork lift truck traffic, hard plastic wheeled trolleys, some impact

Type 8 Very heavy duty (VHD) severe heavily loaded traffic and impact

16



↪ BACK TO CONTENTS

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