

2. Cleaning and Surface Preparation for New Concrete and Cement Screed Floors for Successful Floor Painting

For most domestic and light duty floor painting projects, the three most important criteria are: ensuring that the concrete or cement screed is fully cured (hardened), that it is dry, plus ensuring that the surface has been finished correctly.

Curing, Hardening & Drying-out for Floor Painting:

This means that a concrete floor slab must always be a minimum of 28 days old before any floor painting work is carried out – And this is always provided they are indoors, protected and not exposed to rainfall, or water run-off etc.

For larger areas and thicker concrete floor slabs, as used for the normal medium to heavy duty service requirements, in most institutional, retail, commercial and industrial premises, the concrete can actually take much longer to dry out. – For example a new 200mm thick ground floor concrete slab laid over a DPM without any additional heating or ventilation, can take up to a full year to dry out to a moisture content of 4% by volume – which is the maximum recommended for the application of any vapour tight resin floor paint.

However, there are now floor systems, such as our range of water based epoxy floor paints that are suitable for earlier application. This is because whilst they are waterproof, they are also vapour permeable, meaning that the concrete can continue to dry out under the freshly applied fully bonded floor paint.

- If you think that you may have an excessive moisture content that could cause a problem, then we recommend that you carry out the 'Moisture Mat' test in the 'Floor Substrate Testing' section below and then again follow the recommendations according to your test results.

Additionally, if your project does require the use of a vapour-tight, solvent free epoxy floor paint in order to meet your heavy duty exposure or other special performance requirements, then it is still possible to do the work successfully, by using one or more of the following solutions before applying the selected solvent free epoxy floor paint product:-

- Using additional drying equipment. - Using special water reducing admixtures in the concrete. - Using a special moisture barrier system from us (such as Sika EpoCem technology).

Obviously all of these have different time/cost and technical implications dependant on the project, so in these instances we recommend that you speak to one of the flooring specialists in any of our offices, who will be pleased to assist you in identifying the fastest and most cost effective solution for your floor painting project.

Surface Finishing & Cement Laitance Limitations for Floor Painting:

For successful floor painting it is essential to ensure that the surface has not been 'over-finished', which can make the surface very dense and impermeable, but also create a weak and friable layer. – This weak but brittle surface layer is known as 'cement laitance', and it's presence means that floor paint will not penetrate into the concrete, however it will probably bond and 'stick' very well to this cement laitance layer – the whole of this weak surface layer will eventually de-bond and come off, bringing with it your

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newly applied floor paint! How soon this will happen is dependent on the floors exposure to traffic and variations in temperature etc. – The more frequent these are, then the faster the cement laitance layer will de-bond and your new floor will 'fail'.

- If you think that you have a cement laitance problem on your new concrete floor, we recommend that you carry out the '[scratch test for surface strength](#)' and the '[water droplet test for surface permeability](#)' tests that are outlined -in the '[Floor Substrate Testing](#)' section below. Then follow our recommendations according to the results you obtain. i.e. if the surface is easily scratched to a depth of 0.3 to 2mm and yet the surface is relatively dense and impermeable, then there is a cement laitance layer present that should be mechanically removed before any treatment is applied. Vacuum blastcleaning is the best and preferred modern method of achieving this. See the section of this webpage on [Mechanical Floor Preparation – Vacuum Blast Cleaning](#) below.

- If the surface does not scratch or flake relatively easily, then there is no laitance layer present, but if this surface is dense, very smooth and impermeable, then it still requires mechanical preparation to 'open' the surface and increase the profile to achieve an optimum bond for any floor paint. Again carrying out mechanical vacuum blastcleaning is the best and preferred modern method of achieving this quickly and cost effectively.

Help is Available - If you are not confident or comfortable in handling this surface testing and assessment and would like assistance with either the testing and/or the assessment, then we may be able to talk you through it, or even either do, or arrange to do this for you. Please call any of our offices and one of our technical floor painting specialists will discuss the possibilities with you for your project.

Curing Agents & Curing Agent Removal Finally, in deciding on the cleaning and preparation requirements for any new concrete floors or cement screeds prior to floor painting, it is important to ensure that there are no Curing Agent residues on the surfaces from the concrete flooring contractors' finishing works. These curing agents are usually acrylic resin or wax based, and they are designed to improve the curing and hardening of the concrete by reducing the initial rates of water evaporation. This allows good hydration to proceed without shrinkage cracking, or excessive rates of evaporation that can result in inadequate hydration and therefore weak surfaces prone to dusting.

Fortunately Curing Agents are normally not now used on domestic floors or for smaller commercial and industrial floor areas (but if possible, please check with your builder to be sure they are not used). Additionally the use of any such surface applied curing agents should be specifically excluded in the specification documents for any industrial factory, warehouse or commercial facilities concrete floor that is due to receive a floor paint, or other any resin based flooring treatment. – Please check with your architect, engineer or building contractor to confirm that this is the case.

Where any such surface curing agents have been used, then it will be necessary to carry out some additional mechanical surface preparation by mechanical grinding, or vacuum blast-cleaning to remove them. The claimed 'natural' degradation of some curing agent products is dependent on too many other factors including thickness, UV light exposure for example, therefore this is far too variable and so can not be relied on in any specific time. - Please refer to our '[Mechanical Floor Preparation](#)' section below).