TECHNICAL BULLETIN – TB037
Old Adhesive – Know the Risks

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INTRODUCTION

One of the most common inquiries ARDEX Technical Services receives, involves whether or not old adhesives must be removed from the subfloor or the walls prior to the application of floor levelling cements or ceramic tile adhesives. Removal of these types of residue is one of the more expensive and difficult areas of substrate preparation, but is critical to achieve a good final result.

The following extract highlights some of the issues that are associated with application of new materials over old adhesive residues, and a case history illustrates what can happen. That this is an age old problem is shown by this magazine article being 20 years old.....

Italics reproduced from AFM - Australian Flooring Magazine Feb/Mar

1996 issue – courtesy of "Elite Publishing Co".

> *"It is well known that to eliminate the risk factor in relation to old adhesives, paving paint, curing membranes etc., it is necessary to remove them entirely from the substrate before a levelling compound is installed, as laid down by the Australian Standards and many manufacturers procedure recommendations."*

This can easily be achieved by mechanical means such as shot blasting, diamond grinding/shaving. However, on many occasions, contractors and installers are faced with making the decision to either remove the old adhesive (coating) or to install over them. Their decision may be forced upon them due to a variety of reasons such as size of area, budget and time allocated to do the job. But before going over the adhesives and compounds, it is worth taking the following into account.

> *To provide a primer or system to adequately bond to most of these compounds isn't the problem, but you are then relying on the standard of the previous preparation, the bond strength of the old adhesive and of course the cohesive strength, in itself, of the adhesive or coating.*
>
> *Taking this in mind, be wary of the person who gives you a false sense of security by claiming his product can bond to any surface and therefore suggesting you don't have to remove the old coatings. The risk of the adhesive (coating) lifting from the substrate or indeed splitting within itself can sometimes be very high depending on the type of floor covering, the environment and usage*

The Australian Standard AS1884-2012 has this to say about surface preparation;

> ***3.1.1.5*** *Surface preparation*
>
> *Before laying operations begin, materials such as grease, oil, paint, existing floor coveringsand their adhesives, curing or parting agents, or any surface treatment, particularly oxides, markout paints, wax crayons which could adversely affect adhesion, discolouration or any other detrimental affect shall be removed from the subfloor via mechanical means.*

Certain products can have a high surface tension, putting enormous pressure on the old adhesive such as parquetry. Sadly we see so many floors that have to be replaced because inadequate preparation or wrong advice given regarding the removal of old adhesives.

Some adhesives, such as the old bituminous types (Black Jack) may be reactivated by the new adhesive and in time cause delamination or allow staining to mirror through the underlayment and subsequent floor covering. In this case it is best worth considering total

removal of the adhesive, or the lesser preferred option is to use a levelling compound such as ARDITEX NA at 3mm thick to provide a barrier, which will ensure that the old adhesive isn't reactivated by the new.

The following figures are results from on-site pull up testing and vary with different manufacturers and of course the degree of water solubility.

COMPARISON RISK FACTOR TO BONDING TO CLEAN SOUND CONCRETE	
Pressure sensitive adhesive	13 times greater risk
Bitumen adhesive	8 times greater risk
Carpet adhesive	6 times great risk
Rain Damaged Concrete	Many times greater risk (dependant on water/cement ratio)

As can be seen from the above tabled data, the risk involved in application of new flooring materials over pre-existing residues is variable, but in all cases exceeds that for a properly prepared surface. Refer to Technical Bulletin TB041 for preparation details.

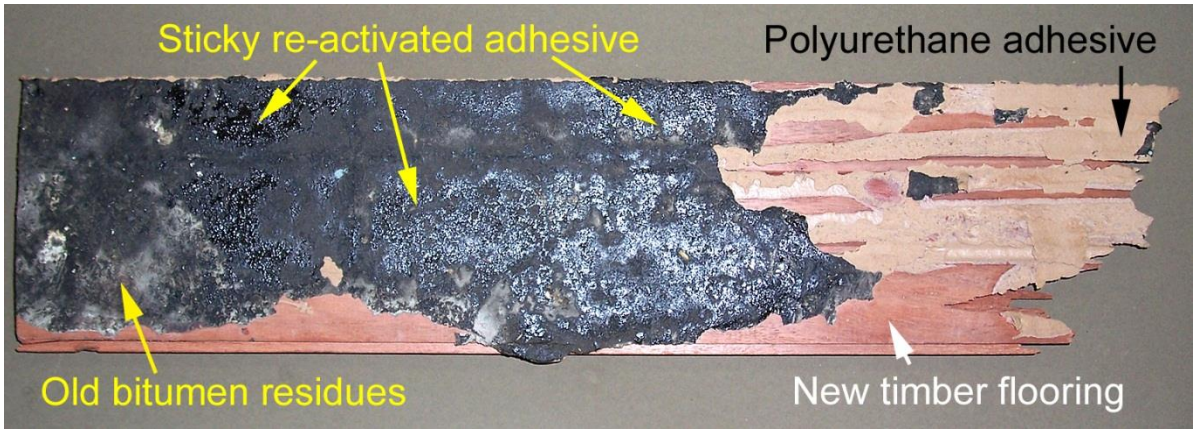
A Typical Case History

Early in 2004 a contractor was asked to lay a strip timber floor over existing bitumen based adhesive residues (i.e. Black Jack type material) at the request of the builder. The contractor was not in favour of this and would have preferred to correctly prepare the floor by removal of the old residues, but after receiving written instructions proceeded with the renovation without removing the residues.

The application went ahead with a skim coating of ARDEX Arditex NA applied direct to the old bituminous adhesive. The strip timber was a premium quality Australian hardwood and was adhered to the Arditex underlayment with a solvent based polyurethane.

After a relatively short period of time the timber floor blew off the subfloor and ARDEX Technical Services was called to investigate to cause of the de-bonding.

The investigation identified the cause of the de-bonding to be related to the old adhesive interacting with the new. The adhesive used to adhere the strip timber was a polyurethane containing MEK and Toluene solvents. These volatile and highly mobile solvents had penetrated through the permeable Arditex layer into the bituminous adhesive which was softened and then broke free of the concrete sub-floor. The problem was compounded by the fact that the Arditex was applied at less than 1mm thick and so did not provide adequate coverage to reduce the solvent penetration.



The above picture shows a sample of the 'blown' floor with the various features highlighted. Areas of the bitumen that were re-activated were quite sticky and weak. The Arditex layer was so thin that it does not show in the picture, but is present between the bitumen and polyurethane adhesive.

The costly end result was that the whole timber floor had to be removed, and the subfloor cleaned back to porous concrete prior to re-laying.

Whilst 2004 might seem ancient history now, the same products are still on the market and so the problem can still, and does occur today.

In summary, the best approach is to remove the old adhesives back to porous concrete subfloors. In the worst case, if you have to go over these adhesives and compounds, try and reduce the risk factor as much as possible by using the correct primer and levelling system for the job. It is important to remember that whilst the primers and smoothing cements will usually bond to the contaminant, it is VERY common for the contaminant to be pulled off the floor by the smoothing cement, resulting in a costly replacement job.

Contact any ARDEX office for advice on the correct primer and for any technical assistance needed.

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