



Carpet Cleaning Prespray Chemicals

Alan Tilley of Prochem Europe explains the features and benefits of carpet cleaning pre-treatment chemicals and their application techniques - from an article first published in November 1997.

The concept of pre-spraying soiled carpet and fabric with a specially formulated chemical has been around for a long time, but it is only in recent years that a wider cross-section of carpet cleaners have become aware of the pre-spray and rinse method which is really the key to effective extraction cleaning. There are many commonly asked questions about pre-sprays, or traffic lane cleaners and pre-spotters, as they are often called and I have highlighted the following article with these questions as a means of covering the subject in practical way.

Why do I need to pre-spray carpet and why can't I just rely on my extraction machine to do the job?

When soil extraction machines were first introduced there was a tendency on the part of the manufacturers to oversell the ability of the machines to remove soil from carpet. Firstly, the machines were not designed to remove dry soil and dust, which makes up about 80% of the soil in carpet and which needs dry vacuuming prior to wet cleaning. If you don't dry vacuum heavily soiled areas before you wet clean you will create mud! Secondly, the machines relied on a very short contact time between the spray solution hitting the fibre, emulsifying the water soluble soil and then being extracted by the vacuum. This can be as little as 1 or 2 seconds depending upon the speed of the operator. It just isn't possible for a mild extraction detergent solution to dissolve oily and greasy soils in such a short time-frame. The consequence of this was that many untrained carpet cleaners would boost the strength of the machine tank solution with high pH chemicals and they would also regularly over-wet the carpet with multiple wand passes, all of which resulted in the risk of disasters such as shrinkage, browning and dye bleed. The answer on heavy soiling and traffic lanes is to pre-apply a different type of chemical which rapidly dissolves the oils and greases which can then be rinsed away by the extraction solution. This principle applies whether you use a truck-mount unit or a small portable extractor.

What is the difference between the pre-spray chemicals and standard extraction machine chemicals?

The main difference is that the pre-sprays contain higher concentrations of the water-soluble solvents and high performance surfactants (detergents) which are needed to break down the oily soils. They also contain coupling agents which help to suspend insoluble soils which may otherwise be re-deposited on the fibre during the rinsing process. Most pre-sprays contain anything between 5% and 20% of these water-soluble solvents depending upon the product end use dilution rate. Another factor is that ready-to-use solutions of most pre-spray chemicals are slightly more alkaline than ready-to-use extraction solutions and this helps to break down acidic soils and proteins and saponify (turn into water-soluble components) oils and grease.

Are the solvents in pre-spray chemicals safe?

During the 1970's and 1980's most pre-spray chemicals were based on EB (ethylene glycol butyl ether) solvents which had some bad press due to health concerns in the paint industry. Since then the trend, particularly in Europe, has been towards the use of DP (propylene glycol ether) based solvents which do not carry the low exposure limits of the ethylene glycol solvents and which, when properly blended, actually provide better grease-cutting and evaporative qualities. The latest development in our industry is the introduction of highly effective presprays containing very low odour and low VOC (volatile organic compound) solvent blends.

Do I need high alkalinity to clean really dirty carpet?

There is no doubt that alkalinity in the range of pH 9.5 to 10.5 will clean heavier soils more effectively than neutral pH detergents and generally this value of pH is safe for most synthetic fibres. If you are cleaning wool, wool-rich or stain-resistant carpet then you can either use a specially formulated lower (neutral) pH pre-spray, or you can neutralise the pre-spray by following up with an acidic rinse solution in the extraction machine.

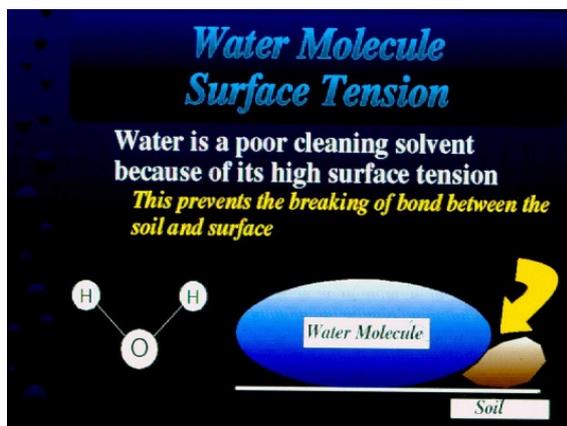
OK, so why can't I use a pre-spray formula in my extraction machine tank?

Well, cost is one factor because the pre-sprays are usually more expensive to manufacture than the extraction detergent formulations, but also they are designed to be left in the carpet for a few minutes "dwell time" before being extracted. They also benefit from agitation or brushing action and so their application has been developed by user experience into a distinct and separate procedure. The other reason is that if you use your pre-spray product at the lower dilution rates of standard extraction detergents there is a tendency towards higher foam being

generated in the recovery tank if you simultaneously spray and extract without allowing the "dwell" time for the pre-spray's surfactant to neutralise the soil.

Can I apply the pre-spray through my extraction machine wand or what about if I just spray my standard extraction detergent onto the carpet, wait a minute or two and then extract?

We've already said that extraction detergents at their low dilution rates are not really designed to deal with the heavy oily and greasy soils. Also, the problem here is that most carpet extraction wands are designed to put down between 3 and 4 litres of solution per minute, depending upon their working pump pressure and jet sizes. You really need to apply presprays at much lower volume because you don't want to over-wet the carpet, which may happen with a wand if you don't immediately follow-up with the vacuum stroke. Generally an output of about 1 or 2 litres per minute at 25 to 30 psi is used for pre-spraying with a coverage of approximately 5 litres of ready-to-use solution over 50 square metres. For this reason, pneumatic and electric spray applicators have been designed and developed for this purpose. Because the pre-spray formula applies a higher concentration of cleaning chemical to the fibre with less water you should apply less volume of solution than you would with the extraction rinsing solution.



If pre-sprays are so effective why don't I pre-spray the whole carpet and just use water in the extraction machine tank?

This is my favourite question! The "clear water rinse" myth.

There some very good reasons why you should not do this - most carpet installations are only heavily soiled in about 20% to 30 % of their surface area. These are the entrance areas and traffic lanes which have the oily type soils that you would need the pre-spray to deal with. So, if you apply a high concentrate pre-spray to all areas of the carpet, you are going to end up applying unnecessary chemical to about 70% to 80% of the carpet. If you consider that the

average price of pre-spray in the UK is say £15.00 per 5 litres with a 1 to 10 dilution rate with water, then one litre of ready-to-use pre-spray solution is going to cost you in the region of 25p! On the other hand, 1 litre of general extraction solution (which is all you need for the low soil areas) with a use dilution of 1 to 100 is going to cost you between 2p and 3p! Following on from this, if you miss any areas with the pre-spray, then these areas will only get cleaned with water and we all know that water on its own doesn't clean very well (try washing dirty hands and greasy dishes without any soap or detergent!).

And here is the least considered but most important reason why you should not use just water in the extractor and why you should use a properly formulated extraction detergent or acidic rinse solution - **Water alone is not a good cleaning or rinsing agent. In hard water areas as little as 15% of the pre-spray detergent will be rinsed from the fibre surface due to the negative action of the calcium and magnesium ions in hard water.** Even in soft water areas, if you do not use a small amount of properly formulated detergent in the rinse, the pre-spray detergent and alkalis, if present in the formula, will not be effectively released from lower areas of the carpet pile because even soft water has a high surface tension which will not effectively allow re-wetting of the pre-spray and soil residue. This un-rinsed and un-neutralised pre-spray detergent may then lead to rapid re-soiling.

Another important issue here is the effect of hard water on the internal lines and pumps of your extraction equipment. Just 0.5% to 1% extraction rinse (acid or alkali) detergent solution will soften the water sufficiently to prevent the build-up of lime-scale in brass fittings and on heating elements.

What about pre-spraying upholstery fabrics?

Yes, there is a definite requirement for pre-cleaning certain areas of wet cleanable fabric upholstery such as the body contact areas where there may be a heavy build-up of skin and hair oils in the fabric. To deal with these types of oils, upholstery pre-sprays sometimes have a different combination of hydrocarbon and glycol solvents and a higher concentration of anionic surfactants which allow the product to be applied as a foam as well as a pre-spray. Also the pH of these products is carefully controlled, although it is still advisable to rinse with an acidic rinse solution, particularly on fabrics such as cotton prints. If you rely just on a fabric extraction machine detergent you will not effectively clean and release the oils and fats from the body contact areas.