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WOOL CARPET MAINTENANCE

Introduction

Correct and regular maintenance will increase the life span of a carpet and also help maintain its good appearance. Cleaning should be proportional to the amount of soiling to which the carpet is subjected: the more dirt is deposited on the carpet, the more intensive is the maintenance programme required.

In order to be able to appreciate the reasons why carpets are cleaned in the ways they are, it is essential to know something about the phenomenon that makes carpet cleaning necessary in the first place: soiling. And to understand why certain cleaning or maintenance techniques are used in particular locations and on given types of carpet, it is necessary to know something about available cleaning systems and about carpets.

There is also difference between cleaning and maintenance: cleaning is the removal of accumulated dirt, and is generally carried out when needed. Maintenance is a planned procedure, started on the day the carpet is installed and on-going to retain a carpet's good appearance.

This paper is an introduction to the increasingly sophisticated techniques of carpet maintenance.

1. How carpets soil

Dirt particles, carried into a building on the soles of shoes and by air currents, are deposited on the carpet surface and stick to the pile fibres. These dirt particles are held by mechanical forces in the yarn structure, or by adhering to the fibre surface because they are sticky (oily) themselves, or because the fibre is sticky, damaged, or has other sites where soil can lodge.

There are two main types of soil (dirt):

Type 1 - coarse, dry, heavy soil: e.g. sand, fibres, salts etc which causes carpet "to fill up with dirt", and which is deposited as far down as the roots of tufts.

Type 2 - fine, sticky, lightweight soil: e.g. soot, oil, rust etc which causes most of the discolouration of the carpet surface and makes the carpet "look dirty".

These two kinds of dirt have to be removed using different techniques:

Type 1 - by mainly mechanical means: e.g. vacuum (suction) cleaning or spray extraction cleaning.

Type 2 - by mainly chemical means: e.g. shampooing, or impregnated compound cleaning.

The more carpets soil, the more difficult, and often expensive, it becomes to clean them. It therefore makes sense to try to reduce the rate at which carpets soil, by somehow trying to reduce the amount of soil reaching the carpet. This can be done by taking preventative measures like the installation of adequate lengths of entrance mats, and by good housekeeping: e.g. by preventing spillages and by putting mats in lifts, and in front of drink dispensing machines.

2. Maintenance planning

The importance of properly planning a maintenance programme for the carpeting in a building, however large or small, cannot be over-emphasised. The maintenance plan should take into account foot traffic loads, traffic patterns, desired appearance levels of the carpeting in different areas of the building, building occupation, the personnel responsible for the maintenance, available equipment, and cleaning costs.

Carpet maintenance usually consists of three categories:

- regular
- interim, and
- periodic

2.1 Regular maintenance

This is usually carried out on a daily basis. It comprises **vacuum (suction) cleaning** of all regularly trafficked areas, and **spot removal**. Extra care must be taken of the most heavily used areas, including entrance mats. Areas of minimal use can be vacuum cleaned at a lower frequency, for instance twice weekly.

Spills should be attended to as soon as possible - the older the stain the more difficult it is often to remove.

Spot removal kits containing all the tools to tackle spills likely to occur must be available to maintenance personnel, who must be trained in the use of these kits and have access to the kits at all times during carpet maintenance periods.

It is important to check that the chemicals in the kits are compatible with the carpet installed: applying them must not cause colour bleeding or bleaching, or any other damage to the carpeting.

Spot removal chemicals must be used with proper precautions: when used the area must be well ventilated, the agents should not come into contact with skin or the fumes inhaled. Those which are flammable must not be used when the operator is smoking, or near open flames, sparks, etc.

The recommended spot removal procedure is as follows:

- Scoop up solids and blot up liquids first. **Avoid rubbing the carpet surface.**
- For unknown spots apply solvents (for greasy/oily stains) first, followed by water-based spot removal agents. Apply agent to clean towel or tissue, **not** to the stain. Use **small** quantities at a time. Always work from edge of stain inwards towards its centre.
- If at all possible as final treatment rinse spot with clean water - **do not over wet** - and blot as dry as possible with **clean** tissues or towelling.

Spot and stain removal kits should at least contain the following:

- clean tissues and / or towels
- small brush, spoon (or spatula) and sponge
- solvent for removing greasy/oily stains
- carpet shampoo
- amyl acetate/nail polish remover
- laundry detergent
- chewing gum remover (solvent or freezing type)
- neutralising agents: acetic acid solution, ammonia solution (5%)
- methylated spirits and turpentine or white spirit
- rust remover

For details on how to remove different spots, see Table 1.

2.2 Interim maintenance

This is used to brighten the appearance of the carpeting by removing surface dirt, but without necessarily removing much of the deep-seated soil in the pile.

This can be accomplished by techniques such as **bonnet buffing** which use a rotary scrubber and a soft textile cleaning pad in place of the circular brush (as used for rotary shampooing). The cleaning solution is either applied directly to the carpet or to the pad. Dirt from the carpet surface is transferred to the pad; the pad must be reversed or changed frequently to be effective. Dirty pads can be laundered and be re-used.

Impregnated compound (powder) cleaning uses inert powder, impregnated with a mixture of water, solvents, detergents, etc which are brushed into the carpet pile and, after drying, vacuumed out. The powder acts as little sponges which absorb the dirt from the fibre surfaces.

2.3 Periodic maintenance

However meticulously both regular and interim maintenance are carried out the time will come when the carpeting will require a thorough, deep or restorative cleaning. Systems used are based on shampooing, using a high foam carpet shampoo, or spray extraction cleaning, using a low foam shampoo.

Prior to commencing these wet cleaning techniques the carpet pile is usually treated with a **pile lifter**, which is a twin-motor vacuum cleaner, with a large cylindrical brush and powerful suction action to open up the pile and remove embedded grit which normal vacuuming leaves behind.

Shampooing involves the use of a rotary or cylindrical brush machine which brushes a shampoo solution - "wet" shampooing - or a shampoo foam - "dry" shampoo - into the carpet pile. After this is completed the dirt-laden shampoo is either;

- sucked out of the pile by means of a wet pick-up machine,
- rinsed out using spray extraction machine (charged with water only), or
- left to dry and the dried shampoo and loosened dirt particles removed by
- vacuuming - the so-called shampoo crystallisation process.

Of the above procedures the last one tends to be the least expensive, but also the least efficient; the second one the most expensive and the most efficient.

Spray extraction cleaning injects a detergent solution into the carpet pile, immediately followed by an integral wet pick-up system. Amount of solution sprayed into or on to the carpet pile varies greatly between machine models and this affects both the efficiency of the "flushing" out of the dirt and the chance of inadvertently over-wetting the carpet.

Cleaning efficiency can be improved by pre-spraying the carpet with the low foam shampoo prior to spray extraction, and by the use of the rotating or oscillating brushes in the floor "wand" of the machine.

With all wet cleaning techniques it is important to avoid over-wetting the carpet as this will greatly lengthen the drying time, and may cause problems with discolouration of the pile. Brushing of the pile should also be kept to a minimum, especially with some carpet constructions. It is strongly recommended that the carpet be pre-tested prior to commencing any wet cleaning to ensure that

neither chemicals (shampoos or spot removal products), nor cleaning techniques itself causes damage to the structure or colour of the carpet.

3. Recommended cleaning methods for wool carpets

There are no hard fast rules on which cleaning techniques is the best for wool carpets. This depends largely on the type of carpet concerned and the degree of soiling. As a general rule cleaning methods involving brushes or beaters should be avoided on long pile or coarser loop pile wool carpets. In these cases plain suction vacuum and spray extraction wet cleaning are often the best methods (see Tables 2 & 3), but much will depend too on the skill of the operator - no technique is completely foolproof.

The damage done to carpets in (wet) cleaning usually relates to over-wetting, too much mechanical action and the use of unsuitable shampoos and other chemicals (see Table 4).

Wet cleaning has both positive and negative effects on the texture of carpets. The positive effects are:

- Lifting of the carpet pile (all textures)
- Improvement in tuft definition (loop pile, velours)
- Improved handle (all textures)

All wet processes cause some untwisting of yarn in cut-pile carpets, depending on amount of moisture applied, mechanical action, degree of "setting" of the yarn, etc. Brushing causes some fuzzing (shampooing, but also upright vacuum cleaner). Ridging on really long pile carpets can be caused by some spray extraction cleaning tools.

4. Cleaning chemicals

The basic requirements of cleaning chemicals for use on wool are:

- Low alkalinity
- Non-sticky residue on drying
- Good cleaning power
- No added bleaches, dyes, etc

The reasons for these requirements are:

- High alkalinity (often, but not always, reflected in high PH) can cause colour bleeding with dyed or heather (tweed) yarns, pigment bleeding in natural Berbers, jute staining of pile surface in light coloured carpets, and in extreme cases yellowing and weakening of the wool fibres.
- Sticky residues cause quicker re-soiling.
- Poor cleaning performance necessitates excessive mechanical agitation of the pile.
- Additives can cause uneven cleaning results, bleaching or change of colours.

Some commercially available carpet cleaning chemicals are unsuitable for use on wool carpets, because they do not conform to one or more of the above requirements. To identify those chemicals - pre-sprays, shampoos, spot removal chemicals - which **are** compatible with wool carpets and are safe to use, IWS started in 1991 an approval programme for wool carpet maintenance products. All products tested and approved under this programme carry the suitable for use on **Wool Carpets** logo on packaging and/or product literature.

Codes of practice for Carpet maintenance

"Textile Floorcoverings - Cleaning maintenance techniques for domestic and commercial carpeting. AS/NZS2455-2007".

"Standard reference guide for professional on location cleaning of installed textile floorcovering materials." IICUC Standard 001-991 First Edition, International Institute of Carpet and Upholstery Certification, Washington, USA.

TABLE 1

SPOT REMOVALGUIDE FOR WOOL CARPETS

STAIN	CARPET SHAMPOO SOLUTION	DRY-CLEANING FLUID	CLEAR COLD WATER	OTHER METHOD
Beverages (tea, coffee, soft drinks)	2		1	3) laundry detergent (2%)
Bleach	1			
Blood			1	2) laundry detergent (2%)
Butter	2	1		
Candle Wax		2		1) absorbent paper and hot iron
Chewing Gum				1) chewing gum remover
Chocolate	2		1	
Cooking Oil	2	1		
Cream	1	2		
Egg	1			
Fruit Juice			1	2) laundry detergent (2%)
Furniture Polish	2	1		3) call cleaner
Gravy and Sauce	2			1) warm water
Ink (fountain pen)			1	2) laundry detergent (2%)
Ink (ball point pen)	2			1) methylated spirits
Lipstick	2	1		
Metal Polish	2			1) brush off when dry 3) methylated spirits
Milk	2			1) warm water
Mustard	1			
Nail Polish		2		1) nail polish remover
Oil and Grease	2	1		
Paint (emulsion)	2		1	
Paint (oil)	3	2		1) turpentine or white spirit 4) call cleaner
Rust	2	1		3) rust remover 4) call cleaner
Salad Dressing	1	2		
Shoe Polish	2	1		
Soot	2			1) vacuum 3) call cleaner
Tar		1		
Urine (fresh stain)	1			
Urine (old stain)				1) call cleaner
Vomit	1			
Wine			1	2) laundry detergent

"Call Cleaner": call in professional cleaner for assistance.

TABLE 2

DAILY MAINTENANCE (SUCTION CLEANING) TECHNIQUES FOR WOOL CARPETS

CLEANING TECHNIQUE	CARPET CONSTRUCTION							COMMENTS
	Level Loop Pile	Cut Pile (Plain)	Cut Pile (Patterned)	Hard Twist	Saxony	Shag Pile	Oriental, Rugs, etc.	
Carpet Sweeper	+	+	+	+	+	+	+	Only removes surface debris (litter), does not clean deep down
Suction Only	+	+	+	+	+	+	+	Reduced efficiency on carpets with impervious backing and stuck down carpets.
Suction plus Revolving Beater Bar/Bristle Strip	+(*)	+	+	+	+	O	+	Not suitable for stuck down carpet installation; may cause fuzzing on certain loop pile carpets.
Suction plus Revolving Bristle Strips	+(*)	+	+	+	+	O	+	Recommended for carpets with impervious backing and stuck down carpets; may cause fuzzing on certain loop pile carpets

(*) Not recommended for coarse loop pile carpets

Methods: ++ Best + Suitable O Optional - Least suitable

TABLE 3

WET CLEANING TECHNIQUES FOR WOOL CARPETS (PERIODIC CLEANING)

CLEANING TECHNIQUE		CARPET CONSTRUCTION						COMMENTS	
		Level Loop Pile	Cut Pile (Plain)	Cut Pile (Patterned)	Hard Twist	Saxony	Shag Pile		Oriental, Rugs, etc.
Single or multi brush rotary Shampooer		+(*)	O	+	O	O	-	O	Cut pile carpets; raise pile with rake or brush when still moist. Efficient pile surface cleaner.
Cylindrical brush shampooer		+(*)	+	+	+	+	O	O	Basically for immediate cleaning; not suitable for heavily soiled carpet.
Bonnet Cleaning		+	+	+	+	+	O	-	
Spray extraction machine	Smooth wand	+	+	+	+	+	+	O	Effective deep cleaner, moderately efficient surface cleaner.
	Rotating or oscillating brush attachment	+(*)	+	+	+	O	-	-	Mainly for large carpeted areas; especially suitable for stuck down installations.
Impregnated compound cleaner		+	O	+	+	+	+	-	Basically for intermediate cleaning only; not suitable for heavily soiled carpets.
Carpet washing machine (plant cleaning)		+	+	+	+	+	+	+	Most efficient cleaning technique, but causes shrinkage with natural fibre backing used only if carpet can be economically removed and satisfactory removed and re-fitted.

(*) Not recommended for coarse loop pile carpets

Methods: ++ Best + Suitable O Optional - Least suitable

TABLE 4

EFFECT OF WET CLEANING AND ACCIDENTAL SPILLAGE ON WOOL CARPETS

	Damage, Effect	Caused by	Contributory Carpet Fault or Weakness
PILE SURFACE	Fuzzing, fluffing, cobwebbing, felting	Excessive mechanical agitation in wet cleaning (shampooing or stain removal).	Low yarn twist, coarse loose loop, long pile.
	Browning (surface)	Pigments from naturally coloured wool, jute or foam backing and over-wetting of carpet.	Neutral or alkaline PH of naturally coloured wools; loose pigments in backing materials.
PILE MASS	Excessive yarn untwisting ("pile burst")	Water based spillage or wet cleaning.	Low yarn twist, unset or insufficiently set yarn.
	Colour bleeding (in multi-coloured patterned carpets)	Water spillage or wet cleaning; high PH cleaning chemicals.	Dyestuff used with insufficient wet fastness.
BACKING	Shrinkage	Overwetting in cleaning, flooding of carpets	Jute (and / or cotton) backing fabric.
	Delamination (tufted or foam backed carpets)	General wear, localise high wear, e.g. Under castor chairs.	Insufficient adhesion between primary and Secondary or foam backing.
	Decomposition or deformation (foam backed carpets)	Dry cleaning solvents (stain removal).	