April 2, 2001

"Tek" Newsletter

Beaulieu Residential

Quarterly Newsletter

Winter Season Soiling

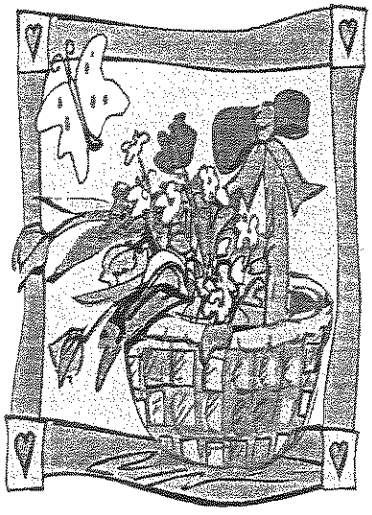
With the onset of warmer weather many home owners go through an annual ritual known as "Spring Cleaning", which often includes deep cleaning of carpet. On occasion the carpet may seem to have soiled excessively during the winter months. This is particularly true in regions where snow is common. Even more frustrating than soiling is the color loss or change that often takes place after the carpet is cleaned. For years this problem has mystified home owners and befuddled less knowledgeable carpet cleaners.

One of the most common sources of soiling during the winter season comes from a small, white, harmless looking crystalline compound called calcium chloride. This hydroscopic agent is used to melt ice and snow during inclement weather.

In the past, rock salt (sodium chloride) was used during the winter months to combat some of the hazards seen with pedestrian and vehicular traffic when threatened by snow and ice. Although effective for this purpose, some of the problems encountered when using rock salt were that the freeze/thaw cycle of this mineral kept concrete in constant motion (causing it to eventually crack), and it was found to be very corrosive to metal (accelerates rust, pits aluminum). Another drawback found with rock salt was that because of its freeze point it tended to lose effectiveness when things really got cold. Because of its ability to compensate for these shortcomings calcium chloride is now recognized as the choice deterrent to slippery steps, sidewalks, and roads.

Call it a humectant, exothermic, or a hydroscopic agent, regardless of the verbiage, in its anhydrous state calcium chloride is an excellent dehumidifier. Additionally, because calcium chloride has a much lower freeze point than rock salt it is much more effective against ice and less damaging to concrete (although it can be very damaging to carpet). Calcium Chloride is also slightly less corrosive than rock salt, although it is more expensive. Because of its cost calcium chloride is generally applied only to steps and walkways, while the less expensive rock salt and gravel is used on roads.

Unfortunately, calcium chloride doesn't stop pulling in moisture after it gets tracked on to carpet. It continues to do exactly what it was intended to do, absorb moisture until it becomes



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saturated (and then you have wet carpet). In fact, calcium chloride pellets left to sit by themselves will be reduced to a liquid in a relatively short period of time.

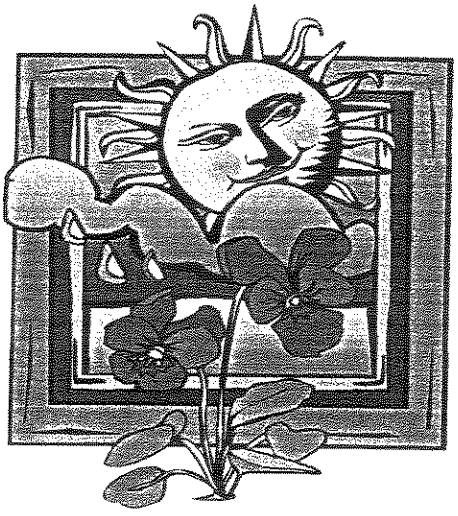
It is widely known that wet carpet makes for an excellent soil accelerator (but the worse is yet to come). When calcium chloride comes in contact with the typical alkaline detergent (pH above 7) it converts to calcium hydroxide (lime), which when wet becomes a thick cake-like residue that by itself is very difficult to remove. Initially, a calcium chloride laden carpet may take on a dull white or yellow cast. Left unattended, it quickly turns the carpet black as it attracts tracked-on and airborne soils (which can include a wide range of oily contaminants). Depending on the nature of the soils and the time the carpet was allowed to collect soil full restoration may not be possible. The carpet may also lose some of its laminate strength and other back coat supported characteristics from it prolonged wet state. Another drawback to the use of these agents is that undissolved salts crystals that are tracked into buildings may change or degrade dyes with prolonged exposure. Color change resulting from salt-dye interaction may or may not be visible prior to cleaning.

Another concern is urea-based chemicals used to melt ice and snow. When these chemicals are exposed to heat they may, when decomposing, form an ammoniated compound that can act upon the dyes as other similar ammoniated compounds (e.g.; urine), resulting in a color change that is irreversible.

Whether carpet has been exposed to salt or urea based chemicals, cleaning seems to aggravate the condition unless the problem is dealt with in the proper manner. The heat, the detergent, agitation, and rinsing are all considered to be contributing factors to the detriment of the carpet.

In most cases soiling due to ice melt chemicals can be remedied by cleaning using the hot water extraction method. A pre-rinse with cool water to try and remove any excess melting chemicals before cleaning may help to alleviate color loss or change. The carpet should then be cleaned with a neutral detergent system, followed by flushing with an organic acid. An application of a fluorochemical like Scotchgard (on compatible yarn systems) after cleaning will increase the surface tension of the yarn, giving the carpet greater ability to resist soil penetration with further use.

Can soiling and loss due to calcium chloride and other ice melt compound track-on be avoided? Not until a better means to deal with snow and ice becomes available. Until then, problems of this nature, which has absolutely NOTHING to do with a manufacturing defect, will continue to bring out the wrath of consumers and finger pointing by cleaners (which invariably prompts the consumer to blame the carpet which propagates into a claim).



Beaulieu Residential
Technical Services Department

Mark Johnston-Tech Manager