

# CFR The Commercial Flooring Report

For the Commercial Floor Covering Industry

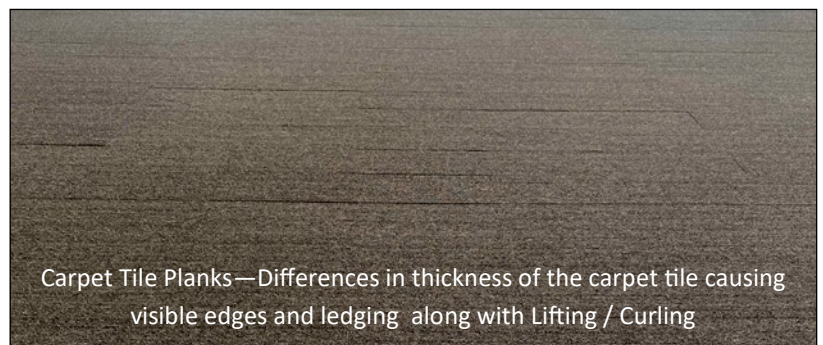
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## CARPET TILE ISSUES



Carpet tile is unquestionably the most popular commercial textile floor covering material there is. It has supplanted broadloom by far. Broadloom in commercial applications is primarily used in board rooms, executive offices or spaces that are considered “high end.” And certainly, broadloom is the king of five star hospitality properties, though carpet tile is making some inroads into that market. Carpet tile is easy to ship, handle, install and remove. The latest iterations are far more fashionable in pattern and visual variety than ever before. And carpet tile comes in a variety of shapes as well, allowing for even greater visuals.

The evolution of carpet tiles has seen the transition to lighter weights, lower profiles, PVC free backings and unique challenges many of these new carpet tiles present - one of which is visible edges or “gaps” at the edges. The thinner the tile is and the lower the profile, or face yarn, the less prone the face yarn is to fill the gap at the edges of the carpet tiles.



We just had a case where there was a complaint for the carpet tiles being uneven or varying in thickness which was causing the edges to be higher. When we tested a multitude of the tiles, we found they were indeed varying in thickness primarily as a result of the felt secondary backing varying in thickness – the numbers were all over the place. In addition, the tests for planar stability, that is, the carpet tile laying flat, also revealed the carpet tile had planar instability issues. So, the carpet tile was defective in two categories, the applied fleece secondary backing thickness inconsistency and planar instability, for which there is no fix for either one other than to replace them.

The big concern now in the industry aside from making carpet tiles lighter and thinner is PVC free backing.

PVC (polyvinyl chloride) plastic, also known as vinyl, is rigid and brittle in its pure form. Phthalates (plasticizers) have long been the chemicals of choice used to achieve the flexibility needed for many uses, in many products, including flooring. Phthalates are called plasticizers because they provide flexibility to vinyl materials, such as carpet tile backings and vinyl flooring materials. Phthalates normally leach out of vinyl. There are no phthalate plasticizers in PVC free flooring, at least there's not supposed to be. The new chemical alternatives are effective as plasticizers for polyvinyl chloride (PVC). Some can't leach out of PVC products because they are chemically bonded to the polymer chain. However, there are a multitude of plasticizers used as alternatives and studies have shown that they can all leach out. So, the alternative to phthalate plasticizers may be no better and there is often less known about them. One class of alternative plasticizers to phthalates is bio-based plasticizers. Bio-based alternatives can be made from plant materials such as corn, soy, rice, wheat, citrus and linseed.

Carpet tile backings can be made from several thermoplastic materials such as polyester, polyolefin or acrylic. All of these products will have unique characteristics of performance, dimensional and planar stability as well as installation variables. Some will require special adhesives to hold them in place. These are not your typical and once familiar carpet tile backings. Some of these products have a long track record and others do not. One concern should be that a lot of the PVC free products are made with recycled content and recycled content can vary, even if it's pre-consumer material, which can affect the integrity of the product and it's performance. And post consumer recycled material could have phthalate plasticizers in them. So now you may have a "soup" of materials in the supposed PVC free products that can create all kinds of other issues. We went down this road several years ago with carpet tiles with recycled content in the backings and it created a fiasco in the industry. And PVC free products may not be equivalent to products with PVC so they may react differently on the floor. The other concern is that if there is nothing for the adhesive to "grab" onto, it may be a fight to keep them flat on the floor. Remember, adhesive is not meant to correct planar or dimensional stability of flooring materials.

Polyolefin, used in some PVC free flooring products, for example is polypropylene. Polypropylene is inherently hydrophobic, which means



## THE COMMERCIAL FLOORING REPORT

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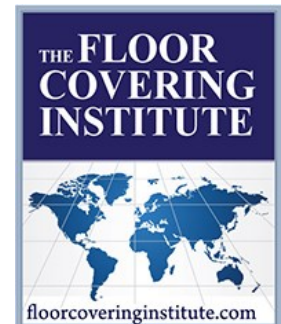
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it hates water – it literally pushes it away. It loves oil but hates water. So, if the adhesive being used is water based, which most are, getting the flooring to stick to it may be a challenge. And, of course, when that happens the installation contractor and installers are going to get blamed. So, it's irresponsible to not understand the characteristics of the products being made and expecting to get results that defy simple chemistry. Worse yet, is to blame someone else for the failure, deny any culpability for the problem and then try to justify the failure with absurd explanations that defy common sense.

Now we come to the case of PVC free backings installed over old adhesives or on substrates that have had several flooring materials installed on them. Several manufacturers have stated that if the substrate contained plasticizers from old flooring installations it would affect the stability of their products. Well, we have more than a few questions about that. How is the flooring installer or contractor supposed to know what was installed before if they didn't do the removal of the existing flooring? If the building is old, it may have had several different flooring materials installed and how is one to know that? And, if the flooring manufacturer says that the old adhesive residue is causing the reaction of the carpet tile, let them prove that it is. In most of these cases when we test the complaint tile, we find that the carpet tile is the problem, not the substrate. Residual Plasticizer on the substrate affecting the new carpet tile? Two of our chemists, that have been in the industry all their lives, chuckled at this. Just how is that supposed to happen?



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Where's the proof of old adhesive and any plasticizer residue from previous adhesives affecting the dimensional or planar integrity of the carpet tile. This is BS and the science doesn't make sense. Prove it! Where is the empirical data? Oh, you don't have it? What a surprise. And if the new backings don't contain phthalate plasticizers how can there be an effect? And if the old or existing PVC carpet tile backings aren't or haven't ever been affected by residual plasticizers, which would be more prone to happen, if it did, then why haven't we seen a proliferation of these issues? One of my faults working in the segment of the industry we do, is that I question everything. And if something seems too good to be true, then it probably is.

One manufacturer states that no treatment of the substrate is required unless old adhesive shows signs of plasticizer migration. And how is the installer supposed to determine that? Flooring contractors and installers are not chemists and know nothing about plasticizer, what conditions it exhibits visibly, if any, and what odor it emits, which can vary. And how about how long ago the old flooring was taken up and the substrate dirtied up from construction which may hide any signs of plasticizer. I would venture to say that no installer or flooring contractor would be able to determine if there was residual plasticizer on the substrate - nor would anyone else. If that's the case then the manufacturer would have to prove old plasticizer was the cause of their product curling, lifting, growing or any other physical change in the carpet tile. It would be incumbent upon them to prove that residual plasticizer existed on the substrate and that it affected their carpet tile. As stated earlier, there must be empirical data to substantiate these claims. We know that installers cannot create physical changes in the floor material. They can't make it grow, shrink, lift, dome, cup, curl or distort in any way. That's strictly on the flooring product itself.

As we said earlier, the movement is to make carpet tiles lighter in weight and thinner in profile. Each manufacturer has a different secondary backing, and each will tell you how the product is to be installed. If they tell you to apply a primer to the substrate prior to installation, then make sure you do it. If they give you specific directions as to how the floor is supposed to be prepared to facilitate the installation of their products, then do it. But if they blame you for the product changing its physical characteristics after installation, then doubt that seriously because the chances you made that change happen are slim to none.

One backing that you can sell that has no VOC issues and that's been around for decades is polyurethane. Once the chemical components are reacted it is benign and has no harmful side effects. If it is in attached cushion form or not it can provide comfort, sound deadening and increase the performance of the carpet tile. Tests we did decades ago proved this. It also imparts stability in the product, increased physical characteristics if the process includes pre-coat and foam or a low profile secondary coat. Every carpet manufacturer has access to polyurethane backings. Of course it costs more money, is heavier and may have to be applied by an outside finisher but in my opinion its worth it and makes a much better product. In one process it can eliminate adhesive completely but that's a story for another day.

As technology advances in the flooring industry so to do the challenges each change imparts on the products. Very often statements made about the products have no basis in science, but you may not know that because you don't know otherwise. If you question what you're being told, contact us, we'll tell you whether it's fact or fiction. LGM has the smartest associates in the industry, many of whom came from the technical ranks of the industry with decades of experience. We're here to help you, so don't hesitate to ask us.

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