



# THE COMMERCIAL FLOORING REPORT

## VINYL FLOORING PROBLEMS INDENTATIONS

Vinyl flooring is being used and specified more and more. Schools, Hospitals and Health Care facilities are the biggest users of vinyl flooring products but it is also being used extensively in businesses, restaurants, and increasingly in mid-tier hotels and even multi-family housing. Vinyl flooring products have become more beautiful, lend themselves to elaborate design elements and, when properly specified, can perform like a Mack truck. Luxury vinyl tile is likely the hottest flooring material on the market right now. Some of the reasons for vinyl's increasing popularity should be obvious. It is extremely durable, when properly specified and cared for. It won't ugly out like carpet due to matting, crushing, soiling, or any of the other inherent performance factors carpet often experiences. This is not to trash carpet, it's my first flooring love and I've been deeply involved with it for 41 years and it too, continues to get better and better. Other reasons to use vinyl are its practicality. Health care is a no brainer for vinyl flooring whether sheet vinyl,

vinyl composition tiles, planks or LVT. In hospitals, because of the type activity such as rolling beds and equipment, the volumes and types of liquids that can be spilled such as medicines, food stuffs, human discharge and fluids, including blood; no other flooring material will stand up to this kind of use and abuse. In these settings it is the most practical flooring material to use. Vinyl flooring however has been plagued with two maladies that affect it more than any other flooring material; indentations and failing to stay adhered to the substrate. Our focus here is indentations, a problem we get calls on constantly and for which we test repeatedly. One point to remember is that all flooring materials will

indent whether carpet, vinyl, wood, cork, rubber or linoleum. Carpet will normally rebound from indentation more readily and easily and indentations can most often be steamed out. Hard surface flooring materials will not which makes this subject most appropriate for them.

Why all of a sudden should there be so many complaints on vinyl flooring indenting? Working extensively with these issues we've compiled a list of what influences and causes this concern and it appears here in some order.

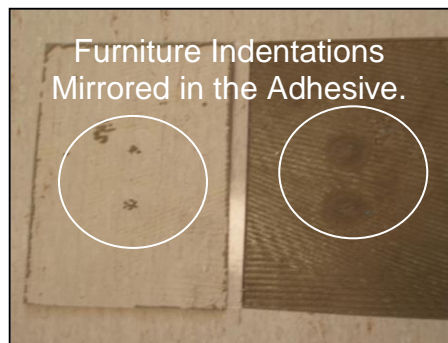
More than anything is the increased use of vinyl flooring materials, as stated previously. Vinyl flooring is being used everywhere it seems but, again; most of the



VINYL INDENTATIONS

indentation concerns are being generated in schools and hospitals and most adversely affected is sheet vinyl and vinyl tile. Rarely do we see issues with LVT or vinyl plank but it can happen.

The improper application of adhesive such as too much, wrong trowel used to apply it and too soft, for example, will allow any weighted object placed on the flooring to depress it and indent it. Soft floor patch or substrate prep materials, such as patching or leveling materials which may be over watered, will diminish the density of the patch and result in it being "soft." This will allow furnishings or equipment, when sitting in place to compress the vinyl and the patch resulting in indentations to the vinyl. Compounded with "soft" adhesive applications this condition can be particularly susceptible to indenting. The use of epoxy adhesives will help minimize indentation as this is a hard set adhesive material with less "give".



Heavier beds and heavier patients in health care environments, when statically positioned, that is stationary in one place, will compress the vinyl flooring and cause indentations. Hospital beds can weigh up to 600 pounds and if they have thin, sharp crowned wheels they can and will wreak havoc on vinyl flooring. Add to that a heavy patient in the bed and it's possible to exert over 1,000 pounds of pressure to the flooring material.

Smaller surfaces coming in contact with the vinyl flooring will exert greater loads or weight over a smaller area. This means that a smaller footprint such as a thinner wheel, smaller castor, sharper casters or feet on furnishings may indent the floor by concentrating more weight on a smaller area. This is one of the primary causes of indentations. The smaller the surface area contacting the vinyl floor and the higher the load exerted, the greater the chances for indentation occurring.



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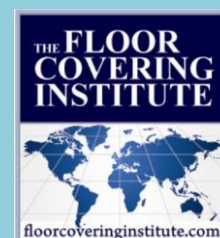
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The wrong product specified is another major factor resulting in vinyl flooring indentations. Some vinyl flooring materials are rated at 125 to 250 pound compression loads and used in facilities that subject the vinyl flooring material to over 1,000 pounds of pressure will tax the material beyond its limits. Common sense and logic should tell you that these products will compress and indent under the high loads they are subjected to. We have tested wheels, furniture and other “feet” using static load tests to determine if a vinyl flooring material will in fact perform under the loads it is subjected to. Very often we can determine how to prevent indentation or minimize it by simply changing the wheels on a bed or the feet on a piece of furniture or substituting the flooring material itself. One thing to understand is that no vinyl flooring, or any flooring for that matter as mentioned previously, is completely resistant to indentations. If the load on the flooring is heavy enough and the area of concentrated pressure small enough that it does not dissipate the load over a larger area, indentations can occur. All you have to do is look at vinyl flooring that has been installed for years to witness the indentations left by a piece of furniture that sat in one place, under a desk for example. The perplexing issue today is the movement of furniture or equipment, much of it on wheels, that leaves marks in the vinyl everywhere it rolls.



The products may have changed as well. As the industry strives to be green and improvements made to vinyl products along these lines, the ability to resist indentation may be compromised. And there may actually be a defect in the material that will allow it to be more susceptible to indentation.

Shown above: Centiva products on their way to be recycled.

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Moisture in the substrate may also be a cause for indentations and wheel marks especially with sheet vinyl flooring materials. Moisture inherent in the concrete can soften the adhesive causing it to become mushy and allow rolling wheels to leave



MUSHY ADHESIVE

marks in the flooring material that make the surface look like there was an off road rally that took place on the floor. Since welded seam sheet goods are not permeable, moisture in the substrate can soften adhesive, allowing the flooring material to release and become more easily susceptible to indentations.



WHEELS MARKS CAUSED BY SOFTENED ADHESIVE

Vinyl flooring materials with high gloss finishes and in light colors can also exacerbate indentation and make them more obvious.

### Preventing vinyl flooring indentation

First and foremost is to understand the influence of the furnishings and equipment that will be used on the floor. If the surface area that contacts the floor is small and will cause a great deal of weight or pressure to be exerted in one spot, then the surface

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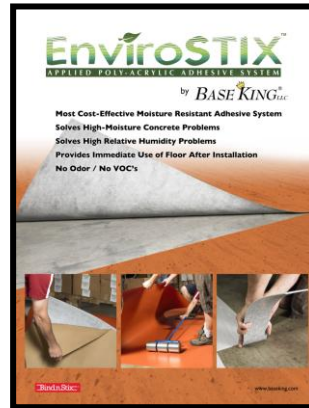
U.S. Patent 7,231,815. Additional patents pending.

area has to be increased to allow the weight to be dissipated over a larger area. Sharp wheels or wheels with a high “crown” should not be used.

The appropriate flooring material, capable of withstanding the types of furnishings and equipment it is going to be subjected to and the type of adhesive used to install it, should be specified. If you have doubts as to whether a product is suitable for use in a space you are considering installing it in, we can test it for you to see if it is inappropriate before the mistake is made and the disappointment is experienced. This is much less expensive than having a problem after the fact and replacing a product that didn't work. Easier yet would be to specify different wheels or feet on equipment or furnishings. It would also be a good idea to read the spec on the flooring product to see if it is rated for the type traffic and use it is going to be subjected to. And most simple is to ask around your marketing area to see how the product you are considering has worked for others using it in the same type of environment. Another easy way to find out what product will work is to ask a flooring contractor, such as a Starnet or Fuse Commercial Flooring Alliance (formerly ReSource) dealer, who installs boat loads of the stuff, what their experiences have been. They work with vinyl flooring materials and will know what products are prone to being a problem.

All of this stuff is pretty simple. Vinyl flooring materials have been used for decades without problems but you just have to know what to use where and how to use it - something we say all the time. The right product exists for every application. Understand also that there can always be a point at which a flooring product will be affected by some type of compromising influence.

Most flooring however lives up to the expectations you have for it. We typically, as the CSI of the flooring industry, see the ones that don't. On the front side we can help you avoid flooring problems by assisting in the specification, selection, testing and proper installation of it.



Systems like EnviroSTIX for hard surface and hard backed flooring materials and Bentley Prince Street Contact Release for carpet are systems that will help prevent the failure of flooring installations. There is more technology coming, most of which we are involved with. We'll keep you informed to help you. In the meantime understand that moisture, temperature and humidity have a profound effect on flooring materials and the integrity of their installation.



The new **Velcro Brand Carpet Protector** is ready to go. This product takes the place of clear plastic coverings with pressure sensitive adhesive that have created a host of problems for the industry. The new **Velcro Brand Carpet Protector** is made for use on loop and cut and loop carpet; the vast majority of commercial carpet. Bentley Prince Street is the first carpet manufacturer to offer this unique product. Contact Velcro for more information and samples.

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