

How Manufacturing the Flooring Product Can Create Problems

This is a subject few if any in the flooring industry, outside of manufacturing, are aware of or have heard of or understand. But if you live in Dalton, Georgia, the Flooring Capital of the World and are intricately involved in the flooring industry, either on the soft or the hard side, it is a subject we are all aware of and you, who make your living in the commercial flooring market, must know about.



The simplest changes in the manufacturing process can alter the final product, be it carpet or any type of vinyl or hard surface flooring. The product can be different depending on what shift it is produced on, what the weather is like, what the internal environment is like, how fast or slow the equipment runs, how the equipment is operating, what components are used or changed, and the list goes on. Some of you may recall a saying about not buying a new car made on a Monday or a Friday because workers were not at their peak, which leads to quality issues, the same can be said of the flooring industry. I'll give you an example later.

How is it that the manufacturing process of the product can create problems or impart variations in the quality or integrity? Years ago, I developed the Nine Major Claims Categories and Problem areas. The first item on the list is manufacturing defects which break into two categories, visible defects and latent defects. A visible defect is something that can be readily seen such as a streak or stop mark in a carpet or a bug in the surface of a vinyl flooring product. A latent defect in a carpet could be delamination or a tuft bind deficiency. In a vinyl tile or plank it could be cupping, end lift or fading. But the problems start with manufacturing because until the product is correctly produced, without any compromises in its integrity, it may be prone to developing and exhibiting the manufacturing weakness in the field after it's installed.

So, Let's look at some of the influencers relative to manufacturing that can create problems with the product. Know too that on any given day there can be a change in the manufacturing process, slight as it may be, that can have an adverse effect on the finished product.

Environmental conditions and seasonal changes can and do change the characteristics of the product. For example, hot and humid weather can change the laminate strength in a piece of carpet. Most of the mills here in Dalton do not have air conditioning in the plant, there may be large swamp coolers used to give some comfort to the people working. But uncontrolled environmental conditions can have an effect on things like the yarn, the tufting, and the finishing of the product. This would be for carpet or hard surface flooring. And even if there is a controlled environment there will still be variables in the conditions which can affect the product at different times of the day and year. If you've ever had the opportunity to tour a flooring manufacturing facility, you'd be able to relate to this.

Line Speed - the speed at which the production line moves for whatever the process may be can influence the finished product. Speed up the line or slow it down and the process it is controlling will alter the product. This can and does affect the finished product. For example, polypropylene has the lowest melting point of any thermoplastic used in flooring material, it can be affected by heat. If the heat used in the manufacturing or finishing process varies or the line speed slows or speeds up the amount of heat the product is exposed to can create problems in the field. We see this with polypropylene backed carpet tile frequently.

Heat – there is a tremendous amount of heat used during the manufacturing process more or less heat can affect the product especially when dealing with a thermoplastic, which would be all of your vinyl tile and plank products and carpet tile backings. And the layers of material that go into these products. If the layers are not balanced, they can and will create stress in the product which can result in dimensional and planar changes in the product after it is installed when the layers of material are trying to reach equilibrium. This can also include the polyurethane wear layer creating stress.

Material Variations – components used in a product can change the quality and integrity of the product. During Covid when there were supply chain issues, alternative chemicals and materials were used in many cases which created product quality issues with the finished flooring. Or a supplier may change the makeup of the raw material used to make the product. Or a change made in the manufacturing process to lower production costs or whatever. Any change, for whatever reason, can influence the finished product without anyone being aware of why until there is a rash of complaints and you go back to figure out where in the system the problem was created.



THE COMMERCIAL FLOORING REPORT

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Application Rates – of whatever is being applied to the product whether a soil/stain resist agent, a polyurethane treatment on a vinyl flooring product or some other applied component in a continuous manufacturing process. Or in the lamination rates of the layers of a vinyl flooring product. Or the heat applied in the process or to anneal the material which may vary and affect the product. If the layers are not balanced and later react to reach equilibrium, that is remembering where they want to be unstressed, they will affect the product. Think shrinking, cupping, curling or any stress related reaction in the material that someone may want to blame on the installation or some other wild hair notion. Remember this, the act of installation will not cause a change in the physical characteristics of the flooring product. And a term we coined years ago, “the product never lies, it will always tell you what’s wrong if you know how to interpret what it’s saying. People lie but never the flooring product.” This is why you must understand the manufacturing process of whatever product you’re looking at, that is doing hinky things on the floor. And if you don’t, you’re just guessing at the cause.

Continuous Dye range – end to end and side to side shade variation. This is another issue that plagues continuously dyed carpet. This system is prone to producing shade variations in a carpet, whether end to end or side to side. It spurned a whole industry of color blending to even out the color to avoid replacing a carpet that suffers from this condition.

Recycled content. Recycled content in flooring products can come from post consumer sources, these are items that were once used by a consumer and are now being recycled or from pre consumer waste generated during the manufacturing process itself, like factory scraps or offcuts. Unless you know the ingredients and make up of post consumer recycled materials, they may adversely affect the finished product. And pre consumer waste can only be recycled so many times before it affects the integrity of the finished product.

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Materials used to manufacture a flooring product can and do vary from the makeup of the vinyl, the thickness, the grind and makeup of the cores of SPC or WPC vinyl flooring products, the polyurethane coating material, how it is cured or a plethora of varying processes and materials, all can have an effect on the product.

Let's look at some specific issues we've dealt with over the years.

UV inhibitors – UV light be it artificial or natural will have an effect on flooring products. UV inhibitors not only prevent carpet fiber from turning into little shards of dust but also prevent the products, both hard and soft surface, from fading prematurely. Red is particularly sensitive to UV light fading.

Extrusion of vinyl flooring materials going over the chill rollers as it is extruded. A chill roller not functioning properly left a "blank" space on the backing sheet that prevented that section of the flooring from adhering when installed.

On a special project the manufacturer we were working with making carpet had to make modifications to the finishing range to achieve high tuft bind and laminate strength. They also had to shroud the tufting machine to maintain consistency in the tufting process.

On another project we insisted the product not be manufactured on third shift. One run was and wound up having to be replaced. (Remember the reference made earlier to not buying a car made on a Monday or a Friday)

On another project where a special polyurethane backing installation system was used. The system was supposed to allow the product to peel off the floor. When it didn't and created a complaint, we went back into the manufacturing process to find out a belt was changed which altered the characteristics of the polyurethane enough to make it bond more aggressively to the substrate.

We could go on with the stories that we've been involved with over the years. But suffice it to say that when you have a problem with a product or claim, you not only have to look at the product but into it and understand how it's made and what is causing the concern condition.

Many years ago, one of my mentors told me, "Either you control the product or the product controls you". This is still true. At LGM we must know the manufacturing processes of the products we look at when there is a problem so we can determine, without question, what went wrong in the system, where and why, so that we can help you with a definitive answer. This is a constant and never ending process. If you don't know, you can't know.

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Session Description:

Flooring failures are the bane of the industry, for whatever reason, be it installation, defective product, the wrong product in the wrong place, substrate conditions, or environmental influences - the list goes on. The increase in new products, with a variety of characteristics and now more PVC free products, present unique challenges for the flooring dealer, installer and contractor. The importance of knowing as much as you can to avoid flooring failures and drains on your business profits is imperative. This program will offer you insight, information and examples of what to avoid and what happens when you don't. This is information you'll not get anywhere else, in an independent, unbiased and objective presentation.



LGM’s clients are not manufacturers but flooring contractors, general contractors, construction attorneys and major commercial end users. Our concentration is strictly in the commercial market, but we’re here to help anyone. As was said by one of the leading flooring manufacturers years ago and still holds true to-day, “LGM are not the guys you want sitting on the other side of the table.”

As professional industry consultants we are hired by clients to provide expert advice and guidance to solve specific flooring problems, prevent them or improve performance.

We have a deep knowledge, extensive experience, and a decades long proven track record in the flooring industry, earned through years of practice, leadership, and study.

Our team's experience and credentials in the flooring industry are irrefutable and second to none when the objective is to find out what went wrong, why, who’s at fault and how do you fix it.

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