

CFR The Commercial Flooring Report

For the Commercial Floor Covering Industry

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The Effects of Lighting on Flooring

Light and lighting have an influence on everything we look at and see and flooring is no exception. Here we'll look at the effect of lighting on creating issues and concerns with flooring from magnifying physical characteristics to exposing influences below the flooring itself, such as the application of adhesives or irregularities in the substrate that telegraph through the flooring material.

We should all know that light colors reflect light and dark colors absorb light. Lighting has a great deal of effect on exposing characteristics of the flooring material, the substrate beneath it and the components used between the "sandwich" of the installation. An example is trowel marks telegraphing through the surface of a sheet vinyl flooring installation or flexible vinyl tile and plank, which are exacerbated by a very shiny polished flooring surface and light – often creating a complaint, which I would imagine many of you have experienced.

Indirect lighting, where light is reflected off surfaces like ceilings and walls, significantly impacts the perceived color and texture of flooring surfaces.

Light can and does exacerbate a planar issue with flooring material, particularly vinyl tile and plank, when the edges or ends have lifted not only exposing the condition but if viewed from the direction of the light source, such as sunlight through the windows, the exposed ends of the lifted plank for example will look lighter.

It is often best to look at these conditions in natural light without the lights on as they are typically more evident.



Bubbles in sheet vinyl flooring from near surface alkali silica reaction, not blatantly obvious in bright light but clearly evident with no lights an illuminated across the surface of the flooring.

In the lab flooring is tested under a McBeth light booth, an apparatus which simulates lighting conditions. This apparatus is used to test products under a variety of lighting conditions, meaning that the user can accurately show how that product will appear under a variety of conditions independent of environmental influences. The Macbeth lighting test, also known as a color checker test, uses a variety of light sources to simulate different lighting conditions for evaluating color accuracy. These light sources include:



- Daylight: D50 and D65, simulating blue sky.
- Fluorescent: Different types like TL83, TL84, U30, U35, and CWF.
- Incandescent: A typical light bulb.
- Ultraviolet (UV): To detect optical brighteners and fluorescent whitening agents.
- LED: A light emitting diode.
- Horizon: A Spectra Light exclusive type.

Shades of light- what light is the flooring specified under – most often used when specifying carpet as the light at the installation site should be matched to the light used to select the color/shade of the carpet. If the lighting under which the carpet is going to be installed is different than what the mill uses to produce the carpet there will be a discrepancy in color. In other words the carpet color should match under the light conditions – this is what the Macbeth light is used to determine.



Custom carpet installed in a corridor. The approved strike offs are laying at the foot of the photo in red square. Is this a color match? Is it possible the color was matched under different lighting in manufacturing to installation?

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This is particularly important with specified carpet where the light in the space the carpet is to be installed in. The carpet color needs to match the lighting the carpet is to be installed, such as cool white or daylight. So when dyeing the carpet the color needs to be compared under those lighting conditions in the Macbeth test, otherwise there will be a complaint that the carpet color does not match the sample. In a commercial application, whoever is selling the carpet must coordinate with the designer so they both know what the lighting conditions are. We've experienced this type of a predicament over the years from a lack of communication by the participants.

Hard surfaces and soft surfaces reflect light differently- hard surfaces reflect light, soft surfaces absorb light.

Bright light – washes out surface irregularities but it can also magnify below the flooring irregularities. Absorption/reflection

Flooring reflective surface variation from texture difference in the flooring material.

Substrate influences – irregularities in the substrate exacerbated or mitigated by light.

Finish influences – in certain lighting and angles oddities may be seen in the flooring material from things such as surface finishes or polishing, such as swirl marks in porcelain flooring. That oddly enough only reveal themselves in the light of the day at certain times. For example, "We only see these marks in the flooring in the morning sun." So, if you're going to look at what they may be complaining about, it better be at the time they're seeing them, or it will be like looking for the emperor's new clothes. (Origin: The phrase comes from Hans Christian Andersen's fairy tale "The Emperor's New Clothes," where an emperor is tricked into believing he has invisible clothes. No one dares to reveal the truth for fear of appearing foolish.)

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Trowel marks telegraphing through sheet vinyl or vinyl tile or plank – more visible in bright light. To eliminate this problem the adhesive after being troweled on should be rolled or it should be rolled on initially, making sure you have appropriate transfer. – always do bond/transfer test first

Why, out of the same boxes or runs does the flooring reflect differently? We'll show you a picture of this. Could be from a textural variation, or a shade or sheen difference. Know that these products are made in huge runs, may not be uniform in their manufacture or finishing and that, like a deck of cards, they may get mixed in the boxes. Any doubts, take some random pieces out of various boxes and turn them over where you may see a different shade or texture in the backing. This will confirm what we just explained.

Shade variation can be measured with a Gray Scale and it shouldn't be more than 10% variation. You can get a Gray Scale at most art supply stores. Best used with carpet or when carpet tile has a shade variation.

Remember, the flooring never lies, it will always tell you what's wrong if you know how to interpret what it's saying. People may, lie but never the flooring.

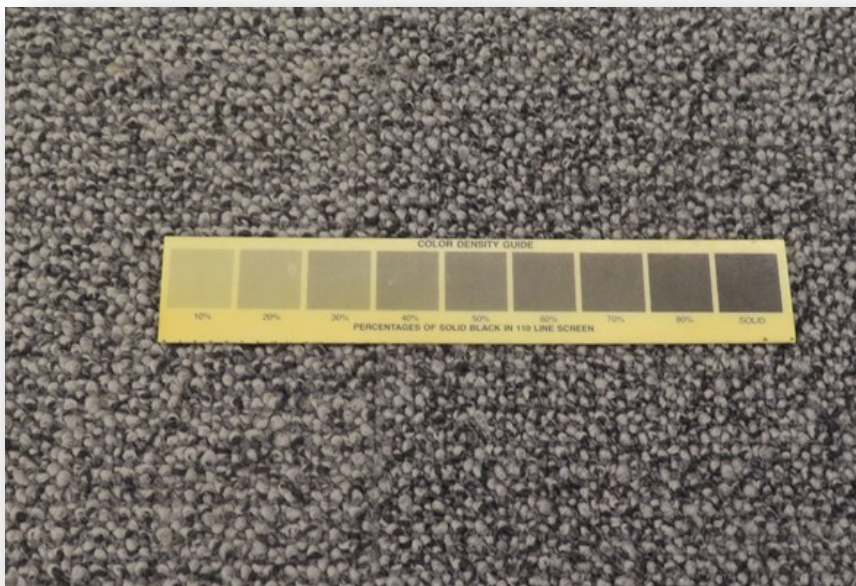
If you have flooring questions, from concrete to carpet, contact us. Our team of experts in all categories of flooring always has the answers; always.



Shade, sheen and texture variation in vinyl tiles evident in streaming sunlight.



Shade variation in vinyl plank due to surface texture differences. All from the same run and boxes.



Use of the Gray scale showing 30% shade variation at the seam of two carpet tiles – and they are going in the same direction.



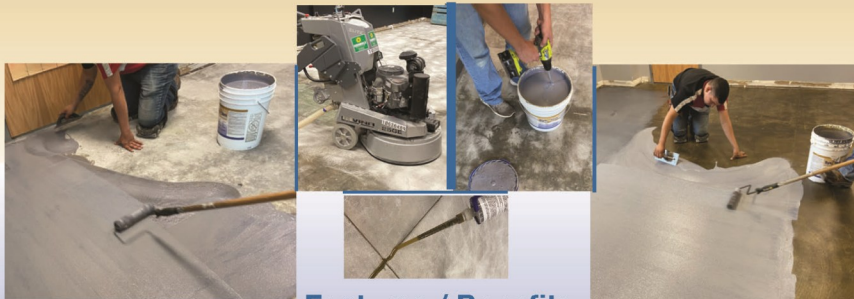
Ceramic tile shade variation from a distance.



The same tile when looking at it close up.

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Contact - Nance Carpet - Kimberlee Cloer <kimberlee.cloer@nancecarpet.com>

If you need help, have a question, aren't sure of a situation you're in, want to avoid a problem, or need guidance on a project or product, contact us. We always have the answers, always. It's what we do, from the substrate to what goes on it.

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