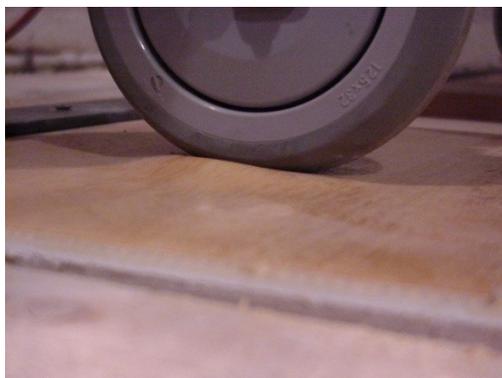


# Installation Expertise with Tim McAdoo



## What is Indentation

In the commercial flooring world, indentation can be a huge issue after the installation. The flooring is a beautiful installation and 3 months after the installation it is being picked apart by the facility manager. Wheel marks and indentations all over the flooring.



Architects and End Users get caught up on the static load numbers of the flooring material. The thought is, the higher the number, the better the flooring.

Most flooring materials will indent to some degree? The industry standard (ASTM F970) is that an indentation up to 5 one-hundredths of an inch is acceptable. A 5 one-hundredths of an inch is very visible. ASTM F970 is a test that is run on the flooring material only, not an installed system. ASTM F970 test is where a weight is placed on a 1 square inch indenter foot for 24 hours. The weight is then removed and the flooring sample is allowed to recover for 24 hours at which time the depth of the remaining indentation is measured. The indent must be less than or equal to 5 one-hundredths of an inch.

Everyone assumes the indentation is with the flooring material only. If it's not the flooring, where is the indentation taking place? There are a few questions that need to be answered first;

1. Is the indentation in the material, the adhesive or in the substrate?
2. What is causing the indentation: heavy equipment, hospital beds, static or dynamic loads, or foot traffic?
- 3.

Let's look at a few things that can contribute to the indentation.

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**Flooring Materials:** Homogeneous and heterogeneous flooring materials are very durable products and rarely fail the ASTM F970 testing. Commercial flooring itself, whether homogeneous or heterogeneous is usually smooth as glass, little texture or embossing. There is no hiding power in a piece of flooring that is smooth as glass. Any minor imperfection showing in the flooring will be seen.

However, an indentation close to 5 one-hundredths of an inch can look extreme on a smooth finish flooring product. If you were to look at the difference in the depths of indentations, you would find that a 1 one-hundredths of an inch indentation is barely visible, but a 5 one-hundredths of an inch indentation looks massive.

**Homogenous** - Floor surfacing in sheet form that is of uniform structure and composition throughout, usually consisting of vinyl plastic resins, plasticizers, fillers, pigments and stabilizers. Same product from top to bottom.

**Heterogeneous** - Floor surfacing in sheet form consisting of a wear layer and other layers which differ in composition and/or design and may contain a reinforcement inner layer. Sometimes called layered composite or backed vinyl sheet flooring.

**Adhesives:** The adhesive is where most indentations occur. In a fine-notch trowel application, the adhesive film is about 1/32" thick when applied, then allowed to dry to the touch. The material is placed into the adhesive and rolled with a 100-pound roller. The remaining adhesive film is still around 18 one-hundredths of an inch to 22 one-hundredths of an inch thick. The likelihood of an indentation appearing in the adhesive line is extremely high, especially if the adhesive is not fully cured. Trowels that are not properly notched or too large a notching will make the material prone to indentations. Not only the depth of the trowel notch but the spacing as well.

Many flooring manufactures recommend the use of 2 part epoxy or urethane adhesives for under areas with heavy loads. The problem is that the epoxies and urethanes require back rolling with a paint roller and multiple rolling with a 100-lb. roller. Epoxies and urethanes are not made for use in large areas as the chance for bubbles and air pockets are high. Also, when the epoxies and urethanes are troweled next to a water based adhesive, there can be a difference in the height of the two adhesives. Epoxies and urethanes contain no water and the water based adhesives do. As the water based adhesive dries to the touch, the adhesive trowel ridge shrinks.

You are starting to see some harder set water based adhesives on the market, eliminating the need for 2 part epoxies and urethanes. Mapei Ultrabond ECO 360 is a high-performance, wet-lay and

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pressure-sensitive adhesive designed specifically for installing homogeneous and heterogeneous solid vinyl flooring. With its strong, durable, moisture-resistant and alkali-resistant bond, it is ideal for commercial and institutional applications. Ultrabond ECO 360 has an excellent open time, develops strength quickly, performs well under rolling loads and resists indentation. Its low volatile organic content makes it ideal for use in occupied buildings such as hospitals and medical centers.

**Patching Compounds:** Improperly mixed patching compounds can also contribute and be the source to indentation. Adding extra water to a patching compound can weaken the strength of the patching compound making it soft and punky.

## Other Contributing Scenarios;

**High-Gloss Polish:** Also known as the “Wet look.” Multiple coats of a high-gloss polish buffed to a mirror-like finish that will show any minor imperfection in the flooring installation and highlight an indentation.

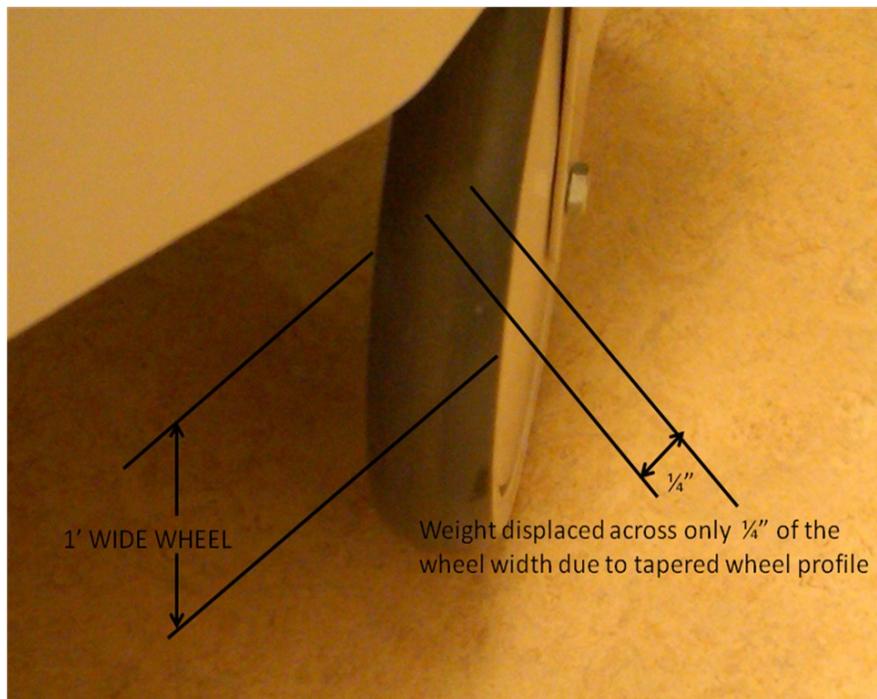


Maintenance personnel need to understand that two or three thin coats are better than one heavy coat of polish. Also, reducing the gloss level of the polish can eliminate a lot of their problems associated with indentations.

**Hospital Equipment and Beds:** The manufacturers of hospital equipment have no concerns for the flooring industry. The casters on some hospital beds are rounded instead of flat and leave a very small foot print (static load pattern). This small load bearing area, along with the weight of the bed plus the weight of the patient is enormous. Lock this caster down and get it to pivot while locked, and the possibility of an indentation or delamination of the adhesive is extreme. The

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locked wheel twists with any movement from the bed, shearing the adhesive loose from the flooring. The weight of a hospital bed can be from 350 – 450 pounds, plus the weight of the patient. As the picture below shows, all this weight is distributed across only a fraction of the wheel width which greatly adds to static load indentation.



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## About Tim McAdoo:

Tim is a certified instructor for Armstrong, Avoire, Konecto and Starloc products and has been a member of the Armstrong Installation Training Team since 1984. Tim has highly developed installation skills and qualifications that have been combined over his 32 years in the floor covering industry. Tim is privy to all the latest innovations and techniques used in the installation of their products.

We are sure you will find your skills improved after attending one of his installation courses.



To view a complete list and register for one of Tim's installation trainings, click here on the QR or visit: <http://www.jjhaines.com/customers/installation-training/>



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