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SOLID VINYL TILE
Keys to a successful installation
By Christopher Capobianco

The words "Vinyl Tile" and "Luxury Vinyl Tile" get thrown around a lot but if you go by industry standards per ASTM, there are only two products in the category of "Vinyl Tile"; Vinyl Composition Floor Tile (VCT) and Solid Vinyl Floor Tile (SVT). Today we will be discussing the installation of SVT so first let's look at the main difference between the two products. ASTM F 141, *Standard Terminology Relating to Resilient Floor Coverings* defines "binder content" which is the main difference between VCT and SVT, "The binder consists of polymers and/or copolymers of vinyl chloride, other modifying resins and plasticizers which comprise at 34% by weight of the finished tile." Binder is what we call "vinyl", so SVT has to be at least 34% vinyl content and tile that is not is VCT.

ASTM F 1700, *Standard Specification for Solid Vinyl Floor Tile* classifies SVT in three categories – Class I Monolithic, which means through color tile with no backing; Class II Surface Decorated, which usually means an "inlaid" type tile with a backing, and Class III, Printed Film Vinyl Tile, which is a photographic print film with a clear vinyl wearlayer and a backing system. Class III is the most popular category, including wood look vinyl plank, stone, marble and granite looks that is often called "Luxury Vinyl". The clear wearlayer comes in many thicknesses. A minimum thickness of 0.020" (20 mils) will classify the product as "Commercial". It is important to note that many products sold as "Luxury Vinyl" are not SVT. These products, mostly for residential use, have a backing containing a lot of filler that does not meet the 34% vinyl content requirement. These products are actually VCT.

Regardless of the composition of SVT, the installation is different from VCT, and failure to understand that is the cause of many failures. Here are the keys to a successful SVT job, starting with some important steps that have to happen before the installation.

- **Adhesive selection.** It is important to know that SVT is not installed the same way VCT is. You can't use "Clear Thin Spread" and put adhesive down over large areas. Most SVT adhesives are either a wet lay or a semi-wet lay installation and in some applications it may be a reactive adhesive like epoxy or polyurethane. Reactive adhesives should be used in very high

traffic areas where there is a lot of foot or rolling traffic. Examples would be elevators, lobbies, hospital patient rooms or supermarkets. Floors that get wet a lot or are exposed to cold or heat are other good examples where reactive adhesives will outperform the standard acrylic latex products. So, before the job is even quoted it is important to match the adhesive to the job and quote the job accordingly.

- Trowel Notch. You should purchase new trowels with the appropriate notch size. It is often the case that SVT adhesive will be applied with a finer notch trowel than the standard VCT or carpet adhesive. Too much adhesive can lead to failures such as adhesive oozing, tiles shifting or indentations in the finished floor, so do not fail to pay attention to this detail. A good trowel costs no more than 2 cents per square foot and that is an important investment
- Site Conditions and Moisture Testing. Make sure you are installing in a building that is climate controlled. The product, the adhesive, the moisture testing and the surface preparation will not be at their best if they are used in very cold or very hot conditions. SVT is not at all "Breathable" so moisture will not pass through it. If you are installing over concrete, make sure that moisture testing has been done and that the slab meets the requirements of the adhesive and/.or the flooring manufacturer.
- Acclimation. The product itself needs to be acclimated to job site conditions for at least two days before installation. The reason for this is the tendency of vinyl products to react to temperature changes, especially warm to cold. Vinyl products such as SVT, vinyl wall base and vinyl edgings may expand slightly or they can be inadvertently stretched during handling if they are warm, such as when they come in from a hot van. Vinyl has "memory" so if it is installed in this expanded state, it will go down with joints that are nice and snug but may show gaps later in when it goes back to its original size. For this reason, acclimating vinyl products to job site conditions is just as important as it is with natural products such as wood, cork, and laminates

- Substrate Preparation. SVT is very flexible and will conform to any irregularities in the substrate, so floor prep is the third key to success. Take extra care to be sure the substrate is smooth by installing the proper underlayment or patching compound to smooth the existing surface. This is especially true on smooth SVT and is most critical on dark color SVT with a smooth surface. This is a good example of knowing the product before you install it. Textured resilient flooring of all kinds is more forgiving of slight irregularities in the substrate then smooth products are, so it may take a little extra time for surface prep with these smooth products.
- Adhesive Open Time. Before you start to spread adhesive, make sure you are comfortable with the required amount of open time so that you can lay out the job and spread the right amount of adhesive at a time. Leaving too short of an open time may cause poor bond and more chance of tile shifting or adhesive oozing up between the tiles. Allowing too long an open time may mean the tile might adhere initially but the long term bond strength will not be good. Open time can be affected by temperature and humidity so it should be checked on a job by job basis. In dry warm weather the open time may be shorter and in humid weather it may be longer. Adhesives with a shorter open time requite that the installer spread small areas of adhesive at a time.
- Spreading the Adhesive and rolling. If you are used to installing VCT, you are experienced in "dry" adhesive, where large quantities are spread using a 1/16" square notch trowel, and allowed to "tack up" so they are dry to the touch and do not transfer to the back of the tile. It is very rare that SVT products are installed using this type of adhesive because the nature of SVT is that it is not as stable as VCT so it needs a harder setting adhesive such as a "wet lay" acrylic or a reactive adhesive, which often are applied using a smaller trowel notch such as a 1/32" notch. "Wet lay" adhesives must be spread in small areas at a time, covered within the recommended open time (usually 15-20 minutes), and rolled with a 100 lb roller. If the tile is lifted periodically, there should be transfer of adhesive to the back of the tile and

the trowel ridges should be flattened out. If these types of adhesives are left open to the air for too long a time period, they lose their adhesive characteristics and must be scraped off the floor. If they are not rolled, the tile sits on top of the adhesive but is not fully adhered. In both cases, there may be enough tack to hold the tile down but the bond will not be nearly as strong so the floor may develop gaps over time. If the floor fails on a wet lay installation, the cause can be diagnosed by lifting a tile. If trowel ridges are visible and/or there is no adhesive transfer to the back if the tile, it's a good bet there was too much "open time" so the adhesive "skinned over", or the floor wasn't rolled.

Another type of SVT adhesive is a "tacky lay" type, where the adhesive is left open to the air for about 30 minutes, or long enough that it develops some tack, but not long enough where it turns clear like a clear thin spread VCT adhesive. The best way to tell if this type of adhesive is ready is to touch it lightly with a finger. If you get a "smudge" on your finger it is not ready. If you see lines from the trowel notching then it is ready. Set the tile and roll it with a 100lb roller.

After installation. Once all of the tile is laid, roll the entire floor with a 100lb roller one more time in both directions. Check for any loose or popping tiles and if there are any, weigh them down so the tile and adhesive will be in full contact with each other when the adhesive sets. This weight can usually be removed after 12 hours or so. Check the flooring and adhesive manufacturer's recommendations for how long to protect the floor from traffic. When in doubt, prevent all foot traffic for the first 12 hours and allow light foot traffic from 12 to 24 hours. As far as rolling traffic and furniture, that may depend on the adhesive. Generally I would recommend preventing rolling traffic for 48-72 hours after the tile is set.

- **Protection** If there will be construction on the floor after installation it should be protected from damage. Tools, ladders, carts and the like can make permanent indentations if they are allowed on the floor while the adhesive is still wet. Wait 24-48 hours for the adhesive to set up, then sweep the floor and cover with brown Kraft paper and ¼" or thicker panels of plywood or

hardboard. Don't use colored paper because it can stain the floor if wet and don't use or plastic because it may hinder adhesive drying. Also, don't put the panels directly on the floor because they may scuff or scratch it. Put paper down first.

- **Floor Care.** Floor care is usually not the installer's responsibility but advice about floor care may be. Before you answer the question "how do I clean the floor?" make sure you know the answer. There are a variety of different cleaners recommended for different floors, so don't just say "any floor cleaner from the supermarket". If you don't know, say "sweep and damp mop with plain water until you get the manufacturer's floor care instructions".

Like a lot of products we cover in "let's talk resilient", SVT is a "high end" product that takes a little longer to install but done correctly make may be one of the most beautiful floors you ever install.

ABOUT THE AUTHOR A fourth generation floor covering specialist, Christopher Capobianco's background includes retailer, architectural sales representative, technical support manager, consultant, writer, educator and activist. His consulting company, Flooring Answers, provides technical support, trouble shooting, training, testing and inspection services to manufacturers, distributors, dealers, architects and end users. He volunteers his time as Chairman of the FCICA (*The* Flooring Contractors Association); ASTM Committee F.06 on Resilient Flooring; and the IICRC (Institute of Inspection, Cleaning and Restoration Certification). You can reach him at www.FlooringAnswers.com.