

Subject: Laminam 3+ mm and 5.6mm on Elevator Floors and Walls

Elevator floors: Crossville Incorporated does not recommend installation of its LAMINAM product in thickness 3+mm on elevator floors or any floor. While Laminam 5.6 mm's reduced weight per square foot may be beneficial in an environment where weight reduction is paramount, there are several factors unique to elevator floors that make the installation of porcelain tile in any thickness challenging.

- **Deflection:** Constant change or shift in live and dead loads on the flooring surface is always a negative influence on rigid flooring systems. Elevators are not normally built in such a way that the substrate for flooring meets the minimum required deflection for tile systems which is at least $L/360$. Elevator floors are in a regular state of deflection and in combination with load, elevator acceleration upward increases weight load and the corresponding downward acceleration lightens weight load. The center of this continual flexing activity is the floor area.
- **Forced vibration:** Incumbent in most elevators is forced vibration. This vibrational activity can be a periodic, steady, or transient in its occurrence all with a negative effect on the flooring system.
- **Point load:** Stressful to any flooring, but if not installed with maximum coverage of setting material gauged porcelain tile panels can be more susceptible to damage than a thicker/heavier tile
- **Impact,** given the multi-use qualities of most elevators, contact with all manner of material dropped at waist level or higher, coupled with irregular installation or structural deficiencies creates further potential for significant floor damage.
- **Wheelchairs and Heavily loaded luggage carts** introduce yet another category of stress to the flooring assembly. Rolling loads and wheel pivot points exert greater mobile loads and increase the likelihood of damage to any area of the tile that is not properly supported by the bonding mortar or an inadequate substrate.

Traditional 3/8" thick tile is a common flooring option in elevators. It is normal, for all the reasons stated above, for the flooring to have a relatively short lifespan before it is in need of repair or replacement. Normally this starts with cracking grout, eventually leading to other failures. When this occurs, normally the tile is not claimed to be at fault, it is just understood that the environment is difficult and the resulting need for repair or replacement is acceptable and outweighs the downside of other less durable surfaces. For this reason, up to now, Crossville Inc. has taken the conservative approach to not subject this new category of tiles to these probable failures due simply to the nature of the elevator floor application. We have chosen to take this stance in order to protect the long-term reputation of Laminam by Crossville in flooring applications.

With the category growing ever stronger, and knowledge of the materials exponentially greater than even 2 years ago we feel we can now make some general recommendations of Laminam 5.6 if, after fully understanding all the information provided above, you still decide to proceed with Laminam 5.6 for an elevator floor application.

There should always be a perimeter soft joint of at least ¼ inch to accommodate movement, that there be at least one grout joint in each direction (north/south and east/west) at the center of the installation for additional movement accommodation, that the grout joints are full and flush to reduce edge impact (epoxy grout will also reinforce the tile edges), and the elevator entrance have some means of protecting the tile from impact as you enter the elevator (usually a pre-fabricated threshold of some type covering the thickness of the tile layer).

Crossville Inc. provides a warranty that our tile products are free of manufacturing defects and compliant with industry standards. This is standard for all tile manufacturers. Also standard is that we do not provide warranty of the system. The system should be detailed by the setting material manufacturer with full knowledge of the substrate to be bonded to, the height of the installation system that can be accommodated, and what the deflection is of the substrate to be tiled. With this information, the setting material manufacturer can provide an installation system and the decision of whether or not a warranty can be applied to that system.

If Laminam by Crossville is used on an elevator floor Crossville will honor claims related, per our warranty, to manufacturing defects, but not related to improper installation, design, environmental conditions, or other improper uses of our materials.

Elevator walls: Laminam 3+ and 5.6 mm are perfect materials for elevator walls due to their durable porcelain characteristics and light weight nature. Installation in these applications should proceed using TCNA Handbook details for interior walls, or with proprietary systems normally developed and specified by elevator cab design/build companies.

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