

The Risks of Grouting Steel Frames

When should frames be grouted? Ask three people and you'll probably get three different answers. In fact, the most common word entered in the search bar on the Steel Door Institute website is "grout". It's understandable. There are a lot of conflicting opinions on the topic. We would like to take this opportunity to share with you our stance on grouting frames.

Standard steel frames, including fire rated frames, do not require grout unless the frame manufacturer's fire protection listings indicate such.

Grouting should never be specified for standard steel frames in drywall construction. When grout is drying, the moisture only has a few places to go. The first is into the drywall, which weakens it and may hinder the frame's integrity or ability to retain anchors. The other places the moisture could go are into the hardware or the bottom of the frame. And we all know what happens when metal is in a moist environment: rust.



Improperly grouted frames are expensive to remedy. Worth the risk? We don't think so.

A properly anchored frame will not be any sturdier if it is grouted. After all, drywall slip-on frames with proper anchoring can pass fire and hose stream tests, cycle tests, and even impact tests.

Grouting is usually not necessary for masonry construction either. To be clear, if the grouting is done properly it will not cause any issues with the frame. Unfortunately, thin pumpable slurry is often used and its excess water causes rust.

There was one project where 300 doors were pumped with slurry and all of them had rusted hinges after just two months. Holes were then drilled in the bottom of the frames and moisture started to seep out. This is what can happen when grout is pumped instead of hand troweled.

Grout can certainly improve the sound deadening qualities of a frame, although similar acoustical performance can be achieved with other sound deadening materials. For fire rated openings, you should verify that the grout or bituminous coating will not negate the rating.

The Do's and Don'ts of Grouting Frames

A common misconception still exists that fire rated frames must be grouted. In fact, very few manufacturer's require grout in order to maintain a rating" Grouting may be required in acoustical frames to sustain the STC rating of the opening.

If you choose to grout, please follow the guidelines below.

- ✓ Grout must be mixed to a 4" (102mm) maximum slump per ASTM C476-20 Standard Specification for Grout for Masonry.
- \checkmark Grout must be hand troweled in place as the masonry is laid.
- \checkmark Brace the frame during grout application to prevent bowing and sagging.
- The installers should reference the frame manufacturer's instructions.
- Mortar grout is recommended because it cures with a chemical reaction and hardens throughout.
- Grout that gets on the exposed side of the frame should be removed immediately. Consider adding a warning regarding the type of cleaner to use when removing the grout.
- **K** Grout should never be pumped.
- 🗶 Never used in standard drywall openings. (There are some exceptions for higher STC openings, see SDI 1271 Grouting Frames in Drywall.)
- 🗶 Does not contain anti-freeze agents unless the frame is backcoated for corrosion protection.
- **K** Grouting of mullions and other closed sections is not recommended.
- 🗶 Plaster should not be used for grout, as only the areas exposed to air will cure and harden, leaving the center wet ang uncured.
- **K** Grouting of thermally broken frames is not recommended due to thermal bridging.
- K Mortar used in STC frames should not include aggregate or rocks.

Resources

SDI 127-I Grouting Frames in Drywall ANSI/SDI A250.8 (Section 4.2 – Frame Installation) Grouting Frames in Masonry SDI 128 Guidelines for Acoustical Performance ASTM C476-20 Standard Specification for Grout for Masonry