
SEMI-RIGID JOINT FILLER INSTALLATION BEST TIMING GUIDE

Joint Filling in Newly Placed Concrete Floors

The role of a semi-rigid joint filler is to protect slab joint edges from damage caused by hard-wheeled traffic. For maximum effectiveness, the filler should completely span the joint and bond tightly to the joint walls.

When concrete is placed, it always contains more water than is required for cement hydration. This extra water slowly evaporates through the slab surface, causing the slab to shrink. As the panels shrink, the joints between them widen. A joint initially cut at 1/8" (3 mm) may eventually open to 3/16"-1/4" (5-6 mm) or larger.

Concrete shrinkage typically follows this pattern:

- **First 30 days** – about 20–30% of total shrinkage
- **Next 335 days** – about 50–60% of total shrinkage
- **At one year** – about 70–90% of total shrinkage

This means joints are widening even as fillers are being installed and continue to move afterward. It's common to see joint filler separate from the joint within a few days due to the gap expanding beyond the filler's ability to stretch. Failures may be adhesive (loss of bond) or cohesive (tearing of the filler itself).

Shrinkage is also influenced by environmental factors such as temperature and humidity. A prime example is found in refrigerated spaces: cold temperatures cause concrete to contract, while refrigeration reduces ambient humidity and speeds evaporation. In freezers, a 1/8" (3 mm) joint may open up to 3/8" (9.5 mm) or more.

Because shrinkage and movement continue for an extended period, waiting for all slab movement to finish before filling is not realistic. The best practice is to delay joint filling until the joints have reached a more stable width.

Recommendations

1. New Industrial Floors

According to ACI and PCA, joint filling should be postponed 60–90 days after slab placement, and longer if conditions permit. For non-climate-controlled buildings, longer delays are especially beneficial. If the structure will eventually be temperature controlled, wait until the HVAC system is operational and the slab has stabilized.

2. Refrigerated Environments

Always postpone filling until the space has reached its permanent operating temperature. ACI floor committees recommend holding that temperature for at least 5 days in coolers and 14 days in freezers before filling.

3. Retail Stores

Retail projects are often built rapidly, leaving little opportunity for joint filling deferral. If joints are filled too early, separation will be more pronounced. To minimize this, joint spacing should be reduced so that movement is distributed across more joints, limiting separation at any single joint.

Filling Older Floors

In some cases, joints are not filled until 6–18 months after placement, as in speculative buildings where tenants are not yet secured. In these situations, the concern shifts from initial shrinkage to seasonal expansion and contraction:

- **Filling in summer:** Joints are at their tightest. When winter arrives, joints open and filler separation is likely.
- **Filling in winter:** Joints are at their widest. When summer heat and humidity arrive, slabs expand, compressing the filler and sometimes forcing it out of the joint.

For best performance, joints in mature slabs should be filled in moderate months (March–May or September–October). If the building will be temperature controlled, fill only after the HVAC system has been running for several weeks to stabilize conditions.

Minimum Wait Before Filling

Although it is always preferable to wait as long as possible, project demands may require early joint filling. ACI/PCA guidelines recommend a minimum of **28 days** after placement. This ensures that the joint walls are dry enough for proper adhesion between filler and slab.

