

# TECHNICAL BULLETIN

## Sacking

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For decades, Tilt-up construction has been a time- and cost-effective building method, making it a popular new construction method for large, functional square- and rectangular buildings. Advancements in this type of construction have allowed for more complex designs, making it appealing to a broader range of applications, including education, retail, commercial, and residential.

“Tilt-up” gets its name from the construction process itself, during which concrete panels are lifted or tilted to form a structure’s walls. Once Tilt-up panels are erected/installed, they are inspected to identify any inconsistencies or flaws. One common issue when pouring the concrete into the horizontal forms is trapped air bubbles that can create undesirable voids in the concrete (**Figure 1**). Typically, these abnormalities are usually repaired via a process called “Sacking.”



*Figure 1: Example of voids on the surface of a concrete tilt-up panel.*

### What is Sacking?

Sacking is the process of reducing or removing defects on a concrete surface to create a smooth finish. It involves applying wet cement to the concrete surface, filling a burlap bag (or other coarse material) with a blend of dry Portland cement and sand, and — before the substrate dries — scrubbing the wall to make it smooth/flat. Sacking repairs air holes or “bugholes,” as well as small imperfections (maximum depth: about 1/8 inch). Sacking is generally done after all patching of significant defects has been completed (**Figure 2**).



*Figure 2: Concrete sample before and after sacking.*

### Materials

While every contractor has their own technique for sacking tilt-up panels, the materials and tools used are alike:

- Right mix for sacking contains one-part Portland cement, one to two parts fine sand, and enough water to produce a consistency between that of thick paint and masonry mortar
- A rubber hand float to apply the patching mix to the wet substrate
- A burlap sack or pad to remove excess patching mix and smooth the surface

### What to Expect When a Tilt-up Has Been “Sacked”?

To ensure a successful Tilt-up paint job, the contractor should pay close attention to the substrate. The panel surfaces should be free of concrete dust, residual sacking, and other construction debris. Also, the sacking and patching compounds used must thoroughly adhere to the concrete surface — not be loose or easily rubbed off. Often, a general contractor might instruct the painting contractor that sacking has been completed and is ready for painting. At this point, the painting contractor will pressure-wash the walls to remove any residual dust and allow the surface to dry.

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The general contractor or concrete/masonry contractor is responsible for first examining the sacked surface's texture and adhesion. As poor-quality sacking can occur, it is critical for the painting contractor to check the sacking's integrity before accepting the surface personally. Ideally, both contractors should inspect the surface together to ensure all issues are addressed. Running a putty knife across the surface could reveal poorly adhering sacking, which can be easily removed. This could also be accomplished by rubbing the sacked area with their fingers to reveal any residual powder. To avoid possible failures throughout, it is a good idea to first prepare a small test area, or mock-up, before painting the entire building.

### Disadvantages of Sacking

A poorly repaired Tilt-up surface could be detrimental to a painting project, as there may be inconsistencies in the repairs depending on the finisher's techniques. The surface may appear unblemished to the eye, but — if any sacking can be removed with light pressure — any coating applied to the area can fail prematurely. Delamination of the coating may occur, as the coating will adhere to the sacking material but may not bond to the substrate. Adhesion tests, performed as described in Dunn-Edwards Technical Bulletin: [Field Adhesion Test Method](#), can show sacking material on the back of the coating (**Figure 3**).

Generally, when repairs are thin, they are prone to failure such as friability (when a solid breaks or crumbles) of the sacked area, which often indicates a lack of moisture in the sacking mix itself. Water from the sacking mix evaporates and is absorbed by the concrete substrate, which leaves little water to hydrate the cement or to establish a strong bond. Void repairs should



**Figure 3:** Sacking failure on tilt-up panel, verified using ASTM D3359 Test Method A – X-Cut Tape Test.

be done within 24 hours of removing the panels from forms, ensuring that the concrete does not dry out. The repairs should also be wet-cured for at least two weeks to prevent evaporation. Traditional vs. New Repair Methods

While the traditional method of void repair through sacking is still widely used, there is no consistent method used in the sacking industry. Regular sacking is often slow, tiring, and dirty — with surface streaking as a constant problem. This has led to explorations into new, high-quality and fast-setting patching compounds, both practical and economical. These compounds are typically one-component patching materials that are more workable and allow for a smoother finish than traditional sacking methods.

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