## SUBSTRATE BOND TESTING

### Understanding Substrate Porosity and Its Impact on Adhesive Application and Performance

The level of porosity in a substrate significantly influences the behavior of adhesives, particularly in terms of open time, working time and curing of the adhesives. Porous surfaces typically allow adhesives to cure more quickly, while non-porous surfaces may prolong the curing process.

Before applying any adhesive, the substrate must be clean and free of contaminants such as dust, debris, paint, oil, curing compounds, release agents (whether applied topically or mixed into concrete before pouring), sealers, loosely bonded toppings or leftover adhesives, anything that could compromise bonding integrity or reduce adhesion.

If the concrete is especially hard or smooth, mechanical abrasion may be necessary to create adequate porosity (porous substrate). Never apply adhesives or floor coverings over substrates that have been treated with chemical or solvent-based cleaners, adhesive removers or that have been treated with silicates, either topical or entrained.

To evaluate porosity, apply several drops of water (about the size of a quarter) to the surface. If the water is not absorbed within five minutes, the surface should be treated as non-porous and may require mechanical preparation such as sanding or bead-blasting to become suitable for adhesive bonding.

Products like surface sealers, hardeners, and other finishing treatments may interfere with proper adhesion. When unsure, performing a bond test is highly recommended. Any remaining residue from curing compounds or form release agents used in tilt-up construction must be removed prior to adhesive application. After the surface is thoroughly swept and vacuumed, conduct a bond test to confirm suitability.

Determining the correct adhesive coverage is the installer's responsibility and should be based on both the flooring material and environmental conditions. A bond test—essentially a trial section of the installation—helps confirm adhesive compatibility with the substrate and identifies appropriate working

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and open times. It can also uncover any bonding issues before full installation begins.

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**How to Conduct a Bond Test**

Choose a representative section of the substrate approximately 2 feet by 2 feet. Apply adhesive and flooring using the same methods intended for the full installation. After 24 hours, inspect the test area for bonding performance. The flooring should remain securely attached and retain its original position. If issues arise, the substrate may require mechanical profiling (such as bead-blasting) to expose a suitable bonding surface.

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**Flooring-Specific Application Guidelines**

**1. Modular Carpet Tiles**
For installations requiring tiles to be repositionable or releasable, apply adhesive using the specified method (trowel or roller) and coverage rate. Allow it to fully dry. Once dry, place the tiles and assess whether they lift cleanly without adhesive transfer and whether they stay in place or shift. Recheck after 24 hours.

**2. Vinyl Composition Tile (VCT)**
Spread the adhesive with the appropriate trowel at the recommended rate and allow it to dry completely. Once tiles are placed, test bond integrity by gently attempting to lift the tile edges. Re-evaluate bonding after 24 hours.

**3. Broadloom Carpet**
Apply adhesive using the specified trowel and coverage. Depending on substrate porosity and carpet backing, the adhesive may need to be wet or slightly tacky at the time of installation. Monitor the adhesive's interaction with the carpet backing during installation, including legging and contact quality. Check bond strength again after 24 hours. If you use a wet-set adhesive, avoid lifting the carpet until the 24-hour period has passed.

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⚠ **Note:**
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