

Adhesive Set-Up (Tack Time) Considerations

Although not commonplace, occasionally a dealer or installer will call the carpet manufacturer to complain about what they believe to be the inability of a carpet being installed by the direct glue-down method to stick to the subfloor. In virtually every instance, the real nature of the problem is the result of the installer's failure to obtain proper transfer of the adhesive to the carpet's backing.

Although adhesive performance properties will vary from one adhesive manufacturer to another, as well as within each manufacturer's own product line (e.g. base grade vs. premium grade), these variables are small, and typically are not responsible for the differences witnessed when trying to glue down one carpet manufacturer's product compared to another. In almost all cases, the question regarding why one carpet seems to glue down better than another pertains to the many variables that can influence adhesive set-up (hereafter referred to as adhesive tack or tack time) time using the same notched trowel.

The first consideration is adhesive type. Because premium adhesives have a high solids content, they will require less tack time than standard multi-purpose adhesives. As a result, it is important that installers frequently check for proper adhesive tack. Failure to do so often results in a good adhesive that did not transfer sufficiently to the carpet's backing as a result of poor installation.

The second consideration pertains to subfloor porosity, or the ability of the subfloor to absorb moisture from the adhesive. Porous floors can accelerate adhesive tack time as much as two-fold compared to non-porous sub floors. Because of this, it is absolutely essential to pre-test sub floors for porosity before spreading the adhesive. When a porous floor is encountered, it is also wise to first spread a small amount of adhesive in an inconspicuous area and check frequently to determine the time it takes for the adhesive to tack.

The third consideration is subfloor moisture content. Setting aside the adhesive degradation properties of alkali presence in a moisture-emitting slab; for every inch of concrete, an additional month is required for curing time. The presence of subfloor moisture can significantly stall or even totally prevent adhesive tack time, and cause a direct glue-down installation to fail in as little as six months. Because of this, our industry requires that subfloors be tested every 1,000 square feet using the Anhydrous Calcium Chloride Test (ASTM F 1869-98) over a 24 hour period. The use of electronic in-situ moisture probes that measure relative humidity in a subfloor is also beneficial. While this is not currently an industry installation requirement, Beaulieu encourages the use of in-situ moisture probes to help validate and record the moisture content of slabs.

The fourth consideration is the trowel notch size. The wider and deeper the trowel notch, the more adhesive is applied and the longer the tack time will be. However, whenever a carpet manufacturer recommends the use of a large trowel, no matter the longer adhesive tack time it requires, the installer must comply with the manufacturer's trowel size recommendations. By using a smaller sized trowel, less adhesive is applied to the subfloor, speeding up tack time. The resulting insufficient adhesive transfer can be detrimental to the longevity of the carpet installation.

Carpet backing type is the fifth consideration for obtaining sufficient adhesive tack. Non-permeable backings such as Kanga and Enhancer do not permit the release of moisture from adhesives. As a result, these backings require the installer to allow for extended adhesives tack time. This is especially true when installing a non-permeable carpet backing over a non-porous sub floor. Decreasing ambient humidity and increasing ambient temperature can accelerate adhesive tack time.

The sixth consideration is ambient relative humidity which significantly influences the time required for the moisture content in an adhesive to evaporate. The lower the humidity, the faster adhesive tack time will occur. Most carpet manufacturers recommend that ambient relative humidity not exceed 65%. Higher humidity will stall adhesive tack time.

The seventh consideration pertains to room temperature. Because rooms that are cold will stall adhesive tack time, and rooms that are too warm will accelerate it, it is imperative to follow site acclimation requirements relative to room temperature to assure that the carpet installation will take place while the room(s) have been kept for 48 hours prior to, during, and at least 72 hours after completion of the installation at the recommended 65-85 degrees Fahrenheit in order for the adhesive to reach its proper tack.

The eighth consideration regarding proper adhesive tack time is sub floor temperature. Like room temperature, sub floor temperature will affect the time required for an adhesive to tack. To prevent this problem, subfloors should not be less than 55 degrees Fahrenheit since colder subfloor temperatures will stall adhesive tack time. Conversely, no subfloor should exceed 85 degrees Fahrenheit since this temperature will accelerate the time required for an adhesive to properly tack.

The ninth and final consideration regarding proper adhesive tack time pertains to adhesive temperature. Cold adhesives require longer adhesive tack time considerations. An adhesive with half the temperature of another adhesive can require as much as twice the time to develop sufficient tack. To prevent this type problem from occurring, adhesives should be stored at 65 to 75 degrees Fahrenheit.

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