

By Norris Legue



>> **ADHESIVE** being applied for a total gluedown by spraying.

adhesive develops its ultimate bonding properties when fully cured. It is the opposite of an oily/slippery adhesive, regardless of strength after cure.

High green strength adhesives and help fight troublesome turf movement during installation, e.g., turf curl, bubbling, wind lift, creep, slip, wrinkling and buoyancy from rain, whereas an oily/slippery adhesive before it cures does not prevent those unwanted surface movements from the same forces mentioned above.

There is no such thing as a “one size fits all” synthetic turf adhesive. From an adhesive chemical standpoint, there are urethanes, epoxies, silicon/silane, rubber, etc. From a handling standpoint, there are Newtonian liquids, thixotropic liquids, spraying adhesives, hot melt adhesives, one and two-part adhesives, etc. So before selecting, do your homework on what’s best for your application.

[Free reprints of the December 2009 article are available from the author upon request.]

## More outdoor synthetic turf adhesive information

**Editor’s note:** Last December we ran an article by Norris Legue, aka the Guru of Glue®, which was well received so we offered him a chance to update us. He is the president of Synthetic Surfaces, Inc., Scotch Plains, NJ

**F**IRST LET’S REVIEW some important points from last year’s article: Adhesives with the highest strength don’t necessarily translate into being the best for synthetic turf installations. Instead of strength it is adhesion to the surfaces being bonded, both initially and after weathering that counts. Think how a high-strength adhesive will easily peel off of oil or wax-coated steel because of poor adhesion.

Do not be fooled into believing that an adhesive with the highest strength is the best for installing synthetic turf. Instead of high strength, it is adhesion to the surfaces being bonded, both initially and after weathering that counts. High adhesive strength does not mean good adhesion. As

an example, that same high strength adhesive will easily peel off of oil and/or wax-coated steel, “Teflon” and many other surfaces due to poor adhesion.

The most important adhesive property for installing synthetic turf is “high green strength” or high grab. This property is the ability to hold two surfaces together when first contacted and before (still green) the



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>> **ADHESIVE** being applied to a white seaming tap from a glue box.

### ADHESIVE UPDATE

Unless you are a gambler who realizes that you could also lose, don’t select an adhesive based on impressive lab test results conducted indoors. The reason is that after weathering, it could deteriorate to become an adhesive “time bomb.” Additionally, indoor tests on cured adhesives do not reveal the adhesive’s outdoor handling properties when

installing at different temperatures, humidity, wind, changing temperatures due to cloud cover and other variable weather conditions.

Regardless of the high quality of the outdoor adhesive selected, don't try and save money on the amount of it used by avoiding a total gluedown in favor of a partial one, such as by "strip gluing," spot, and/or perimeter gluing. The unbonded parts from partial gluing can expand upward from the sun's heat and cause bubbles or wrinkles. These parts also can bunch up underfoot from twisting, turning, sudden stops, etc. And these installations can look awful because a combination of rain water and light "telegraphs" through the turf, to show which parts are bonded and which are not bonded.

Another hazardous way to try to save money on glue is to apply a narrow width of it onto a seaming tape. The narrower the width, the less glue that's used, coupled with a lower seam strength. While the installation initially looks good, seam problems may develop later when athletic traffic is steady. The reason should be obvious because "shear strength" decreases as the width of the adhesive on the tape decreases. Hence a seam with 6 inches of glue on each side will be stronger than one with 4 inches on each side, down to 2 inches, etc. That's one reason why total gluedowns are superior—There's a wide width of adhesive on each side of the seam.

Still another method to try to save money on glue is to substitute a non-curing thermoplastic hot melt adhesive for an adhesive that cures. Not only does the thermoplastic hot melt re-soften from surface heating on sunny days, but also during the initial installation, bonding is slower and more labor intensive. Remember, time is money. Additionally, because a thermoplastic hot melt adhesive is usually applied as a thick film that becomes a very hard in cold weather, I wonder if seams, numbers, and other inserts bonded with them have a higher Gmax and/or hardness underfoot than the other parts of the same field.

There is a debate among professionals about seams joined with mechanical fasteners like sewing, nails and staples versus adhesive bonded seams. I'm uneasy about metals like nails and staples because of lightning possibilities so I won't write more about them.

Glued versus sewn synthetic turf seams is another story. In reality, if done correctly, both methods are adequate for good seam performance but the best by far is a combination of both gluing and sewing seams. I believe that it's more than double than if gluing or sewing alone. However, unless the job is a total gluedown, which is much better than loose-laying turf, doing both difficult. In my opinion, a superior installation is one that is a total glue-down with both glued and sewn seams.

Unfortunately, by trying to save money on glue, some specifiers, contractors and installers have caused glued seams to get a "bad rap." They use a cheap, inferior adhesive and/or not enough of a good adhesive that results in a seam failure. The subject then gets oversimplified and generalized by some into mistakenly concluding that "sewn seams are better than glued seams" without regard to the quality and amount of adhesive used on the failed seams.

When it is either gluing or sewing but not both, I prefer gluing over sewing when a good outdoor adhesive and experienced turf in-

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» **ADHESIVE** being applied to seaming tape with a kneel-down trowel.

stallers are used. Why? Gluing spreads seam stress evenly over a large bonding area instead of concentrating the stress at stitching points like sewing, plus sewing leaves unbonded spaces between each stitch. Technical adhesive books and trade magazines confirm the advantage of adhesives bonding over mechanical fasteners.

In breezy conditions, steady winds and/or gusts can be dangerous when sewing; when wind gets under or behind uplifted turf, which then can act like a sail. Wind has temporarily (minutes or days) halted installations because it can break sewing needles and/or injure installers. Even without wind delays, sewing is still slower than gluing. Remember, time is money. Finally, glued seams look better than sewn seams.

It is not just the adhesive component that is the victim of those who oversimplify or generalize negatively about synthetic turf. A poor or failed installation often gets misinterpreted into “synthetics are inferior.” We ignore the hundreds of quality installations throughout the world done by experienced installers.

Do not believe that a fast “**snap cure**” adhesive has a high grab and green strength. It’s usually the opposite. Such adhesives usually proceed from oily/slippery with no grab to dry with little acceptable working time for bonding in between.

### YEAR ROUND BUSINESS

It is becoming increasingly important that synthetic turf adhesives must be usable year round to install turf, even in adverse weather. The reason is that the synthetic turf business for both installation and repair keeps expanding to a point where it is no longer a short seasonal business. That’s good profit news for contractors and installers because again, time is money. It translates into more hours each day and/or more days each year for profitable outdoor installations and repairs.

There should not be a lower or higher temperature weather limit on when the adhesive can be used to install or repair synthetic turf, nor should the threat of rain, which may or may not occur, delay an installation. If it is not raining or snowing

and the installers can do good work in adverse weather, the adhesive should not prevent them from installing. Adhesives that can only be used in “fair weather” are no longer acceptable.

Do not believe that a fast “snap cure” adhesive has a high grab and green strength. It’s usually the opposite. Such adhesives usually proceed from oily/slippery with no grab to dry with little acceptable working time for bonding in between. Conversely, a good high green strength adhesive for installing synthetic turf will not “snap cure” even when hot. Instead, after application its high grab develops quickly and stays that way for bonding for say about an hour depending on conditions. This gives installers plenty of working time because the installed turf is being held in

» **ADHESIVE** being applied to e-layer with a stand-up trowel.



place even though the high green strength adhesive has not yet cured.

Do not believe that a hot melt adhesive has “high grab” because in hot weather they tend to stay liquid for an excessively long time, which slows down the installation. Oppositely, in cold weather they often re-solidify before the bond can be made, thus causing a hard lump under the surface.

Variable outdoor weather conditions, as opposed to stable indoor conditions, can affect installation time, labor expense, installation appearance, and profits. Because time is money, proper outdoor adhesive selection is critical. It can be the difference between profit or loss due to the speed of installation, cost of labor, number of call backs, plus finished job appearance and performance.

Architects, specifiers, and installers should keep in mind that selecting a suitable outdoor adhesive for its easy handling and long-term exterior durability, plus installing synthetic turf outdoors using that



>> **ADHESIVE** being applied for a total gluedown with airless spray.

adhesive is a different world than the indoor installation of synthetic turf and/or flooring. Experienced and successful indoor installers can have disastrous results outdoors by using the same indoor installation techniques and/or adhesives.

Assuming high quality materials and professional installers, the adhesive is the most important component for a profitable outdoor installation. The information provided in this article should be helpful to

both not only initially earn good profits but also to later keep them by avoiding call backs. ■



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