

THE BASICS OF MAINTAINING SYNTHETIC TURF

By Jim Cornelius, CSFM

Editor's Note:

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Let's begin by acknowledging that synthetic infill fields are NOT maintenance free. No matter what anyone says, these fields require routine maintenance. Secondly, what comes out of these fields must be replaced, meaning that the infill material disappears from the field as it is carried off by players, wind, rain, snow, snow removal, routine maintenance, etc.; being that the infill material is the supporting substance of these fields, it will need to be replaced.

When we service a field we typically find that most fields are lacking infill material whether it's all crumb rubber or rubber/sand mix; we also find the turf fibers are laid over with minimal support causing them to prematurely break-off. The worst enemy of the fibers on a synthetic turf field is the sun's ultra violet rays that the field must endure day after day. By maintaining a proper amount of crumb rubber and allowing only approximately a 1/2 to 3/4-inch of fiber exposed you are preventing the fibers from folding over and lessening the amount of material breakdown due to ultra violet rays.

On average an athlete or end user will carry off 3 to 4 pounds of infill material during a playing season. This needs to be replaced annually to support the fibers and provide longevity for the playing

surface. To calculate your needs, you need to measure the amount of crumb rubber in a variety locations within the synthetic field boundaries (we measure 10 locations using the ASTM 1936-10 guidelines for Gmax testing as our test points) to determine what you have. If your turf is 2 1/4 inches tall and you have less than 1 1/2 to 1 3/4 inches of infill, you need to add more. Most crumb rubber infill calculates to 0.55 pounds per square foot for a 1/4-inch lift. Most rubber/sand infill systems will not need additional sand as it tends to stay stable within the turf. There are rare occasions when the sand is removed due to operations (snow plowing) or torrential down pours that cause flooding; if this happens, sand will need to be added to the mix.

Grooming the field is an essential maintenance task that needs to be understood. It is highly recommended to use a good groomer designed for synthetic turf. When using any groomer, the best results will be achieved by adjusting it so that it lightly touches the fibers. Do not lower the entire weight of the groomer onto the turf unless you are trying to level out the crumb rubber or fill an area such as a lacrosse goal crease. When tickling the fibers with the groomer's brushes, the intent is to stand the fibers up to minimize lay over from resulting from field use.

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Often I am asked how much or how often should I groom a field. There is no true, exact answer, but from my experience I recommend that the field be groomed every 300 to 350 hours of use. There are articles on the web that will say 400 to 500 or more hours and much depends on the manpower available. At minimum it should be groomed several times during the highest use periods and less during the down times (if there is such a thing).

Trash and debris removal is another constant nuisance and needs to be done whenever it exists. Timely removal is important to keep the trash and debris from becoming ground into the infill material, which causes problems later on. Sunflower seeds, chewing gum, candy wrappers, cigarette butts, wire ties from nets, and broken sand bags or stone bags used for weighting down goals are some of the typical items we see when deep-cleaning a field. Water, Gatorade, juice, and soda bottles are unsightly and need to be removed when present.

Removal of chewing gum is largely overlooked and needs to be addressed as soon as possible; most chewing gums today never harden and with the intense heat in the field it becomes goeey and eventually spreads across the turf surface. To remove use either ice cubes or a freezing spray agent to harden the gum, chip it off and remove it.

Weeds can exist and thrive in synthetic turf. Be prepared if your synthetic fields is surrounded by bermudagrass or any other creeping stolon-producing grass! These grasses tend to seek their way into and under the synthetic turf and since temperatures on these fields reach optimal growing peaks before the surrounding turf, once they start spreading beneath they will find the drainage holes and send their shoots upwards for the sun light. These plants become very hard to remove due to their sewing machine effect and in many cases will need to be treated chemically (as approved by the turf manufacturer) to control. It is best to prevent these grasses from growing under from the beginning. Look for it and act quickly when discovered.

Pay attention to heavy wear areas. These fields wear just like natural turf with the exception that you can't grow it back in once it is gone; so, don't let it wear out. Common sports specific high wear areas include Football: center of the field between the hash marks; Soccer: penalty kick area, corner kick, goal crease; Field Hockey: goal crease, penalty arc; Lacrosse: goal crease areas, center of the field where face offs take place. Men's or Women's Lacrosse has the ability to destroy a goal crease in as little as one year if not maintained. The infill material gets kicked or shuffled out. The fibers take a beating and break-off quickly without the support of the infill material.



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Before you know it you have a big black area that is the backing of the turf and now it's time to patch it or replace the area with either the pieces you saved from installation or maybe cut it out from outside the playing area so that it matches in color and type. Even after one year it won't be a perfect match (even if left on a roof top to sun burn like the turf on the field) because the surrounding fibers in the field will have seen use and started to mat out or break down and if you are patching it must have worn out. Contact the manufacturer or a reputable service company to save you the pains of having to deal with the patch. There are special materials that you will need and the local or big box hardware store does not carry them. Do not use a Gorilla glue-type product, liquid nails, styrene bonding agents, and/or drywall screws or framing nails for repairs. These are not designed for synthetic turf and may become a liability nightmare later down the road.

Painting may or may not have to be performed on these fields depending on whether or not everything was inlaid during installation. If you have to paint use only paint that is approved for synthetic turf field. It seems that every year some company announces that they have synthetic turf paint. Do your homework and look at a company history and get recommendations. If you need to remove the paint ask the supplier if it can be performed, and if so, how it is done and what will it cost and how long will it take. Will you need special equipment and chemicals? Have their products been endorsed by any manufacturers and is your turf manufacturer one of them? If you have to paint try to do it at times other than the heat of the day. If you are removing lines it works much better to do this at night or early in the morning when the turf is the coolest. Chemicals used during the heat of the day will evaporate long before they start to work and this will only cost you more time and materials.

Dust, dirt, pollen, body skin cells, screws, nails, track spikes, bobby pins and human hair, just to name a few, do not break down in these fields. They remain for much of the life of the field and it is truly amazing how much exists. Special equipment with hepa-filter

vacuums will be able to clear this out and remove it from within the turf. Rain, snow sleet and hosing do not help.

Static is common and can increase with humidity and sometimes age. If you need to combat static, you can use several household products. Liquid Tide washing machine soap and/or the use of a softener (Snuggles) both work well when sprayed on the turf.

Eventually someone will ask if these fields need to be disinfected. My suggestion is to review Dr. Andrew McNitt's research pages to obtain the best answer (<http://cropsoil.psu.edu/ssrc/sportsturf-scoop>). Information can also be found by visiting the website of the Synthetic Turf Council (<http://syntheticturfcouncil.org/>)

Lastly, unlike natural turf, we can't see what is going on with these fields beneath their surface. ASTM has recommended that these fields be tested annually to determine their hardness (G_{max}). There are those who do not believe this is necessary; but I can tell you that it is an important tool, much like soil testing. If you do not perform testing for one, two, four or six years then you have no history data to determine what has been happening to surface hardness. I have tested two-year fields and eleven-year-old fields with less than 3/4-inch of fibers remaining and almost no infill and yet the newer one tests harder than the older. Does this mean we are no longer testing the turf and we are now testing the stone base beneath? Good question. Since we do not have eleven years of historic G_{max} testing, we can only imagine we are now testing the G_{max} of the stone base.

Hopefully I haven't scared you and you haven't run away from your synthetic field. These fields are a great tool and if properly maintained will provide years of play for all users. What you have just read is only the tip of the iceberg and there is much to learn about these fields. Don't be afraid to ask your peers or contactor if you don't know; it may prevent you from making a huge mistake.

Jim Cornelius is a Certified Sports Field Manager (CSFM); and Services Manager, Pro. Services Division, Fisher & Son Co., Inc.

Did you know . . .

How to Find the Equipment Cost per Hour

Don Savard, CSFM, CGM

Example: Compact Tractor

Purchase Price \$35,000 + Interest \$ 3,000 – Salvage Value \$5,000 = \$6.66
 Life Expectancy 5,000 hours (500 hrs per year for 10 years)

Lifetime Maintenance Cost: \$20,000.00 = \$4.00
 Life Expectancy 5,000 hours

Fuel Price \$4.00 per gallon = \$2.66
 Fuel Used per hour : 1.5 gallons

Equipment Cost per Hour = \$13.32