



PENN STATE

CENTER FOR SPORTS SURFACE RESEARCH

From the Field: Best Management Practices – Synthetic Turf Fields

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Welcome to From the Field - A Guide to Athletic Field Safety and Care.

Throughout this series, we will focus on a sometimes overlooked but critical component affecting the safety and performance for athletes of all ages – the playing surface.

Our goal is to provide you with simple, helpful tips about playing conditions that maximize both safety and performance.

This document describes best management practices for the maintenance and care of synthetic turf fields. The management practices refer to “infill” synthetic turf systems, which consist of plastic pile fibers infilled with crumb rubber, a mixture of crumb rubber and sand, or other granular materials.

A common misconception is that synthetic turf fields are maintenance-free. This is not the case. Synthetic turf fields require regular maintenance to preserve and enhance safety and playability, along with maximizing the turf’s lifespan.

The field care practices described are applicable to all infill synthetic turf fields, regardless of manufacturer. However, it is important to be familiar with and follow field care instructions specifically from your turf’s manufacturer.

Best Management Practice #1 – Surface Hardness

Surface hardness (g-max) testing should be conducted on synthetic turf fields on a regular basis, preferably every year. Testing agencies equipped to perform g-max testing are located throughout the country and can test your field for a fee.

All field locations are to meet the requirement of < 200 g-max, as measured with the test method described in ASTM F355, Procedure A. The 200 g-max threshold has been accepted by the U.S. Consumer Products Safety Commission.

If a g-max value is 200 g’s or above at any location, the field is to be remediated and should not be used until g-max values return to below 200 g’s at all locations.

Elevated surface hardness levels can often be reduced by adding additional infill material (crumb rubber). Over time, infill material is removed from the field, a phenomenon termed “walk-off crumb rubber”. As small amounts of infill material are removed from the field in shoes,

equipment, etc., the thickness of the infill “cushion” is reduced, resulting in increased surface hardness. Heavily-used areas on fields are especially prone to the loss of infill material and elevated hardness levels.

Your turf manufacturer can provide instructions or services for incorporating additional infill material into your field.

Best Management Practice #2 – Infill Depth

Infill depth should be measured on a routine (monthly) basis to ensure infill levels have not fallen below your turf manufacturer’s specified infill depth range. Infill depth should be measured across the entire field (at least 20 locations), with the majority of testing taking place at locations of heavy use.

Infill depth can be measured using a fire-proofing depth gauge, such as the model shown in the picture below. These devices often cost less than \$20.

Your turf’s manufacturer can provide you with the specified infill depth range for your turf system.

If your infill depth measurements fall below your manufacturer-specified range, additional crumb rubber should be added. Small areas with low infill depths can be remediated with several buckets of crumb rubber. The rubber should be applied in a thin layer, broomed into the turf, and the process should be repeated until the infill levels meets the specified depth range. It is important to use the same size rubber as originally installed in your field.

In some cases, large areas or the entire field may require additional rubber. Your turf manufacturer can provide instructions or services for incorporating additional infill material into your field.

Best Management Practice #3– Grooming

Grooming helps keep turf fibers upright and infill evenly distributed across the field. Grooming refers to both brushing and the loosening of infill granules.

Brushing the field with equipment specifically designed for synthetic turf should be done every three to four weeks during the season. The brush should be set to “tickle” the surface and not so that the entire weight of the unit is on the turf. The brush can be set to a slightly deeper depth when leveling infill on uneven areas.

Aerating also helps loosen infill. Grooming units consisting of vertical star-shaped, non-powered “slicers” that roll through the turf and infill should generally be used no more than two or three times per year.

It is important that you check with your field manufacturer for grooming information that is specific to your field.

Best Management Practice #4 – Visual Inspection

Prior to every game, the field should be inspected for the following:

1. *Buildup of Paint* – If paint buildup is excessive, old paint should be removed according to your turf manufacturer's recommendations and new paint should be applied. Be sure to use paint specifically formulated for use on synthetic turf. A general rule is to remove old paint after every 3-4 paintings.
2. *Inlays and Seams* – Inlays such as logos and numbers should be inspected to ensure the inlays have not become separated from the surrounding turf. Seams should also be checked to make sure they have not separated wider than 3 mm. If repairs are needed, contact your turf manufacturer.
3. *Foreign Objects* – The field should be free from any foreign debris such as garbage, leaves, etc. Blowers and sweepers specifically designed for synthetic turf can help clean the field prior to a game.
4. *Uneven Surface* – The field should be checked for depressions and uneven areas. If the field is also used for other sports such as lacrosse, depressions often form in goal mouth areas and should be leveled with additional infill material.