LIMONTA SPORT USA

MAINTENANCE PROCEDURES

SYNTHETIC TURF FIELD WITH INFILLPRO GEO

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INTRODUCTION

Congratulations on the installation of your new FIFA Quality synthetic turf with Organic InfillPro Geo. Basic common sense and maintenance procedures, as described in this manual, will prolong the performance levels designed into your new Limonta Sport field.

Please be sure to follow these basic guidelines:

- Keep the field and its surroundings clean and free from debris
- Prohibit the use of sharp metal objects in contact with the surface
- Follow the guidelines for vehicular use and static loads
- Bring any defects to the attention of Limonta Sport USA as quickly as possible
- Be diligent with grooming and maintenance

NOTIFICATIONS

Control access if possible and establish the protocol for the use of the field and inform the general public with clearly marked postings at all entrances with the following rules:

(sample text of posted sign)

THE FOLLOWING ITEMS ARE PROHIBITED:

- **Litter or debris**
- **Shells from Sunflower seeds and nuts**
- **Chewing gum and candy**
- **Sharp metallic objects or cleats**
- **Smoking, matches or flame**
- **Motorized vehicles of any type**
- **Bicycles, skates or skateboards**
- **Acidic or caustic chemicals**

ROUTINE MAINTENANCE

The main purpose of routine maintenance is to ensure that the synthetic turf playing surface is free of debris and contaminants that can interfere with the performance of the field as designed and potentially cause harm to the players and the field itself. The maintenance for a field utilizing patented, organic ***INFILLPRO GEO*** must only be carried out by *Limonta Sport USA*, *Certified crews* or *Authorized personnel* trained and/or supervised by Limonta Sport USA. These crews may consist of facility or maintenance personnel on behalf of the end user after successful completion of a minimum four hour training course given by representatives of Limonta Sport USA upon completion of the installation. The duration of the training will be determined by the Limonta Sport USA staff and/or certified Installers until it is determined that the use of the equipment and procedures are fully understood. Only these personnel who have been trained directly at this time will be considered satisfactory to conduct the maintenance required to satisfy the terms of the warranty and their names will be recorded by Limonta Sport USA as such. The end user will be required to maintain a light utility vehicle or tractor to tow and utilize the authorized Sweeper and ***Geo-Groom*** described in this manual. Other equipment already in service at the end user's facility shall be considered by Limonta Sport USA for incorporation into the maintenance program. Please notify Limonta Sport USA when any new equipment is being considered for use on the field.

STAIN REMOVAL

Try to be prompt when a stain is noticed or before it dries into a residue. Residue should be removed with a plastic spatula or knife and then cleaned if necessary in the following manner, in order of severity:

1. A warm, mild solution of household detergent such as TIDE, mix one teaspoon to one pint of water to handle most stains and then blot up with dry paper towels.
2. A three percent solution of Ammonia in water, then rinse thoroughly with cold water.
3. Sponge with Perchloroethylene (dry cleaning solution) then wipe with paper towels.
4. Mineral spirits or a grease spot remover applied directly and sparingly, then wiped away.
5. Chewing gum can be removed after frozen in place with dry ice or refrigerant aerosol.

Caution: do not use bleach or highly caustic detergent cleaners with a pH of 9 or higher, or high acid cleaners with a pH below 5 as this may negatively affect turf fibers.

TEMPORARY LINE MARKING PAINT

APPLICATION: The reccommended latex paints are designed to be easily removed after usage during several sport games. Typically, the latex paint should be diluted one to one with water and applied lightly to the tips of the turf fibers with a roller in an attempt to eliminate a heavy build up that will be harder to remove later. Always apply paint during moderate air temperatures. Please consult with Limonta Sport USA for a list of the authorized products.

Do not use chalk, laquer, epoxy or polyurethane based marking paints on the synthetic turf.

Air-spray applicators are preferred over airless ones due to improved accuracy and paint application control. The following are two examples of approved air-spray guns:

1. DeVilbiss with 505E fluid tip, an ES needle and a #53 air cap
2. Grayco assembly with 161-188 fluid tip, a 164-870 needle and a 161-192 air cap

REMOVAL: It is reccommended to prepare a cleaning solution of 8% ammonia by mixing one part of aqua ammonia (33% ammonia) to three parts water.

Caution: wear eye protection at all times when working with chemicals and air borne debris.

Procedure:

1. Hose down the painted area with water until the surface is saturated. Using a sprayer or watering can, apply the ammonia solution to the painted area at a rate of one gallon per 45-50 sq ft. Scrub the wet area with a bristle broom or brush until the ammonia solution turns to foam and the pigment begins to loosen and run.
2. Wait approximately ten minutes to allow the foamed ammonia to work. Apply the same amount of ammonia solution as before a second time and thoroughly scrub the area.
3. Hose down the area with water and attempt to pick up the dislodged paint residue with a wet vac while making every attempt to keep the residue from seeping across the field.

SNOW AND ICE MANAGEMENT

Left alone, snow and ice do not cause damage to a synthetic field. However, certain snow melting chemicals as well as metal shovels, tire studs, chains or blades are harmful. Rigid shovels or blades of any type should not be used, use only a rubber shovel or blade attachment for a tractor to expedite the removal. When using a tractor with a rubber blade, set the blade height about ½" above the surface of the turf and attempt to roll the snow over itself as you plow, it is best to work from the middle of the field outward. If using mechanized equipment, be sure that the tire pressure does not exceed 35 psi and do not leave equipment sitting on the field for any length of time.

Do not use a tarpaulin at any time on the field during freezing conditions, the potential condensation below will cause it to freeze to the turf.

A light build-up of ice can be broken up with a heavy rubber roller to help it melt quicker. If this does not suffice, or if the ice is thick, a sodium chloride based ice salt can be used sparingly and as needed according to the thickness, temperature and quantity of ice. This application of salt may leave a residue on the surface of the field which can be simply washed away with water when possible.

GENERAL FIELD CLEANING

The following steps should be taken as precautionary maintenance measures:

- Keep many permanent trash receptacles on site
- Discourage the use of chewing tobacco, gum, cigarettes and seeds
- Establish stations off the field for refreshments
- Limit the access points to the field to better control its use

Vacuum cleaners, power washers and leaf blowers are not reccommended unless caution is used so as not to disturb or displace the infill.

The field should be swept regularly to remove any litter and debris with an approved "Tow Behind" Sweeper such as the one supplied by Limonta Sport USA or an approved equal. Make every attempt to replace the organic infill that is caught by the sweeper.

Approved Type: Agri-Fab 46' Sweeper

Model Number:	45-0326
Wt. :	75 lbs
Size:	67" x 53" x 24"

NOTE:
Be sure that the bristles are set just above the infill to eliminate unnecessary removal.

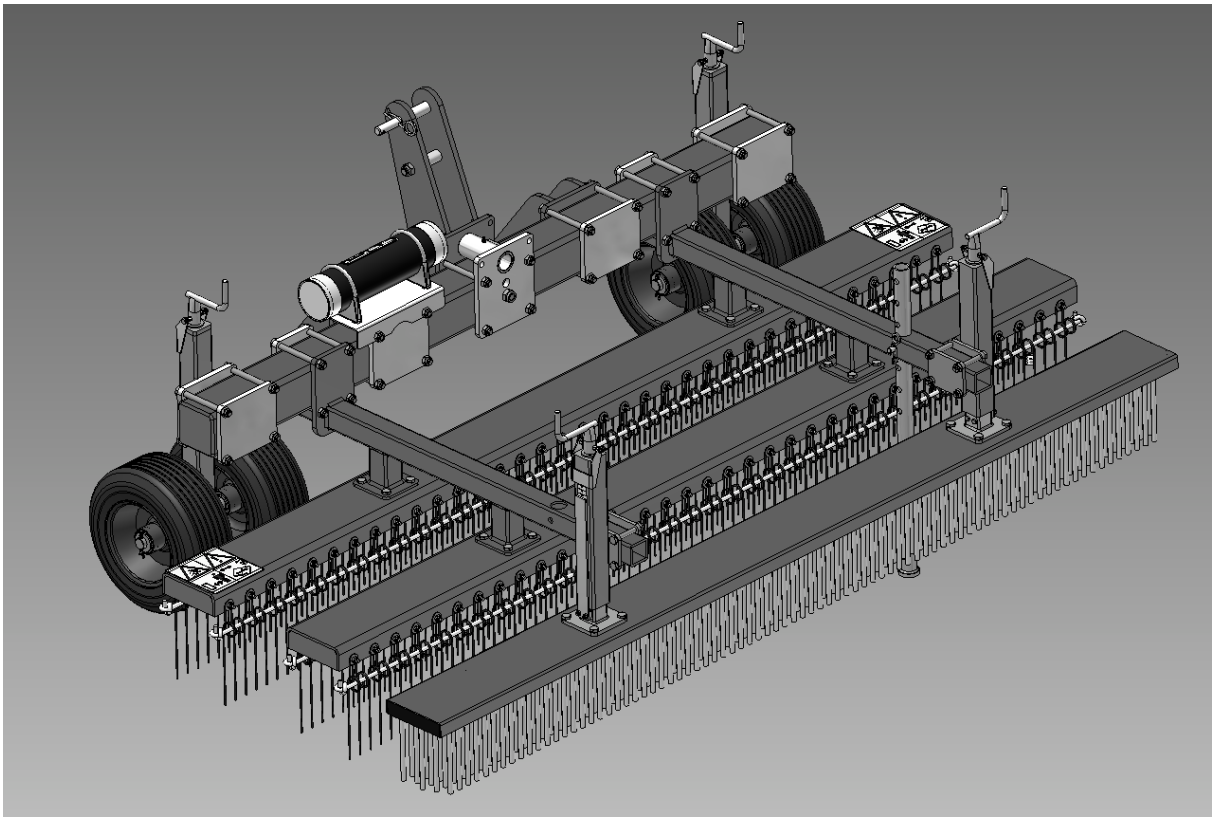
GROOMING

It is important that the surface of the infill be uniformly flat and even across the field. This is maintained by grooming the field with the approved ***Geo-Groom*** groomer with vertically adjustable brush and spring tine rake at least twice a month or after about every eighty hours of activity. During heavy overall use, or heavy use in specific areas, it may be necessary to groom and even out the infill more frequently to maintain a uniform playing surface. The height of the infill should remain uniform at about one-half to three-quarters of an inch on average below the overall height of the turf. The void space, or difference between the overall height of the turf and the height of the infill is referred to as the *free pile*. Too much *free pile* will cause the turf fibers to lose support and eventually weaken, causing a premature loss of performance. It may be necessary to add infill after a certain amount of time to top off the field and maintain the appropriate *free pile* height. On average, about three percent of infill may need to be added per year. The infill can be applied with a motorized spreader, a hand spreader or with a shovel and tine rake.

To summarize, the purpose of grooming is to lift the fibres and uniformly rake the infill to maintain the bio-mechanical properties it was designed to have and to sweep any foreign bodies to the edges, off the field.

For areas with a high intensity of use, such as the penalty areas; goal; corner flags; mid-field or baseball running lanes where sliding is normal- more frequent, yet localized, grooming may be required. It is for this reason that an “attic stock”, or reserve quantity of infill be ordered with every project so it will be available as needed.

The Geo-Groom is designed to be towed across the field by a small tractor or utility vehicle such as a *Gator* or *Clubman* using a simple hitch attachment, there are no hydraulics invloved in the operation.



GEO-GROOM

GEO-GROOM SPECIFICATIONS

Model: Tow-behind Geo-Groom

Chassis: Steel-tubular, vertically adjustable with (independent) vertically adjustable brush outrigger

Length: 50”

Width: 79”

Weight: 495 lbs.

Tines: 4 row- flexible, 5mm thick

Brush: Full-width 4” poly brush

MOTORIZED EQUIPMENT GUIDELINES

Vehicles should never remain stationary with the motor running on the turf long enough to cause the hot exhaust or fluids to concentrate onto the synthetic fibres and cause them to melt.

Always ensure that the vehicles and equipment used on the turf are properly maintained. Do not perform vehicle maintenance or repairs on the field so as to avoid any leakage of oil, grease, transmission fluid, battery acid, etc. onto the turf and potentially damage the fibre.

Limonta Sport fields are designed so that vehicles may be driven across them without causing damage to the, provided the following recommendations are adhered to:

- Avoid driving on field if temperature is below 40˚F or above 90˚F
- Vehicle rolling load must not exceed 35 psi
- Only vehicles fitted with low pressure tires may be driven directly on the surface of the field
- Vehicle turns must be performed in broad circles
- Moving vehicles must not exceed 10 miles per hour
- There should be no sudden braking
- Sudden accelerations in wheel spin must not occur, especially on damp surfaces
- The wheels of the vehicles must remain clean and free of mud and dirt
- All vehicle must be checked for leakage of oil, battery acid, fuel or hydraulic fluid
- To avoid potential damage to the infill material and to the synthetic turf, vehicles must not be driven on the field when it is wet

EVENTS

Your FIFA Quality synthetic turf sports field with organic InfillPro Geo is designed and tested with performance and safety as a priority. Many fields function as public assembly spaces as well as sports fields, but our system is very specific to sports and we cannot guarantee its use otherwise.

If the staging of chairs or bleachers on the field cannot be avoided, we recommend the static load not exceed 3 psi, or 300 lbs per square foot. It is further advised that a layer of 10 mil polyethylene sheeting be installed over the field and clean three quarter inch plywood be placed uniformly over the plastic with 2 x 10 timbers placed under major static loads. Contact Limonta Sport with your requirements as there are re-usable turf protection products also available. If any protection should remain in place for more than three days, a full grooming will be required upon its removal.

REPAIRS

To properly maintain a synthetic playing field you must be acutely aware of its condition to properly accommodate the day to day activities it is being used for. It is important that any minor damage be repaired immediately because a small problem may eventually grow to a large repair. In addition to the routine awareness of field condition, at a minimum of once or twice a year, the field should be given a careful and thorough inspection, preferably in the spring and another in the early fall. Check that the infill is at the right height and the *free pile* is consistent with guidelines. All seams should be inspected and any loose or worn areas noted and repaired. Check the turf panels for any rips or tears and make a note of any depressions in the pad below or the base. Inspections should be made more frequently on older fields.

A rule of thumb is to contact your Limonta Sport USA representative when any repair is needed, big or small. If it is deemed a small repair that can be performed "in house", make sure to use only Limonta Sport seaming tape and adhesives, unless otherwise directed.

INFILLPRO GEO

InfillPro Geo is extremely resilient and durable, having been tested in over four hundred fields as of 2014 with multiple FIFA 2 STAR certifications. Irrigation is recommended, more so in environments with less than 50% relative humidity. In arid and dry conditions, it is advisable to not allow the infill to completely dry out or it will not perform as designed. In this case, it would be advisable to apply about twenty minutes of water to activate the organic material. Water can be re-applied based on conditions and performance of the field.

WATERING AND REPLENISHMENT GUIDELINES

Watering for a typical 80,000 ft² playing field will be defined as:

- Ambient humidity above 50%- 6,500 gallons or 10.5 oz./ft²
- Ambient humidity below 50%- 8,000 gallons or 12.8 oz./ft²

Typical environment:

There is a direct correlation between the watering requirements for organic Geo and the frequency of rainfall as well as the ambient humidity. The rule of thumb would be to be sure there is at least one watering per week from either rainfall or irrigation.

1. Coastal/tropical-

   For instance, on the East coast where occasional precipitation and 30-50% humidity is the norm, there is typically no irrigation required. This would also be the case in the Northwest and other coastal environments of this type.
   Despite climates with high ambient humidity of over 50% but with less predictable precipitation of no more than once every two weeks, it is reccommended to water at least once a week.

2. Arid-

   With dry, inconsistent or unpredictable climate zones, it is better to err on the side of caution and treat the field as if it is in a dry climate with a minimum of two watering's per week.

REPLENISHMENT OR "TOPPING OFF"

An 80,000 ft² field (2" pile ht.) requires approximately 160,000 lbs. or 100 sacks (1540 lbs. each) at install.

The factory states that normal replenishment will require no more than 3-5% per annum as long as the minimum moisture requirements for the infill are met.

Therefore on average, topping off requires no more than 5 sacks/yr. or 40 sacks for 8 yr. life.

When the field is scheduled for replacement, the infill can simply be removed and up to 40% of the clean organic infill can be re-used in the new field or distributed on site in the natural soil and/or natural grass environments as a top-dressing or mixed in to aerate the soil.