



SYNTHETIC TURF SPORTS SURFACES

Minimising infill migration into the environment

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Minimising infill migration into the environment through good field design and operation

Synthetic turf sports surfaces provide safe, durable playing areas that can sustain high levels of use 7 days a week, 52 weeks a year. They can be used in most weather conditions and are easier and cheaper to maintain than natural grass. This ability to sustain high usage allows large numbers of people to play sport, providing communities with fun and exercise, physical and mental health benefits, and social inclusion.

Many third generation (3G) synthetic turf surfaces contain infill materials made from rubbers and plastics. These infills help ensure the playing surface is safe and able to perform in the ways the different sports require.



But, as with any engineered product, a synthetic turf surface needs to be used in a way that minimises its impact on the environment. The synthetic turf industry is committing significant resources to developing sustainable surfaces including the use of organic infills and surfaces without infill, that will enable a cradle to cradle approach for the manufacturing and recycling of the surfaces. During the use of the surfaces, however, it is the owner or operator of the sports field surface that has a key role to play in ensuring the surfaces do not adversely affect the environment.

Concerns originating in Scandinavia, where inappropriate snow clearance and storage was seen to be leading to infill losses into the environment, and investigations elsewhere that showed poor maintenance was also allowing infill to migrate from fields and contaminate the environment, has identified the need to minimise these issues.

Working with the European Standards Committee (CEN), ESTC have helped prepare CEN Technical Report 17519: *Guidance on how to Minimise Infill Dispersion into the Environment*. This report details simple design, construction, operation, maintenance, and disposal procedures that will minimise the potential for infill to migrate from a synthetic turf sports surface onto the surrounding environment. The key principles are:

Containment barriers

Fit containment barriers around the perimeter of the field. If the synthetic turf surface is laid close to the fence these should be at least 0.5 m high. If there is a spectator area or path inside the fence line, the barriers only need be 200 mm high.



The panels can be formed from brickwork, timber, plastic planks (often made from recycled synthetic turf) metal, or other materials.

Entrance ways

Install decontamination mats and boot cleaning stations at every entrance to a field. The mats should be set in recessed plinths that capture the dislodged infill. The plinths should have drains to prevent



them filling with rain water, and the drains should include suitably sized filters to prevent any infill being carried away.

Snow storage

Regular clearance of snow from a synthetic turf surface will result in infill being pulled out of the synthetic turf surface. In regions where regular snow can be expected fields should therefore include



adequate space for the storage of snow. These should ideally slope inwards to minimise melt-water carrying infill into the external environment. If, as recommended, snow storage areas contain drains, they should also include suitably sized filters to prevent infill being carried away.

Perimeter barriers on the outer margins of the field should be high enough to ensure stored snow does not spill out of the field area.

Field profiles

Synthetic turf fields are often built with crowned profiles of up to 1% in magnitude. This is partly to aid the movement of water as it drains through the synthetic turf surface, partly to minimize the risk of localized ponding of water and partly to replicate the traditional appearance of grass field, that drain much more slowly. The more pronounced the profile or crown of the field, the greater the probability becomes of infill moving to the boundaries of the field. Ensuring fields are built with gradients that do not exceed 0.5 % will help to minimize infill movement across a field.

Drains

All surface drains adjacent to a synthetic turf field should contain suitably sized silt buckets to ensure any infill being carried by rain water, does not enter the stormwater drainage system.



Synthetic turf surface

Increasingly synthetic turf carpets are being designed to stabilize the infill and reduce the potential infill splash and migration. These include the use of fibrillated and texturised or curled yarns to form a lower root zone. In some cases, the main carpet pile is also produced from these yarns, and these are particularly suited to areas where the need to replicate the playing qualities of grass are less important.

Shockpads

Synthetic turf surfacing systems that incorporate shockpads (also known as elastic layers) obtain some, if not most, of their dynamic properties from the shockpad, meaning that a lower quantity of infill is required. Anecdotal data suggests that infill migration from synthetic turf surfacing systems that incorporate shockpads is lower than on systems without shockpads.



Field construction

One of the biggest sources of infill dispersion can occur during the installation of the synthetic turf surface. This is often due to poor planning and inappropriate working practices. The following procedures have been shown to minimize infill contamination of the workspace:

- Ensure that all infill materials are supplied to site in suitable heavy-duty bags that are not torn or open.
- Ensure the materials are stockpiled in secure compounds to prevent vandalism of bags.
- Only open the bags within the confines of the field. Do not transport loose infill from outside the field to the installation equipment.
- Ensure empty infill bags are collected and contained before they leave the field area.
- Do not allow the installation of the infill until the perimeter of the field is secure and the appropriate containment measures, as described in this guide, are operational.
- Ensure infill installation equipment and carpet brushes are thoroughly cleaned before they leave the field area.

Field maintenance

The depth of the infill within the synthetic turf carpet pile is carefully determined by the manufacturer; this normally allows about 15 – 20mm of the carpet pile to protrude above the infill. During use the infill can be dispersed to the margins of the field and it is particularly important that the dispersed infill is regularly returned to the higher use areas of the field. This is easily achieved through regular brushing and drag matting of the field. The best type of brush or drag mat to be used will depend on the recommendations of the synthetic turf surface manufacturer and their

advice should always be followed to ensure no damage to the carpet occurs, or their warranty is not violated through the use of inappropriate equipment.

The key rules to maintaining a synthetic turf field, as far as infill migration is concerned, are:

- Ensure the infill depths are as specified by the manufacturer in their product datasheet;
- Ensure the infill is evenly distributed across the field. Do not allow it to accumulate on the sides and ends of the field;
- When using rotary brushes, adjust the brushing patterns to ensure infill is not flicked up and thrown off the field;
- Avoid using leaf blowers to maintain the perimeters of the fields;
- Ensure all maintenance equipment is thoroughly cleaned and any infill is removed before it leaves the field;
- Ensure all silt traps are regularly checked and emptied as required to ensure they remain operational;
- As some infill will inevitably be caught on maintenance brushes and mats ensure they are stored on hard paved areas that do not drain onto surrounding areas or ensure all drains have suitable silt traps.

Further information

For further information on how to minimise the impact your synthetic turf field has on the environment, please visit the ESTC website at www.estc.info or contact us at info@estc.info.

