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Podloge za športne dejavnosti - Umetne travnate podloge športnih objektov - Navodilo za zmanjšanje razprševanja polnila v okolje

Surfaces for sports areas - Synthetic turf sports facilities - Guidance on how to minimize infill dispersion into the environment

Leitfaden zur Minimierung des Risikos von Umweltkontaminationen durch Kunststoffrasenfüllungen

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ICS:

97.150	Talne obloge	Floor coverings
97.220.10	Športni objekti	Sports facilities

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Surfaces for sports areas - Synthetic turf sports facilities - Guidance on how to minimize infill dispersion into the environment

Leitfaden zur Minimierung des Risikos von Umweltkontaminationen durch Kunststoffrasenfüllungen

This draft Technical Report is submitted to CEN members for Vote. It has been drawn up by the Technical Committee CEN/TC 217.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (FprCEN/TR 17519:2020) has been prepared by Technical Committee CEN/TC 217 “Surfaces for sports areas”, the secretariat of which is held by AFNOR.

This document is currently submitted to the Vote on TR.

Introduction

General

Synthetic turf sports surfaces provide attractive, hard–wearing and safe playing areas that can accommodate high levels of use and be used in far more diverse climates than natural turf. The development of these surfaces has led to significant demand with over 16 000 full size sports fields now being used in Europe, and approximately 4 000 new fields being built each year.

Synthetic turf sports surfaces take four generic forms:

— non-filled short pile;

— sand filled or sand dressed short pile;

— long pile with infill (typically rubber and/or sand);

— long pile non-filled.

Infill is applied to the synthetic turf surfaces for three reasons:

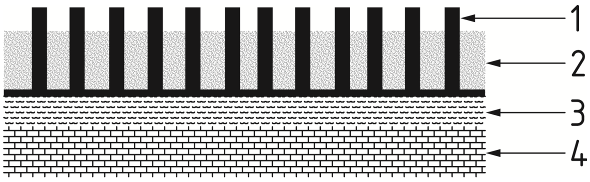
— it is used to stabilize the carpet to prevent dimensional expansion and contraction and movement through use i.e. it acts as a ballast. This type of infill is often described as stabilizing infill;

— it contributes or provides the sports performance and impact attenuation characteristics of the sports surface. This type of infill is often described as performance infill. The performance infill is a key component of the surface as it provides comfort and protection to players as they run and fall on the surface.

— it helps control the way the ball interacts with the surface, supporting the pile of the surface so it remains upright.

Short pile synthetic turf surfaces typically have pile heights of between 10 mm and 30 mm and normally only have one layer of infill. This is often a rounded sand. Sometimes the sand has a polymeric coating to change the colour of the infill (i.e. it is coloured to match the synthetic turf colour).

Figure 1 shows the typical cross section of a short pile synthetic turf sports surface.



Key

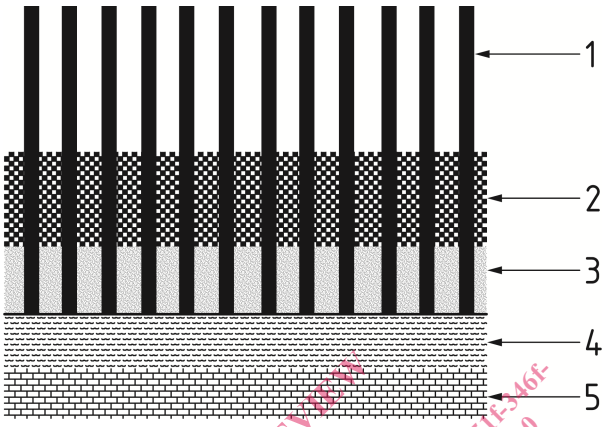
1 synthetic turf carpet pile, may be curly
2 infill
3 shockpad (optional depending on intended sports use)
4 base (or foundation)

Figure 1 — Typical cross section of short pile synthetic turf surface

Long pile synthetic turf surfaces typically have pile heights of between 30 mm and 60mm. Most contain two layers of infill, the lower layer (normally sand) is installed to provide ballast and stability to prevent the synthetic turf carpet moving. The upper layer is the performance infill.

There are a number of different granulated materials used to form this layer including various rubbers and thermo-plastics and natural materials such as cork, timber, nut husks, etc.

Figure 2 shows the typical cross section of a long pile synthetic turf sports surface.



Key

1 synthetic turf carpet pile, might be curly
2 performance infill
3 stabilizing infill
4 shockpad (optional)
5 base (or foundation)

Figure 2 — Typical cross section of long pile synthetic turf surface

Most infills are in the particle size range 0,5 mm to 2,5 mm with some occasionally being larger.

Environmental concerns

Increasing public concern about microplastics has led the European Commission, to investigate ways of reducing the quantities released into the environment. They have defined a microplastic as any solid particle made of a non-biodegradable polymer that is 5,0 mm or less in size. They can be unintentionally formed through wear and tear or deliberately manufactured and intentionally added to products for a specific purpose.

As many infill materials used within synthetic turf sports surfaces are either made from non-bio-degradable polymers that are less than 5,0 mm in size, or incorporate some form granule (e.g. sand) that has a polymeric coating, it is important that the design and maintenance of sports fields having these infills is undertaken in a way that minimizes the possibility of the infill migrating from the sports surface and being dispersed into the environment. This Technical Report describes ways of containing infill materials within the footprint of the synthetic turf field during its construction, operation and end of life removal.

1 Scope

This document describes ways of containing infill materials used in many types of synthetic turf sports fields within the confines of the sports field, so they are not dispersed into the surrounding environment.

The options described are based on examples of best practice identified by members of CEN/TC 217.

This document is intended to be of practical use, to create awareness amongst field designers, venue owners, installation companies and those maintaining synthetic turf sports fields. It is applicable for all forms of synthetic turf sports field, from those used for community activities to those used by professional and elite level athletes.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
synthetic turf surfacing system
all components of the surface that influence its sports performance or bio-mechanical characteristics including the synthetic turf carpet, infill and shockpad

3.2
filled synthetic turf
synthetic turf surface, whose pile is either totally filled or partly filled with an unbound particulate material

3.3
infill
particulate materials used within the synthetic turf surface to provide support to the carpet pile and to aid the provision of the required performance characteristics of the surface

3.4
performance infill
granulated materials used to form the upper layer of infill that help provide the required sports performance and player welfare characteristics of the surface

3.5
polymeric infill
granular infill material formed from non-biodegradable rubbers or plastics, or an infill material that has a coating formed from non-biodegradable rubbers or plastics (e.g. coated sands)

3.6
stabilizing infill
particulate materials used to infill the lower portion of the synthetic turf surface to provide support to the carpet pile and ballast to hold the carpet in place and help prevent dimensional movement

3.7
shockpads
elastic material placed beneath a synthetic turf sports surface that is designed to aid the provision of the performance properties of the sports surfacing system

Note 1 to entry: Shockpads are also known as elastic layers.

3.8
stitch rate
number of tufts per square meter, which is a function of the number of stitches per linear length multiplied by the spacing (gauge) of the tufting needles

3.9
field
playing area including the perimeter margins or run offs

Note 1 to entry: Field is also known as the pitch.

3.10
base
all elements of construction beneath the synthetic turf sports surfacing system

4 Sports performance

The performance of a synthetic turf sports surface is provided by the interactions of the synthetic turf carpet, the infill materials and, if part of the system, the shockpad.

Occasionally some synthetic turf systems also utilize characteristics of the base construction to achieve the required performance.

EN 15330-1 specifies the properties required of synthetic turf surfaces used for football, rugby, hockey, tennis and multi–sports applications. The requirements of EN 15330-1 are intended to apply to surfaces used for community, educational and recreational sport. For professional and elite levels of competition, many sports governing bodies have published their own specifications.

NOTE The requirements of the sports' governing bodies differ from those detailed in EN 15330-1 and facility developers are advised to ensure that they select surfaces offering the correct performance for the level of competition to be played on the field.

5 Infill migration routes

Experience has shown that infill materials can be transported from a synthetic turf field by a number of different actions including:

— being carried by players (caught in and stuck on clothing and footwear);

— snow removal;

— being carried by maintenance equipment;

— inappropriate maintenance procedures;

— inappropriate installation procedures;

— poor storage of spare material;

— surface water run–off from the field;

— wind dispersion.

6 Means of minimizing infill migration

6.1 General

By incorporating appropriate design features into a synthetic turf sports field and undertaking its construction, operational maintenance and end-of-life removal in environmentally sensitive ways the risk of infill being dispersed from within the field to the surrounding environment can be minimized.

The following clauses describe examples of good practice that have been shown to be effective in ensuring infills are not dispersed into the surrounding environment. Many of these design features work best when used in collectively and it should not be assumed that only incorporating one feature will achieve the desired containment.

6.2 Types of synthetic turf surface

6.2.1 Carpet design

The tuft density (expressed as the number of tufts per square meter) of the synthetic turf carpet can greatly influence the mobility of the infill. Experience shows the more mobile the infill is, the greater the likelihood of it being dispersed to the environment around the field. Carpets that have lower tuft densities will generally allow greater infill movement and so the potential for infill dispersion is greater. When selecting a synthetic turf surface for a specific field, choosing one that offers the desired sporting qualities and has a high tuft density (for the intended use), will help reduce the potential of infill movement and loss into the surrounding environment.

Some long pile synthetic turf carpets contain a lower layer of curly tufts (often called a thatch zone), that is designed to stabilize the infill and so reduces the potential for movement and migration.

Other forms of synthetic turf carpet use texturized or curled yarns to form the main carpet pile, and these are also designed to stabilize the infill, which they do quite effectively, but possibly to the detriment of controlling the ball speed, meaning they are possibly better suited to areas being used for recreational and small sided football, where the need to replicate a natural grass field is less important.

The performance standards published by FIFA and World Rugby for synthetic turf football and rugby surfaces, contains an Infill Splash Test. This measures how much infill is lifted from the surface when a ball strikes it. Products having *Infill Splash Values* of less than 1,5 % are designated 'low splash' and will therefore offer better containment of the infill.

6.2.2 Shockpads

Many long pile synthetic turf surfaces used for sports such as football are often based on carpets having pile lengths of between 50 mm and 60 mm. These are laid directly onto the base of the field and are partly filled with a combination of stabilizing infill and performance infill. As the ball rebound and player welfare properties of these surfaces are provided by the performance infill it forms a significant proportion of the infill depth.

Alternative surfacing systems incorporate shockpads, these obtain some, if not most, of their impact attenuation properties from the shockpad, meaning they can have lower pile heights and lower quantities of performance infill. Anecdotal evidence suggests that the reduced infill quantities results in surfaces the are less likely to suffer from infill migration.