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3 October 2023

**Ensuring synthetic turf surfaces are not
a source of microplastic pollution**



ESTC is the trade association for the synthetic turf industry in the EMEA region. Our objective is to serve, promote, develop, grow and advocate for the synthetic turf industry.

We work in both the sports and landscaping sectors.



A photograph of a girls' soccer game on a muddy field. The text "But to be able to play sport you need decent facilities" is overlaid in white. The image shows several young girls in yellow and green jerseys (one with the number 12) and blue jerseys playing on a field with large puddles of water. In the background, there are soccer goals and a line of trees under a bright sky.

But to be able to play sport you need decent facilities



Synthetic turf surfaces provide high quality, sustainable football fields:

- Usable in a very diverse range of climates (all weather use)
- Consistent and safe performance
- Significant carrying capacity – maximising the opportunities to play
- Simpler to maintain – ensuring good fields for all
- Utilisation of brown-field sites

The background is a complex infographic with various text boxes and icons. At the top left, a box says 'Placing plastics in a landfill may simply be storing a problem for the future'. In the top center, a large circle contains the text 'ENOUGH PLASTIC IS THROWN AWAY EACH YEAR TO CIRCLE THE EARTH FOUR TIMES'. To the right, a box states 'Chemical building block that is used primarily to make polycarbonate plastic and epoxy resins'. Further right, another box says 'BURNING PLASTIC CAN RELEASE TOXIC FUMES'. At the top right, there's a section for 'CHEMICAL POLLUTANTS' with a diagram showing 'Chemicals' being released. In the middle left, a box says 'ENOUGH PLASTIC FILM TO MAKE A 100 METER LONG STRIP OF FILM FOR EVERY PERSON IN THE STATE OF TEXAS'. In the center, a large box reads 'ABOUT 10 MILLION TONS OF PLASTIC ARE PRODUCED EACH YEAR AND IT'S IMPACT ON OUR PLANET'. Below that, a box says 'PLASTICS GROW IN RATE OF ABOUT 9% EACH YEAR'. At the bottom left, a box says 'Our main use of these lightweight, inexpensive plastic materials are as single-use items that will go to the garbage dump within a year, where they'll persist for centuries'. At the bottom center, a box says 'NEXT YEAR, MORE THAN 300 MILLION TONS OF PLASTIC WILL BE PRODUCED WORLDWIDE'. At the bottom right, a box says 'PLASTIC IS THE LARGEST SOURCE OF OCEAN LITTER' with a wavy line icon. To its right, another box says 'Public agencies spend \$1 billion on coastal litter clean-up per year' with a dollar sign icon. At the very bottom right, a box says 'Floating plastic waste serves as mini transportation devices for invasive species, disrupting habitats' with an icon of a boat. The infographic uses various icons like a recycling symbol, a trash can, a globe, and a dollar sign to illustrate the points.

But synthetic turf is part of the plastics industry – and increasingly the world is recognising the need to use plastics in a sustainable way.

Responding to the concerns of society, government agencies, are increasingly seeing the need to introduce new, stricter environmental regulations to reduce the impact of human activities.

This creates threats, but also opportunities for the synthetic turf industry and the users or synthetic turf fields.

Concerns about microplastics

Microplastics - a material consisting of synthetic polymer containing particles or fibres, to which additives or other substances may have been added, and where $\geq 1\%$ w/w of particles or fibres have:

- a. For particles - dimensions $\leq 5\text{mm}$
- b. for fibres - a length of $\leq 15\text{mm}$

Intentionally added microplastics: microplastics that are manufactured and used (intentionally added) in and unrestrained way in products.

Secondary microplastics: microplastics that occur through wear or degradation of polymeric materials



After an extensive period of consultation and debate the EU has finally decided to ban polymeric synthetic turf infills, why?

- Surveys show there are over 40,000 full size sports fields in Europe + many thousands of mini-fields
- Over 85 % currently use polymeric infill
- Polymeric infill meets the definition of an intentionally added microplastic
- The EU estimate each field loses up to 1000 kg of infill per year
- 1kg of ELT infill contains circa 500,000 granules

What about infill containment measures?



- An increasing number of European studies are showing that infill containment measures work. So why did the EU not grant derogation to fields having them?
- The regulators were not convinced infill containment measures could be used effectively across the whole of Europe
- They also concluded even restricting losses to no more 50 kg per year was not good enough

What types of infill will be banned?

Synthetic polymeric infills

- ELT
- EPDM
- TPE, etc



Polymeric coated infills

With either:

- a. a particle of any composition with a polymer content of $\geq 1\%$ w/w
- a. a particle of any composition with a continuous polymer surface coating of any thickness



Note: The EU definition for biodegradable polymers probably means biodegradable polymeric infills are not an option

- 
- Ban to become effective EIGHT YEARS after legislation is enacted – so Autumn 2031
 - The ban does not:
 - stop the use of current fields containing rubber infill
 - prevent the building of new fields having rubber infill until 2031, but will you be able to obtain the necessary materials to maintain these correctly?
 - Some member states may introduce national bans before 2031

Industry is now innovating to develop a range of alternative turf and infill solutions

Vegetal infills



- Granulated cork
- Corn husks
- Sand
- Coconut fibres
- Wood chips
- Olive pits

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

DRAFT
prEN 15330-5

August 2022

ICS 97.220.10

English Version

Surfaces for sport areas - Synthetic turf and textile sports
surfaces - Part 5: Specification for infill materials

Sportböden - Kunststoffrasenflächen und textile
Sportflächen - Teil 5: Spezifikation für Verfüllgut

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

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.



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Ref.No. prEN 15330-5:2022 E

New European Standard, currently under development

- Quality
- Durability
- Climatic resistance
- Toxicology

Hopefully approved for publication Q1 / Q2 2024



Alternative turf systems



Sand dressed turfs

Non-filled turfs



Points to consider

- Compliance with FIFA standards
 - Player welfare
- Suitability for your local climate
 - Does the infill float?
 - Will it withstand extreme climatic conditions?
- Cost
 - More expensive than ELT
 - Need for a shockpad
- Availability of vegetal infills
 - Transportation & environmental impact
- Durability & life expectancy
 - Real life proof
- Maintenance requirements
 - Frequency and cost

Turf systems not using polymeric infills will need shockpads



alc@ac-as BS EN 15330-4:2022-20

EUROPEAN STANDARD

EN 15330-4

NORME EUROPÉENNE

EUROPÄISCHE NORM

December 2022

ICS 97.220.10

English Version

Surfaces for sports areas - Synthetic turf and needle-punched surfaces primarily designed for outdoor use - Part 4: Specification for shockpads used with synthetic turf, needle-punch and textile sports surfaces

Sols sportifs - Surfaces en gazon synthétique et surfaces en textile aiguilleté principalement destinées à l'usage en extérieur - Partie 4 : Spécifications relatives aux couches de souplesse utilisées avec les sols sportifs en gazon synthétique, en textile et en textile aiguilleté

Sportböden - Überwiegend für den Außenbereich hergestellte Kunststoffrasenflächen und Nadelfilz - Teil 4: Festlegungen für Elastikschichten, die in Kunststoffrasenflächen, Nadelfilzen und textilen Sportbelägen eingesetzt werden

This European Standard was approved by CEN on 16 October 2022.

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Secondary microplastics

The European Commission wishes to reduce total EU emissions of secondary microplastics by 30% by 2030



The EU:

- wants pan-European solutions
- wants industry to self – regulate wherever possible
- believes European Standard are the most appropriate way of setting quality standards

Our situation today:

- Yarn technology continues to advance, and the quality of yarns used today is far superior to those being used even a few years ago
- More robust quality standards (FIFA, etc) are helping to ensure that yarns are suitable for all climates

But the industry is being judged on what is happening today, based on fields sold in the past – so it needs to respond



Quantifying the size of the problem

ESTC has commissioned the Institut für Landschaftsbau, Sportfreianlagen und Grünflächen, University of Osnabrück, to visit older sports fields throughout Europe to collect samples so that the levels of fibre wear can be measured and quantified.

We plan to extend the study to more fields in 2024/25

Fibre wear on synthetic turf systems|Final report – Part 1

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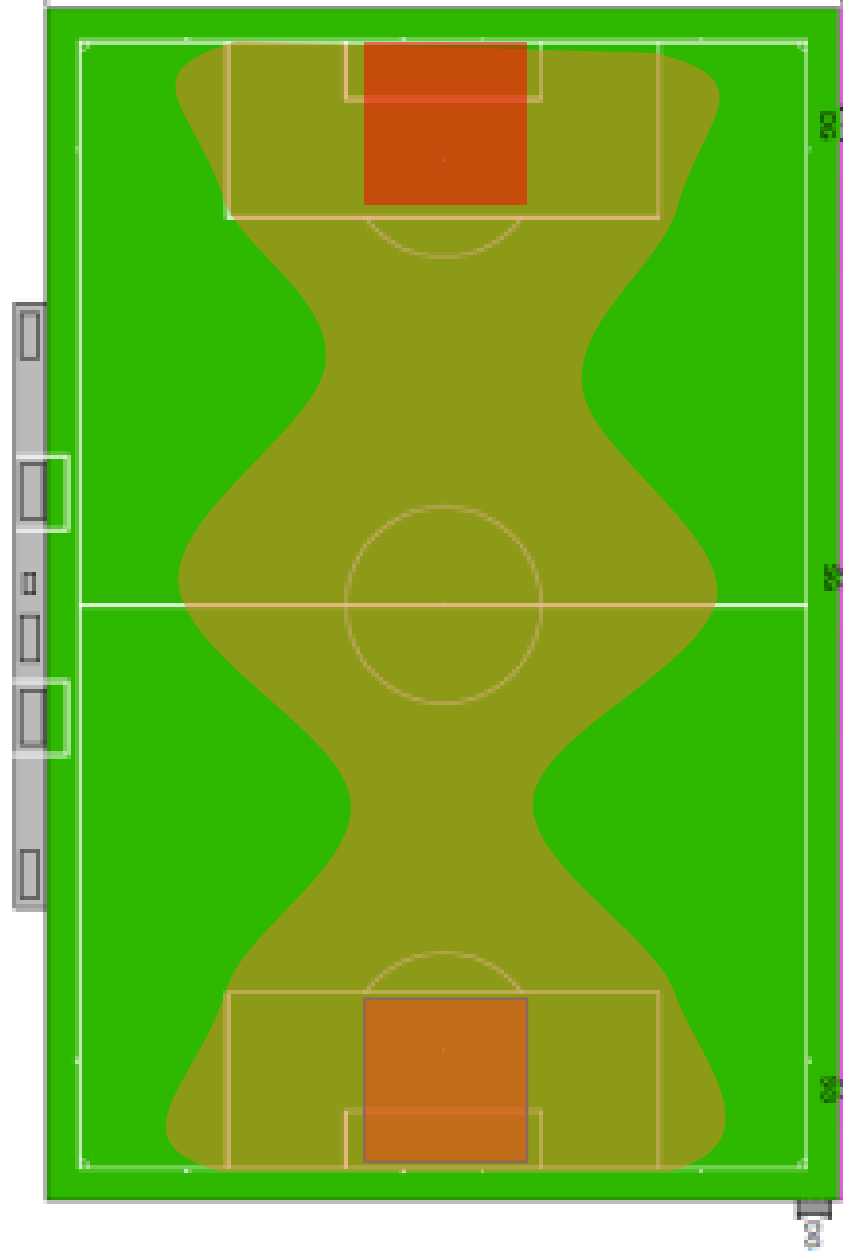


FINAL REPORT
PART 1: SPORT FIELDS

Investigations on outdoor sports fields with synthetic turf systems to determine wear phenomena due to fibre abrasion related to the intensity of use

SYNTHETIC TURF COUNCIL
EMEA

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- A football turf field will typically contain approx. 10 tonnes yarn. Yarns are lost in two ways

1. Tuft loss

- occurs immediately after installation
- occurs if infill depths are not maintained

2. Fibre wear

- predominately starts between years 6 & 8
 - becomes more intensive after 10 year as fibres weaken
- **Not all areas of the field suffer fibre wear at the same rate. Use on every field is different:**
 - **High use areas** (\approx 10% total area) may lose up to 12% of fibre after 10 years
 - **Moderate use areas** (\approx 50% total area) may lose up to 2% of fibre after 10 years
 - **Low use areas** (\approx 40% total area) may suffer \leq lose 0.5% fibre after 10 years

prEN 15330-6

New European Standard for synthetic turf carpets and yarns

Currently under development

prEN 15330-6:20XX
First draft

prEN 15330-6
First draft

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHENORM

English Version

Surfaces for sports areas - Synthetic turf sports surfaces

Part 6: Specification for synthetic turf carpets

Surfaces pour aires de sport - Surfaces de sport en gazon synthétique
Oberflächen für Sportflächen - Kunstrasensportbeläge

Partie 6 : Spécifications pour les tapis en gazon synthétique
Teil 6: Festlegungen für Kunstrasenteppiche

This European Standard was approved by CEN on XXXX

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Everyone involved with the use of synthetic turf products has a responsibility to ensure fields are not a source of environmental pollution

Turf manufacturers

- should only use robust yarns in their products
- ensure any loose tufts and fibres are removed prior to shipping

Installation contractors

- should ensure tufts dislodged during carpet trimming are removed prior to handover

Field owners

- should only purchase products of proven long-term quality
- should ensure their fields are adequately and frequently maintained
- need to accept the turf yarns will weaken and fields should be replaced before significant fibre loss occurs



We need to collect fibre and turf debris, so it does not become a pollutant

You need to invest in specialist maintenance equipment that will collect fibres and fibre debris as it occurs.

This is best done as part of a routine maintenance programme.



Maintenance objectives need to focus on:

- Ensuring players have safe and enjoyable playing surfaces
- Preventing contamination of the neighbouring environment



Questions?

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