

BLUE ANGEL

The German Ecolabel



Synthetic turf systems and sports fields

DE-UZ 235

Basic Award Criteria

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Version 1

The Environmental Label is supported by the following four institutions:



Federal Ministry
for the Environment, Nature Conservation,
Nuclear Safety and Consumer Protection

The Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection is the owner of the label. It regularly provides information on the decisions taken by the Environmental Label Jury.



Umwelt
Bundesamt

The German Environmental Agency with its specialist department for "Ecodesign, Eco-Labeling and Environmentally friendly Procurement" acts as office of the Environmental Label Jury and develops the technical criteria of the Basic Criteria for Award of the Blue Angel.



Jury
Umweltzeichen

The Environmental Label Jury is the independent, decision-making body for the Blue Angel and includes representatives from environmental and consumer associations, trade unions, industry, the trade, crafts, local authorities, academia, the media, churches, young people and the German federal states.



The RAL gGmbH is the awarding body for the Environmental Label. It organises the process for developing the relevant award criteria in independent expert hearings – which involve all relevant interest groups.

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This document is a translation of a German original. In case of dispute, the original document should be taken as authoritative.

List of abbreviations

AfPS	Ausschusses für Produktsicherheit (Product Safety Commission)
BAM	Bundesanstalt für Materialforschung und -prüfung (Federal Institute for Materials Research and Testing)
BAuA	Bundesanstalt für Arbeitsschutz und Arbeitsmedizin (Federal Institute for Occupational Safety and Health)
BBodSchV	Bundes-Bodenschutz- und Altlastenverordnung (Federal Soil Protection and Toxic Residue Ordinance)
BNatSchG	Bundesnaturschutzgesetz (Federal Nature Conservation Act)
CEN	European Committee for Standardization
CEN/TS	CEN (see CEN) Technical specification
CFRP	Carbon fibre reinforced plastic
CLP	Classification, Labelling and Packaging Regulation (EC) No. 1272/2008 (CLP)
CMR	Carcinogenic (C), mutagenic (M), reprotoxic (R)
DE-UZ	German environment label
DFB	Deutscher Fußballbund (German Football Association)
DIN	Deutsches Institut für Normung (German Institute for Standardisation)
DWA	Deutsche Vereinigung für Wasserwirtschaft, Abwasser und Abfall e.V. (German Association for Water, Wastewater and Waste)
DWA-A	DWA (see DWA) worksheet
ECA	European Chemicals Agency
ELT	End-of-Life Tyre
EN	European standard
EOX	Extractable organically bound halogens
EPA	Environmental Protection Agency
EPDM	Ethylene-propylene-diene (monomer) rubber
ErsatzbaustoffV	Verordnung über die Verwendung von Ersatzbaustoffen im Straßenbau (Substitute Building Materials Ordinance)
FSC	Forest Stewardship Council
% by mass	Percentage by mass
GRP	Glass fibre-reinforced plastics
GLP	Good Laboratory Practice
GS	Tested safety
ILO	International Labour Organization
incl.	including
ISCC	International Sustainability and Carbon Certification
ISO	International Organization for Standardization
kg	Kilogram
KrWG	Kreislaufwirtschaftsgesetz (Circular Economy Act)
LED	Light Emitting Diode
lx	Lux
mg	Milligramm
mm	Millimetres
MS	Mass spectrometric detection
PA	Polyamide

PAH	Polycyclic aromatic hydrocarbons
PBT/vPvB	Persistent, bioaccumulative and toxic substances/very persistent and very bioaccumulative substances
PCB	Polychlorinated biphenyls
PCR	Post-consumer recycled plastics
PE	Polyethylene
PEF	Product Environmental Footprint
PEFC	Programme for the Endorsement of Forest Certification Schemes
PEX	Cross-linked polyethylene
PFAS	Perfluorinated and polyfluoroalkyl substances
PIR	Post industrial recycled materials
PLA	Poly lactide
PMT	Persistent (P), mobile (M), toxic (T)
POP	Persistent Organic Pollutants
PP	Polypropylene
PU/PUR	Polyurethane
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No. 1907/2006
RPU	Recycled PU
RSPO	Roundtable on Sustainable Palm Oil
RTRS	Round Table on Responsible Soy
SBR	Styrene-butadiene rubber
STOT	Specific target organ toxicity
SVHC	Substances of Very High Concern
DM	Dry mass
TPU	Thermoplastic polyurethane
ULR	Upward Light Ratio
UZ	Umweltzeichen (ecolabel)
vPvM	Very persistent, very mobile
VOC	Volatile organic compounds
WHG	Wasserhaushaltsgesetz (Federal Water Act)
e.g.	For example
µg/l	Microgrammes per litre

1 Introduction

1.1 Preface

In cooperation with the Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection, the German Environmental Agency and considering the results of the expert hearings conducted by RAL gGmbH, the Environmental Label Jury has set up these Basic Criteria for the Award of the Environmental Label. RAL gGmbH has been tasked with awarding the Environmental Label.

Upon application to RAL gGmbH and on the basis of a Contract on the Use of the Environmental Label to be concluded with RAL gGmbH, the permission to use the Environmental Label may be granted to all products, provided that they comply with the requirements as specified hereinafter.

The product must comply with all the legal requirements in the country in which it is to be marketed. The applicant shall declare that the product meets this requirement.

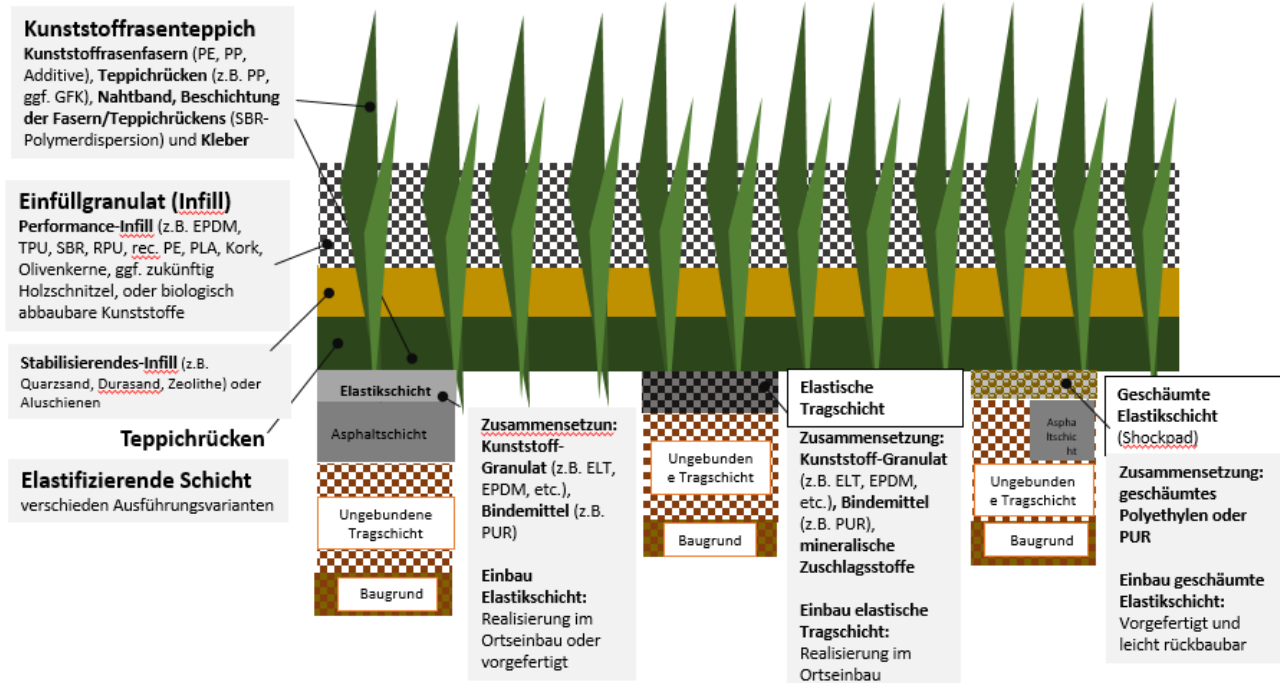
1.2 Background

Synthetic turf sports fields (also sometimes called artificial turf sports fields) are often used in the leisure and sports sectors and are becoming increasingly common due to the fact that, amongst other things, they can be used all year round, are more durable, require less care and maintenance and have lower specific costs per hour of use due to their higher utilisation. Synthetic turf sports fields are mainly used for playing football but can also be used for other types of sport such as hockey, tennis, American football and rugby. School sports are also sometimes played on synthetic turf sports fields. Sports fields can be made of natural grass, synthetic turf and also so-called hybrid turf systems that combine natural grass with synthetic turf. These hybrid turf systems have not been considered in these Basic Award Criteria due to their unfavourable life cycle assessment in comparison to natural grass and synthetic turf (Itten et al. 2020; Bertling et al. 2021).

Various organisations have estimated the number of synthetic turf sports fields, the area they cover and their locations. For example, the German Football Association estimates that there are 5,100 synthetic turf sports fields (large pitches) in Germany (DFB 2020). Bertling et al. (2021) analysed satellite data to calculate the number of synthetic turf sports fields in Germany (total number, not just large pitches). They identified 9,500 synthetic turf sports fields in Germany. According to information provided by manufacturers, around 400 new synthetic turf sports fields are added every year.

The different designs used to produce synthetic turf sports fields are described in the following diagram.

Ausführungsvarianten Kunststoffrasensysteme derzeit



Abkürzungen: PE - Polyethylen / PP - Polypropylen / ELT - End-of-life tire / EPDM - Ethylen-Propylen-Dien-(Monomer)-Kautschuk / GFK - glasfaserverstärkter Kunststoff / SBR - Styrol-Butadien-Kautschuk / RPU - Recycling-Polyurethan / PLA - Polylactid / PUR - Polyurethan / TPU - thermoplastisches Polyurethan

The synthetic turf carpet usually consists of a synthetic backing fabric into which synthetic fibres are knotted or woven in small tufts. To secure the synthetic turf fibres in place, the underside of the backing fabric is coated with latex or PU. The turf fibres are usually made out of PE, while the backing fabric is made out of PP, although sometimes out of GRP. There are also some synthetic turf carpets that are almost completely made out of polyolefins.

In full and partially filled synthetic turf systems, a layer of quartz sand is laid on top of the turf carpet to stabilise the tufts and weigh down the carpet. The infill is added as a performance and/or stabilising infill. Sand, old tyre granulate, synthetic elastomers or plastic can be used as the infill, as well as biogenic materials such as cork, olive stones or woodchips. Unfilled synthetic turf systems without any additional infill also exist.

The elastic cushioning layer can be produced in various designs. If an elastic layer or elastic base layer is used, it usually currently consists of old tyre granulates (alternatively EPDM), which are bound together to form a solid layer using a polymer binder (polyurethane).

There are environmental differences between the different types of synthetic turf systems that are currently installed. These differences arise due to the type and amount of materials used for the synthetic turf carpet, infill granulate and elastic cushioning layer, the design of the sports field, the pollutants contained within the sports field, the usage and care/maintenance of the sports field and the recycling of the synthetic turf system at the end of its service life.

The use of synthetic turf can have various effects on the environment and health. In particular, the introduction of microplastics into the environment has been a much-discussed topic in recent years. This is mainly due to the loss of the infill granulates and the impact of the sporting activities, maintenance measures, wind and rain. In addition, consumers are now increasingly aware of the possible impacts of plastic on the environment.

Other possible sources are fibre wear, the breakdown of the elastic layer due to the use of the sports field or plastic emissions during the construction and dismantling of the sports field.

Another issue is the pollutants and critical additives such as polycyclic aromatic hydrocarbons (PAHs), perfluorinated and polyfluoroalkyl substances (PFAS), volatile organic substances (VOC) and heavy metals that are also dispersed together with the plastic components – and which are found in the recycled materials (e.g. old tyres) that are currently used or also in new materials for granulates, fibres, carpet backings and elastic cushioning layers.

From a resource perspective, an important issue up to now has been the insufficient qualitative and in some cases quantitative recycling of the synthetic turf at the end of its service life. The lack of a specific waste code for synthetic turf makes it difficult to trace the disposal of it. Synthetic turf sports fields have up to now been an important application for the cascading use of recycled old tyres. In order to develop a circular economy, however, it will be necessary to promote higher quality uses for these old tyres (e.g. for remoulded tyres) in future and thus reduce their use in synthetic turf systems.

Synthetic turf sports field can have a wide range of relevant effects on the environment depending on their design of the system and the materials used. While renewable raw materials such as cork raise questions, in particular, about the cultivation conditions and their environmental scarcity, biodegradable infill granulates raise questions about how and under which conditions they degrade and whether any other (new) problematic substances are created or released in the process.

The design and structural integration of the synthetic turf sports field will also have an influence on the level of any microplastic emissions. There is a huge variance in the emissions from the different types of sports fields. Sports fields with polymer performance infills can cause comparatively high microplastic emissions, while sports fields without these types of infill granulates have significantly lower microplastic emissions. Synthetic turf fibres with a high level of durability also reduce the creation of secondary microplastics. Furthermore, the care and maintenance of the sports field, its structural integration and the collection and treatment of waste water at each installation site can also reduce the high potential for dispersing microplastics into the environment.

It is thus possible to ensure that a synthetic turf sports field performs significantly better than average from an environmental perspective by carefully selecting the components, ensuring its structural integration and through proper usage and care/maintenance. These synthetic turf sports fields or systems will be certified by this Blue Angel ecolabel.

1.3 Objectives of the Environmental Label

This ecolabel may be awarded to synthetic turf systems (Part A) and synthetic turf sports fields (Part B) that stand out with respect to environmental aspects in comparison to other synthetic turf systems and sports fields:

Part A - Synthetic turf systems:

- Resource conservation
- Promoting the use of post-consumer recycled materials
- Minimising pollutant emissions into the soil and groundwater
- Durability of the carpet (minimising the breakdown of the fibres and their dispersion into the environment)
- Replacing microplastic in the infill granulate by bringing forward the restrictions in the ECHA proposal, possibly for an extended period
- Promoting the circular economy with a salvaging and recycling concept

Part B - Synthetic turf sports fields:

- Installation of a recyclable and durable synthetic turf system that is low in pollutants
- High usage efficiency (needs-based assessment based on player hours)
- Limiting plastic losses (fibre breakage)
- Mechanical maintenance without the use of biocides
- Limiting water consumption
- Guidelines for the disposal of waste water

The Basic Award Criteria are split into two parts

A – Requirements for the synthetic turf system

B – Requirements for the structural integration and care/maintenance of the synthetic turf sports field

The Blue Angel ecolabel can be used to certify a synthetic turf sports field if it complies with the requirements in Part A and Part B.

The explanatory boxes differ based on certification in accordance with Part A and B:

Explanatory box for PART A



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This **synthetic turf system** complies with the requirements of Part A of UZ 235 and enables the construction of a synthetic turf sports field (Part B) certified with DE-UZ 235.

- Low level of harmful materials
- Reduced introduction of microplastics into the environment
- Recyclable and durable

Explanatory box for PART B



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This **synthetic turf sports field** was constructed using a synthetic turf system certified according to DE-UZ 235 Part A and fulfils the criteria for Part B of the DE-UZ 235 ecolabel, edition 2024.

- Low level of harmful materials, recyclable and durable synthetic turf system
- Reduced introduction of microplastics into the environment
- Mechanical maintenance without the use of biocides
- Efficient operation and intensive use

1.4 Definitions

The terms used in the Basic Award Criteria are defined as follows:

- **Operator of the synthetic turf sports field:** The operator of a synthetic turf sports field is the person or company who – based on the legal, economic and actual circumstances – has the decisive influence over the condition and operation of the synthetic turf sports field.
- **Carbon footprint:** The total amount of greenhouse gases emitted and the amounts of greenhouse gases absorbed in a product system, stated as a CO₂ equivalent based on a life cycle assessment using climate change as the only impact category.
- **Elastic cushioning layer:** The cushioning layer underneath the synthetic turf carpet, in the form of an elastic layer incl. a shockpad or an elastic base layer.

- **Infill granulate:** An infill (also referred to as filler according to ISO 150330-1:2013-12; (functional) filler according to DIN 18035-7 / RAL-GZ 944/3/ infill) that is added to the synthetic turf to achieve certain characteristics (e.g. to provide stability or achieve the required performance characteristics). This includes stabilising and performance infills.
- **Elastic layer:** Cushioning layer underneath the synthetic turf carpet, usually consisting of an elastic granulate (rubber or plastic granulate such as SBR, EPDM, etc.) and an elastic binder (usually PUR) or a plastic foam (PE, PUR, etc.). The latter is also described as the shockpad.
- **Elastic base layer:** Cushioning layer underneath the synthetic turf carpet, consisting of an elastic granulate (rubber or plastic granulate such as SBR, EPDM, etc.), an elastic binder (usually PUR) and mineral additives or alternatively a recycled granulate (aggregate/recycled turf agglomeration).
- **High-quality recycling of materials:** After undergoing an industrial recovery process, the secondary material is a suitable substitute for new goods in typical applications for the material. Products such as industrial pallets, palisades, toys, cover plates, grass pavers, etc. are not considered to be typical applications for the material.
- **Synthetic turf fibre:** Plastic fibres (usually made out of PE, PP or PA and various additives) that are designed to mimic natural grass.
- **Synthetic turf sports field:** An outdoor area, consisting of a sports or playing field, the necessary surrounding areas and, if relevant, areas and facilities that allow room for forms of movement and practice within the rules of the sport, on which a synthetic turf system is used as the surface on part of the sports field.
- **Synthetic turf system:** A combination of a synthetic turf carpet and other possible components such as a stabilising infill, performance infill, elastic layer/elastic base layer/shockpad and a base layer.
- **Synthetic turf carpet:** A product consisting of synthetic turf fibres, a carpet backing, a seam tape, coating and adhesive.
- **Microplastic:** Solid plastic particle smaller than 5 mm that can consist of a mixture of polymers and functional additives.
- **Performance infill:** An infill granulate that is added to the stabilising infill to influence the performance and safety characteristics of the sports field.
- **Post-consumer recycled material (PCR material):** According to ISO 14021:2021-10, material generated by households or by commercial, industrial and institutional facilities in their role as end-users of the goods or service which can no longer be used for its intended purpose.
- **Post-industrial recycled material (PIR materials, alternatively called pre-consumer material):** According to ISO 14021:2021-10, material diverted from the waste stream during a manufacturing process.
- **Recycled material:** Material that has been recovered from a waste flow using a recycling process.
- **Player hours:** Number of hours on which sport is played on the field, multiplied by the average number of players involved in the game per hour.
- **Sports and playing fields:** According to DIN 18035-1:2003, areas suitable and usable for (competitive) sport and leisure activities.
- **Stabilising infill:** An infill granulate designed to stabilise the synthetic turf fibres.
- **Flood area:** Flood areas are areas between overground bodies of water and dykes or banks and other areas that can be flooded or traversed by an overground body of water or which

are designated as flood relief zones or flood retention zones (definition according to § 76 Federal Water Act). This includes areas in which a flood event can be statistically expected once every 100 years, as well as areas that have been designated as flood relief zones or flood retention zones. Flood areas are usually designated by the relevant state government.

2 Scope

These Basic Award Criteria apply to permanently installed synthetic turf systems used as sports and playing fields at sporting facilities. This includes synthetic turf systems (requirements in Part A) comprising the elastic cushioning layer, infill granulate and synthetic turf carpet, taking into account structural integration aspects, the conditions at the installation site and the usage and care/maintenance instructions (requirements in Part B).

Hybrid turf systems, which combine natural turf with synthetic turf, are not considered to be synthetic turf systems in the sense of these Basic Award Criteria.

The Basic Award Criteria are split into two parts (A and B). The Blue Angel ecolabel can be used to certify a synthetic turf sports field if it complies with the following requirements in Part A and Part B.

The requirements in Part A are aimed at (system) suppliers of complete synthetic turf systems or also their components. A synthetic turf system can be certified independently of Part B. Components of the synthetic turf system may not be certified individually in accordance with Part A. However, they can be certified as a package together with other suppliers.

Special requirements apply to the use of the logo (see Paragraph on the use of the logo).

Part B is aimed at operators of sports fields. Operators can apply for a Blue Angel ecolabel for a specific sports field if it uses a certified synthetic turf system (Part A) and the operator also submits verifications of compliance with the requirements in Part B. Special requirements apply to the use of the logo (see Paragraph on the use of the logo).

The diagram in Appendix B provides a schematic overview of the different criteria.

3 Requirements

This section lists the individual award criteria and the relevant compliance verifications. All application documentation must be submitted via the Web Portal: <https://portal.ral-umwelt.de/>. The required test reports, certificates, etc. must be up to date, i.e. these documents should not be more than two year old at the time of application. RAL gGmbH must be informed immediately about all changes to the product, recipe and material composition, as well as any amendments to the care and maintenance of the sports field or a change of operator, etc. Documentation verifying compliance with the requirements must also be resubmitted in these cases.

3.1 Part A: Requirements for the synthetic turf system

3.1.1 General product description

The applicant must enclose a product description containing the following information with the application:

- Brand/trade names (if relevant, of the individual components)
- Design of the synthetic turf system
 - ♦ Synthetic turf carpet:
 - Manufacturer and type designation, manufacturing sites
 - Type of fibre (monofilament, fibrillated ...)
 - Type of polymer used for the fibres, supplier/manufacturer of the polymer, contents and origin (recycled content, primary plastic, renewable raw material)
 - Type of polymer used for the backing, supplier/manufacturer of the polymer, contents
 - Type of fixing for the fibres (coating, woven, ...)
 - Fibre density and pile height
 - Type of connection between the individual sheets (adhesive, stitching material, ...)
 - Reinforcement fibres (yes/no + type)
 - ♦ Infill granulate
 - Manufacturer and type designation, manufacturing sites
 - Unfilled / only filled with sand / sand + performance infill
 - Initial surface weight
 - ♦ Elastic cushioning layer
 - Type (elastic layer, elastic base layer, shockpad)
 - Installation (on site, prefabricated)
 - Design (prefabricated --> name of manufacturer / in-situ)
 - Surface weight
 - Type of polymer, supplier/manufacturer of the polymer, contents

Compliance verification

The applicant shall submit a product description in Annex 1-A to the contract, which provides information where available on the proportions by mass for 98 % of the product.

3.1.2 Testing the sporting performance

Synthetic turf sports fields certified with the Blue Angel ecolabel stand out due to their environmental benefits. Nevertheless, applications for the Blue Angel ecolabel must also include verification of the required sporting performance of the synthetic turf systems.

The applicant must state which standard (e.g. DIN 18035-7¹, DIN EN 15330², RAL-GZ 944³) was used to verify its sporting performance.

The following requirements include specific rules for aspects of the design of synthetic turf systems that have a direct or indirect relevance for the environment.

¹ DIN 18035-7:2019-12 Sports grounds - Part 7: Synthetic turf areas

² Series of standards DIN EN 15330 Surfaces for sports areas - Synthetic turf and needle-punched surfaces primarily designed for outdoor use

³ RAL-GZ 944, Synthetic turf systems in outdoor sports facilities

Compliance verification

The applicant shall state in Annex 1-A to the contract which standard was used to test the required sporting performance and shall verify compliance with the requirements in the corresponding standard.

3.1.3 Origin of the materials

3.1.3.1 Origin of the recycled plastics

Post-consumer recycled materials (PCR) and post-industrial recycled materials (PIR) are approved for use in the synthetic turf system (infill granulate, synthetic turf carpet, elastic cushioning layer). The latter includes reusable material such as sprues, cutting scraps or rejected batches that were generated in a particular process and can be reused within the same process.

The PCR or PIR plastic must come from certified sources that can clearly verify their origins. In particular, the applicant must provide information on the type of waste (PCR, PIR consumer) and the origin of the waste (household, commercial, industrial, dismantled synthetic turf sports fields).

Compliance verification

The origin and composition of the PCR plastics and PIR plastics used in the product shall be verified by the applicant in the form of a certificate (including a report) in accordance with the EuCertPlast certification scheme, the RecyClass certification scheme (for "recycling purposes"), the Global Recycled Standard (GRS) or ISCC plus (with calculated and plausibly justified verification of the proportion of post-consumer plastics used)⁴ or an equivalent certification scheme according to EN 15343:2007 or DIN EN 15343:2008⁵. The certificate must clearly state whether the plastic is PCR plastic (recycled) or PIR plastic.

3.1.3.2 Origin of other (non-plastic) recycled materials

Information on the origin of any other (post-consumer) recycled material (non-plastic) for which there are currently no certification systems (mineral substances, renewable raw materials) must be provided.

Compliance verification

If other (post-consumer) recycled materials are used, the origin and the company/supplier must be stated in Annex 1-A.

3.1.3.3 Origin of primary renewable raw materials

If primary renewable raw materials are used to produce biobased plastics for the production of any component of the synthetic turf system, these must be sourced from sustainable cultivation on cultivation areas that can verify that they are managed in an ecological and socially responsible manner.

⁴ See <https://www.eucertplast.eu> and <https://recyclclass.eu/>

⁵ EN 15343:2007 / DIN EN 15347:2008-02

Plastics - Recycled Plastics - Characterisation of plastics wastes; German version EN 15347:2007

In addition, cork, timber or timber products must be sourced 100% from certified sustainably managed cultivation. The use of material cultivated in areas requiring a particularly high level of protection (e.g. forests that are particularly worthy of protection such as tropical or boreal forests) is prohibited. All of the processed materials must come from legal sources. The source of the material must be verifiable. Only raw timber, including timber stripped of bark, that has only been mechanically processed is approved.

Other biogenic material (e.g. olive stones, cherry pits, walnut shells, rice husks or maize used as infill granulates) is only approved if it was generated as a waste product or by-product (agricultural residues, timber and forestry residues).

Fundamental principles and rights with respect to working conditions, as defined in the valid fundamental labour standards of the International Labour Organisation (ILO), must be fulfilled in the sourcing of the materials. ILO standard 155 concerning occupational safety and health and the working environment must also be complied with alongside these fundamental labour standards.

Compliance verification

The applicant shall name the raw materials used and the materials produced from primary renewable raw materials, with information on their geographical origins and suppliers or producers, in Annex 1-A. The applicant shall also confirm compliance with the criteria described above in writing in Annex 1-A and submit suitable certificates from the raw material suppliers.

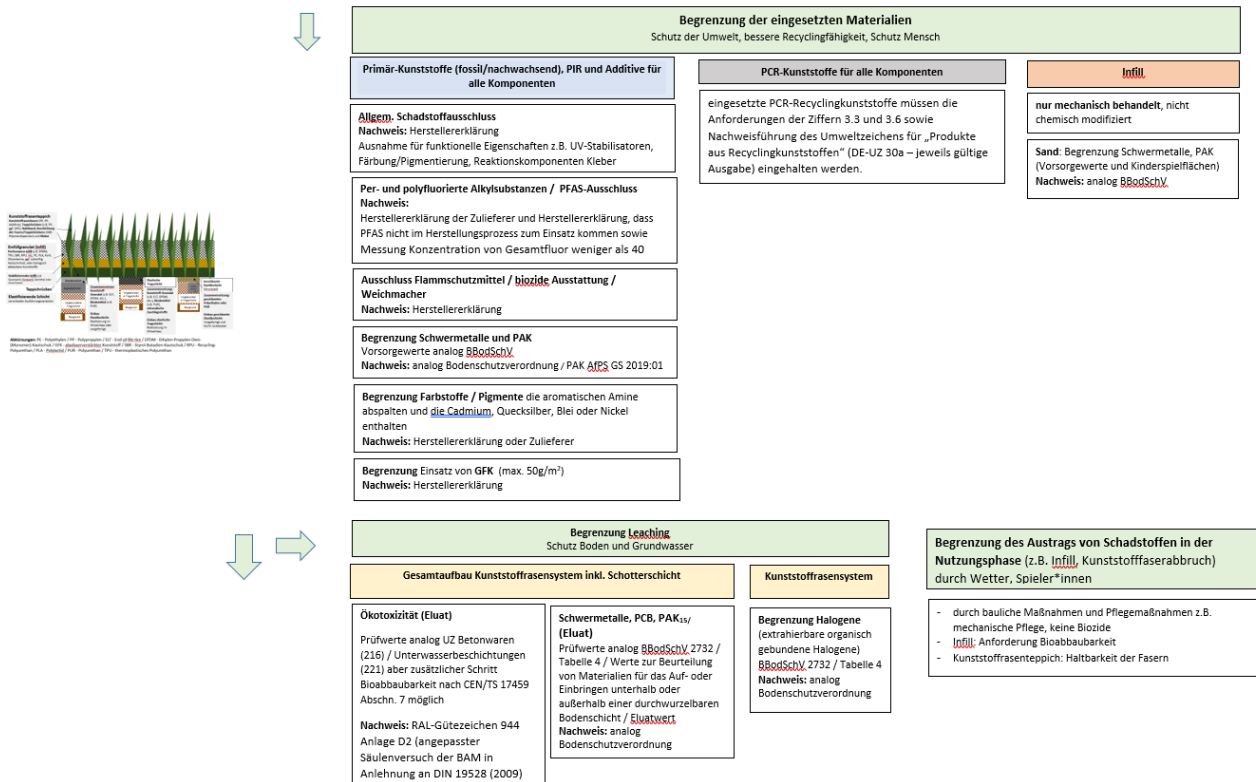
- *The following certificates will be accepted for renewable raw materials used in the production of biobased plastics: RSB, RSPO, ISCC PLUS and RTRS.*
- *Certification in accordance with the FSC and PEFC standards will also be accepted for timber, timber products and cork.*
- *If other biogenic materials for which there is currently no certification on the market (olive stones, cherry pits, rice husks, ...) are used, the applicant shall verify that these raw materials were generated as a by-product or production waste and do not account for the majority of the production value.*

The applicant shall declare compliance with the stated ILO labour standards and submit corresponding declarations from the raw material suppliers. The social requirements will be considered to be fulfilled if the raw materials are certified in accordance with the FSC standard.

3.1.4 Limits on pollutants

This section describes the requirements for the primary materials including PIR plastics and then also the requirements for the secondary materials and the entire product. The graphic in the Annex provides an overview of these requirements.

Übersicht Schadstoffanforderungen Umweltzeichen Blauer Engel für Kunststoffrasensysteme und -Sportplätze (DE-UZ 235)



3.1.5 Limits on pollutants in primary plastics (fossil and renewable), PIR plastics and additives

3.1.5.1 General substance requirements

Observance of the legal regulations according to European and German chemical law is a prerequisite; this includes, in particular, the REACH Regulation⁶ Annexes XIV and XVII, the POP Regulation⁷ Annex I and the CLP Regulation⁸. Above and beyond the legal requirements, products certified with the Blue Angel must also comply with other requirements.

The primary plastics (fossil and renewable) and PIR plastics used to produce the components of the synthetic turf system (i.e. the elastic cushioning layer, synthetic turf carpet (fibres and backing) incl. coatings, adhesive and infill granulate (except for sand and biogenic materials) as well as any additives/process auxiliaries may not contain any substances as constituent components⁹ with the following properties (except for the stated exemptions):

⁶ Regulation (EC) No. 1906/2006 concerning the Registration, Evaluation, Authorization, and Restriction of Chemicals

⁷ Regulation (EC) 2019/1021 on persistent organic pollutants

⁸ Regulation(EC) No. 1272/2008 on classification labelling and packaging of substances and mixtures

⁹ Constituent components are substances or preparations added to the product or primary products and remain there unchanged in order to achieve or influence certain product properties and those required as chemical cleavage products for achieving the product properties. This does not apply to residual monomers that have been reduced to a minimum.

- Substances that according to the CLP Regulation (EC) No. 1272/2008 have been classified or which meet the criteria for such classification.
- Substances which are identified as particularly alarming under the REACH Regulation and which have been incorporated into the list drawn up in accordance with Article 59, Paragraph 1 of the REACH Regulation (so-called "list of candidates").

The substances, hazard classes and categories are allocated to three groups in Table 1. No exemptions are possible for substances in group 1. Based on the information in Paragraphs 3.1.8 and 3.1.10, some exemptions apply to substances in groups 2 and 3 for the fulfilment of certain functions in the synthetic turf carpet and elastic layer. The minimisation principle applies to all materials added to the product. They should only be used in the quantities required to fulfil certain functions.

Table 1: Allocation of substances, hazard classes and categories in groups

Hazards in group 1
Substances classified on the candidate list as substances of very high concern (SVHC) Endocrine disruptors: EUH380, EUH381, EUH430, EUH431 PBT/vPvB and PMT/vPvM: EUH440, EUH441 and EUH450, EUH451 Carcinogenic, germ cell mutagenic and/or reprotoxic (CMR), category 1A or 1B: H340, H350, H350i, H360, H360F, H360D, H360FD, H360Fd, H360Df
Hazards in group 2
CMR, category 2: H341, H351, H361f, H361d, H361fd, H362 Aquatic toxicity, category 1: H400, H410 Aquatic toxicity, categories 1 and 2: H300, H310, H330 Aspiration hazard, category 1: H304 Specific target organ toxicity (STOT), category 1: H370, H372
Hazards in group 3
Aquatic toxicity, categories 2, 3 and 4: H411, H412, H413 Aquatic toxicity, category 3: H301, H311, H331, EUH070 STOT, category 2: H371, H373 Skin Sens 1: H317

Compliance verification

The applicant shall declare compliance with the requirements in Annex 1-A to the contract pursuant to DE-UZ 235. This declaration must confirm that the manufacturer/supplier has also been obligated to comply with the requirements.

A new declaration must be submitted in the event of any changes to the recipe. If the term of validity of the Basic Award Criteria is extended, new declarations from the manufacturer or suppliers shall be submitted.

3.1.5.2 Substance exemptions for the synthetic turf carpet – pollutant content

As an exemption to the requirements for the pollutant content in Paragraph 3.1.4.1, the following substance exemptions can be utilised in order to achieve certain functions:

Table 2: Possible substance exemptions for the synthetic turf carpet

Components of the synthetic turf carpet	Function	Exemptions are possible for substances in the following hazard categories
Synthetic turf fibre	UV stabilisation	Group 3 (H411, H412, H413 H301, H311, H331, EUH070 H371, H373, H317)
	Dye / pigmentation	Group 3 (H411, H412, H413 H301, H311, H331, EUH070 H371, H373, H317)
Adhesive	Reaction components	Group 3 (H411, H412, H413 H301, H311, H331, EUH070 H371, H373, H317)

If these exemptions are utilised, the substances and their concentrations in the product must be reported in accordance with Paragraph 3.1.4. Other exemptions will only be approved after examination by the German Environment Agency.

Compliance verification

If the exemptions to the pollutant content requirements are utilised, the applicant must submit the safety data sheets. The substances used and their concentrations in the product must also be reported.

3.1.5.3 Substance exemptions for the elastic cushioning layer – pollutant content

As an exemption to the requirements for the pollutant content in Paragraph 3.1.4, the following substance exemptions can be utilised in order to achieve certain functions in the elastic cushioning layer:

Table 3: Possible substance exemptions for the elastic cushioning layer

Function	Exemptions are possible for substances in the following hazard categories
Polurethane applications	Group 3 (H411, H412, H413 H301, H311, H331, EUH070 H371, H373, H317)

Compliance verification

If the exemptions to the pollutant content requirements in 3.1.4 are utilised, the applicant must submit the safety data sheets. The substances used and their concentrations in the product must also be reported.

3.1.5.4 Perfluorinated and polyfluoroalkyl substances (PFAS)

To avoid the release of persistent substances into the environment, no perfluorinated and polyfluoroalkyl substances (PFAS) may be contained in the primary plastics (fossil and renewable) and PIR plastics as a constituent component or added as an auxiliary substance in a subsequent production process.

Compliance verification

The applicant (Annex 1-A) or supplier (Annex 2) shall declare that the primary materials and PIR plastics do not contain the stated substances and these substances are not used in the production process.

The applicant shall also verify that the concentration of total fluorine in the plastics used for the components of the synthetic turf system is less than 40 mg/kg.

The applicant shall submit a measurement report according to DIN EN ISO 10304-1:2009-07 from a certified laboratory stating the proportion of total fluorine in the plastic. The testing laboratory must have implemented a quality assurance system according to DIN EN ISO/IEC 17025 "General requirements for the competence of testing and calibration laboratories" or a comparable standard (e.g. GLP) and confirm that this is the case in the test report.

3.1.5.5 Heavy metals and PAH

The following values must be complied with in the primary plastics (fossil and renewable), PIR plastics and additives used to produce the components of the synthetic turf system (elastic cushioning layer, synthetic turf carpet + infill granulate (except for sand and cork)):

Table 4: According to BBodSchV/ErsatzbaustoffV¹⁰ Table 1 2731 Precautionary values for inorganic substances and Table 2 2731 Precautionary values for organic substances

Parameter	BBodSchV / ErsatzbaustoffV Table 1 2731 Precautionary values for inorganic substances mg/kg DM	BBodSchV / ErsatzbaustoffV Table 2 2731 Precautionary values for organic substances mg/kg DM	Measurement method
Mercury (Hg)	0.3		According to the latest table from the Soil Investigation Advisory Council (FBU) ¹¹
Arsenic (As)	20		
Total chromium (Cr)	100		
Cadmium (Cd)	1.5		
Zinc	200		
Thallium	1		
Nickel	70		
Copper	60		
Lead (Pb)	100		
Benzo(a)pyrene		0.5	AfPS GS 2019:01 ¹²
PAH16 ¹³		5	AfPS GS 2019:01

¹⁰ Ordinance to introduce a Substitute Building Materials Ordinance, revise the Federal Soil Protection and Toxic Residue Ordinance and amend the German Landfill Ordinance and Commercial Waste Ordinance of 9 July 2021

¹¹ <https://www.umweltbundesamt.de/themen/boden-flaeche/kommissionen-beiraete/fachbeirat-boden-untersuchungen-fbu#der-fachbeirat>
https://www.umweltbundesamt.de/sites/default/files/medien/359/dokumente/gleichwertigkeitsfeststellung_bbodschv_stand_2023-08-02.pdf

¹² AfPS GS 2019:01 PAK: GS specification "Testing and assessment of polycyclic aromatic hydrocarbons (PAHs) in the course of awarding the GS mark" issued by the Product Safety Commission (AfPS) <https://www.baua.de/DE/Aufgaben/Geschaeftsfuehrung-von-Ausschuessen/AfPS/pdf/AfPS-GS-2019-01-PAK.html>

¹³ The BBodSchV tested 16 selected PAH based on the group of polycyclic aromatic hydrocarbons (PAH) from the list produced by the Environmental Protection Agency (EPA): Acenaphthylene, acenaphthene, anthracene, benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[g,h,i]perylene

Compliance verification

The applicant shall submit a test report that verifies compliance with the criteria. The testing laboratory must have implemented a quality assurance system according to DIN EN ISO/IEC 17025¹⁴ "General requirements for the competence of testing and calibration laboratories" or a comparable standard (e.g. GLP Good Laboratory Practice) and confirm that this is the case in the test report.

3.1.5.6 Plasticisers

No plasticising substances from the group of phthalates may be contained in the primary plastics (fossil and renewable) and PIR plastics as a constituent component or added as an auxiliary substance in a subsequent production process.

Compliance verification

The applicant shall declare compliance with the requirement in Annex 1-A to the contract or submit a corresponding declaration from its suppliers (Annex 2).

3.1.5.7 Dyes and pigments

The azo dyes and pigments stated in Appendix C of the Basic Award Criteria that can cleave into amines may not be added. No dyes and pigments containing heavy metals may be added.

Compliance verification

The applicant shall declare compliance with the requirement in Annex 1-A or submit a corresponding declaration from its suppliers (Annex 2).

3.1.5.8 Flame retardants / biocide finishing

No flame retardants may be added to any component of the synthetic turf system as a constituent component.

Microbiocides or fungicides are also not permitted as constituent components.

Compliance verification

The applicant shall declare compliance with the requirements in Annex 1-A to the contract pursuant to DE-UZ 235.

3.1.6 Limits on pollutants in PCR plastics

PCR plastics used in the synthetic turf system (synthetic turf carpet, elastic cushioning layer) must comply with the requirements in Paragraph 3.3 and 3.6 of the ecolabel for "Products made

benzo[k]fluoranthene, chrysene, dibenzo[a,h]anthracene, fluoranthene, fluorene, indeno[1,2,3-cd]pyrene, naphthaline, phenanthrene and pyrene

¹⁴ DIN EN ISO/IEC 17025:2018-03 General requirements for the competence of testing and calibration laboratories (ISO/IEC 17025:2017)

from recycled plastics" (DE-UZ 30a – in the currently valid version¹⁵) and the compliance verifications must be provided.

Compliance verification

The applicant shall submit the corresponding verifications every year in accordance with Paragraphs 3.3 and 3.6 of the DE-UZ 30a ecolabel.

¹⁵ <https://www.blauer-engel.de/de/zertifizierung/vergabekriterien#UZ30a-2024>

3.1.7 Limits on pollutants in sand

The sand used in the infill granulate must comply with the following requirements for its pollutant content. These requirements also apply to recycled sand. The sand may not contain substances in amounts above the limits stated in the following table.

Table 5: Pollutant limits for sand according to BBodSchV/ErsatzbaustoffV Table 1 2731 Precautionary values for inorganic substances in the soil type sand and Table 4 2737 Values for the soil - human pathway on children's playgrounds

Parameter	BBodSchV / ErsatzbaustoffV Table 1 2731 Precautionary values for inorganic substances in the soil type sand, limit in mg/kg DM	BBodSchV / ErsatzbaustoffV Table 4 2737 Values for the soil - human pathway on children's playgrounds in mg/kg DM	Analysis methods
Arsenic	10		According to the latest table from the Soil Investigation Advisory Council (FBU) ¹⁶
Lead	40		
Cadmium	0.4		
Chrome	30		
Nickel	15		
Copper	20		
Thallium	0.5		
Zinc	60		
Mercury	0.2		
2,4-dinitrotoluene		3	
2,6-dinitrotoluene		0.2	
DDT (dichlorodiphenyltrichloroethane)		40	
Hexachlorobenzene		4	
Hexachlorocyclohexane (HCH mix or beta HCH)		5	
2,2', 4,4',6,6'-Hexa-nitrodiphenylamine (hexyl)		150	
1,3,5-Trinitro-hexahydro-1,3, 5-triazine (hexogen)		100	
Pentaerythritol tetranitrate		500	
Pentachlorophenol		50	
PAH16 represented by benzo(a)pyrene		0.5	
PCB6		0.4	
2,4,6 Trinitrotoluol (TNT)		20	

¹⁶ <https://www.umweltbundesamt.de/themen/boden-flaeche/kommissionen-beiraete/fachbeirat-boden-untersuchungen-fbu#der-fachbeirat>
https://www.umweltbundesamt.de/sites/default/files/medien/359/dokumente/gleichwertigkeitsfeststellung_bbodschv_stand_2023-08-02.pdf

Compliance verification

The applicant shall submit a test report that verifies compliance with the criteria. The testing laboratory must have implemented a quality assurance system according to DIN EN ISO/IEC 17025 "General requirements for the competence of testing and calibration laboratories" or a comparable standard (e.g. GLP) and confirm that this is the case in the test report.

3.1.8 Limits on the leaching of pollutants from the end product

The following parameters must be tested on a sample of the complete structure of the synthetic turf system.

3.1.8.1 Halogens

The following test value for extractable organically bound halogens (EOX) must be complied with by the synthetic turf system:

Table 6: According to BBodSchV /ErsatzbaustoffV Table 4 2732 Values for evaluating materials designed for installation or insertion below or above a layer of soil containing roots in DM

Parameter	BBodSchV / ErsatzbaustoffV Table 4 2732 Values for evaluating materials designed for installation or insertion below or above a layer of soil containing roots in mg/kg DM	Analysis methods
Extractable organically bound halogens (EOX)	1	According to the latest table from the Soil Investigation Advisory Council (FBU) ¹⁷

Compliance verification

The applicant shall submit a test report that verifies compliance with the criteria. The testing laboratory must have implemented a quality assurance system according to DIN EN ISO/IEC 17025 "General requirements for the competence of testing and calibration laboratories" or a comparable standard (e.g. GLP) and confirm that this is the case in the test report.

3.1.8.2 Ecotoxicity

In order to evaluate the environmental compatibility of the synthetic turf system with respect to soil and groundwater, the applicant must use an elution method based on RAL Quality Mark 944 Annex D2¹⁸ (adapted column experiment from the Federal Institute for Materials Research and Testing (BAM) based on DIN 19528¹⁹ (2009)). This method involves a laboratory test to determine the mobilisable potential pollutants.

The processes for producing the eluate and analytically determining the substances are described in Annex D2 of the RAL Quality Assurance and Test Specifications for RAL Quality Mark 944. This

¹⁷ <https://www.umweltbundesamt.de/themen/boden-flaeche/kommissionen-beiraete/fachbeirat-boden-untersuchungen-fbu#der-fachbeirat>

https://www.umweltbundesamt.de/sites/default/files/medien/359/dokumente/gleichwertigkeitsfeststellung_bbodschv_stand_2023-08-02.pdf

¹⁸ https://www.ral-guetezeichen.de/gz-einzelansicht/?gz=gz_944

¹⁹ DIN 19528:2009-01 Leaching of solid materials - Percolation method for the joint examination of the leaching behaviour of inorganic and organic substances

evaluation must be carried out on the complete synthetic turf system (total design: elastic base layer or elastic layer or pre-manufactured web material or pre-manufactured tiles, synthetic turf carpet, mineral infill and infill granulate). The ecotoxicity of the eluate must be tested in accordance with the following table (with a water/solid ratio of 2).

Table 7: Test criteria for ecotoxicity

Test species	Test standard	Endpoint	Criterion
Luminescent bacteria (<i>Vibrio fischeri</i>)	EN ISO 11348-1 ²⁰	Light	$G_L \leq 8$
Algae (<i>Raphidocelis subcapitata</i> or <i>Desmodesmus subspicatus</i>)	EN ISO 8692 ²¹	Growth	$G_A \leq 4$
Crustaceans (<i>Daphnia magna</i>)	EN ISO 6341 ²²	Mobility	$G_D \leq 4$
umu test	ISO 13829 ²³	Genotoxicity	$G_{EU} \leq 1,5$

If the eluate does not comply with these values, an intermediate step in accordance with Section 7 "Assessment of biodegradability" of CEN/TS 17459²⁴ may be carried out on synthetic turf systems using cork as an infill granulate. The ecotoxicity of the eluate must then be retested.

Compliance verification

The applicant shall submit a test certificate that verifies compliance with the criteria. The testing laboratory must have implemented a quality assurance system according to DIN EN ISO/IEC 17025 "General requirements for the competence of testing and calibration laboratories" or a comparable standard (e.g. GLP) and confirm that this is the case in the test report.

3.1.8.3 Heavy metals, PAH, PCB

The applicant must use an elution method based on RAL Quality Mark 944 Annex D2²⁵ (adapted column experiment from the Federal Institute for Materials Research and Testing (BAM) based on DIN 19528 (2009). The eluate must comply with the following test values according to the Federal Soil Protection and Contaminated Sites Ordinance (BBodSchV):

²⁰ DIN EN ISO 11348-1 Water quality - Determination of the inhibitory effect of water samples on the light emission of *Vibrio fischeri* (Luminescent bacteria test) - Part 1: Method using freshly prepared bacteria

²¹ DIN EN ISO 8692 Water quality - Fresh water algal growth inhibition test with unicellular green algae

²² DIN EN ISO 6341 Water quality - Determination of the inhibition of the mobility of *Daphnia magna* Straus (Cladocera, Crustacea) - Acute toxicity test

²³ ISO 13829 Water quality - Determination of the genotoxicity of water and waste water using the umu-test

²⁴ CEN/TS 17459:2023 Construction products: Assessment of release of dangerous substances - Determination of ecotoxicity of construction product eluates

²⁵ https://www.ral-quetezeichen.de/gz-einzelansicht/?qz=qz_944

Table 8: BBodSchV / ErsatzbaustoffV 2732 / Table 4 / Values for evaluating materials designed for installation or insertion below or above a layer of soil containing roots / value in the eluate in µg/l

Parameter	BBodSchV / ErsatzbaustoffV 2732 / Table 4 / Values for evaluating materials designed for installation or insertion below or above a layer of soil containing roots / value in the eluate in µg/l	Measurement method
Mercury (Hg)	0.1 µg/l	According to the latest table from the Soil Investigation Advisory Council (FBU) ²⁶
Arsenic (As)	13 µg/l	
Total chromium (Cr)	19 µg/l	
Cadmium (Cd)	4 µg/l	
Zinc	210 µg/l	
Nickel	31 µg/l	
Copper	41 µg/l	
Lead (Pb)	43 µg	
Sum of PCB6 and PCB-118	0.01	
PAH ¹⁵ (PAH ¹⁶ excluding naphthalene and methylnaphthalene)	0.23	

Compliance verification

The applicant shall submit a test report that verifies compliance with the criteria. The testing laboratory must have implemented a quality assurance system according to DIN EN ISO/IEC 17025 "General requirements for the competence of testing and calibration laboratories" or a comparable standard (e.g. GLP) and confirm that this is the case in the test report.

3.1.9 Synthetic turf carpet

The following criteria apply to the synthetic turf carpet (synthetic turf fibres, carpet backings, coating, adhesive) and address the requirements for the efficiency of the materials.

3.1.9.1 Requirements on the maximum use of fossil primary materials and the minimum proportion of PCR plastics

The use of recycled plastics makes an important contribution to the conservation of resources. From 2025 onwards, PCR plastic materials that comply with the requirements in Paragraph 3.1.3.1 must account for at least 10 % of the total weight of the synthetic turf carpet. During any revision of the Basic Award Criteria, a gradual increase in this proportion will be discussed. The maximum amount of fossil primary materials in the synthetic turf carpet is also limited and will also be gradually reduced over the term of the Basic Award Criteria. A differentiation is made here between synthetic turf carpets designed for use unfilled and synthetic turf carpets designed for use with an infill granulate (just sand or sand and a performance infill). PIR materials that comply with the requirements in Paragraph 3.1.3.1 may also be used. However, they may not

²⁶ <https://www.umweltbundesamt.de/themen/boden-flaeche/kommissionen-beiraete/fachbeirat-boden-untersuchungen-fbu#der-fachbeirat>
https://www.umweltbundesamt.de/sites/default/files/medien/359/dokumente/gleichwertigkeitsfeststellung_bbodschv_stand_2023-08-02.pdf

be included in the calculations with respect to the requirements for the minimum proportion of PCR materials and biobased materials with a corresponding certificate (Paragraph 3.1.3.2).

Table 9: Max. use of fossil primary materials and minimum use of PCR plastics

Valid for products placed on the market in	Maximum use of fossil primary materials [kg/m ²] for fibres, base layers and coatings			Minimum proportion of PCR (recycled) materials based on the total weight of the synthetic turf carpet	Alternatively to the PCR proportion (total weight)
	Unfilled sports fields	Filled sports fields (only sand)	Filled sports fields (sand + performance infill)		Minimum proportion of PCR (recycled) materials in the coating (carpet backing)
2024	4.25	3.00	2.75	0%	0%
2025-2027	3.25	2.25	2.00	10%	50%

Compliance verification

The applicant shall enclose a description of the design of the synthetic turf carpet with their application. The applicant must also list all of the materials and their contents in the product according to their type (type of polymer) in Annex 1-A. Non-declared materials may only account for a maximum of 2 % by mass of the synthetic turf carpet.

The origin and composition of the recycled materials used in the product (including information on the proportion of PCR and PIR materials) must be verified by the applicant in the form of a certificate (including a report) (see Paragraph 3.1.3.1).

Furthermore, the applicant shall specify the qualitative and quantitative composition of the synthetic turf carpet named in the application, i.e. the proportions of PCR and PIR plastics, fossil primary plastics and biobased primary plastics.

All of the plastics contained in the synthetic turf carpet must be included when calculating the contents.

3.1.9.2 Requirements on the recyclability of the synthetic turf carpet

The synthetic turf carpet must be designed in such a way that it enables the high-quality recycling of materials.

This includes compliance with the requirements placed on the materials in the individual components or the establishment of a take-back scheme for the synthetic turf system.

1A) Polyolefins account for at least 99 percent by mass of the synthetic turf carpet.

OR

1B) The manufacturer has established a take-back scheme designed to enable the reuse or material recycling of the synthetic turf carpet. The manufacturer has its own recycling processes or a partnership with a qualified recycling company to recycle the materials in the synthetic turf carpet. The manufacturer must verify that it achieves a recycling (output) ratio of greater than 80 %, based on the installed mass. The recycled materials must be of a quality that is at least

sufficient for use in sporting facilities or for use in products certified in accordance with the DE-UZ 30a Blue Angel ecolabel or for a comparable application.

AND

2) In order to guarantee their recyclability, glass fibre reinforced plastic (GRP) or another fibre-reinforced plastic such as carbon fibre reinforced plastic (CFRP) may only be used up to a maximum of 50g/m² on filled sports fields and a maximum of 200g/m² on unfilled sports fields.

Compliance verification

1A)+2) *The applicant shall document the materials used in the synthetic turf carpet in Annex 1-A and declare compliance with the stated criteria.*

1B) *The applicant shall document the materials used in the synthetic turf carpet. In addition, the applicant shall confirm in writing that a take-back scheme has been established with the aim of recycling the materials in the synthetic turf carpet at the end of its service life. The applicant shall also provide a link to the website for the take-back scheme or submit paper-based information on the take-back scheme. The applicant shall name the company carrying out the recycling process. This company must confirm in writing in Annex 2 that its processes can guarantee a recycling ratio of at least 80 % of the synthetic turf carpet. A flow chart of the recycling processes must be submitted in table form or as a material flow diagram. In order to verify the quality of the recycled material, the applicant must submit a test report from a testing institution to verify that the recycled material is suitable for the stated applications or a certificate from one of the users of the recycled material.*

3.1.9.3 Durability requirements

The synthetic turf fibres used on the certified sports fields must comply with the following criteria:

- Following a weathering process in accordance with EN 14836²⁷, the tensile strength of the fibres must be at least 15 N at a tuft row distance of greater than 4/8 of an inch and 9 N at a tuft row distance of below 4/8 of an inch determined according to EN 13864.
- After storage in hot water in accordance with EN 13744²⁸ and following a weathering process in accordance with EN 14836, the pull-out resistance determined in accordance with ISO 4919²⁹ must be at least 30 N.
- When carrying out a wear test in accordance with EN 15306³⁰ (Lisport test) with at least 150,000 cycles under the influence of heat and UV light using simulated sunlight in accordance with RAL-GZ 944 Annex B, a final assessment value of at least 3 must be achieved on at least 98 % of the fibres in the tested area. The test (according to RAL-GZ 944) must be carried out together with the infill granulate.

²⁷ DIN EN 14836:2019-04 Surfaces for sports areas - Synthetic surfaces for outdoor sports areas - Test method for synthetic weathering; German version EN 14836:2018

²⁸ DIN EN 13744:2005-01 Surfaces for sports areas - Procedure for accelerated ageing by immersion in hot water; German version EN 13744:2004

²⁹ ISO 4919:2012-08 Carpets - Determination of tuft withdrawal force

³⁰ DIN EN 15306:2014-07 Surfaces for outdoor sports areas - Exposure of synthetic turf to simulated wear; German version EN 15306:2014

Compliance verification

The applicant shall submit the test reports for the tensile strength and wear resistance tests according to the requirements in the standards described above. The applicant must verify that the test was carried out by a testing laboratory accredited according to DIN EN ISO/IEC 17025. In the case of filled systems, the test must be carried out together with the normal amount of granulate usually used in practice. This must be confirmed in the test report.

3.1.10 Infill granulate (infill)

The following uses of infill granulates are approved on certified sports fields:

- No use of infill granulates

If infill granulates are used (as a stabilising or performance infill), they must comply with the following criteria:

- Infill granulates made out of biodegradable plastics for which it has been verified that they are fully biodegradable in soil and river sediments.

The tests to verify that the organic infill granulates are fully biodegradable in soil and water/sediment systems must have been carried out in accordance with the guidelines in Appendix 15 "Rules on proving degradability" for the restriction of use of intentionally added microplastics in the EU as entry 78 of Annex XVII of the EU Chemicals Regulation (EC) No 1907/2006, which was published in the official journal of the EU on 27/09/2023. If the sports field is located directly next to the ocean, verification of biodegradability in marine sediment (instead of river sediment) must be provided. If the infill granulate is lighter than water, verification of its biodegradability in fresh water and marine water must be provided (EN ISO 14852:2018 or EN ISO 14851:2004). The test materials used in the tests to verify full biodegradability must comply with the guidelines in section 3 of the above-mentioned Appendix 15 "Rules on proving degradability".

OR

- Infill granulates from renewable raw materials (e.g. cork, timber, olive stones, cherry pits) that comply with the requirements in Paragraph 3.1.3.2 and have only been mechanically processed and not chemically modified. Chemical treatment includes any modification beyond hydration. The temporary use of organic solvents in the processing of the infill granulates is also considered to be a chemical modification (e.g. viscose).

AND/OR

- Mineral infill granulate (sand, zeolithe, etc.), which has only been mechanically treated and not chemically modified. Chemical treatment includes any modification beyond hydration. The temporary use of organic solvents in the processing of the infill granulates is also considered to be a chemical modification.

Compliance verification

The applicant shall document the design of the product and the infill granulate used and shall also confirm compliance with the criteria stated above in Annex 1-A.

The applicant shall also submit the test results for the requirements that were determined in accordance with the stated standards. If relevant, the biodegradability of the infill granulate must be verified with a suitable certificate. The applicant must verify that the tests were carried out by a testing laboratory accredited according to DIN EN ISO/IEC 17025 .

3.1.11 Elastic cushioning layer

3.1.11.1 Design variants and construction methods

In order to minimise the environmental impact associated with the production and disposal of the elastic cushioning layer, the following fundamental requirements must be complied with by the different design variants and construction methods (on-site, in the factory):

The system must have been designed so that it can be completely dismantled.

At least the following design variants/construction methods are currently possible:

- A) Foam elastic layer (PEX / PE foam, prefabricated)
- B) Elastic layer / elastic granulate (PEX foam, grouted; ELT+PUR; EPDM+PUR)
- C) Elastic base layer (ELT+PUR, ...)

It is also possible to reuse already existing elastic layers or elastic base layers. In this case, the applicant must justify this reuse based on a residual service life of at least 15 years according to the minimum requirements of the relevant standards.

Furthermore, on-site closed-loop recycling of the elastic layer or elastic base layer is also permitted. In this case, the process does not need to comply with the pollutant requirements for the environmental label.

If already existing elastic cushioning layers are reused, the applicant does not have to verify compliance with the requirements for their pollutant contents.

Compliance verification

The applicant shall submit documentation on the design and provide the required information in Annex 1-A (type, prefabricated or in-situ, fixing).

In order to justify the reuse of an existing elastic layer or elastic base layer, the applicant shall submit a report from an accredited testing laboratory to verify that it complies with the minimum requirements according to EN 15330-4:2022.

In order to verify that elastic layers installed on site, elastic base layers or irreversibly fixed elastic layers produced in the factory can be completely dismantled, the applicant shall submit an independent report based on experimental tests (e.g. annealing loss of the support layer) incl. a critical review to confirm that the recovery of at least 99.9 % by mass of the layer is possible using the machine technology and procedures designated for this process.

3.1.11.2 Durability requirements

The durability of the elastic cushioning layer must be verified in accordance with the guidelines in EN 15330-4 2023-01.

Compliance verification

The applicant shall submit the results of the test carried out in accordance with the guidelines in EN 15330-4 2023-01. The applicant must verify that the test was carried out by a testing laboratory accredited according to DIN EN ISO/IEC 17025.

3.1.11.3 Requirements on the maximum use of fossil and renewable primary materials

The maximum use of fossil and renewable primary materials in the elastic cushioning layer is limited and will also be gradually reduced over the term of the Basic Award Criteria. The use of PCR and PIR materials in accordance with the requirements in Paragraph 3.1.3.1 is also possible. The values stated in the following table refer to the elastic base layer, elastic layer/shockpad in the new installation and for in-situ closed loop recycling. The proportions of the materials used in the elastic cushioning layer must be stated.

Table 10: Maximum use of fossil and renewable primary materials

Valid for products placed on the market in	Maximum use of fossil and renewable primary materials [kg/m²]
2024	2.0
2025-2027	1.5

Compliance verification

The applicant shall enclose a description of the design of the elastic cushioning layer with their application. The applicant must also list all of the materials and their contents according to their type. In addition, the applicant shall specify the qualitative and quantitative composition of the elastic cushioning layer named in the application, i.e. the proportions of PIR and PCR plastics, fossil primary plastics and biobased primary plastics. All of the plastics contained in the elastic cushioning layer must be included when calculating the contents.

The elastic cushioning layer must comply with the requirements regarding the pollutant content and non-declared materials may only account for a maximum of 2 % by mass.

The origin and composition of the PCR and PIR materials used in the elastic cushioning layer must be verified by the applicant in the form of a certificate (including a report) (see Paragraph 3.1.3.1) with information on the proportion of PCR and PIR materials.

3.1.12 Dismantling and recycling concept

The certified sports fields must guarantee compliance with the following dismantling and recycling criteria:

A concept for how to dismantle and recycle the synthetic turf sports field at the end of its service life must exist. This concept must enable the high-quality recycling of the individual components. If the exemptions to the pollutant content requirements are utilised for some components of the synthetic turf carpet, they must be stated in the concept. The applicant must also enclose a

general product description according to Paragraph 3.1.1 with the dismantling and recycling concept.

The following also applies to the individual components:

- 1) Synthetic turf carpet: The concept must state which qualified parties can carry out the dismantling, take-back and recycling of the synthetic turf carpet. The concept must also indicate that the recycled material will not be used in a loose form (e.g. on riding arenas).
- 2) Infill granulate: Depending on the type of infill granulate used, the concept must comply with one or more of the following variants for the recycling of the infill granulate.

2A) If sand is used as the infill granulate, the concept must aim to reuse the sand or prepare it for reuse. The intended processes for separating and cleaning the sand and the parties who will carry out these processes must be named. A reuse rate of at least 90 % (based on its reuse as an infill granulate on synthetic turf sports fields or comparable applications) must be achieved.

2B) If cork or another mechanically processed material made out of renewable raw materials or biodegradable polymers are used as the infill granulate (in accordance with the guidelines in Paragraph 3.1.3.2), the concept must state how it will be separated from the synthetic turf carpet at the end of its service life. The infill granulate must be sent for thermal recycling or another type of recycling that will not cause the migration of any impurities (fibre wear, pollutants from the elastic cushioning layer).

- 3) Elastic cushioning layer: The concept must state which qualified parties can carry out the dismantling, take-back and recycling of the elastic cushioning layer.

If it is necessary to dismantle an existing sports field before installing a new one and the system manufacturer is responsible for the disposal of the already existing sports field, all components of the synthetic turf system must be recycled in accordance with the list of priorities in the Circular Economy Act (KrWG).

In accordance with the Commercial Waste Ordinance, the waste should already be collected and separated in the best way possible by a prequalified company at the place where it is produced. In accordance with § 53 KrWG, the waste must only be transported by an approved and qualified freight forwarding company. The recycling processes must only be carried out by certified specialist waste disposal companies.

In addition, the concept must comply with the guidelines for the dismantling and recycling of synthetic turf surfaces in RAL 944/8.

Compliance verification

The applicant shall submit the dismantling and recycling concept that highlights compliance with the above-named criteria (Point 1.3). The applicant shall verify the need to dismantle the elastic cushioning layer by carrying out a sports performance test to confirm that it is not possible to continue using this layer under a new synthetic turf carpet for a further full service life.

For the recycling of old existing sports fields, the applicant shall document the recycling processes in a material flow diagram (type, quantity and location of the material flows with information on the name and address of the recycling companies). Following the disposal of the synthetic turf, the client must submit a report without request incl. evidence (e.g. delivery notes) of the type, quantity and location of the material flows with information on the name and address of the recycling companies and the type of reuse (application).

Compliance with the requirements in RAL 944/8 must be confirmed in writing.

3.1.13 Usage, care and maintenance instructions

The manufacturer must produce environmentally friendly usage, care and maintenance instructions and make them available to the operator of the sports field.

These instructions should be based on at least the existing sports field maintenance guidelines and supplemented, if necessary, with the following instructions if they are not already required in the sports field maintenance guidelines:

- mechanical maintenance; i.e. use of biocides and herbicides and any other chemical additives is prohibited,
- correct selection, use and maintenance of machines and maintenance equipment,
- instructions on the maintenance intervals,
- instructions on the return and needs-based refilling of the infill granulate, incl. documentation,
- instructions on the qualification of employees.

Compliance verification

The manufacturer shall submit the usage, care and maintenance instructions. These instructions must be based on the above-mentioned requirements and take into account the requirements in the guidelines issued by the Landscape Development and Landscaping Research Society (FLL) (especially the "Sports field maintenance guidelines – guidelines for the maintenance and use of outdoor sports facilities, planning guidelines" (Sportplatzpflegerichtlinien - Richtlinien für die Pflege und Nutzung von Sportanlagen im Freien, Planungsgrundsätze) and the FLL specialist report: Sustainable Selection of a Synthetic Surface for Outdoor Sports Facilities (Nachhaltige Kunststoffbelagsauswahl für Sportfreianlagen)).

3.1.14 Carbon footprint of the components (cradle to gate)

Specific rules (methodological processes) to calculate the product environment footprint (PEF product category rules) of synthetic turf system are currently being developed. Once these rules have been defined, carbon footprint calculations based on these product category rules must be submitted for the components in the synthetic turf system (infill granulate, synthetic turf carpet, elastic cushioning layer) after a 6-month transition phase.

Compliance verification

The applicant shall submit the calculations for the infill granulate (if used), synthetic turf carpet and elastic cushioning layer. At least the carbon footprint in kg CO₂ equivalent per square meter must be provided as a reference unit. The calculations must comply with the guidelines in the PEF product category rules for synthetic turf sports fields.

3.2 Part B: Requirements for the installation site, periphery and operation

3.2.1 Certified synthetic turf system

The operator must verify that the installed synthetic turf system complies with the requirements of Part A.

Compliance verification

The operator shall state the name and manufacturer of the synthetic turf system in Annex 1-B to the contract and submit verification of certification in accordance with DE-UZ 235 Part A.

3.2.2 Requirements for the installation site

As a precautionary step to prevent the dispersion of microplastics into sewers, bodies of water and neighbouring soil following weather events such as heavy rain or floods, special requirements have been formulated for the installation sites of synthetic turf sports fields.

- Sports and playing facilities with synthetic turf sports fields certified with the Blue Angel ecolabel may not be located in flood areas, polders or flood retention zones according to §76 (1) and (2) WHG³¹.
- The synthetic turf sports and playing fields must be located at least 50 m from the banks of surface waters and, in the case of coastal waters, at least 150 m from the average high water line of the North Sea and from the average water line of the Baltic Sea in accordance with § 61 BNatSchG³².

Compliance verification

The applicant shall submit a map indicating the positions of the installation site and any nearby surface waters incl. their banks, high water lines or average water lines and any flood areas, polders and flood retention zones and the distances to the synthetic turf sports and playing fields.

3.2.3 Disposal of the existing sports field

If it is necessary to dismantle an existing synthetic turf system used as a sports and playing field before installing a new synthetic turf system on site as a sports and playing field and the operator of the sports field is responsible for the disposal of the already existing sports and playing field, all components of the synthetic turf system must be recycled in accordance with the list of priorities in the Circular Economy Act (KrWG).

In accordance with the Commercial Waste Ordinance, the waste should already be collected and separated in the best way possible by a prequalified company at the place where it is produced. In accordance with § 53 KrWG, the waste must only be transported by an approved and qualified freight forwarding company. The recycling processes must only be carried out by certified specialist waste disposal companies.

³¹ Federal Water Act (Wasserhaushaltsgesetz, WHG) 2009

³² Federal Nature Conservation Act (Bundesnaturschutzgesetz - BNatSchG) 2009

In addition, the concept must comply with the guidelines for the dismantling and recycling of synthetic turf surfaces in RAL 944/8.

Compliance verification

For the recycling of old existing synthetic turf sports and playing fields, the applicant shall document the recycling processes in a material flow diagram (type, quantity and location of the material flows with information on the name and address of the recycling companies) and submit this information at the time of application.

Compliance with the requirements in RAL 944/8 must be confirmed in writing in Annex 1-B.

3.2.4 Energy efficiency of the lighting system

In order to reduce the environmental impact related to electricity consumption, especially for the lighting system at the sports field, requirements have been formulated for the type of lighting and the type of electricity.

If a new lighting system is being installed at the sports field, it must use LED technology. If the operator intends to continue using the existing lighting system, he or she must undertake to switch over to LED technology when it is time to replace the existing system. The LED lights must have a pressure compensation valve including a membrane to protect the lights against moisture. If new foundations are required, they must be constructed without the use of concrete so that they are easier to dismantle. The average illuminance should not exceed the following values by more than 15 %: 75 lx in illuminance class 3, 200 lx in illuminance class 2 and 500 lx in illuminance 1. A maintenance factor of 0.9 should be used for the calculations. A maximum colour temperature of 4000 K is permitted. The lighting system must be controllable and dimmable. It must also be possible to adjust the lighting for training use or for partial use of the sports field. In order to protect the night sky, the lighting system must be planned so that the upward light ratio (ULR) is less than 1 % and the average vertical illuminance – projected over the width of the field up to a height of 10 m and measured at a distance of 50 m to the side line and goal line – is less than 4 % of the average horizontal illuminance of the sports field.

Compliance verification

The applicant shall submit the product data sheets and planning documents that describe the type of lighting system, the existence of a pressure compensation valve including a membrane and the type of foundations. The applicant shall submit a lighting calculation that includes the average illuminance of the sports field, the ULR value and the vertical illuminance at a distance of 50 m from the side line and goal line at a height of 10 m. (e.g. carried out with Calculux Area). In addition, the applicant must also submit the operating instructions that describe how the lighting system can be adapted to the illuminance class required for the type of sporting activity, who is responsible for adapting the lighting system and how the provision of training and compliance with these instructions are guaranteed. If the applicant intends to continue using an existing lighting system, he or she must submit verification of the residual service life incl. a declaration that the lighting system will be converted to LED technology after the expiry of this residual service life.

3.2.5 Electricity from renewable energies

The electricity supply to the infrastructure at the sports field (floodlight system, other interior and exterior lighting such as in the changing rooms) must be sourced 100 % from renewable energies in the sense of Directive (EU) 2018/2001³³ on the promotion of the use of energy from renewable sources and the sourced electricity must be appropriately labelled. The electricity consumed in the production of the certified product must correspond to the supplied proofs of origin for the purchased electricity. In addition, the purchased electricity must also promote the production of additional electricity from renewable energies.

If it is not possible to source green electricity in accordance with the requirements described above at the time of the application due to a long-term supply contract, a corresponding contract must be concluded at the next possible point in time.

Exemption

Applicants who are not contractual partners of an electricity supplier themselves but instead receive their electricity via a third party (e.g. a superordinate administrative unit of an authority or municipal community) are exempt from this requirement (100% electricity from renewable of energy).

Compliance verification

The applicant shall declare compliance with the requirement for the use of electricity from renewable energy sources in Annex 1-B and submit the electricity labelling data as verification. This verification must be re-submitted for every year of the term of the contract on the use of the environmental label.

3.2.6 Minimum utilisation

Synthetic turf sports fields are particularly beneficial to the environment (e.g. in comparison to natural grass sports fields) if they are used intensively. To achieve the environmental benefits of synthetic turf sports fields certified with the Blue Angel ecolabel, they must be utilised for at least 30,000 player hours per year or for 1,500 occupancy hours.

Compliance verification

The applicant shall verify compliance by submitting a current occupancy plan (for a period of one year, of which at least 6 months are after the application date) indicating the number of occupancy hours and documenting the number of active players per (type of) use. The number of occupancy hours indicated in the occupancy plan can be multiplied by 20 to calculate the player hours. A game or training unit of 45 minutes can be calculated as one hour (90 minutes as 2 hours).

Every year, the applicant shall submit real occupancy plans and documentation of the number of active players per (type of) use for the past 12 months to verify that the sports field was actually used for at least 30,000 player hours.

³³ Directive (EU) 2018/2001 on the promotion of the use of energy from renewable sources

3.2.7 Avoidance of plastic emissions

3.2.7.1 Avoidance through structural integration

The dispersion of infill granulates and the emission of microplastics into the environment can be reduced through the appropriate structural integration of the synthetic turf sports field.

The certified sports fields must guarantee compliance with the following criteria with respect to structural integration:

- a) The perimeter of the sports field must be equipped with a continuous border in accordance with CEN TR 17519. This border must prevent synthetic turf fibres and particles from blowing away in the wind.
- b) Drainage
 - ♦ If a drainage system is planned for the sports field and/or the sealed surfaces located within the border of the sports field, it must be equipped with a filter system (filter bucket, filter channel or filter shaft) that is suitable for trapping microplastics (fibres and infill granulates). The filter system can consist of e.g. a silt trap or filter bucket according to CEN TR 17519³⁴ that carries out the primary filtration function and a secondary microfilter to trap any remaining small particles. Alternatively, a drainage channel system around the sports field is also possible. The filter units must be easy to remove for maintenance purposes.
 - ♦ If the sports field is drained via seepage basins and they are used without an upstream filter system, the seepage basin must be properly maintained, dredged at the end of its service life and the dredged material sent for thermal disposal. A simplified measurement method according to DWA-A 138 may be used for the seepage basin. The failure rate must be less than 0.05/year (1x in 20 years).

Compliance verification

- *The applicant shall submit planning documents (drawings, flow charts, calculations) and photographic documentation of the structural integration, as well as a declaration from the planner responsible for the construction project to verify that it complies with the guidelines in CEN TR 17519.*
- *The filtering performance of the filter buckets, channels and shafts is considered to have been verified if the drainage channels at the sports field have received a national technical approval (abZ) as a system for handling the drainage of precipitation on traffic areas and the measurement values in the approval were taken into account.*
- *Verification according to DWA-A 138³⁵ or alternatively with a long-term simulation using a software programme (e.g. STORM).*

3.2.7.2 Avoidance through information and cleaning options

Synthetic turf fibres, worn material and plastic infill granulates (see Paragraph 3.5.3 for the relevant requirements) can stick to the clothing and footwear of users of the synthetic turf sports field and cause plastic emissions, especially in the form of microplastics. In order to reduce the

³⁴ PD CEN/TR 17519:2020-07-29 Surfaces for sports areas. Synthetic turf sports facilities. Guidance on how to minimize infill dispersion into the environment

³⁵ DWA-A 138:2005-04 Planning, Construction and Operation of Facilities for the Percolation of Precipitation Water

dispersion of microplastics, the certified synthetic turf sports field must comply with the following requirements:

- The possibility that fibres and worn material could be dispersed and the possible consequences of microplastic emissions for the environment should be indicated at all entrances to and exits from the sports field. The signs must provide information on the use of the boot cleaning grates/scrapper mats and boot cleaning stations. The signs must be placed in a prominent position at all entrances and exits. The signs must also have a minimum size of 60 cm x 40 cm and be sufficiently illuminated. The sign should contain instructions equivalent to the following "Synthetic turf fibres and worn material stuck to clothing and footwear can cause microplastic emissions into the environment. Please clean your clothing and footwear at the cleaning stations provided before leaving the sports field."
- The operator undertakes to include the subject of microplastics in the general code of conduct for sportspeople and users of the sports field and to provide appropriate information on this subject.
- Boot cleaning grates/scrapper mats according to CEN TR 17519³⁶ should be fitted at all entrances to and exits from the sports field. These should consist of grates with smooth bars and heavy duty rubber scrapper mats. The decontamination grates/scrapper mats should cover the entire width of the entrance gate and be at least 1.5 m long so that nobody can avoid them. Barriers should be installed to the left and right of the entrance area to prevent persons walking around the decontamination grates at the sides. The grates/mats should be embedded in recessed bases so that they can collect the infill granulate and released fibres. These bases should be fitted with a drain to prevent them from filling with water (see Paragraph 3.6 on the handling of waste water).
- Boot cleaning stations for at least eleven persons must be installed at the main exits from the sports field so that they can mechanically clean their footwear and clothing (with brushes). These stations must comply with the recommendations in CEN TR 17519 (see sections 6.3.8 and A.4). The boot cleaning stations should either be located on the sports field or be designed so that the fibres and infill granulates removed by the brushes can be reliably retained (if the stations have a drain for rainwater, they must comply with the requirements for the handling of waste water in Paragraph 3.6).

Compliance verification

The applicant shall mark the signs, boot cleaning grates/scrapper mats and boot cleaning stations on a site plan. The applicant shall submit photographs of the signs to verify that they have been placed in a suitable position and provide appropriate information on the dispersion of microplastics and highlight the possibilities for minimising this dispersion.

The applicant shall declare in writing in Annex 1-B that the subject of microplastics will be included in the general code of conduct for sportspeople and users of the sports field.

3.2.8 Maintenance/care concept

Microplastic emissions, water consumption and other environmental impacts can be reduced by complying with an appropriately designed maintenance/care concept. The following requirements also apply in addition to the manufacturer's instructions and any rules and

³⁶ PD CEN/TR 17519:2020-07-29 Surfaces for sports areas. Synthetic turf sports facilities. Guidance on how to minimize infill dispersion into the environment

recommendations issued by associations and go above and beyond them in some cases. Certified sports fields must comply with the following criteria with respect to the maintenance/care of the sports field:

- a) The sports field must not be artificially watered or sprayed with drinking water. However, the sports field may be watered with rainwater collected in a cistern – also within a circuit. The water must not be chemically treated and, if necessary, it should be biologically cleaned/filtered.
- b) The sports field must be mechanically maintained; i.e. the use of biocides and herbicides and any other chemical additives is prohibited.
- c) The sports field must be regularly maintained using machines to collect any loose fibres and restore the infill granulates.
- d) The sealed areas around the edge of the sports field must be cleaned at least once a week.
- e) Suitable machines include turf sweepers, front sweepers (without rotating brushes for cleaning the sports field) and sweeping and vacuum machines. Leaf blowers may only be used on the sports field to collect leaves on the field and not to blow the leaves off the sports field. The use of high pressure cleaners is prohibited.
- f) The waste water gutters, shafts, filters and recesses under grates must be mechanically cleaned on a regular basis, although at least once a week. Rinsing the sports field with water is not permitted.
- g) If it is necessary to push/blow snow from the synthetic turf sports field, any direct contact between the snow clearing machine (plough/blower) and the synthetic fibres should be avoided. A layer of snow 5-10 mm thick should ideally be left on the sports field. The snow cleared from the sports field should be stored on it, while observing any existing requirements with respect to safety zones, or on a sealed surface that will enable the recovery of any residual infill granulates and fibres. After the snow has melted, any residual granulate and fibres should be redistributed or disposed of properly.
- h) All waste including leaves must be sent for thermal recycling (e.g. via the residual waste bin). In particular, the waste must not be composted.
- i) The equipment and tools used to maintain the sports field must be cleaned to avoid any possible transfer of microplastics. This cleaning process must be carried out on or in close proximity to the sports field. These items should preferably be cleaned using a vacuum cleaner. If the equipment and tools are cleaned manually or using water, this process must be carried out on a sealed surface and any waste must be collected properly for subsequent disposal via the waste disposal system. If cleaned using water, this process may only be carried out on surfaces connected to a waste water disposal system equipped with a filter system (see Paragraph 3.6). If the equipment and tools are not cleaned or not fully cleaned in close proximity to the sports field, suitable measures must be taken to avoid plastic emissions during their transport.
- j) The refilling of the infill granulate must be documented (time it was refilled, as well as the type, mass and origin of the granulate used to refill the sports field). The granulate used to refill the sports field must comply with the requirements in Paragraph 3.1.10.
- k) Care and maintenance of the synthetic turf sports field must be carried out by qualified persons. Suitable training courses provided by the manufacturer or another provider (e.g. Deula basic course) must be held to ensure that personnel are properly qualified.
- l) The maintenance/care of the sports field must comply with the requirements in RAL GZ 944/6 (currently valid version) as a minimum.

Compliance verification

- *The following verifications must be submitted with the first application and then resubmitted every 3 years:*
- *The applicant shall create and submit maintenance/care instructions that take into account the above-mentioned requirements and comply with the guidelines in CEN TR 17519, the FLL Guidelines for the Maintenance of Sports fields ("FLL-Sportplatzpflegerichtlinien - Richtlinien für die Pflege und Nutzung von Sportanlagen im Freien, Planungsgrundsätze") and the FLL specialist report: Sustainable Selection of a Synthetic Surface for Outdoor Sports Facilities (Nachhaltige Kunststoffbelagsauswahl für Sportfreianlagen), in their currently valid versions, as well as the manufacturer's instructions for the care and maintenance of the sports field in Annex 1.*
- *For point a): The applicant shall submit a declaration in Annex 1-B that the sports field is not artificially watered using drinking water. If relevant, the applicant shall submit a concept for the use of rainwater.*
- *For points b) to j): The applicant shall submit the concept including information on responsibilities, training and the frequency and documentation of the maintenance/care measures (including verification of the amounts of infill granulate used to refill the sports field).*
- *For points e) and g): The applicant shall submit information on the equipment and tools used to maintain the sports field and information on how they are cleaned (place where they are cleaned, distance travelled if relevant, cleaning processes). If the equipment and tools are not cleaned or not fully cleaned on site, the applicant must verify how emissions are avoided during their transport.*
- *For point k): The applicant shall submit information on the trained personnel and the type and date of the training courses.*

3.2.9 Dismantling

At the end of its service life, the operator must undertake to dismantle the sports field using the recycling concept developed by the system supplier/manufacturer or its take-back scheme or another equivalent take-back scheme. The dismantling process must comply with the requirements in RAL GZ 944 (currently valid version) as a minimum.

Compliance verification

The applicant shall declare in writing in Annex 1-B that the system will be dismantled via the take-back scheme.

3.3 Outlook/further development of the Basic Award Criteria

In the event of a future revision of the Basic Award Criteria, the following requirements will be examined in particular:

- Examination and possible amendment of the pollutant exemptions for the individual components.
- Examination and possible amendment of the requirements for the recycled content (increasing the proportion of PCR plastics from material recycling and comparing the certificates for PCR materials with those in UZ 30a)
- Limiting the use of primary materials (fossil/renewable) and verifying their origin
- Examination of possible measures to prevent thermal stress

- Discussion about targets for the carbon footprint
- Amending the requirements if necessary based on the updated standard EN 15330
- Establishing new verification processes for quantifying emissions/dispersion if suitable methods are available.
- The Lisson test is currently being developed to test and verify the durability of synthetic turf carpets (filled or unfilled). As soon as a corresponding standard is available, it will be examined to see whether it is expedient to include it in the ecolabel. The same applies if other new test methods become established in the sector in the future.

4 Applicants and Parties Involved

Label holders are (system) suppliers of synthetic turf systems (Part A) and operators of synthetic turf sports fields (Part B) according to Paragraph 2.

Parties involved in the award process are:

- RAL gGmbH to award the Blue Angel Environmental Label,
- the federal state being home to the applicant's production site,
- Umweltbundesamt (German Environmental Agency) which after the signing of the contract receives all data and documents submitted in applications for the Blue Angel in order to be able to further develop the Basic Award Criteria.

5 Use of the Environmental Label

The use of the Environmental Label by the applicant is governed by a contract on the use of the Environmental Label concluded with RAL gGmbH.

Use of the label for Part A for (system) suppliers of synthetic turf systems

Within the scope of this contract, the applicant undertakes to comply with the requirements under Paragraph 3.1 (Part A) while using the environmental label.

Contracts on the Use of the Environmental Label are concluded to fix the terms for the certification of products under Paragraph 2. Such contracts shall run until 31 December 2027.

They shall be extended by periods of one year each, unless terminated in writing by 31 March 2027 or 31 March of the respective year of extension.

After the expiry of the contract, the Environmental Label may neither be used for labelling nor for advertising purposes. This regulation shall not affect products being still in the market.

The applicant shall be entitled to apply to RAL gGmbH for an extension of the right to use the ecolabel on the product entitled to the label if it is to be marketed under another brand/trade name and/or other marketing organizations.

The Contract on the Use of the Environmental Label shall specify:

- Label holder ((system) supplier)
- Brand/trade name, product description
- Distributor (Label User), i.e. the marketing organization.

The Blue Angel logo may only be displayed on the product and product packaging or in advertising (both online and in print) in combination with the explanatory box A.

Use of the label for Part B for operators of synthetic turf sports fields

Within the scope of this contract, the applicant undertakes to comply with the requirements under Paragraph 3.2 (Part B) while using the environmental label. The use of the environmental label by the applicant is governed by a contract on the use of the environmental label concluded with RAL gGmbH.

Contracts on the Use of the Environmental Label are concluded to fix the terms for the certification of synthetic turf sports fields under Paragraph 2. Contracts may only be concluded within the term of validity of the Basic Award Criteria for Part A (currently: 31/12/2027). Contracts according to Part B are valid until 31/12/2037, although a maximum usage period when complying with the criteria for Part B of 10 years is envisaged after the expiry of the Basic Award Criteria for Part A. The contract may be terminated in accordance with the rules in the Contract on the Use of the Environmental Label. In the event of a change of operator, the compliance verifications must be submitted by the new operator.

An annual fee according to fee level 1 of the Schedule of Fees will be charged for the operation of synthetic turf sports fields.

After the expiry of the contract or at the end of the maximum service life, the Environmental Label may neither be used for labelling nor for advertising purposes.

The Contract on the Use of the Environmental Label shall specify:

- Applicant (operator)
- Installation site / max. service life
- Distributor (Label User), i.e. the marketing organization.
-

The Blue Angel logo may only be displayed at the installation site or in advertising (both online and in print) in combination with explanatory box B. It must be clear which edition of the Basic Award Criteria were used for the certification.

Appendix A Cited legislations and standards, literature

AfPS GS 2019:01 PAH GS Specification - Testing and assessment of polycyclic aromatic hydrocarbons (PAHs) in the course of awarding the GS mark – specification according to § 21 (1) No. 3 ProdSG - AfPS GS 2019:01 PAH

CEN TR 17519:2020 Surfaces for sports areas. Synthetic turf sports facilities. Guidance on how to minimize infill dispersion into the environment - AfPS GS 2019:01 PAH

CEN/TS 17459:2023 Construction products: Assessment of release of dangerous substances - Determination of ecotoxicity of construction product eluates

DIN 18035-7:2019-12 Sports grounds - Part 7: Synthetic turf areas

DIN 19528:2009-01 Leaching of solid materials - Percolation method for the joint examination of the leaching behaviour of inorganic and organic substances

DIN EN 13744:2005-01 Surfaces for sports areas - Procedure for accelerated ageing by immersion in hot water; German version EN 13744:2004

DIN EN 14836:2019-04 Surfaces for sports areas - Synthetic surfaces for outdoor sports areas - Test method for synthetic weathering; German version EN 14836:2018

DIN EN 15306:2014-07 Surfaces for outdoor sports areas - Exposure of synthetic turf to simulated wear; German version EN 15306:2014

DIN EN 15330 Surfaces for sports areas - Synthetic turf and needle-punched surfaces primarily designed for outdoor use

DIN EN 15343:2008 Plastics - Recycled Plastics - Plastics recycling traceability and assessment of conformity and recycled content

DIN EN 15347:2008-02 Plastics - Recycled Plastics - Characterisation of plastics wastes; German version EN 15347:2007

DIN EN ISO 11348 1 Water quality - Determination of the inhibitory effect of water samples on the light emission of *Vibrio fischeri* (Luminescent bacteria test) - Part 1: Method using freshly prepared bacteria

DIN EN ISO 6341 Water quality - Determination of the inhibition of the mobility of *Daphnia magna* Straus (Cladocera, Crustacea) - Acute toxicity test

DIN EN ISO 8692 Water quality - Fresh water algal growth inhibition test with unicellular green algae

DIN EN ISO/IEC 17025:2018-03 General requirements for the competence of testing and calibration laboratories (ISO/IEC 17025:2017)

DWA-A 138:2005-04 Planning, Construction and Operation of Facilities for the Percolation of Precipitation Water

EN 15330-4 2023-01 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

EN ISO 14851:2004 Determination of the ultimate aerobic biodegradability of plastic materials in an aqueous medium- Method by measuring the oxygen demand in a closed respirometer

EN ISO 14852:2018 Determination of the ultimate aerobic biodegradability of plastic materials in an aqueous medium - Method by analysis of evolved carbon dioxide

ISO 13829 Water quality - Determination of the genotoxicity of water and waste water using the umu-test

ISO 14021:2021-10 Environmental labels and declarations - Self-declared environmental claims (Type II environmental labelling)

ISO 4919:2012-08 Carpets - Determination of tuft withdrawal force

PD CEN/TR 17519:2020-07-29 Surfaces for sports areas. Synthetic turf sports facilities. Guidance on how to minimize infill dispersion into the environment

RAL-GZ 944, SYNTHETIC TURF SYSTEMS IN OUTDOOR SPORTS FACILITIES

Bibliography (All texts in German)

Bertling, Jürgen; Bertling, Ralf; Dresen, Boris; Arvan, Venkat (2021): Kunstrasenplätze - Systemanalyse. Multi-Client-Studie. Hg. v. Fraunhofer-Institut für Umwelt-, Sicherheits- und Energietechnik UMSICHT. Oberhausen.

Available online at <https://doi.org/10.24406/umsicht-n-640390>.

DFB (2020): Kunstrasen/Mikroplastik. Hg. v. Deutscher Fußball-Bund e.V. (DFB).

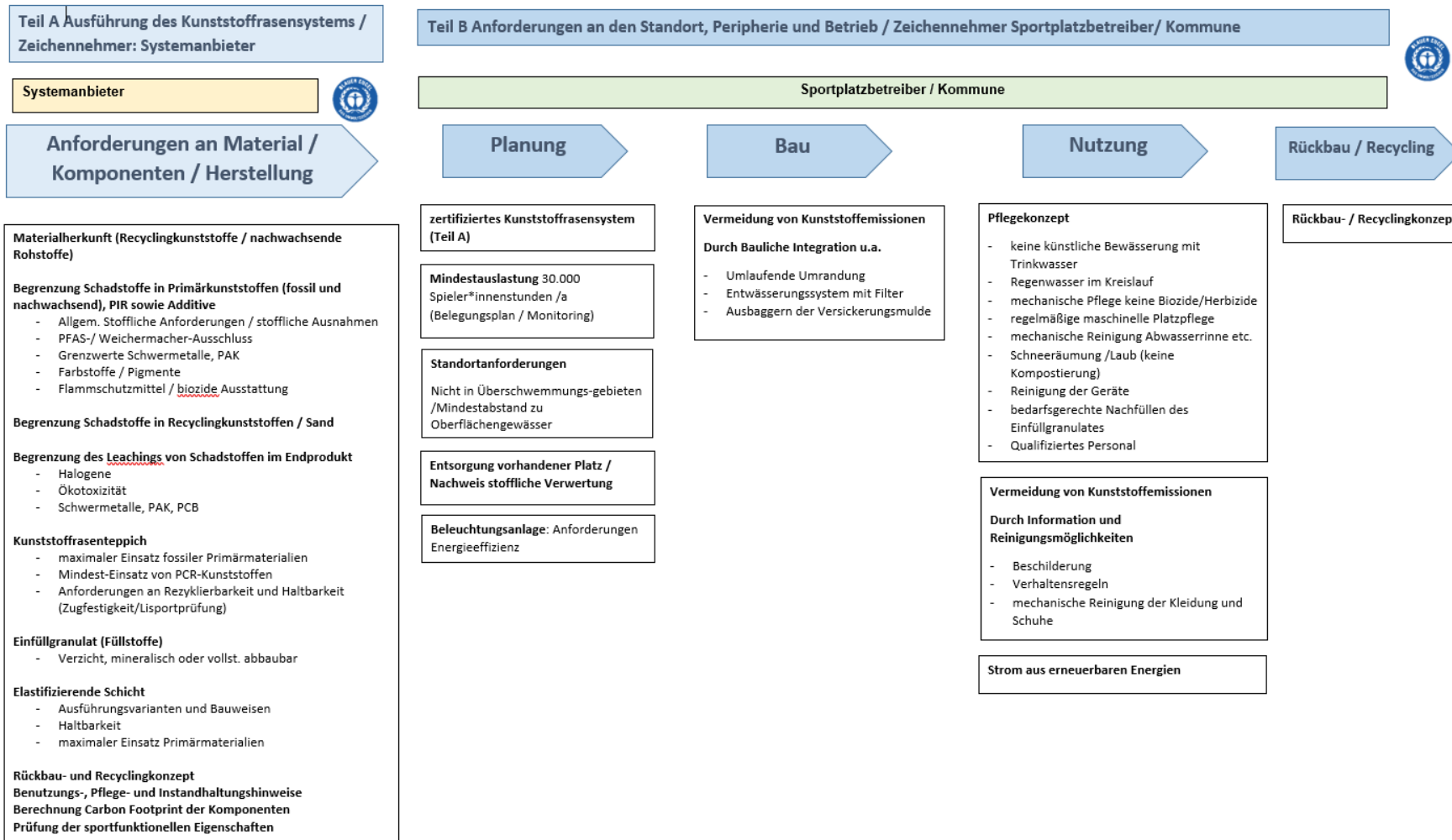
Available online at <https://www.dfb.de/sportstaetten/kunstrasenmikroplastik/>, last updated on 18/08/2020, last checked on 01/06/2021.

Itten, René; Glauser, Lukas; Stucki, Matthias (2020): Ökobilanzierung von Rasensportfeldern : Natur-, Kunststoff- und Hybridrasen der Stadt Zürich im Vergleich. Hg. v. Institut für Umwelt und Natürliche Ressourcen, Zürcher Hochschule für Angewandte Wissenschaften (ZHAW). Wädenswil (Switzerland).

Available online at https://digitalcollection.zhaw.ch/bitstream/11475/20774/3/2020_Itten-Glauser-Stucki_Oekobilanzierung-Rasensportfelder.pdf, last checked on 07/06/2021.

Appendix B Structure of the Basic Award Criteria (PART A/B)

Übersicht Teil A/Teil B Blauer Engel für Kunststoffrasensysteme und -sportplätze (DE-UZ 235)



Appendix C Prohibited dyes and pigments

Azo dyes that may cleave to one of the following aromatic amines (according to the REACH Regulation, Annex XVII, No. 43):

4-Aminobiphenyl (92-67-1),
Benzidine (92-87-5),
4-chloro-o-toluidine (95-69-2),
2-naphtylamine (91-59-8),
o-amino-azotoluene (97-56-3),
2-amino-4-nitrotoluene (99-55-8),
p-chloroaniline (106-47-8),
2,4-diaminoanisol (615-05-4),
4,4'-diaminodiphenylmethane (101-77-9),
3,3'-dichlorobenzidine (91-94-1),
3,3'-dimethoxybenzidine (119-90-4),
3,3'-dimethylbenzidine (119-93-7),
3,3'-dimethyl-4,4'-diaminodiphenylmethane (838-88-0),
p-cresidine (120-71-8),
4,4'-methylene-bis-(2-chloro-aniline) (101-14-4),
4,4'-oxydianiline (101-80-4),
4,4'-thiodianiline (139-65-1),
o-toluidine (95-53-4),
2,4-diaminotoluene (95-80-7),
2,4,5-trimethylaniline (137-17-7),
4-aminoazobenzene (60-09-3),
o-anisidine (90-04-0)

Dyes containing heavy metals

Dyes and pigments containing cadmium, mercury, lead or nickel.