SYNTHETIC TURF COUNCIL
EMEA

ESTC Quality Guide for Landscaping Turfs

2019 EDITION

Contents

1 Introduction & scope

This ESTC Quality Guide for Landscaping Turf has been prepared by the EMEA Synthetic Turf Council (ESTC).

ESTC is a trade association representing the major European manufacturers of synthetic turf and includes companies that make the yarns from which the turf is produced, companies that manufacture the turf and companies that supply and install it throughout Europe. ESTC is a non-profit organisation and offers neutral and unbiased information for the promotion of synthetic turf, enhancing its numerous advantages and benefits. ESTC is actively contributing to standardisation to improve test methodology and continuously strive for transparent and consistent harmonisation of the requirements for the large variety of synthetic turf products.

This document has been prepared with the principal objective of defining the minimum quality levels ESTC considers appropriate for synthetic turf products used for landscaping applications. By doing so, it allows specifiers, purchasers and end users to compare the quality levels of different products in an objective way by ensuring that a common set of data is available to allow a direct comparison to be made.

Landscaping (synthetic) Turf is turf used to enhance landscapes by providing a durable, all weather alternative to natural turf. The primary reason for using Landscaping Turf is normally visual, comfort is secondary and wear-resistance is often of less importance. Other reasons for installing landscape synthetic turf include saving water or reduced maintenance costs.

Landscaping Turf is typically used:

- for visual purposes on areas not subjected to foot fall (garden lawn borders, traffic islands, etc.).
- for visual purposes on areas subjected to low intensity foot fall (e.g. medium /large sized private gardens)
- for visual purposes on areas subjected to high intensity foot fall (e.g. small gardens with frequent use and parks with regular visitors using it for picnics, etc.)

Landscaping Turfs sold within the European Community and designed for indoor use should also comply with European Standard EN 14041: Resilient, Textile and Laminate floor coverings. Essential Characteristics.

An additional use of synthetic turf is for leisure applications; these types of surface are described as Leisure Turf and are not included in the scope of this guideline standard. Leisure Turf is typically used to provide areas for play and typical leisure activities. Unlike Landscaping Turf, the primary objectives of Leisure Turf are comfort and durability; visual aspects are secondary. Use is intensive and areas are often relatively small (balconies and small gardens). Leisure turf is also used as a surfacing for playgrounds in which play equipment (swings, climbing frames, etc.) is located. These forms of Leisure Turf need to comply with appropriate European Standards such as EN 1177 and national standards and regulations.

Synthetic turf used as doormats or laid in elevators are not considered to be Landscaping Turfs and fall outside the scope of this guide, as do synthetic turfs used for sports purposes.

Some Landscaping Turfs incorporate infill materials, typically quartz sand, to support the pile of the carpet. This is most commonly done for Landscaping Turfs subjected to foot traffic. The grade and quantity of infill used should be as specified by the supplier of the Landscaping Turf.

Before installation of any of the above types of Landscaping Turf, the surface on which it is installed needs to be prepared in accordance with the suppliers' instructions.

This is the second edition of the ESTC Landscaping Quality Guide. It has been updated to take into account experiences gained since its first publication in 2015.

2 Certification

To qualify for ESTC certification the Landscaping Turf needs to be tested by an independent test institute accredited to ISO 17025 and/or recognised by ESTC and be shown to comply with all relevant parts of this quality guide. Products satisfying these requirements receive an ESTC certificate of conformity and are shown on ESTC's website at www.estc.info.

Note: Manufacturers may also undertake tests in house and self-declare the performance of their products. Such declarations do not constitute certification by ESTC and the responsibility for the accuracy of the declaration of conformity remains with the manufacturer.

3 Terms and definitions

For the purposes of this document the terms and definitions detailed below apply:

Infill – a granulated material (normally sand) that is brushed into the pile of the synthetic turf carpet to support the pile of the carpet to help keep it standing upright and to provide weight and stability to the synthetic turf carpet.

Landscaping Turf – a flooring system comprising a synthetic turf carpet and, if applicable, an infill material.

Pile – the surface of the synthetic turf which is made of upright strands of yarn.

Synthetic turf - woven, knitted or tufted carpet with a pile of monofilament or split tape yarn that is designed to replicate the appearance of natural grass (irrespective of colour).

Thatch zone – curled or texturised yarns at the base of the carpet pile, designed to give bulk and support to longer upright standing pile yarns.

Yarn – the plastic fibre from which the turf's pile is formed.

4 Quality requirements

Landscaping Turfs should conform to the principal requirements specified below:

4.1 Toxicology

The Landscaping Turf carpet shall comply with Table 2 Category 3 of EN 71-3 and Entry 50 of Annex XVII of the REACH regulations. If used within the landscaping Turf any polymeric infills shall comply with Entry 28 of Annex XVII of the REACH regulations.

Notes:

1. The use of results previously obtained on yarns may be carried forward if:

- The original tests were made by an independent test institute accredited to ISO 17025 and/or recognised by ESTC
- The same polymer is used in both yarns – verified using the test method described in ISO 11357-3 (same DSC profile and peak temperature ± 3°C).
- The pile thickness of each filament is a minimum of 90% of the previously tested yarn
- The yarn has the same profile
- The yarn is the same colour (ΔE+/-2)
- A declaration by the yarn manufacturer states that the same colour pigments have been used in each yarn master-batch.

2. The use of previous results for backing and coating may be carried forward if a signed declaration is provided by the manufacturer and the test report was made by an independent test institute accredited to ISO 17025 and/or recognised by ESTC.

4.2 Resistance to UV degradation

Following artificial weathering in accordance with EN 14836, but with the test extended so the total exposure is 9600 ± 125 kJ/m2/nm at 340 nm (taking approximately 5000 hours), the pile shall satisfy the following requirements:

Property	Test method	Requirement
Loss of tensile strength Loss of tenacity	EN 13846	≤ 50% of unaged values
Colour fastness	ISO EN 20105-A02	Grey scale ≥3

Notes:

1. The requirements shall apply to all yarns used within the pile of the surface, unless the yarn is only used to form a thatch zone and that has a pile height that does not exceed 50% of the total pile height of the carpet.
2. The results obtained on one yarn type are considered valid for all thicker (> 90%) versions of the same yarn (colour, profile and shape).
3. The use of previous test results for the resistance of artificial weathering of pile yarns is allowed if:

- The original tests were made by an independent test institute accredited to ISO 17025 and/or recognised by ESTC
- The same polymer is used in both yarns – verified using the test method described in ISO 11357-3 (same DSC profile and peak temperature ± 3°C).
- The pile thickness of each filament is a minimum of 90% of the previously tested yarn
- The yarn has the same profile
- The yarn is the same colour (ΔE+/-2)
- A declaration by the yarn manufacturer states that the same colour pigments have been used in each yarn master-batch.

4.3 Reaction to fire

If a claim for the Reaction to Fire is being made the Landscaping Turf shall be tested and classified according to the requirements of EN 13501-1 and the resulting class and sub-class declared.

If applicable, the test specimen shall contain infill, of the type and quantity specified by the manufacture.

Test specimen preparation and conditioning shall be as defined in the appropriate fire test standard.

The test specimens shall be tested on one of the two standard substrates specified for floorings in EN 13238, according to the intended end use.

The composition of the product, including the presence of any fire-retardant additive (if applicable), shall be declared by the manufacturer prior to type testing.

4.4 Tuft retention

The tuft withdrawal force of each tuft bundle, when measured in accordance with ISO 4919, after water ageing in accordance with EN 13744, shall be ≥ 25N.

4.5 Tensile strength of carpet

The tensile strength of the Landscaping Turf carpet, when measured in accordance with EN ISO 13934-1, shall be ≥ 10N/mm in both directions of production (warp and weft).

4.6 Dimensional stability

Landscaping Turfs that are not intended to be fully bonded to a substrate or be infilled with an infill designed to prevent dimensional expansion of the turf shall be tested in accordance with EN 13746, and at each stage of the test the Landscaping Turf shall have a maximum shrinkage ≤ 1.0% and a maximum extension: ≤ 1.0%.

4.7 Anti-static properties

If a claim for anti-static properties is made, the body voltage should be measured according to ISO 6356 and the result shall be ≤ 2.0 kV at 25%rh.

4.8 Water permeability

Landscaping Turfs that are intended to be permeable shall have a water permeability rate of at least 150mm/h, when tested in accordance with EN 12616. If the Landscaping Turf is intended to include an infill tests shall be made with the infill in place.

5 Product identification

Product identification tests shall be undertaken to characterise the Landscaping Turf and compare the values to those declared by the manufacturer.

Table 1: Product identification characteristics to be declared by the manufacturer and measured and reported, together with permitted production tolerances

Characteristic	Test method	Tolerances (to nominal value)
Landscaping Turf		
Effective pile length above the carpet backing (in mm)	ISO 2549	± 2mm
Total mass per unit area of the Landscaping Turf (in g/m^2)	ISO 8543	± 15%
Mass of the pile above the substrate per unit area (in g/m^2)	ISO 8543	+ 15% / -10%
Number of tufts or loops (per m^2)	ISO 8543	+ 10% / -10%
Colour(s) of the pile yarn - L*a*b*	RAL Classic	Same RAL number
Infill materials (if applicable)		
Particle grading of infill materials	EN 933-1	60 -100% between d and D
Bulk density of infill materials	EN 1097-3	±15%
Shape of infill materials	EN 14955	Similar shape

6 Report

The test report, based on the template shown in Appendix B, shall contain:

a. Reference to this ESTC quality guide

b. The brand name of the Landscaping Turf

c. The manufacturer of the Landscaping Turf

d. The name of the test institute

e. Type of manufacturing process used to produce the Landscaping Turf

f. Type of yarn

g. Type of primary backing (if applicable)

h. Type of secondary backing (if applicable)

i. Type of infill (if applicable)

j. The individual test results

k. Full product identification of all components making up the landscaping turf

l. A statement of conformity with this ESTC quality guide

m. Details of all results carried forward, including reference to the laboratory that undertook the tests and the test report from which the results were taken

n. An indication of which of the tests undertaken are covered by the test institutes' ISO 17025 accreditation

Appendix A - Normative References

This Guide refers to the following documents, completely or in part. For dated references, only the edition cited applies.

For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 933-1, Test for geometrical properties of aggregates – Part 1: Determination of particle size distribution – sieving method

EN 1097-3 Tests for mechanical and physical properties of aggregates – Part 3: Determination of loose bulk density and voids

EN 13744, Surfaces for sports areas — Procedure for accelerated ageing by immersion in hot water

EN 13746, Surfaces for sports areas - Determination of dimensional changes due to the effect of varied water, frost and heat conditions

EN 14836, Synthetic surfaces for outdoor sports areas – Exposure to Artificial weathering

EN 14955, Surfaces for sports areas- Determination of composition and particle shape of unbound mineral surfaces for outdoor sports areas

ISO 1763, Carpets — Determination of number of tufts and/or loops per unit length and per unit area

ISO 2549, Textile floor coverings – Hand-knotted carpets – Determination of tuft leg length above the woven ground

ISO 4919, Carpets - Determination of tuft withdrawal force

ISO 6356, Textile and laminate floor coverings - Assessment of static electrical propensity - Walking test

ISO 8543, Textile floor coverings - Methods for determination of mass

ISO 11357-3, Plastics – Differential scanning calorimetry (DSC) – Part 3: Determination of temperature and enthalpy of melting and crystallization

Appendix B – template test report

ESTC Quality Guide for Landscaping Turfs Summary test report	
Product details	
Landscaping Turf product name / code	
Manufacturer	
Product details	
Type of manufacturing process used to produce the Landscaping Turf	
Type of pile yarn(s)	
Type of primary backing (if applicable)	
Type of secondary backing (if applicable)	
Type of infill (if applicable)	
Recommended method of laying (marquee) (tick appropriate box)	Loose laid ☐ Fully bonded to substrate ☐
Report details	
Test Institute	
Report reference	
Date of test	
Details of which of the tests undertaken are covered by the test institutes' ISO 17025 accreditation	

Results				
Toxicology (tick appropriate box)		Compliant	Non-compliant	
	Landscaping turf			
	Compliance with Table 2 Category 3 of EN 71-3	☐	☐	
	Compliance with Entry 50 of Annex XVII` of the REACH regulations	☐	☐	
	Polymeric infills (if applicable)			
	Compliance with Entry 28 of Annex XVII of the REACH regulations	☐	☐	
		Limits	Result	Pass / fail
Resistance to UV degradation	Loss of tensile strength	≤ 50%		
	Loss of tenacity	≤ 50%		
	Colour fastness	≥ Grey scale 3		
Dimensional stability		≤ 1% after each stage of conditioning		
Reaction to fire		Class		
Tuft bind	Unaged sample	≥ 25N		
	After water ageing			
Tensile strength of carpet	Warp	≥ 10N/mm		
	Weft			

Optional tests			
	Limits	Result	Pass / fail
Anti-static properties	≤ 2.0 kV at 25%rh		
Water permeability	≥ 150mm/h		
Product identification			
Pile length above the carpet backing (in mm)			
Total mass per unit area of the Landscaping Turf			
Mass of the pile above the substrate per unit area			
Number of tufts or loops			
RAL colour(s) of the pile yarn			
Infill materials	Composition / type		
	Particle grading		
	Bulk density		
	Shape		
Details of all results carried forward, including reference to the laboratory that undertook the tests and the test report from which the results were taken			
Assessment of results and statement of conformity: The Landscaping Turf detailed in this report is considered to: (tick appropriate box)	Conform with the requirements of the ESTC Quality Guide for Landscaping turf.	☐	
	Not fully conform with the requirements of the ESTC Quality Guide for Landscaping turf.	☐	
Report prepared by (name and signature)	Name		
	Signature		
Date of report			

ESTC – EMEA Synthetic Turf Council

40, rue Belliard
1040 Brussels
www.estc.info

E: info@estc.info
T: +322 436 9633