



**Engineered  
for Hockey**



**Part 4. Requirements for Hockey 5s Courts**

2017 Edition

# FIH Hockey Turf and Field Standards

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Any questions about this Standard should be addressed to:

Facilities and Equipment Manager  
International Hockey Federation  
Rue du Valentin 61,  
Lausanne,  
CH 1004,  
Switzerland

Email: [facilities@fih.ch](mailto:facilities@fih.ch)

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## Foreword

A new Hockey 5s court is a major investment therefore it is important that it meets the expectations of hockey players, associations and clubs. To help ensure good quality courts are built for all levels of play, from elite level competition to community development, the FIH has developed its internationally recognised quality assurance programme - the **FIH Quality Programme for Hockey Turf**. The programme was launched as part of an initiative of the Hockey Revolution - FIH's ten-year strategy for hockey aimed at making hockey a global game that inspires the next generation.

The programme provides consistent and dependable industry standards and ensures the appropriate quality of performance for the intended level of play - whether it is community development, international competition, or anything in between. It is based on the principles of quality assurance. Only companies that meet the demanding standards of the FIH are able to join. The Hockey Turf products they produce are independently tested by internationally recognised test institutes accredited by the FIH. Once installed, hockey facilities are also independently tested to verify the construction and performance is as required for the games of hockey and Hockey 5s.

The technical requirements of the programme are detailed in the FIH Hockey Turf and Field Standards, which are published in four parts:

Part 1 – Introduction & General Guidance

Part 2 – Requirements for Hockey Turf Products

Part 3 – Requirements for Hockey Fields

Part 4 – Requirements for Hockey 5s Courts

This document is Part 4 of the *FIH Hockey Turf and Field Standards*. It specifies the performance and construction standards for Hockey 5s courts.

Full details of the FIH Quality Programme for Hockey Turf, including a list of the companies who are part of it, their approved products and the hockey fields and Hockey 5s courts that are currently certified can be found at [www.fih.ch/hockeyturf](http://www.fih.ch/hockeyturf).

## 1 Introduction

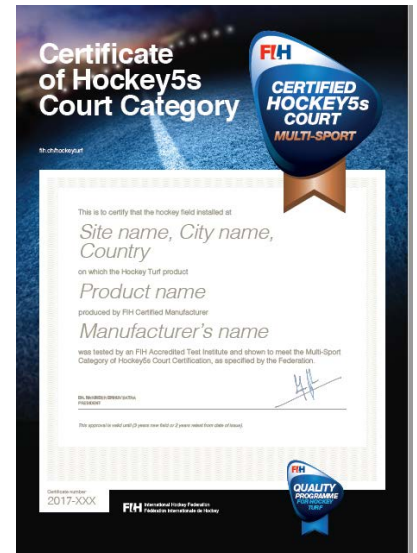
### 1.1 Scope

This document is Part 4 of the *FIH Hockey Turf and Field Standards*. It specifies the performance and construction standards for Hockey 5s courts.

The requirements have been established after consultation with players, members of the FIH Quality Programme for Hockey Turf and FIH accredited Test Institutes. They embrace products upon which Hockey 5s can be played safely and comfortably.

As court certification helps court owners demonstrate they are providing facilities that are fit for purpose and therefore meeting their legal obligations the FIH recommends all new Hockey 5s are certified, irrespective of any competition requirements.

For a Hockey 5s Court to be certified by the FIH it has to meet the requirements of this Standard. Certification is required for FIH, Continental Federation and national competitions, depending on the specific rules of the competition. It is also often required as a condition of public funding for new courts.



### 1.2 Implementation

The Standard becomes effective from 1 July 2017 and all new courts requiring certification from this date on shall be tested in accordance with this Standard.

## 2 Definitions

**Approved Product** - a Hockey Turf surface that has been tested and certified in accordance with Part 2 of the FIH Hockey and Field Standards.

**EN** - Standard published by the European Standards Committee (CEN).

**FIFA TM** - test method specified by FIFA in their Handbook of Test Methods for Football Turf.

**Field of Play (FOP)** - the playing area as defined in the Rules of Hockey.

**Filled synthetic turf or textile surface** - synthetic turf or textile surface whose pile is either totally filled or partly filled with an unbound particulate material, typically sand.

**Hockey 5s court** - a court as defined in the *Rules of Hockey 5s*.

**Hockey Turf** - a synthetic turf or textile surface designed to have the quality and performance characteristics required to allow the game of hockey to be played.

**ISO** - standard published by the International Standards Organisation.

**Long pile synthetic turf surface** - synthetic turf surface whose pile length is equal to or greater than 30mm when tested in accordance with ISO 2549.

**Non-filled synthetic turf** - synthetic turf surface that does not contain any form of unbound particulate fill within the pile of the carpet.

**One Turf Concept** - a joint initiative between FIFA, World Rugby and FIH setting performance requirements for long pile synthetic turf surfaces that can be used by all three sports.

**Operational Margin** - a paved area around the perimeter of the field, outside the run-offs, that provides space for media and event personnel.

**Rules of Hockey 5s** - Rules of Hockey 5s as published by the FIH and available at [www.fih.ch/inside-fih/our-official-documents](http://www.fih.ch/inside-fih/our-official-documents). Unless specifically specified the edition of the Rules applicable at the time a court was built shall apply through the life of the court.

**Run-offs** - a perimeter margin outside the FOP that provides an area for players to run onto without the risk of colliding with any permanent or temporary structures.

**Shockpad and elastic layer** - prefabricated foam or elastomeric sheets or tiles or insitu laid elastomeric granulate and binder mixes, laid beneath the synthetic turf or textile surface and designed to aid the provision of the required sport's performance.

**Short pile synthetic turf** - synthetic turf surface whose pile length is less than 30mm when tested in accordance with ISO 2549.

**Synthetic turf surface** – a carpet designed for sports use, having a tufted, knitted or woven construction.

**Textile surface** – a carpet designed for sports use, having a needle-punched or fibre bonded sports surface.

### 3 Test Institutes

Court tests shall only be undertaken by FIH Accredited Test Institutes, details of which can be found at ([www.fih.ch/hockeyturf](http://www.fih.ch/hockeyturf)). A number of the Accredited Tests Institutes have regionally based engineers to allow the competitively priced testing of courts globally.

### 4 Requirements

For a court to be certified it shall comply with the following requirements:

#### 4.1 Base & drainage systems

The base on which a Hockey Turf surface is laid shall be designed and constructed to:

- provide adequate stability so that the playing surface does not move outside the requirements for surface regularity over a period of at least 10 years;
- resist the effects of frost or drought that may be expected to occur in a return cycle of once every 30 years;

The court's drainage system (vertical or lateral) shall be designed and installed to:

- ensure that all surface water is removed from the Hockey Turf at a rate that ensures that no surface flooding will occur during heavy storms, or the facility will not be lost either through rain at the highest intensity which may be expected to occur once every five years.

- protect the installation from the effects of ground or surface water from the areas surrounding the court.
- ensure no water remains present in the base construction that may result in a reduction of the load bearing capacity of the formation or damage to the construction from the actions of frost.

When applying for a court to be certified under the FIH Quality Programme the applicant is deemed to be confirming that these requirements have been satisfied, unless written confirmation from the court owner is supplied acknowledging, for whatever reason, that non-compliance with this requirement was accepted at the design/contract stage of the court's construction.

This requirement does not automatically apply to existing courts that are being resurfaced or upgraded, unless it is included in a contract specification.

Notes:

- 1 To ensure these requirements are satisfied the court should be designed and constructed by specialist companies with a proven ability to construct hockey fields. The FIH recommends the use of FIH Preferred Suppliers or FIH Certified Field Builders.
- 2 The FIH recommends inspections be made at key stages through construction of the base and drainage system to verify the installation is proceeding to the agreed design and specification.

## 4.2 Playing Surface

### 4.2.1 New Courts

A court shall be surfaced with an FIH Approved Product. A list of Approved Hockey Turf Products can be found at [www.fih.ch/hockeyturf](http://www.fih.ch/hockeyturf).

During 2017, new Hockey 5s courts may be surfaced with Approved Products that are listed on the FIH website ([www.fih.ch/hockeyturf](http://www.fih.ch/hockeyturf)) and have been tested to the 2017 or earlier editions of the FIH Standard. From 31<sup>st</sup> January 2018, new courts must be surfaced with a Hockey Turf that has been tested and approved in accordance with Part 2 of the *FIH Hockey Turf and Field Standards - 2017* edition.

### 4.2.2 Existing courts

Existing courts requiring certification for the first time or courts requiring re-certification shall be surfaced with a hockey turf that was approved at the time the court was built.

### 4.2.3 Use of existing shockpads / elastic layers

Whenever an existing court is being resurfaced, the existing shockpad or elastic layer should ideally be reused, providing it is in a suitable condition for a further 8-10 years use.

FIH Approved Hockey Turf Products are a sports surface system that comprises a synthetic turf or textile carpet and a shockpad or elastic layer. When only the synthetic turf or textile carpet is being replaced the FIH consider it acceptable to incorporate an existing shockpad or elastic layer into the Approved Hockey Turf Product providing:

- the generic type (not brand) of shockpad is similar to that used in the Hockey Turf system that will be laid;

- shock absorption of the existing shockpad or elastic layer is within  $\pm 5\%$  of the value declared by the manufacturer of the Hockey Turf that will be laid;
- the vertical deformation of the existing shockpad or elastic layer is within  $\pm 3\text{mm}$  of the value declared by the manufacturer of the Hockey Turf system that will be laid;
- the water permeability of the shockpad or elastic layer is greater than  $150\text{mm/h}$  when tested in accordance with EN 12616;
- the surface regularity of the shockpad or elastic layer complies with the requirements of this Standard

Compliance with the above requirements does not override the need for the resurfaced court to fully satisfy the requirements of this Standard.

Notes:

- 1 It is recommended that samples of the existing shockpad are tested to ensure the tensile strength is in accordance with the requirements of clause 8.17 of Part 2 of this Standard.
- 2 The condition and performance of an existing shockpad or elastic layer should be assessed in advance of any tender or bidding process to allow Preferred Suppliers, Certified Field Builders and Certified Manufacturers to determine if the existing shockpad is similar to one used in one of their Approved Hockey Turf Products. Such assessments may be undertaken by FIH Accredited Test Institutes or specialist consultants.

### 4.3 General Court Design Requirements

#### 4.3.1 Dimensions

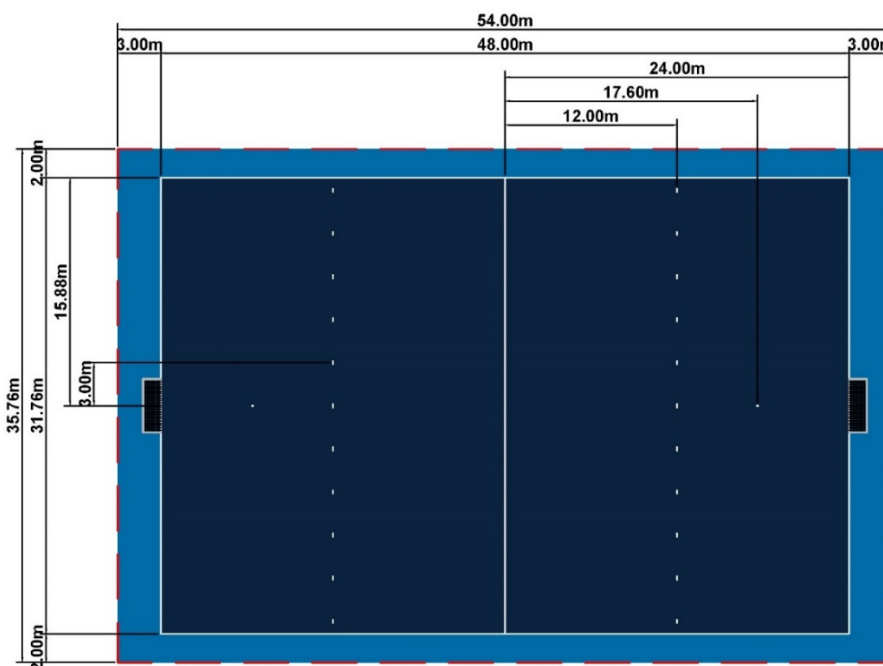


Figure 1- High-level competition court dimensions (with perimeter margin)



The court comprises the FOP and may include a Perimeter Margin. The FIH has established a recommended size for competition courts. This is what is used at high-level Hockey 5s events such as the Youth Olympic Games. It is recognised that in many cases, however, courts may be larger or smaller than the recommended competition size and there is no desire to restrict the use of such facilities providing they are at least large enough for 10 players (depending on age) to play and train on. On high-level competition Hockey 5s courts a FOP Perimeter Margin is required beyond the rebound boards that define the boundary of the FOP.

For lower-level competition courts and multi-sports areas, it is recognised that it is often not feasible to have free standing or socketed rebound boards within the overall playing area and that the most appropriate option is to mount the rebound boards to the perimeter fencing meaning a FOP Perimeter Margin is not present.

The layout and size requirements for the four categories of court certification are given in Annex A.

#### 4.3.2 Court Markings

Court markings shall conform to the latest edition of the Rules of Hockey 5s as shown in Figure 1. If a Multi-sport court is not to the recommended size, the court markings should be scaled accordingly. Lines shall be 75mm wide and those intended to be straight shall have no sudden deviations or irregularities

#### 4.3.3 FOP Colours

The colour of the FOP on Global Elite and Global category courts shall be a single uniform green, single uniform blue (either RAL 5002 or RAL 5005) or any other FIH approved colour. For National and Multi-Sport courts, there are no restrictions, subject to any local competition rules.

#### 4.3.4 Profile and Gradients

The profile of a court influences important sports characteristics. Hockey desires a court to have unbiased performance and therefore consistency requirements are included for certain properties. One of these is ball roll, which relates to the speed of the surface. A court with a pronounced slope will give different ball roll results depending on whether the ball is rolling up or down the slope. Therefore, keeping the court as flat as possible will help ensure unbiased ball roll. Courts need, however, to be built in regions of the world that are subjected to intense rainfall and often have to be constructed from materials that have very low water infiltration rates. In these cases, hockey courts need to rely on horizontal drainage to allow water to discharge from the playing surface, and to achieve this, an adequate slope is required.

To address these two conflicting requirements the FIH has established preferred and maximum slope requirements. In all cases compliance with the slope requirements do not take precedence over the ball roll consistency criteria and it is the court designer’s responsibility, in conjunction with the Hockey Turf manufacturer, to determine the acceptable balance between the two parameters.

##### 4.3.4.1 FIH Preferred Gradients

Longitudinal gradients along length of the court	0.2%
Lateral gradients across width of the court	0.4%

##### 4.3.4.2 FIH Maximum Gradients

The maximum gradient in any orientation shall not exceed 1.0%.

Notes:

- 1 Experience is showing that the latest types of FIH Class 1 surfaces based on texturised-monofilament pile yarns are particularly sensitive to gradients over 0.6% and the advice of the Hockey Turf Manufacturer should always be sought before designing Global Elite or Global category courts that do not use the FIH Preferred Gradients.
- 2 A number of different profiles are used including single planes (end to end, side to side and diagonal falls), envelope and ridge profiles.

4.3.5 Court Profile

Global Elite and Global category courts shall have profiles that do not cause the surface to dry inconsistently across the court.

When envelope or ridge profiles are used, the change in gradient shall not adversely affect the consistency of the ball roll or exceed the requirements for surface regularity.

Historically in some countries, courts have been built with a ridge profile. If the ridge is pronounced it can result in a court not satisfying the surface regularity requirements of this standard. As the FIH has no desire to prevent existing courts from continuing to be used, such courts can be certified providing the ridge does not cause balls travelling at speed to lift from the Hockey Turf. This should be verified by the Test Institute witnessing balls being hit at high speed in varying directions across the ridge and reporting their observations.

4.3.6 Rebound Boards

The playing area is defined by resilient rebound boards. The boards form an important part of the court as they are designed to keep the ball in play. On higher-level competition courts, the boards are placed on the boundary of the FOP and the perimeter margins lie outside them. On community and multi-sport courts the boards often form part of the perimeter fencing.

On Global Elite and Global courts the boards shall be free standing or socketed. They should comply with the following requirements:

Board height	250 ± 10mm
Angle to playing surface	90 ± 1° from vertical
Colour	White or other
Inner face material	Resilient foam (COR of 0.65 ± 0.05 when measured with a ball having an in-bound velocity of 7 ± 0.5 m/s) – as certified by the board’s supplier

For community and multi-sports courts, the boards may be as described above or 250mm high (or greater) timber kick boards, or similar, mounted to the perimeter fence posts.

4.4 **Court Tests**

4.4.1 Test Conditions

A court shall be tested under the condition(s) for which it was designed to be used, as specified below.

Surface condition at time of test			
	Irrigated	Dry	Wet
Global Elite	✓		When court is wet due to rain or dew
Global	✓		
National		✓	
Multi-Sports		✓	

Hockey Turf products that are required to be irrigated prior to play shall be watered using the procedures specified for match play. This shall evenly apply a volume of water that is equal to or greater than that used to irrigate the product when it was tested for approval (and as specified in the Product Approval test report). Following irrigation, the court shall be left for 15 ±1 minutes before the tests commence. Tests shall then be undertaken in the following order:

- Ball rebound. Tests shall be completed in all five positions within 30 minutes of the tests commencing.
- Shoe – Surface friction

A further application of water shall then be applied if the surface is becoming dry. If required, this shall be determined by re-measuring the ball rebound in the first test position. If the value differs by more than ± 15% of initial value, the surface shall have another half cycle of irrigation applied, before the following tests are undertaken:

- Ball Roll & Ball Roll Deviation
- Shock Absorption and Vertical Deformation

Tests should be conducted during a period of commonly prevailing climatic conditions. Wherever possible, tests should be made when wind speeds are less than 5m/s.

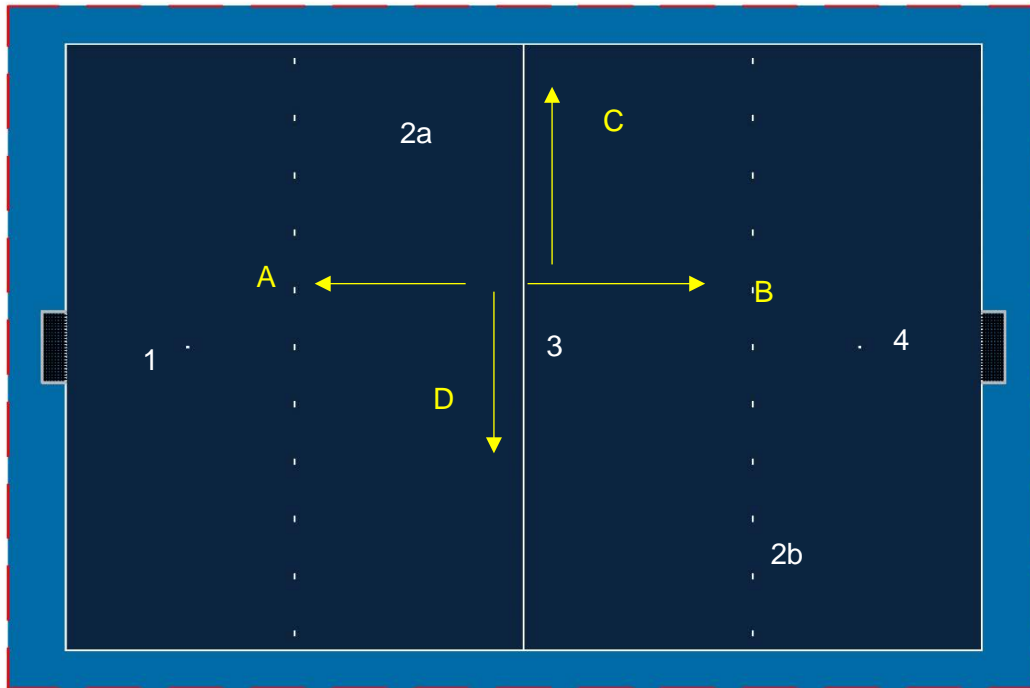
Note: A drying court or strong winds cannot be used to justify acceptance of non-complying test results.

#### 4.4.2 Test Positions

A minimum of four spot tests shall be undertaken in the locations specified below. However, the Test Institute is responsible for adequately assessing the court’s condition. Therefore, the testing personnel may increase the number of spot tests at their discretion and they may select other spots if they consider this will present a more complete picture of the court’s condition. The location of the spot tests shall be identified in the test report.

If the client authorising the tests is concerned about the performance of particular areas of the pitch, they should require the test institute to conduct additional tests in those areas.

The diagram below illustrates the positions for spot tests.



Ball roll tests shall be undertaken in each test position in four directions, each at 90° increments, two along the direction of play and two across the direction of play.

#### 4.5 Test methods

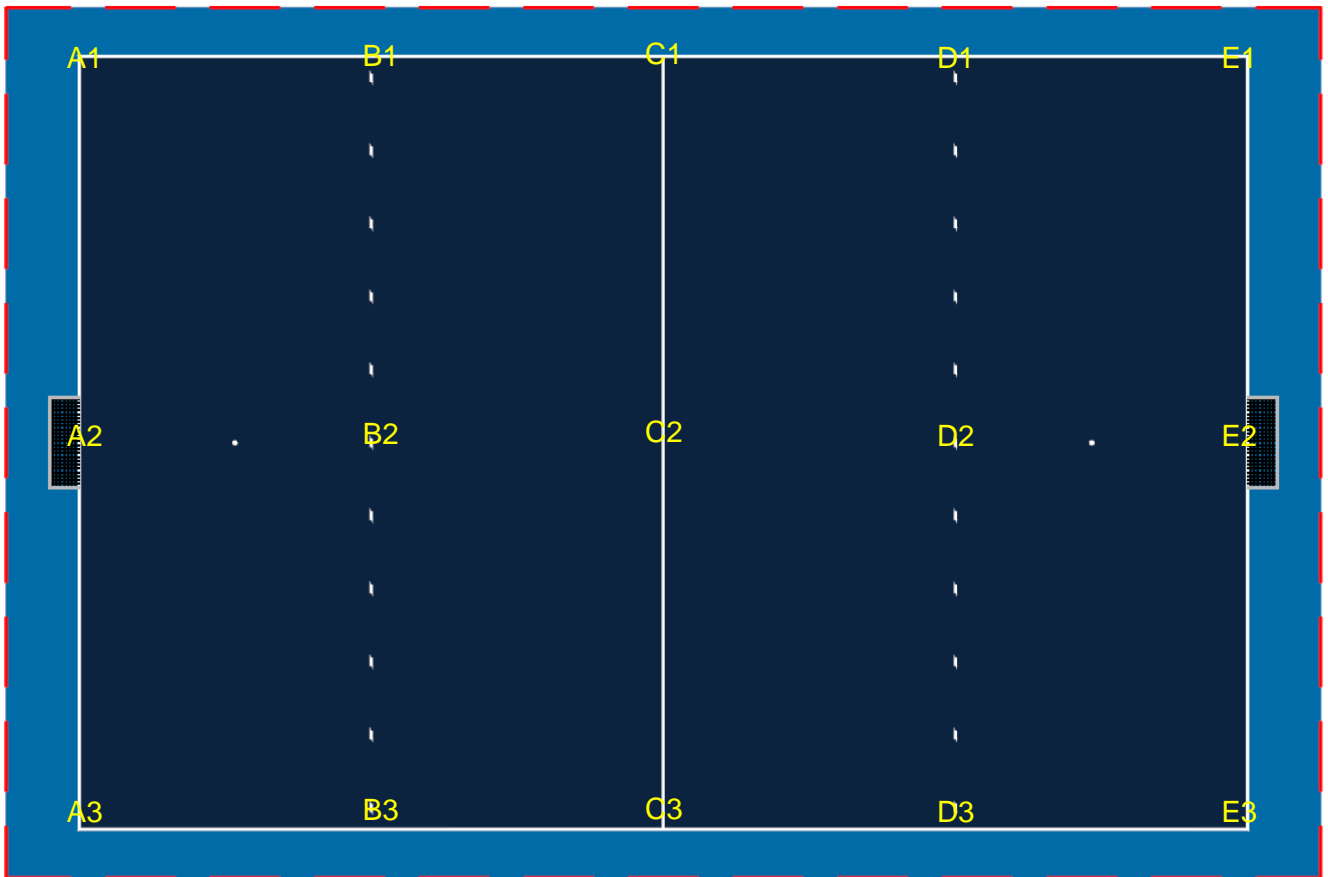
The following test methods shall be used:

Ball Rebound	EN 12235 using an acoustic timer and an FIH Approved Hockey Ball. When tested on concrete the ball shall have a rebound of 700 ± 50mm.
Ball Roll	EN 12234 using an FIH Approved Hockey Ball. Three tests shall be made in each direction/position of test
Ball Roll Deviation	FIH Hockey Turf and Field Standards Part 2 – clause 7.3
Shock Absorption	CEN TS 16717
Vertical Deformation	CEN TS 16717
Shoe – Surface Friction	EN 15301-1 using the dimpled test sole
Water Permeability	EN 12616
Surface Regularity	FIFA TM 12 Any localised ridges or hollows identified during the 3m straightedge survey of the court should also be checked using a 300mm straightedge.

#### Profile and Gradients

The gradients and profile of the field shall be determined in the positions specified in the positions shown in the figure below. Measurements shall be made using a surveyor’s level and staff, or equivalent technique.

When lines are bonded into place the measurements shall be offset by the width of the jointing tape if this noticeable.



#### 4.6 Manufacturing and Hockey Turf Installation Quality Requirements

##### 4.6.1 Shockpad installation

The shockpad or elastic layer shall be installed to provide a uniform and consistent under-layer on which the Hockey Turf is laid. There shall be no variations in quality or installation that adversely affect the performance of the hockey field so it falls outside the relevant requirements of this Standard.

In situ elastic layers shall be formed from materials and be laid in accordance with the Hockey Turf manufacturer's instructions and specifications.

Prefabricated shockpads shall be laid in accordance with the manufacturer's instructions; including the taping of all head and side joints as required.

##### 4.6.2 Carpet installation

The installed synthetic turf or textile surfacing shall be free of manufacturing and visual defects.

Global and National Class 1 surfaces shall be laid in full width rolls running across the FOP (side line to side line) without head seams.

Global category surfaces shall either be loose laid, tensioned and clamped along their side boundaries, or be bonded to the underlying shockpad to minimise the risk of dimensional movement. The adhesive used to bond the surface shall be in as specified by the Hockey Turf manufacturer and it shall be applied in accordance with their instructions.

Note: The FIH also recommends the tensioning and clamping or bonding of sand dressed synthetic turf carpets.

There shall be no carpet rucks, wrinkles or any other form of installation defect within the FOP or run-offs.

All carpet joints shall be fully bonded/stitched with no joint failures.

The maximum gap at the top of the carpet pile on any carpet joint or any in-laid line markings, shall be equal to or less than the carpet's stitch gauge plus 2mm.

Bonded carpet joints shall not have any adhesive beads within the pile of the carpet that may cause a ball to lift or deviate as it passes over the joint. Stitched joints shall not cause a ball to lift or deviate as it passes over the joint.

The pile of the synthetic turf or textile carpet immediately either side of a joint shall be consistent with the remainder of the field. The carpet pile should not be trapped within the joint nor should adhesive layers and backing films beneath the carpet cause ridges outside the tolerances stated for surface regularity.

#### 4.6.3 Carpet repairs

Repairs to the playing surface shall only be permitted if:

- They have no adverse effect on the performance or consistency of the field. The Test Institute shall undertake all necessary tests to verify this and report accordingly;
- On new courts, the field owner is willing to accept such repairs and confirms this (in writing) to the Test Institute;
- On new courts, the specification and colour of any patch matches the surrounding area.

#### 4.7 **Product Identification**

To verify that the Hockey Turf supplied to a field is the same as the Approved Product, representative samples of the installed synthetic turf or textile surface, shockpad and any infill materials shall be characterised by the Test Institute using the test methods detailed below. The following samples shall be tested:

- Sample representative of synthetic turf or textile surface laid on the FoP
- Sample representative of synthetic turf or textile surface laid the run-offs, if applicable and different to the FoP
- Sample synthetic turf or textile surface laid representative of each colour of in-laid or tufted line marking

By including the results of the product identification tests in the Field Test Report the Test Institute is deemed to be confirming the samples tested are representative of the materials installed on the field. They shall take all necessary steps to ensure this is correct.

The results obtained shall comply with the manufacturer's product declaration, as detailed in the product approval test report, subject to the tolerances specified below.

Component / property	Characteristic	Requirement
Carpet type	Synthetic turf or textile surface	-
Method of carpet manufacture	Tufted, Woven, Knitted or Needle-punch	-
Carpet pile colour – FOP, Run-offs and line markings	RAL Classic number	Same RAL number(s) as Approved Product
Carpet pile type	Straight, curled, monofilament, split film	Same as Approved Product
Shockpad	Type of construction	Same as Approved Product
Infill	Type / composition	Same as Approved Product

Component	Characteristic	Test Method	Tolerance
Properties of synthetic turf carpet	Pile height above backing	ISO 2549	$\pm 10\%$
	Tufts per unit area	ISO 1763	$\pm 10\%$
	Filaments/m <sup>2</sup>	See note 1	$\pm 10\%$
	Pile weight	ISO 8543 – see note 2	$\pm 10\%$
	Pile dtex	FIFA TM 23	$\pm 10\%$
	Pile Thickness	FIFA TM 25	$\geq 90\%$
	Pile Profile	FIFA TM 25	Same profile
	Pile polymer characterisation	FIFA TM 22	Same number of peaks, same profile $\pm 3\text{ }^{\circ}\text{C}$ (peak)
	Carpet mass per unit area	ISO 8543	$\pm 10\%$
	Water permeability of carpet	FIFA TM 24	$\geq 90\%$

Properties of inlaid / tufted line markings	Colour	RAL Classic	Same as approved product
	Polymer characterization	FIFA TM 22	Same number of peaks, same profile $\pm 3\text{ }^{\circ}\text{C}$ (peak)

Properties of shockpads and elastic layers	Thickness	EN 1969	90% - 130%
	Mass per unit area	ISO 8543	± 10%
	Shock Absorption	EN TS 16717	± 5% SA
	Water permeability	FIFA TM 244	≥ 90%

Properties of infills	Particle Grading	FIFA TM 20	60% between d and D
	Particle Shape	EN 14955	Similar shape
	Bulk density	EN 1097-3	± 15%
	Polymer composition (polymeric infills only)	FIFA TM 11	± 15%

Properties of textile carpets	Thickness of pile above the substrate	ISO 1766	≤ 10 %
	Fibre polymer characterization	FIFA TM 22	Same number of peaks, same profile ± 3 °C (peak)
	Carpet mass per unit area	ISO 8543	≤ 10 %
	Water permeability	FIFA TM 244	≥ 90%

Notes

- 1 The number of filaments per square metre shall be calculated by multiplying the number of tufts per square metre by the number of filaments per tuft; this figure being the mean value of 20 tufts extracted at random from a 200mm x 200mm sample
- 2 If it is not possible to extract tufts from the carpet backing (e.g. when there is an integral shockpad or the carpet is of a knitted construction, etc.) the pile weight per unit area above the substrate shall be determined in accordance with ISO 8543. This shall be noted in the test report

4.8 Court Test Requirements

A court shall fully comply with the requirements detailed in Annex A, as appropriate for the category of court certification being sought.

4.9 Assessment of Court Irrigation Systems

In order to ensure courts surfaced with hockey turfs that are designed to be used wet can be adequately irrigated, the performance of the irrigation system shall be tested as part of a court test.



Traditionally, court irrigation has been provided using rain-guns or pop-up sprinklers. More recently, companies are starting to innovate and develop sub-court irrigation systems that are designed to reduce the amount of water required to keep a court in its optimum playing condition. The FIH supports such innovations.

#### 4.9.1 Assessment of above ground irrigation

An above ground irrigation system shall be designed to apply the quantity of water required for the specific approved hockey turf being installed and as detailed in the product approval report. This will be in the range of 1.0l/m<sup>2</sup> to 3.0l/m<sup>2</sup>.

In climates where the average ambient daytime temperature during the hockey season is not expected to exceed 32°C the irrigation system shall be able to:

- Apply a full application of water across the court prior to a game in a period of 10 minutes or less;
- Apply up to a 50% application of water across the court in a period of 10 minutes or less during the half time break.

In climates where the average ambient daytime temperature during the hockey season may be expected to exceed 32°C the irrigation system shall be able to:

- Apply a full application of water across the court prior to a game in a period of 10 minutes or less;
- Apply up to a further full application of water across the court in a period of 10 minutes or less during the half time break. If required, the fixed irrigation system may be augmented with flexible or movable sprinklers/hoses that allow partial or reduced watering to ensure a previously wetted court is returned to the optimum playing condition.

The performance of an above ground irrigation system shall be tested by laying out a 10m x 10m grid of collector dishes on the FOP and inner run-offs. A full watering cycle shall be conducted. This shall be completed in no more than 10 minutes. The depth or volume of water collected in each collector dish shall be determined and the uniformity of distribution across the court calculated.

The mean volume or depth of water for the whole court (FOP and run-offs) shall be equal to or greater than watering requirements for the installed hockey turf, as detailed in the product approval report. In addition, the water depth at any test spot shall not be more than twice the depth or less than half the depth of an adjacent measuring point.

Tests shall not be undertaken if winds are causing the water spray:

- to drift significantly off the court
- to over or under water certain areas of the court

Tests should not be undertaken if it is raining.

#### 4.9.2 **Assessment of sub-court irrigation**

For courts having sub-court irrigation that require certification the method of verifying adequate and consistent wetting shall be agreed by the FIH Preferred Supplier/Certified Manufacturer/Certified Field Builder, the Accredited Test Institute and the FIH prior to the field test.

#### 4.10 Water Permeability

Courts shall have a water permeability rate of 150mm/h or greater. When required (in cases of concern, etc.) this shall be measured in accordance with EN 12616 to verify compliance.

Whenever a Global Elite or Global court is tested the ability of the surface to drain freely shall be assessed during the testing of the irrigation system. If National and Multi-Sport category fields are tested in the rain the ability of the surface to also drain freely shall be assessed.

If water is found to be ponding on the playing surface 5 minutes after the irrigation or rainfall ceases this should be reported.

### 5 Reporting

The results of a court test shall be reported on an official FIH Test Report prepared by an FIH Accredited Test Institute.

The completed test report shall be sent to the FIH ([facilities@fih.ch](mailto:facilities@fih.ch)) for review. If the review concludes the court meets the requirements of this Standard, the FIH will issue a Certificate of Court Certification and a copy of the test report to the following:

- Court Owner
- FIH Preferred Supplier or FIH Certified Manufacturer.
- FIH Preferred Supplier or FIH Certified Field Builder
- National Hockey Association
- Continental Federation

The FIH will also place the court on the list of Certified Courts on the FIH Website ([www.fih.ch/hockeyturf](http://www.fih.ch/hockeyturf)).

Court test reports shall be submitted to the FIH by the FIH Accredited Test Institute within two months of the date of the court test.

### 6 Period of Court Certification

Fields that are less than 12 months old when tested will be certified for a period of three years from the date of the court test.

Courts that are more than 12 months old when tested will be certified for a period of two years from the date of the court test.

If the synthetic turf or textile surface is replaced the court automatically loses its certification, unless a new court test is undertaken.

In applying for a court to be certified, the court owner is deemed to be granting the FIH the right to commission a spot test (at the FIH's expense) at any time (subject to scheduling), to verify compliant performance is being maintained.

If the manufacturer of the installed Hockey Turf ceases to be a member of the FIH Quality Programme for Hockey Turf for any reason, this will not prevent a court owner from applying to have their court recertified when a current certificate expires.

## Annex A - Court Test Requirements

FIH Court Category		Global Elite	
<b>Construction &amp; Court Layout Requirements</b>			
FOP size		48.0m x 31.76m	
Perimeter Margin	Ends of court	$\geq 3.0\text{m}$	
	Sides of court	$\geq 2.0\text{m}$	
Socketed or free standing rebound boards		Required	
Category of Approved Product		Global	
Type of pile yarn		Crimped mono-filament – see note 1	
Colour of FOP		See clause 4.3.2	
Colour of line marking		White	
Accuracy of line markings		Required - see clause 4.3.2	
Other line markings within the FOP		None	
FIH Quality Programme logo within run-off		Required	
Logos within the FOP		None – see note 2	
Surface regularity	Maximum undulation	3m straightedge	0.3mm straightedge
		$\leq 6\text{mm}$	$\leq 2\text{mm}$
Gradients		See clause 4.3.4	
Assessment of irrigation system's performance		Required	
Provision of flexible or movable sprinklers/hoses to augment permanent sprinklers or rain guns		Required	
<b>Performance Requirements</b>			
Ball rebound		100mm - 400mm	
Ball rebound consistency between test positions		$\leq 10\%$ of overall mean	
Ball roll		$\geq 10.0\text{m}$	
Ball roll consistency between test positions		$\leq \pm 10\%$ of overall mean	
Ball roll deviation		$\leq 0.50\text{m}$ @ 9.5m	
Shock absorption		45% - 60%	
Shock absorption consistency		$\leq \pm 5\%$ SA (absolute) from overall mean	
Vertical Deformation		4mm – 9mm	
Shoe – surface friction		25Nm – 45Nm	
Shoe – surface friction consistency		$\leq \pm 5\text{Nm}$ from overall mean	

Sports Equipment	
Hockey goals, complete with nets, side and backboards	Required – see note 3
Rebound boards	Required
Maintenance and Operational Equipment	
Flexible or movable sprinklers/hoses	Required – see note 4
Maintenance equipment	Required – see note 5
Maintenance log	Required – see note 6

Notes

- 1 A crimped monofilament pile yarn may be produced by a texturising or a knit-de-knit manufacturing process.
- 2 Unless required by FIH commercial agreements.
- 3 Goals shall be manufactured by an FIH Quality Programme Certified Manufacturer.
- 4 In addition to the permanent irrigation system the field shall have large bore hoses or portable sprinklers to allow manual localised watering as required.
- 5 The Court shall be equipped with the maintenance equipment recommended by the Hockey Turf Manufacturer.
- 6 The field operator shall complete the Hockey Turf Manufacturer’s Maintenance Log each time maintenance is undertaken on the field. The log shall be available for inspection by the FIH Accredited Test Institute at the time the field is tested for FIH field certification

FIH Court Category		Global	
<b>Construction &amp; Court Layout Requirements</b>			
FOP size		48.0m x 31.76m	
FOP Perimeter Margin	Ends of court	$\geq 3.0\text{m}$	
	Sides of court	$\geq 2.0\text{m}$	
Socketed or free standing rebound boards		Required	
Category of Approved Product		Global or National Class 1	
Type of pile yarn		No restrictions	
Colour of FOP		See clause 4.3.2	
Colour of line marking		White	
Accuracy of line markings		Required - see clause 4.3.2	
Other line markings within the FOP		Permitted - see note 1	
FIH Quality Programme logo within run-off		Optional	
Logos within the FOP		Permitted - see note 2	
Surface regularity	Maximum undulation	3m straightedge	0.3mm straightedge
		$\leq 6\text{mm}$	$\leq 2\text{mm}$
Gradients		See clause 4.3.4	
Assessment of irrigation system's performance		Required	
Provision of flexible or movable sprinklers/hoses to augment permanent sprinklers or rain guns		Recommended	
<b>Performance Requirements</b>			
Ball rebound		100mm - 400mm	
Ball rebound consistency between test positions		$\leq 10\%$ of overall mean	
Ball roll		$\geq 10.0\text{m}$	
Ball roll consistency between test positions		$\leq \pm 10\%$ of overall mean	
Ball roll deviation		$\leq 0.50\text{m}$ @ 9.5m	
Shock absorption		45% - 60%	
Shock absorption consistency		$\leq \pm 5\%$ SA (absolute) from overall mean	
Vertical Deformation		4mm – 9mm	
Shoe – Surface Friction		25Nm – 45Nm	
Shoe – Surface Friction consistency		$\leq \pm 5\text{Nm}$ from overall mean	

## Notes:

1. The presence of other line markings on a court in this category will not prevent it being FIH Certified but they may exclude the court from being used for certain categories of competition. The advice of the national hockey association should always be sought before deciding to put additional markings on a court.
2. The presence of logos on a court in this category will not prevent it being FIH Certified but they may exclude the court from being used for certain categories of competition. The advice of the national hockey association should always be sought before deciding to put a logo on the FOP.

FIH Court Category		National	
<b>Construction &amp; Court Layout Requirements</b>			
FOP size		Length	48.0 ± 7.0m
		Width	31.76 ± 3.0m
FOP Perimeter Margin	Ends of court	Optional	
	Sides of court		
Rebound boards		Socketed, free standing or fence mounted	
Category of Approved Product		National Class 1 or Class 2	
Colour of FOP		No restrictions – See note 1	
Colour of line marking		White or yellow recommended	
Accuracy of line markings		Required	
Other line markings within the FOP		Permitted - see note 2	
Logos within the FOP		Permitted - see note 3	
Surface regularity	Maximum undulation	3m straightedge	0.3mm straightedge
		≤ 6mm	≤ 3mm
Gradients		≤ 1% in any direction	
Performance of irrigation system		Optional – see note 4	
<b>Performance requirements</b>			
Ball rebound		100mm - 425mm	
Ball rebound consistency between test positions		≤ 20% of overall mean	
Ball roll		≥ 9.0m	
Ball roll consistency between test positions		≤ ± 20% of overall mean	
Ball roll deviation		≤ 0.45m @ 8.5m	
Shock absorption		40% - 65%	
Shock absorption consistency		≤ ± 5% SA (absolute) from overall mean	
Vertical Deformation		4mm – 9mm	
Shoe – surface friction		25Nm – 45Nm	
Shoe – surface friction consistency		≤ ± 5Nm from overall mean	

## Notes:

1. Providing the yarn colour has been tested for resistance to UV degradation as part of the Hockey Turf's approval.



2. The presence of other line markings on a court in this category will not prevent it being FIH Certified but they may exclude the court from being used for certain categories of competition. The advice of the national hockey association should always be sought before deciding to put additional markings on a court.
3. The presence of logos on a court in this category will not prevent it being FIH Certified but they may exclude the court from being used for certain categories of competition. The advice of the national hockey association should always be sought before deciding to put a logo on the FOP.
4. Some National Category courts do have irrigation systems. Assessing its performance is not mandatory for this category of court certification, but it is recommended whenever a new court is being tested. It is also a requirement for any court being proposed for an FIH event and may also be required by continental federation or national league competitions.

FIH Court Category		Multi-Sport – Class 1	
Typical sports uses		Hockey 5s, small sided football, futsal	
<b>Construction &amp; Court Layout Requirements</b>			
FOP size		Length (L)	≥ 40.0m
		Width (W)	≥ 28.0m
		Ratio (L:W)	Approximately 1:0.7
FOP Perimeter Margin	Ends of court	Optional	
	Sides of court		
Rebound boards		Socketed, free standing or fence mounted	
Category of Approved Product		Multi-Sport – Class 1	
Colour of FOP		No restrictions – See note 1	
Colour of line marking		White or yellow recommended	
Accuracy of line markings		See Note 2	
Other markings allowed within the FOP		Permitted	
Logos within the FOP		Permitted - see note 3	
Surface regularity	Maximum undulation	3m straightedge	0.3mm straightedge
		≤ 6mm	≤ 3mm
Gradients		≤ 1% in any direction	
Performance of irrigation system		Not applicable	
<b>Performance Requirements</b>			
Ball rebound		100mm - 450mm	
Ball rebound consistency between test positions		≤ 20% of overall mean	
Ball roll		≥ 8.0m	
Ball roll consistency between test positions		≤ ± 20% of overall mean	
Ball roll deviation		≤ 0.40m @ 7.5m	
Shock absorption		40% - 70% - see note 3	
Shock absorption consistency		≤ ± 5% SA (absolute) from overall mean	
Vertical Deformation		4mm – 10mm	
Shoe – surface friction		25Nm – 45Nm	
Shoe – surface friction consistency		≤ ± 5Nm from overall mean	

## Notes:

1. Providing the yarn colour has been tested for resistance to UV degradation as part of the Hockey Turf's approval.
2. Multi-sport courts have a number of sports markings and it is recognised that if there are too many it can be confusing to players and match officials and compromise the integrity of the playing surface (if they are cut-in). To minimise these problems common line markings are often used and occasionally these may not fully comply with the *Rules of Hockey 5s*. Nevertheless, the FIH will certify such courts providing they have the necessary markings to allow Hockey 5s to be played.
3. The presence of logos on a court in this category will not prevent it being FIH Certified but they may exclude the court from being used for certain categories of competition. The advice of the national hockey association should be sought before deciding to put a logo on the FOP.

FIH Court Category		Multi-Sport – Class 2	
Typical sports uses		Hockey 5s, tennis	
<b>Construction &amp; Court Layout Requirements</b>			
FOP size		Length (L)	≥ 40.0m
		Width (W)	≥ 28.0m
		Ratio (L:W)	Approximately 1:0.7
FOP Perimeter Margin	Ends of court	Optional	
	Sides of court		
Rebound boards		Socketed, free standing or fence mounted	
Category of Approved Product		Multi-sport – Class 2	
Colour of FOP		No restrictions	
Colour of line marking		White or yellow recommended	
Accuracy of line markings		See Note 1	
Other markings allowed within the FOP		Permitted - see note 1	
Logos within the FOP		Permitted - see note 2	
Surface regularity	Maximum undulation	3m straightedge	0.3mm straightedge
		≤ 6mm	≤ 3mm
Gradients		≤ 1% in any direction	
Performance of above irrigation system		Not applicable	
<b>Performance Requirements</b>			
Ball rebound		≤ 500mm	
Ball rebound consistency between test positions		≤ 20% of overall mean	
Ball roll		≥ 8.0m	
Ball roll consistency between test positions		≤ ± 20% of overall mean	
Ball roll deviation		≤ 0.40m @ 7.5m	
Shock absorption		≥ 30%	
Shock absorption consistency		≤ ± 5% SA (absolute) from overall mean	
Vertical Deformation		2mm – 9mm	
Shoe – surface friction		25Nm – 45Nm	
Shoe – surface friction consistency		≤ ± 5Nm from overall mean	

## Notes:

1. Multi-sport courts by definition have a number of sports markings and it is recognised that if there are too many it can be confusing to players and match officials and compromise the integrity of the playing surface (if they are cut-in). To minimise these problems common line markings are often used and occasionally these may not fully comply with the *Rules of Hockey 5s*. Nevertheless, the FIH will certify such courts providing they have the necessary markings to allow Hockey 5s to be played.
2. The presence of logos on a court in this category will not prevent it being FIH Certified but they may exclude the court from being used for certain categories of competition. The advice of the national hockey association should be sought before deciding to put a logo on the FOP.
3. Based on the requirements of EN 15330, Multi-Sport MS2 category field should have a tennis ball rebound under dry and wet conditions of  $\geq 1.12\text{m}$ , when tested in accordance with EN 12235.

FIH Court Category		Multi-Sport – Class 3	
Typical sports uses		Small sided football & Hockey 5s	
<b>Construction &amp; Court Layout Requirements</b>			
FOP size		Length (L)	≥ 40.0m
		Width (W)	≥ 28.0m
		Ratio (L:W)	Approximately 1: 0.7
Run-offs	End of courts	Optional	
	Sides of court		
Rebound boards		Socketed, free standing or fence mounted	
Category of Approved Product		Multi-sport – Class 3	
Colour of FOP		No restrictions	
Colour of line marking		White or yellow recommended	
Accuracy of line markings		See note 1	
Other markings allowed within the FOP		Permitted - see note 2	
Logos within the FOP		Permitted - see note 3	
Surface regularity	Maximum undulation	3m straightedge	0.3mm straightedge
		≤ 6mm	≤ 3mm
Gradients		≤ 1% in any direction	
Water permeability		≥ 150mm/h	
Performance of irrigation system		Not applicable	
<b>Performance Requirements</b>			
Ball rebound		≥ 75mm	
Ball rebound consistency between test positions		≤ 20% of overall mean	
Ball roll		≥ 5.0m	
Ball roll consistency between test positions		≤ ± 20% of overall mean	
Ball roll deviation		Not applicable	
Shock absorption		55% - 70%	
Shock absorption consistency		≤ ± 5% SA (absolute) from overall mean	
Vertical Deformation		4mm – 12mm	
Shoe –Surface Friction		25Nm – 50Nm	
Shoe – Surface Friction consistency		≤ ± 5Nm from overall mean	

## Notes:

1. Multi-Sport courts by definition have a number of sports markings and it is recognised that if there are too many it can be confusing to players and match officials and compromise the integrity of the playing surface (if they are cut-in). To minimise these problems common line markings are often used and occasionally these may not fully comply with the *Rules of Hockey 5s*. Nevertheless, the FIH will certify such courts providing they have the necessary markings to allow Hockey 5s to be played.
2. The presence of logos on a court in this category will not prevent it being FIH Certified but they may exclude the court from being used for certain categories of competition. The advice of the national hockey association should be sought before deciding to put a logo on the FOP.

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