



ENGINEERED
FOR HOCKEY

Hockey turf & field standards

PART 3 – HOCKEY5s COURTS

VER. 02

Foreword

Hockey is well known for its fast pace, technical skills, and social inclusiveness. Versions of the game are played outdoors and indoors in both formal and informal environments. The 2018 Global Hockey Survey conducted by the FIH showed that there are over 30 million people playing hockey around the world.

HOCKEY5s is a small-sided, predominantly outdoor, format of the game. It is simple and flexible enough to be played by anybody, anywhere. The game is played on a court, which can either be a permanent facility, or be temporarily set-up on a full size sports field. Depending on the level of competition being played on a court, it can either be used exclusively for HOCKEY5s or be shared with other sports.

For foundation and community levels of play, the key to court design is flexibility and there are no fixed requirements. For higher levels of competitive and tournament play, a more controlled approach is needed to provide teams with certainty about the type of court they will compete on.

HOCKEY5s is played on many different types of playing surface, particularly at the foundation and community levels of the sport. For more formal competitions a synthetic turf designed specifically for hockey (also known as hockey turf) is the preferred surface.

Guidance on the layout, surfacing, and court options for HOCKEY5s is given in our *Facilities Guidance – HOCKEY5s Courts*, which may be downloaded at www.fih.ch/qp.

When determining which form of court is most appropriate for a specific facility it is very important that the requirements of the various competitions that will be held on it are considered, as well as the policies and recommendations of the national hockey association.

People need suitable facilities to play, but these require major investment, so it is very important that hockey courts are designed and constructed correctly. To help ensure this occurs, the FIH has developed its FIH Quality Programme. The programme provides guidance and quality assurance through internationally recognised standards. These are based on over 40 years' experience and have been developed to ensure the appropriate levels of performance and durability are achieved by a facility, irrespective of whether it is intended for community hockey, international competition, or anything in between.

The FIH Quality Programme also endorses companies that manufacture high quality hockey surfaces, and contractors that have a proven ability to build great hockey facilities.

FIH Preferred Suppliers are companies that manufacture hockey turf products and build hockey courts allowing customers to benefit from a one-stop approach to the construction of their new hockey facility. FIH Preferred Suppliers have a global commitment to work with the FIH to provide high-quality hockey facilities suitable for international, national, club, and development hockey.

FIH Certified Manufacturers are companies that specialise in the manufacturing of hockey turfs. These companies have a proven ability to produce surfaces to the standards the game requires, whilst operating quality management systems that ensure consistency in their products.

FIH Certified Field Builders are companies that specialise in building hockey fields. Due to the nature of hockey, a small ball moving quickly across the surface, the tolerance to which a facility needs to be constructed are much more demanding than large-ball sports. FIH Certified Field Builders have a proven ability to construct fields, and HOCKEY5s courts, to the standards the game requires.

The FIH recommends that whenever you are planning a new HOCKEY5s you always:

- select an FIH approved hockey turf
- appoint either an FIH Preferred Supplier or FIH Certified Field Builder to design and build the court.

Details of FIH Approved Products, FIH Preferred Suppliers and FIH Certified Field Builders can be found at www.fih.ch/qp.



1 Scope

This Standard specifies the quality, performance and construction standards required for HOCKEY5s courts. It becomes effective from January 2021 and replaces the 2017 edition.

All new courts requiring FIH certification from June 2021 should be designed and tested in accordance with this Standard.

Note – If a currently certified court needs to be re-certified when its current certification expires, it should be tested and shown to meet the requirements of the Standard that was applicable when it was first certified.

Other FIH reference documents

This Standard incorporates the requirements of the following FIH publications, which can be accessed at www.fih.ch/qp:

- FIH Hockey Turf and Field Standards – FIH Approved Hockey Turfs
- Facilities Guidance– Hockey Field Irrigation
- FIH Approved Field Equipment – Hockey Goals
- FIH Approved Field Equipment – HOCKEY5s Rebound Boards
- FIH Approved Field Equipment – Team Shelters
- Facilities Guidance Sports – Lighting for Non-Televised Outdoor Hockey (2021 edition)
- Facilities Guidance – Sports Lighting for Televised Outdoor Hockey (2021 edition)

2 Definitions

The following definitions apply to this Standard:

Competition regulations – specific requirements for a competition or tournament, issued by the Event's organising committee

EN – Standard published by the European Standards Organisation (CEN).

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

FIH Approved®– a product that has been tested and certified in accordance with the *FIH Hockey and Field Standards* part 1 – FIH Approved Hockey Turfs

HOCKEY5s court – a court as defined in this Standard and The FIH Guide to HOCKEY5s Courts – Design Principles and Layouts

Hockey turf Global category – FIH Approved non-filled wet synthetic turf designed to be irrigated prior to use.

Hockey turf National category – FIH Approved sand dressed or non-filled synthetic turf that does not require irrigating prior to use.

Hockey turf Community category – FIH Approved sand filled synthetic turf or textile sports surface.

Hockey turf Gen 2 category – modified FIH National or FIH Community category surface designed to also allow other sports such as tennis, netball, futsal, etc to be played.

Hockey turf 3G Multi-sport category – FIH Approved long pile synthetic turf. These surfaces are primarily designed for football but may also be used for lower level hockey.

ISO – standard published by the International Standards Organisation.

Overlay court – a court temporarily laid onto a synthetic turf sports court or other area.

Permanent court – a court built for long-term use.

Playing Area – the area within the boundaries formed by the perimeter rebound boards and goals.

Run-offs – a margin outside the rebound boards that provides an area for players to run onto without the risk of colliding with any permanent or temporary structures. Run-offs are required on Category 1 and 2 courts and are recommended on Category 3 courts, unless the perimeter rebound boards are mounted to the boundary fencing of the court.

Team area – an area on one side of the Court, outside of the run-off, where substitutes and team benches, etc. are located. It should be centrally located on the centre line of the court.

Shockpad or 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, that is designed to aid the provision of the required sport's performance.

3 Categories of court

This Standard defines the requirements of three categories of HOCKEY5s court. They are:

Intended use	Hockey turf	
	Type of turf	FIH category
Category 1 courts		
Tournament courts intended for major competitions	Non-filled, wet turf	Global
	Sand dressed synthetic turf	National
Category 2 courts		
Courts intended for regional, national, and local competitions & training	Non-filled wet turf	FIH Global
	Sand dressed synthetic turf	FIH National
	Sand filled synthetic turf or textile sports surface	FIH Community – Hockey Plus
	Sand dressed synthetic turf or textile sports surface	FIH Community – Gen 2
	Long pile synthetic turf	FIH 3G Multi-sport
Category 3 courts		
Courts intended for community and informal play & training	FIH National – sand dressed synthetic turf	
	Sand dressed synthetic turf	FIH National
	Sand filled synthetic turf or textile sports surface	FIH Community – Hockey Plus
	Sand dressed synthetic turf or textile sports surface	FIH Community – Gen 2
	Long pile synthetic turf	FIH 3G Multi-sport

The layout, construction and performance requirements for each category are detailed in Appendix A.

Areas intended for introductory and informal forms of HOCKEY5s fall outside the scope of this Standard, but the principles of this Standard can be applied when appropriate.

4 Construction criteria

4.1 Court layouts and dimensions

The layout and sizes of each category HOCKEY5s court is shown in Appendix A. The ends and sides of the playing area are defined by rebound boards. These can be free-standing or mounted onto fencing enclosing the court. Perimeter run-offs are only required if there is a risk of players leaving the playing area and colliding with perimeter structures (light columns, team benches, etc). If the rebound boards are mounted on the perimeter fencing, run-offs are not needed.

4.2 Court profile and gradients

A number of different court profiles are used including single planes (end-to-end, side-to-side, and diagonal falls), envelope and ridge profile.

The maximum slope on a court in any direction (including diagonal and combined gradients, etc.) should not exceed 1%.

The court profile should be symmetrical around the central axis of the court. When envelope or ridge profiles are used, the change in grade shall not adversely affect the consistency of the ball roll or exceed the requirements for surface regularity.

4.3 Sub-base and base

The base on which the hockey turf is laid should 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.

To ensure compliance of the playing surface, the base, should not have any undulations exceeding 6 mm under 3 m straightedge, or 3 mm under a 0.3 m straightedge.

Notes

- 1 To ensure the compliance of the playing surface with the surface regularity requirements of this Standard it is recommended the base is surveyed prior to installation of the shockpad.
- 2 Compensating for undulations in a base by localised adjustments to the thickness of an in-situ laid shockpad can result in variable and unacceptable sports performance.

4.4 Drainage

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

- ensure that all surface water is removed 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 flowing from the areas surrounding the court.
- ensure no water remains present in the base that may result in a reduction of the load bearing capacity of the formation or damage to the construction from the actions of frost.

The court should have a water permeability rate of 150mm/h or greater. When required (in cases of concern, etc.) this should be measured using the procedure described in EN 12616 to verify compliance.

Note – 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, that for whatever reason, 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 court that are being resurfaced or upgraded unless it is included in a contract specification.

Note: The FIH recommends inspections be made at key stages through construction of a base and drainage system to verify the installation is proceeding to the agreed design and specification.

4.5 Shockpad installation

The shockpad or elastic layer should be installed to provide a uniform and consistent under-layer on which the hockey turf is laid.

There should be no variations in quality or installation that adversely affect the performance of the field, so it falls outside the requirements of this Standard.

Insitu elastic layers should be made from materials, and be laid in accordance with, the hockey turf manufacturer's instructions and specifications.

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

4.6 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 turfs comprise 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 150mm/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 also tested to ensure the tensile strength is in accordance with the requirements detailed in *FIH Hockey Turf and Standards – Approved Hockey Turfs*.
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 an FIH Accredited Test Institute.

4.7 Carpet installation

The hockey turf surfacing should be free of manufacturing and visual defects. It should be laid in full width rolls running across the field (side line to side line) without head seams.

Non-filled hockey turfs should either be loose laid, tensioned and clamped along their side boundaries, or bonded to the underlying shockpad to minimise the risk of dimensional movement.

Notes:

1. Good quality shockpads should be usable under at least two carpets. If a carpet is bonded to the shockpad, the shockpad might be damaged when the carpet is lifted for replacement. Therefore, the implications of bonding the carpet to the shockpad need to be assessed against the installation benefits bonding offers.

2. If the carpet is bonded to the shockpad, the adhesive used should be in accordance with the hockey turf manufacturer recommendations.
3. The FIH also recommends the tensioning and clamping or bonding of sand dressed hockey turf carpets.

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

All carpet joints should be fully bonded/stitched with no joint failures. The gap at the top of the carpet pile, on any carpet joint or any in-laid markings, should be no wider than the carpet's stitch gauge plus 2mm.

Bonded carpet joints should 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 should not cause a ball to lift or deviate as it passes over the joint.

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

Repairs to the hockey turf should only be permitted if:

- They have no adverse effect on the performance or consistency of the field. When inspecting a field for FIH certification, the Test Institute should verify this and report accordingly;
- On new fields, the specification and turf colour of any repair matches the surrounding area, and visually the repairs do not undermine the integrity of the FIH Quality Programme. When inspecting a field for FIH certification, the Test Institute should verify this and report accordingly;
- On new fields, the field owner is willing to accept such repairs and confirms this (in writing).

5 Perimeter fencing

Most courts are enclosed by a perimeter fencing. This ensures balls do not leave the court, stops unauthorised use, and helps protect the hockey turf from wild-life, etc. The fencing should be designed and constructed in accordance with local standards and industry guidelines.

Fence heights should be determined by assessing the potential for a hockey ball to leave the boundaries of the court and cause injury or damage.

Typical heights used are:

End of field – width of shooting circle	4.5 m
End of field – outside shooting circle	3.0 m
End of fields – tiered spectator seating	7.0 m
Sides – no spectator viewing	3.0 m
Sides – spectator viewing	min. 10m

Fencing is often based on weld-mesh or twin-bar panels. Ball catch netting can also be used, especially for higher sections behind the goals. The mesh should not allow hockey balls travelling at speed to pass through so, a 45 mm mesh-size is often used.

To protect the fencing from the repeated impact of balls kick-boards (often 250 mm – 300 mm high) are often mounted to the bottom of the fencing. These boards also help contain any fibre debris or infill and prevent it migrating into the surrounding environment.

If temporary division nets are installed to split a field into sections for cross pitch play, they should be at least 3 m high and have sufficient surplus to ensure balls cannot pass under them. Experience also suggests that fitting a weighted band at the bottom of the net helps prevent it billowing in windy conditions.

6 Sports Lighting

It is recommended that lighting of fields that are not intended to host televised competitions is in accordance with the *FIH Facilities Guidance – Sports Lighting for Non-Televised Outdoor Hockey* (2021 edition). The category of lighting should be in accordance with the recommendations and regulations of the National Hockey Association.

Lighting of fields intended to host televised competitions should be in accordance with the *FIH Facilities Guidance – Sports Lighting for Televised Outdoor Hockey* (2021 edition). The category of lighting should comply with the broadcast requirements of the televised/streamed competitions that will be held on the field.

Appendix A – Court specific requirements

	
Intended use	Tournament courts intended for major competitions

A.1.1 Category 1 court – dimensions & layout

The court comprises the playing area and run-offs. Figure 1 shows the layout of a Category 1 court.

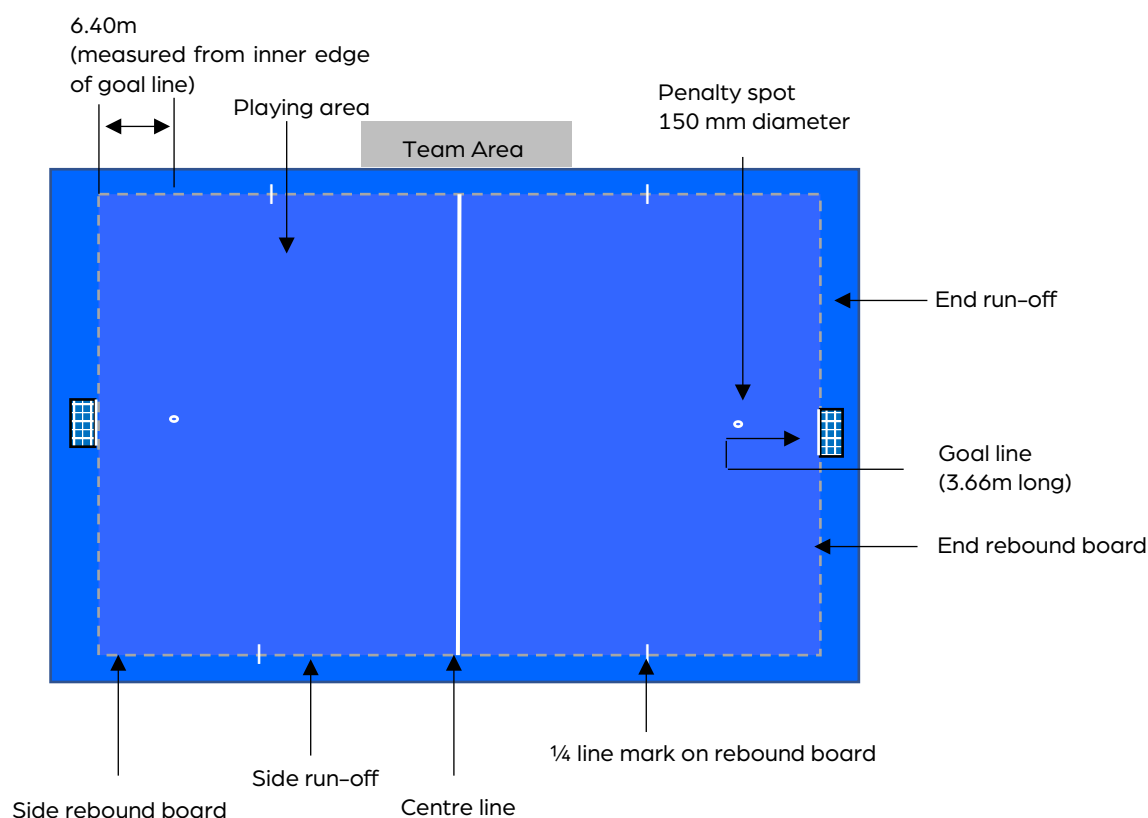


Figure 1 – Category 1 court layout

Outside the court area there also needs to be space for team benches for substitutes, etc. These should measure a minimum of 8.0 m by 1.0 m and be aligned centrally on the centre line of the court.

The court dimensions should be:

	Playing area	Run-off (each boundary)	Total size
Length	40.0 m	2.0 m	44.0 m
Width	23.76 m	2.0 m	27.76 m

Note: the court width allows for the size of the goal frame, which is 3.76 m wide.

A.1.2 Category 1 court – surfacing

The court should be surfaced with either an FIH Approved Global or National category hockey turf¹.

The playing area and run-offs should have the same playing surface.

The team area does not form part of the playing area and run-offs and may have a different surface e.g., hard paving.

Surfacing colours

Courts that may host televised HOCKEY5s events should be an approved shade of blue, as listed in Table 1.

Table 1 – Approved shades of blue for courts hosting televised matches			
Ultramarine Blue	RAL 5002	Traffic Blue	RAL 5017
Signal Blue	RAL 5005	Capri Blue	RAL 5019
Gentian Blue	RAL 5010		
Yarn colours are defined by their RAL colour code. These are a standardised way to display different colours. Yarn and carpet manufacturers may use their own product names to describe a yarn colour. Providing the RAL number of the yarn colour is listed above, the colour is approved.			

For courts that will not host televised events there are no FIH restrictions on the colour of the playing area or run-offs, but local or regional competition regulations may require a court to be blue or green.

¹ A list of FIH Approved Hockey Turfs can be found at www.fih.qp.

Note: As the resistance to UV degradation and chemical content of the plastics used in the surface may be colour dependant, each yarn colour needs to be tested to show satisfactory performance. The FIH Product Test Report for each **FIH Approved** hockey turf details the colours approved for that hockey turf. The report is available from the manufacturer of the hockey turf.

turf. The report is available from the manufacturer of the hockey turf.

A.1.3 Category 1 court – sports performance

The performance of the playing surface will depend on the category of surface installed. As Global category and National category hockey turfs are considered acceptable for Category 1 courts, the same levels of performance are specified.

Ideally non-filled short pile synthetic turfs will have been Approved at the Global and National categories of performance, meaning the surface is known to have acceptable performance when dry, wet and after irrigation. If, however, the surface is only Approved as a Global category surface the court must have an irrigation system capable of evenly applying the quantity of water required by the installed hockey turf. Details of the irrigation requirements for each hockey turf are detailed in the official FIH test report, available from the manufacturer.

Property	Unit	Requirement
Ball rebound	mm	100 – 425
Ball rebound consistency ¹	%	≤ 20
Ball roll	m	≥ 9.0
Ball roll consistency ¹	%	≤ 20
Ball roll deviation ²	m	≤ 0.45m
Shock absorption	% FR	40 – 65
Shock absorption consistency ¹	% FR	± 5
Vertical Deformation	mm	4 – 9
Shoe – surface friction	Nm	25 – 45
Shoe – surface friction consistency ¹	Nm	± 5

1 Consistency between each test position and overall mean. Expressed as a % variation, or absolute value, depending on the property.

2 Measured at 8.5 m from where the ball first comes into contact with the playing surface.

A.1.4 Category 1 court – line markings & logos

Line markings

Goal line, centre line and penalty spot markings should be white. On permanent courts they should be inlaid into the hockey turf.

Lines should be 75 mm wide. Penalty spots are circular with a diameter of 150 mm.

Category 1 courts should only have markings for HOCKEY5s.

Logos

There should be no logos on the playing areas. Non-commercial logos may be positioned on the run-offs, subject to the conditions of specific competition regulations.

A.1.5 Court equipment

Goals

The court should be equipped with two goals. To ensure safety in use and durability they should be **FIH Approved**².

Rebound boards

The court should be equipped with FIH Approved Class 1 rebound boards.

Team shelters/benches

The court should be equipped with two team shelters/benches. To ensure safety in use and durability they should be FIH Approved.

Technical officials' booth

If a Technical officials' booth is being provided to a court, it should be FIH Approved.



A.1.6 Category 1 court – wet hockey turfs – court irrigation

If the installed hockey turf has only been FIH Approved for use under wet conditions (FIH Global category), the court should have an irrigation system that complies with the *FIH Hockey and Field Standards – Field Irrigation*.

A.1.7 Category 1 court – FIH certification

For a court to be classified as a Category 1 HOCKEY5s court it must be tested and certified in accordance with Appendix B of this Standard.

² A list of FIH Approved Field Equipment can be found at www.fih.qp.

	
<p>Intended use</p>	<p>Courts intended for regional, national, and local competitions & training</p>

A.2.1 Category 2 court – dimensions & layouts

The court comprises the playing area and run-offs. Figure 2 shows the layout of a Category 2 court.

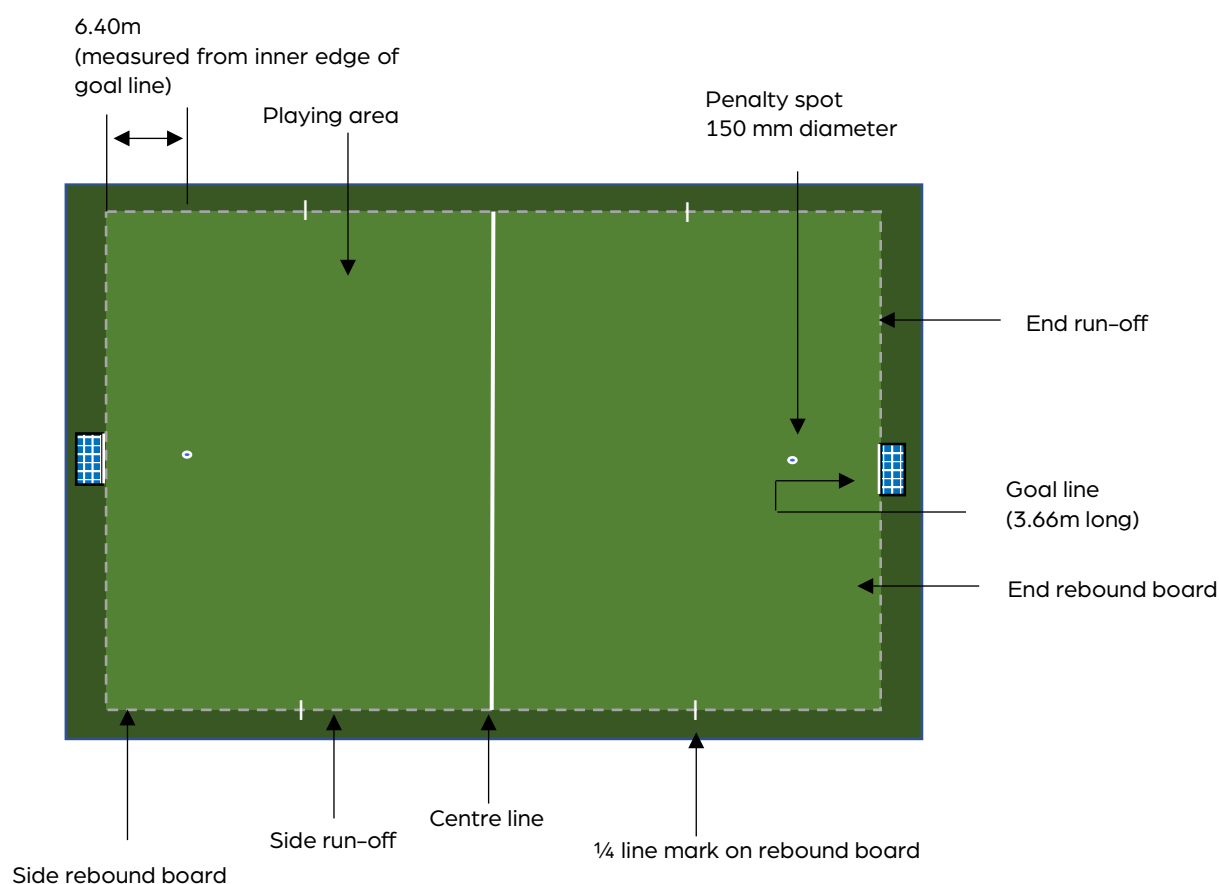


Figure 2 – Category 2 court layout

The dimensions should be:

	Playing area	Run-off (each boundary), when applicable
Length	Between 36.0 m & 48.0 m	2.0 m
Width	Between 19.0 m & 34.5 m	2.0 m

Note: ideally the length of the court will be approximately 1.7 x the width.

A.2.2 Category 2 court – surfacing

The court should be surfaced with an FIH Approved hockey turf³. The playing area and run-offs should have the same playing surface. There are no FIH restrictions on colours, but local or regional competition regulations may require a court to be blue or green.

Note: As the resistance to UV degradation and chemical content of the plastics used in the surface may be colour dependant, each yarn colour needs to be tested to show satisfactory performance. The FIH Product Test Report for each FIH Approved hockey turf details the colours approved for that hockey turf. The report is available from the manufacturer of the hockey turf.

A.2.3 Category 2 court – sports performance

The performance of the playing surface will depend on the category of surface installed. This will be determined by the facility owner and competition regulations. Based on the selected category the performance of the court should be as detailed below:

		Hockey turf classification			
		Global / National	Community Hockey Plus	Community GEN 2	3G Multi-sport
Ball rebound	mm	100 – 425	100 – 450	≤ 500	> 75
Ball rebound consistency ¹	%	≤ 20	≤ 20	≤ 20	≤ 20
Ball roll	m	≥ 9.0	≥ 8.0	≥ 9.0	≥ 5.0
Ball roll consistency ¹	%	≤ 20	≤ 20	≤ 20	≤ 20
Ball roll deviation ²	m	≤ 0.45m	≤ 0.40m	≤ 0.45m	–
Shock absorption	% FR	40 – 65	40 – 70	≥ 30	55 – 70

³ A list of FIH Approved Hockey Turfs can be found at www.fih.qp.

Shock absorption consistency ¹	% FR	± 5	± 5	± 5	± 5
Vertical Deformation	mm	4 – 9	4 – 10	4 – 9	< 12
Shoe – surface friction	Nm	25 – 45	25 – 45	25 – 45	25 – 50
Shoe – surface friction consistency ¹	Nm	± 5	± 5	± 5	± 5

1 Consistency between each test position and overall mean. Expressed as a % variation, or absolute value, depending on the property.

2 Measured at the distance specified in Clause 4.1.3 of Part 1 of the FIH Hockey Turf and Field Standards

Ideally non-filled short pile synthetic turfs will have been Approved at the Global and National categories of performance, meaning the surface is known to have acceptable performance when dry, wet and after irrigation. If, however, the surface is only Approved as a Global category surface the court must have an irrigation system capable of evenly applying the quantity of water required by the installed hockey turf. Details of the irrigation requirements for each hockey turf are detailed in the official FIH test report, available from the manufacturer.

A.2.4 Category 2 court – line markings

Goal line, centre line and penalty spot markings can be any colour that contrasts with the playing surface, although white or yellow are preferred. Lines should be 75 mm wide. Penalty spots are circular with a diameter of 150 mm.

Markings for other sports are allowed, subject to local or regional competition regulations.

A.2.5 Category 2 court – court equipment

Goals

The court should be equipped with two goals. To ensure safety in use and durability they should be FIH Approved⁴.

Rebound boards

The court should be equipped with FIH Approved Class 1 or Class 2 rebound boards.

A.2.6 Category 2 court – wet hockey turfs – court irrigation

If the installed hockey turf has only been FIH Approved for use under wet conditions (FIH Global category), the court should have an irrigation system that complies with the *FIH Hockey and Field Standards – Field Irrigation*.

⁴ A list of FIH Approved Field Equipment can be found at www.fih.gp.

A.2.7 Category 2 court – FIH certification

For a court to be classified as a Category 2 HOCKEY5s court it must be tested and certified in accordance with Appendix B of this Standard.

	
Intended use	Courts intended for community and informal play & training

A.3.1 Category 3 court – dimensions & layout

Category 3 courts may comprise the playing area with run-offs as shown in Figure 2, or a playing area that is enclosed by rebound boards mounted directly onto the perimeter fencing (Figure 3).

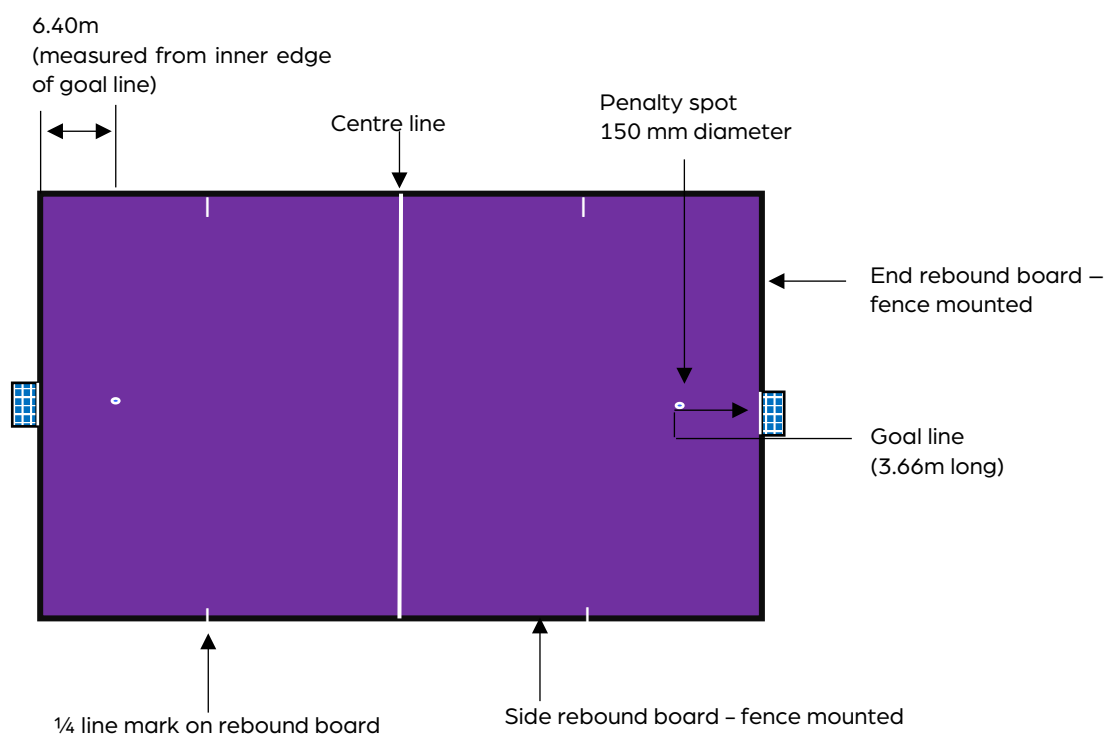


Figure 3 – Category 3 court layout without run-offs

A.3.2 Category 3 court – surfacing

The court should be surfaced with an FIH Approved hockey turf⁵.

Note: As the resistance to UV degradation and chemical content of the plastics used in the surface may be colour dependant, each yarn colour needs to be tested to show satisfactory performance. The FIH Product Test Report for each FIH Approved hockey turf details the colours approved for that hockey turf. The report is available from the manufacturer of the hockey turf.

A.3.3 Category 3 court – sports performance

The performance of the playing surface will depend on the category of surface installed. This will be determined by the facility owner and competition regulations. Based on the selected category the performance of the court should be as detailed below:

		Hockey turf classification			
		Global / National	Community	GEN 2	3G Multi-sport
Ball rebound	mm	100 – 425	100 – 450	≤ 500	> 75
Ball rebound consistency ¹	%	≤ 20	≤ 20	≤ 20	≤ 20
Ball roll	m	≥ 9.0	≥ 8.0	≥ 9.0	≥ 5.0
Ball roll consistency ¹	%	≤ 20	≤ 20	≤ 20	≤ 20
Ball roll deviation ²	m	≤ 0.45m	≤ 0.40m	≤ 0.45m	–
Shock absorption	% FR	40 – 65	40 – 70	≥ 30	55 – 70
Shock absorption consistency ¹	% FR	± 5	± 5	± 5	± 5
Vertical Deformation	mm	4 – 9	4 – 10	4 – 9	< 12
Shoe – surface friction	Nm	25 – 45	25 – 45	25 – 45	25 – 50
Shoe – surface friction consistency ¹	Nm	± 5	± 5	± 5	± 5
<p>1 Consistency between each test position and overall mean. Expressed as a % variation, or absolute value, depending on the property.</p> <p>2 Measured at the distance specified in Clause 4.1.3 of Part 1 of the FIH Hockey Turf and Field Standards</p>					

Ideally non-filled short pile synthetic turfs will have been Approved at the Global and National categories of performance, meaning the surface is known to have acceptable performance

⁵ A list of FIH Approved Hockey Turfs can be found at www.fih.qp.

when dry, wet and after irrigation. If, however, the surface is only Approved as a Global category surface the court must have an irrigation system capable of evenly applying the quantity of water required by the installed hockey turf. Details of the irrigation requirements for each hockey turf are detailed in the official FIH test report, available from the manufacturer.

A.3.4 Category 3 court – line markings

Goal line, centre line and penalty spot markings can be any colour that contrasts with the playing surface, although white or yellow are preferred.

Lines should be 75 mm wide. Penalty spots are circular with a diameter of 150 mm.

Markings for other sports are allowed.

A.3.5 Category 3 court – court equipment

Goals

The court should be equipped with two goals. It is recommended these are FIH Approved⁶.

Rebound boards

The court should be equipped with rebound boards. It is recommended these are FIH Approved.

A.3.6 Category 3 court – FIH certification

For a court to be classified as a Category 3 HOCKEY5s court it must be tested and certified in accordance with Appendix B of this Standard.

⁶ A list of FIH Approved Field Equipment can be found at www.fih.qp.

Appendix B – Court certification

To ensure that hockey courts facilities are being built to the highest standards and that the playing surfaces are being installed correctly, the FIH Quality Programme for hockey turf includes the certification of HOCKEY5s courts.

An FIH certified court is independently tested by an [FIH Accredited Test Institute](#) to ensure it meets the requirements of this Standard. Tests include measurements of how the ball interacts with the playing surface, and verifies adequate comfort and protection is being provided to ensure the well-being and protection of players. Court Certification also includes a comprehensive series of quality control checks to ensure the installed playing surface is the same as the **FIH Approved** Product; ensuring manufacturing and installation mistakes do not go undetected.

The FIH recommends that all new or refurbished HOCKEY5s courts are tested to allow FIH certification.

B.1 HOCKEY5s courts located on full size hockey fields

If a court is located on a full size hockey field that is FIH certified, the court will automatically qualify for certification providing the rebound boards and goals being used are FIH Approved. Applications for this type of certification should be made directly to facilities@fih.ch.

B.2 Sports lighting

FIH Certification is primarily an assessment of the playing surface and its suitability to host HOCKEY5s. If required, certification may be expanded to also include an assessment of a court's sports lighting, providing it is designed to satisfy the appropriate FIH lighting guidance.

B.3 Certification criteria

For a court to qualify for certification it should satisfy the following conditions:

B.3.1 Playing surface

The court must be surfaced with an FIH Approved hockey turf. The category of hockey turf shall be as specified in this Standard.

B.3.2 sports performance & player welfare properties

The sports performance & player welfare properties of the installed playing surface shall comply with the requirements detailed for each court category in Appendix A.

B.3.3 Layout and construction

The layout and construction of the court should be as detailed in this Standard.

B.3.4 Field equipment

Courts should have the following field equipment available at the time they tested:

Court Category	Goals x 2	Rebound Boards	Team Shelters
1	FIH Approved	FIH Approved Class 1	FIH Approved
2	Required *	Required **	Optional***
3	Required *	Required **	Not required
<p>* it is recommended FIH Approved goals be used</p> <p>** the class of board should be determined in accordance with local/regional competition regulations. It is recommended FIH Approved be used</p> <p>* it is recommended FIH Approved team shelters be used</p>			

B.3.5 Court assessment test methods

The court shall be tested using the following test methods:

Ball Rebound	EN 12235 using an acoustic timer and an FIH Approved Class 1 hockey ball. When tested on concrete the ball shall have a rebound of $800 \pm 50\text{mm}$.
Ball Roll	EN 12234 using an FIH Approved Class 1 Hockey Ball. Three tests shall be made in each direction/position of test
Ball Roll Deviation	FIH Hockey Turf and Field Standards – Part 2
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.

B.3.6 Court assessment test positions

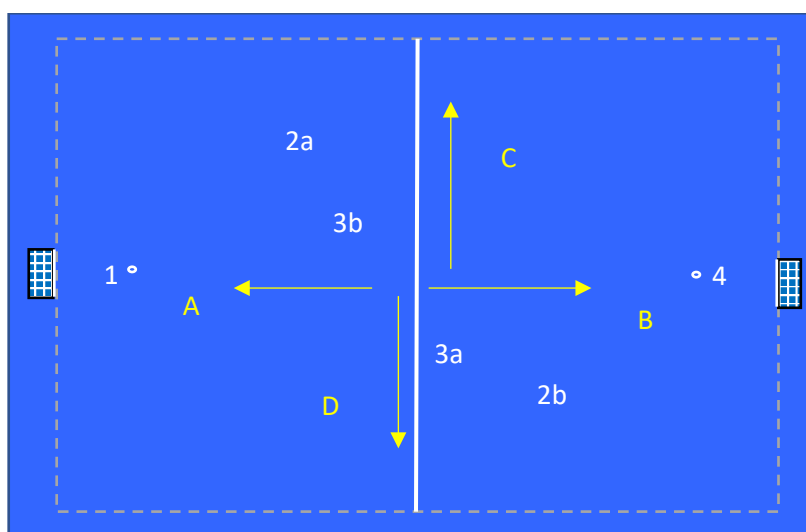


Figure 4 – test positions and ball roll directions

Figure 4 illustrates the positions for spot tests. If position 2a is selected, so should position 3a, etc. Ball roll tests should 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.

A minimum of four spot tests should 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 should be identified in the test report.

If the client requesting the tests is concerned about the performance of particular areas of the court, they should ask the test institute to conduct additional tests in those areas.

B.3.7 Test conditions

A court should be tested under the condition(s) for which it was designed to be used.

If the court has a non-filled short pile hockey turf only approved to the Global category, it should be watered using the procedures specified for match play. This should 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 should be left for 15 ±1 minutes before the tests commence. Tests should then be undertaken in the following order:

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

A further application of water should then be applied if the surface is becoming dry. If required, this should be determined by re-measuring the ball rebound in the first test position. If the value differs by more than $\pm 15\%$ of initial value, the surface should 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.

B.3.8 Hockey turf identification

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

- Sample representative of the synthetic turf or textile surface laid on the playing area
- Sample representative of the synthetic turf or textile surface laid on the run-offs, if applicable, and different to the playing area
- Sample representative of the synthetic turf or textile surface for each colour of in-laid or tufted line marking
- Sample representative of the installed shockpad
- Sample representative of any infill used within the playing surface

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

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

B.3.9 Polymeric infills – PAH content

This requirement only applies to courts containing polymeric infills (normally 3G multi-sport surfaces).

PAHs are a widely occurring group of chemicals present in natural and man-made materials, including some rubbers and plastics used to make infills for synthetic turf sports surfaces. Prolonged exposure to unacceptably high concentrations of PAHs can be harmful

to human health, so it is important that any polymeric infill does not have unacceptable amounts.

To ensure players, installation contractors and maintenance contractors are adequately protected, the European Union and other countries are establishing legislation that will limit the PAH content of infill materials. As these will be legal requirements compliance will be mandatory in the regions in which they apply. In countries where there are no legal restrictions the FIH recommends the European Union's limits, detailed below, are applied to all new HOCKEY5s court containing polymeric infills.

European Union REACH Regulation requirements			
The sum of the content of the eight PAHs listed below shall be ≤ 20.0 mg/kg:			
PAH	CAS Registry No.	PAH	CAS Registry No.
Benzo[a]pyrene (BaP)	50-32-8	Benzo[b]fluoranthene (BbFA)	205-99-2
Benzo[e]pyrene (BeP) C	192-97-2	Benzo[j]fluoranthene (BjFA)	205-82-3
Benzo[a]anthracene (BaA)	56-55-3	Benzo[k]fluoranthene (BkFA)	207-08-9
Chrysen (CHR)	218-01-9	Dibenzo [a, h] anthracene (DBAhA)	53-70-3

When courts containing polymeric infills are first tested (see note 3 below) for FIH Court Certification it is recommended the test programme also includes a test to verify that the infill installed complies with these requirements. If verification testing is requested, it should be undertaken as follows:

1. Sampling of the infill to be undertaken in accordance with EN 17409 *Surfaces for sports areas – Code of practice for the sampling of performance infills used within synthetic turf surfaces*, including preparation of the samples in accordance with clause 9 and Appendix A.
2. The PAH content of the samples shall be determined in accordance with AfPS 2019:01 PAK, published by the [German Federal Institute for Occupational Safety and Health](#).

Notes:

1. Testing to demonstrate compliance with this requirement shall be undertaken by an independent test laboratory accredited to ISO 17025 for the specified procedure. If the FIH accredited test institute wishes to sub-contract this test they shall seek approval from the FIH in advance.
2. Compliance with this requirement demonstrates that the PAH content of the polymeric infill used when the synthetic turf surface was installed was in accordance with the threshold limits developed by the European Chemical Agency. These requirements are intended to protect players from exposure to materials containing unacceptably high levels of PAHs.

3. During the life of the playing surface top dressing with additional infill will be required. In many cases this will not be supplied by the company that built the court. Additionally, the field may be exposed to localised contaminants (atmospheric pollution, etc) that may change the PAH content of the infill layer. Therefore, the field operator should make periodic checks to ensure the PAH content of the infill on their field does not exceed the recommended limits.

B.3.10 Assessment of court irrigation systems

If the court has an irrigation system to wet the hockey turf it should be tested using the procedure detailed in the *FIH Facilities Guidance – Hockey Field Irrigation*.

B.3.11 Reporting

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

The completed test report should be sent to the FIH (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).

Court test reports should be submitted to the FIH by the FIH Accredited Test Institute within three months of the date of the court test. If reports are submitted outside this timeframe the FIH reserves the right to reject the report, meaning a new test will be required.

B.3.12 Period of Court Certification

Courts are certified from the date they are tested.

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

To remain certified a court must be re-tested. This may be undertaken prior to an existing certificate expiring.

Whenever the hockey turf surface is replaced, the court automatically loses its certification, and a new test is required.

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.

Appendix C – hockey turf quality control verification

Component / property	Characteristic	Requirement
Carpet type	Synthetic turf or textile surface	Same as Approved Product
Method of manufacture	Tufted, Woven, Knitted or Needle-punch	Same as Approved Product
Carpet pile colour – Playing area, line markings & run-offs	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

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

Component	Characteristic	Test Method	Tolerance compared to manufacturer's declaration
Properties of synthetic turf carpet	Pile height above backing	ISO 2549	$\pm 10\%$
	Tufts per unit area	ISO 1763	$\pm 10\%$
	Filaments/m ²	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 polymer DSC profile ± 3 °C (mean peak)
	Carpet mass per unit area	ISO 8543	$\pm 10\%$
	Water permeability of carpet	FIFA TM 24	$\geq 90\%$

Component	Characteristic	Test Method	Tolerance compared to manufacturer's declaration	
Properties of shockpads and elastic layers	Thickness	EN 1969	90% – 130%	
	Mass per unit area	ISO 8543	$\pm 10\%$	
	Shock Absorption	EN TS 16717	$\pm 5\%$ SA	
	Water permeability	FIFA TM 244	$\geq 90\%$	
Properties of infills	Particle Grading	EN 933-1 / FIFA TM 20	80% between d and D	$\leq 5\%$ passing 0.150 mm
	Particle Shape	EN 14955	Similar shape	
	Bulk density	EN 1097-3	$\pm 15\%$	
	Polymer composition (polymeric infills only)	FIFA TM 11	Same polymer TGA $\pm 15\%$	
Properties of textile carpets	Thickness of pile above substrate	ISO 1766	$\leq 10\%$	
	Fibre polymer characterization	FIFA TM 22	Same polymer DSC profile $\pm 3\text{ }^{\circ}\text{C}$ (mean peak)	
	Carpet mass per unit area	ISO 8543	$\leq 10\%$	
	Water permeability	FIFA TM 244	$\geq 90\%$	

Use of this Standard

Whilst every effort has been made to ensure the accuracy of the information contained in this publication, any party who makes use of any part of the Standard in the development of a hockey facility shall indemnify the International Hockey Federation (FIH), its servants, consultants or agents against all claims, proceedings, actions, damages, costs, expenses and any other liabilities for loss or damage to any property, or injury or death to any person that may be made against or incurred by the FIH arising out of or in connection with such use.

Compliance with the requirements detailed in this Standard by a User does not of itself confer on that User immunity from their legal obligations but does constitute acceptance of the terms of this disclaimer by that User.

FIH reserve the right to amend, update or delete sections of this Standard at any time, as they deem necessary.

Any questions about this Standard should be addressed to facilities@fih.ch

FIH facilities guidance – helping you win

This Standard is part of a series of facilities documents produced by the FIH. Other information that might assist you is available at www.fih.ch/qp. It includes:

- Facilities Guidance – Outdoor Hockey Facilities
- Facilities Guidance – GEN 2 multi-sports areas
- Facilities Guidance – HOCKEY5s Courts
- Facilities Guidance – Sports Lighting for Non-Televised Outdoor Hockey
- Facilities Guidance – Sports Lighting for Televised Outdoor Hockey
- Facilities Guidance – Hockey Field Irrigation
- Facilities Guidance – Indoor Hockey

- Hockey Turf and Field Standards – Part 1 FIH Approved Hockey Turfs
- Hockey Turf and Field Standards – Part 2 – 11 a-side hockey fields
- Hockey Turf and Field Standards – Part 3 – HOCKEY5s courts
- Hockey Turf and Field Standards – Part 4 – Temporary Overlay Pitches (TOPS)

- FIH Approved Field Equipment – Hockey Goals
- FIH Approved Field Equipment – HOCKEY5s Rebound Boards
- FIH Approved Field Equipment – Team Shelters
- FIH Approved Field Equipment – Technical Officials Booths
- FIH Approved Field Equipment – Indoor Hockey goals
- FIH Approved Field Equipment – Indoor Hockey side-board



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