# FIFA Quality Concept for Football Turf

# Handbook of Requirements

## January 2008 Edition

**Contents**

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## 1 Introduction

The development of artificial grass surfaces (designated 'Football Turf' by FIFA) that replicate the playing qualities of good quality natural grass has led to the rapid acceptance of the surfaces by the football world and an ever increasing expansion of the market. Manufacturers are now producing surfaces which have been found to provide an ideal solutions to those parts of the world where climate or resources makes the provision of good quality natural grass pitches difficult or impossible. Likewise the development of Football Turfs has provided a potential solution to facility operators wishing to maximise the use of their facilities through community use and those struggling with stadium microclimates that make the maintenance and growth of natural grass difficult

To ensure these new forms of playing surface replicate the playing qualities of good quality natural grass; provide a playing environment that will not increase the risk of injury to players; are of adequate durability (providing they are adequately maintained) FIFA developed its FIFA Quality Concept for Artificial Turf. Launched in 2001 the Quality Concept is a rigorous test programme for Football Turf that assesses the ball surface interaction, player surface interaction and durability of products and allows successful manufacturers to enter into a licensing programme for the use of the prestigious FIFA RECOMMENDED marks.

Following the decision of the International Football Association Board in July 2004 to introduce artificial surfaces into the Laws of The Game the FIFA Quality Concept has been further developed by introducing two categories of performance. FIFA Recommended Two Star is the higher category and has been established to ensure fields meeting it replicate the playing qualities of the best quality natural turf pitches. This category is intended for professional clubs and national federation team wishing to play competitive matches subject to the relevant competition rules allowing the use of artificial surfaces)or undertake training on Football Turfs. The FIFA Recommended One Star category has slightly wider bands of acceptability and is primarily aimed at organisations wishing to provide facilities for training and community use, although fields meeting this category of performance may also be used for competitive play (subject to the relevant competition rules).

The laboratory test programme that a Football Turf must satisfy as part of the FIFA Quality Concept includes a programme of simulated use to assess the ability of a surface to perform for a period of time; the simulated use being designed to replicate the usage patterns commonly found on stadium and training fields. Fields used for community activities may be subjected to higher levels of use than that simulated. Experience to date has shown fields subjected to high intensity use may be unable to retain the demanding performance criteria of the FIFA Quality Concept for the life of the playing surface.

This edition of the manual supersedes previous editions with effect from 30th January 2008.

## 2 Field certification

The FIFA Quality Concept is the certification of a particular field that has been found to fully meet the requirements of the Quality Concept. It is not the approval of products. To gain such certification a FIFA licensee needs to undertake two phases of testing and operate a programme of factory quality control (as detailed in Annex H) that shall be open to third party third party attestation as considered appropriate by FIFA.

The phases of testing are described below.

2.1 Stage 1/3 - laboratory testing

- A potential Licensee (Manufacturer) or existing Licensee will submit the appropriate samples and the Laboratory Test Form to a FIFA accredited laboratory.

- The FIFA accredited laboratory will undertake all the statutory tests laid out in the FQC Handbook. If the sample submitted has fulfilled all the requirements a Test Report will be submitted to FIFA confirming that the potential Licensee's product has met the requirements of the FQC Laboratory Test Procedure.

- On request the (potential) Licensee will be informed by FIFA that the Licensee's Product has met the requirements of the FQC Laboratory Test Procedure and the Licensee can progress with the installation of fields for potential certification (subject to completion of the license the contract between FIFA and the Licensee).

2.2 Stage 2/3 - initial field assessment

- Following construction of a field the Licensee or facility owner will arrange for it to be tested by a FIFA Field Test Institute. The Test Institute appointed to undertake the field test shall not have been involved in the design, specification or procurement of the field. In advance of the field test the Licensee will inform FIFA of the intention to have the field tested, the Test Institute appointed to undertake the field test and the proposed date of test. FIFA will issue a unique Field Test Report Number to the Licensee and Test Institute.

- The field shall be fully tested in accordance with the procedures specified in Table 3.

- Samples of the artificial grass and any infill used to construct the field shall be taken from site by the Test Laboratory and tested using the procedures detailed Table 4 to ensure they are of the same specification as those submitted for the initial laboratory type approval (subject to the tolerances specified in Table 4).

- The results of the field and quality control tests will be entered onto a FIFA Field Test Report by the Test Laboratory which shall be sent to FIFA only.

2.3 Stage 3 /3 – Field certification

If the field satisfies all aspects of the FIFA Quality Concept FIFA will grant the appropriate FQC star rating to the Licensee with a copy to the field owner/operator.

Only fields surfaced with Football Turfs that have been laboratory tested (Stage 1) in advance of the field test (Stage 2) will be certified.

2.4 Period of field certification

2.4.1 FIFA Recommended Two Star

FIFA Recommended Two Star certification is valid for twelve months unless:

- the field is subsequently found to no longer satisfy all the aspects of the FIFA Quality Concept Two Star category

or

- the Football Turf is replaced.

2.4.2 FIFA Recommended One Star

FIFA Recommended One Star certification is valid for three years unless:

- the field is subsequently found to no longer satisfy all the aspects of the FIFA Quality Concept One Star category

or

- the Football Turf is replaced.

2.5 Field retesting

Retesting of a field may be requested by the licensee or the field owner/operator.

Testing shall be undertaken by a FIFA Field Test Institute.

Retesting may be undertaken up to three months in advance of a field's renewal date without the subsequent renewal date changing.

In advance of the retest the Licensee, or the field owner/operator will inform FIFA of the intention to have the field retested, the Test Institute appointed to undertake the field test and the proposed date of test. FIFA will issue a unique Field Test Report Number to the Test Institute.

The field shall be fully tested in accordance with the procedures specified in Table 3.

The results of the field retests will be entered onto a Field Retest Report by the Test Laboratory which shall be sent to FIFA. Assuming the field satisfies all aspects of the FIFA Quality Concept FIFA will grant the appropriate FQC star rating to the Licensee.

2.5.1 FIFA Recommended Two Star

If a field is found to fully comply with Tables 3 and 5 it is recertified for a further 12 months.

If a field fails to satisfy the FIFA Recommended Two Star category but is found to satisfy the requirements of the FIFA Recommended One Star category it is re-designated accordingly for a further three year period.

If a field fails to satisfy even the FIFA Recommended One Star requirements it loses its FIFA Recommended designation.

In cases where a field has been resurfaced it shall be is tested as a new installation in accordance with Tables 3 and 4.

2.5.2 FIFA Recommended One Star

If a field is found to fully comply with Tables 3 and 5 it is recertified for a further three years.

In cases where the Football Turf has not been changed the field is re-tested in accordance with the field test requirements of Table 3. If the field is found to still comply it is re-registered for a further three years.

If a field fails to satisfy the FIFA Recommended One Star requirements it loses its FIFA Recommended Designation.

In cases where a field has been resurfaced it shall be is tested as a new installation in accordance with Tables 3 and 4.

## 3 Test methods

The test methods used to assess Football Turfs and installed fields are described in either the FIFA Handbook of Test Methods for Football Turf (identified by the prefix FIFA), International Standards (identified ISO) or European Standards (identified EN). Where a test method is given a dated reference, subsequent amendments to or revisions of the method will apply to this Handbook of Requirements only when incorporated into it by amendment or revision. For undated references, the latest edition of the publication referred to applies.

### 4 Laboratory test requirements

4.1 General

When tested in the laboratory for initial type approval the Football Turf shall fully satisfy the requirements of Table 1 using the methods of test specified.

The components of the Football Turf shall be identified using the test methods specified in Table 2 and the results compared to the data supplied by the licensees (Section 3 of the FQC Laboratory Report Form). The differences between the product identification tests and licensee's data shall be no greater than the tolerances specified in Table 2.

4.2 Resistance to artificial weathering

If a Football Turf pile is manufactured from a pile yarn that has been previously tested by a FIFA Test Laboratory for Resistance to Artificial Weathering the results may be used for the new Football Turf providing that:

- a pile yarn characterisation (DSC) shows the yarn to be the same as that previously tested;
- the declared pile thickness is the same as the yarn tested previously (± 10 micron);
- the profile of the yarn is the same as the yarn tested previously;
- the colour (RAL number) of the yarn is the same as the yarn tested previously;

4.3 Use of existing shockpads / elastic layers

If an existing artificial turf pitch is to be converted to Football Turf or an existing Football Turf surface is to be replaced, any existing shockpad or elastic layer may be incorporated into the new surfacing system provided:

- the mean shock absorption of the existing shockpad is between 90% and 110% of the shock absorption value declared by the manufacturer when the Football Turf system was initially type approved;

- the mean deformation of the existing shockpad is $\pm$ 2mm of the deformation declared by the manufacturer when the Football Turf system was initially type approved;

- the water permeability of the shockpad is greater than 180mm/h when tested in accordance with EN 12616.

The installed shockpad shall be tested for each property detailed above in the 6 positions detailed in the FIFA Handbook of Tests Methods for Football Turf by a FIFA Field Institute. Tests shall be made no sooner than 12 months before the initial field test after resurfacing. The results of the shockpad tests shall be appended to the FIFA Field Test Report and issued to FIFA following the initial field test.

Compliance with the above requirements does not override the need for the field to fully satisfy the field test requirements of the FIFA Quality Concept.

**Table 1 – Laboratory test requirements**

| Property | Test Method | Test conditions | | | |
|---|---|---|---|---|---|
| | | Preparation | Temperature | Condition | Re |
| Vertical ball rebound | FIFA 01 & FIFA 09 | Pre-conditioning | 23ºC | Dry | |
| | | | | Wet | 0. |
| | | Simulated Wear | 23ºC | Dry | |
| Angle ball rebound | FIFA 02 | Pre-conditioning | 23ºC | Dry | |
| | | | | Wet | |
| Ball roll | FIFA 03 | Pre-conditioning | 23ºC | Dry | |
| | | | | Wet | |
| Shock Absorption | FIFA 04 & FIFA 09 | Pre-conditioning | 23ºC | Dry | |
| | | | | Wet | |
| | | Simulated Wear | | Dry | |
| | | Pre-conditioning | 40ºC | Dry | |
| | FIFA 04 1st impact | - | -5ºC | Frozen | |

| Property | Test Method | Test conditions | | | |
|---|---|---|---|---|---|
| | | Preparation | Temperature | Condition | Re |
| Vertical Deformation | FIFA 05 & FIFA 09 | Pre-conditioning | 23ºC | Dry | |
| | | Pre-conditioning | 23ºC | Wet | |
| | | Simulated Wear | | Dry | |
| Rotational Resistance | FIFA 06 & FIFA 09 | Pre-conditioning | 23ºC | Dry | |
| | | | 23ºC | Wet | 3 |
| | | Simulated Wear | 23ºC | Dry | |
| Linear Friction - Stud Deceleration Value | FIFA 07 | Pre-conditioning | 23ºC | Dry | |
| | | | | Wet | |
| Linear Friction - Stud Slide Value | | Pre-conditioning | 23ºC | Dry | |
| | | | | Wet | |

| Property | Test Method | Test conditions | | | |
|---|---|---|---|---|---|
| | | Preparation | Temperature | Condition | |
| Skin / surface friction | FIFA 08 | Pre-conditioning | 23ºC | Dry | |
| Skin abrasion | FIFA 08 | Pre-conditioning | 23ºC | Dry | |

Artificial Weathering (FIFA 10)

| Component | Property & test method | | |
|---|---|---|---|
| Artificial turf | Colour change | EN ISO 20105-A02 | |
| Pile yarn (s) | Tensile strength | EN 13864 | P b |
| Polymeric infill | Colour change | EN ISO 20105-A02 | |
| Joint strength: stitched seams | Joint strength - unaged | EN 12228 Method 1 | |
| | Joint strength - after immersion in hot water | EN 13744 & EN 12228 Method 1 | |
| Joint strength: Bonded seams | Joint strength - unaged | EN 12228 Method 2 | |
| | Joint strength - after immersion in hot water | EN 13744 & EN 12228 Method 2 | |

| Property | Test Method | Condition | FIFA Reco Two |
|---|---|---|---|
| Tuft withdrawal | ISO 4919 | Unaged | ≥30 |
| | EN 13744 & ISO 4919 | After immersion in hot water | ≥30 |
| Tensile strength of shockpads and e-layers (if supplied as part of system) | EN 12230 | Unaged | 0.15 |
| Water permeability[1] - using a single ring infiltrometer in which the artificial turf carpet is sealed prior to infilling and testing | EN 12616 | Unaged | > 180m |

1 Not applicable to surfaces designed specifically for indoor use

2 To ensure adequate drainage of a field all individual elements of the football turf should satisfy this req

**Table 2 – Product identification tests**

| Component | Characteristic | Test method | Permit compon |
|---|---|---|---|
| Artificial turf | Mass per unit area | ISO 8543 | |
| | Tufts per unit area | ISO 1763 | |
| | Tuft withdrawal force | ISO 4919 | ≥ 90 |
| | Pile length | ISO 2549 | |
| | Pile weight | ISO 8543 | |
| | Water permeability | EN 12616 using a single ring infiltrometer | |
| Pile yarn(s) | Pile yarn characterisation | DSC | |
| | Pile dtex | See Note 2 below | |
| Performance infill (if supplied as part of system) | Particle size | EN 933 - Part 1 | |
| | Particle shape | prEN 14955 | |
| | Bulk density | EN 1097-3 | |

1 Not applicable to surfaces designed specifically for indoor use

2 Dtex (g per 10,000m) shall be calculated from the mean weight (measured to 0.01g) and mean length (measured to 1m artificial turf.

| Component | Characteristic | Test method | Permit compon |
|---|---|---|---|
| Stabilising infill (if supplied as part of system) | Particle size | EN 933 - Part 1 | |
| | Particle shape | prEN 14955 | |
| | Bulk density | EN 1097-3 | |
| Shockpads / e-layers (if supplied as part of system) | Shock Absorption | EN 14808 | |
| | Thickness | EN 1969 | ≥ 90 |
| Unbound sub-bases (if tested as part of system) | Composition | - | |
| | Particle size range (attach particle size grading to test report) | EN 933 - Part 1 | |
| | Particle shape | prEN 14955 | |

## 5 Field Test Requirements

5.1 Field tests procedures

When tested a field (pitch) shall fully satisfy the requirements of Table 3 in any position on the field using the methods of test specified. The field shall be tested in the positions specified in the FIFA Handbook of Test Methods for Football Turf. Field tests should not be made on joints or inlaid lines, other than ball roll that will cross them. Maintenance of the field shall not be undertaken during a field test.

If a field fails to satisfy the requirements of Table 3

Metrological conditions during the field tests shall be as specified in the FIFA Handbook of Test Methods for Football Turf.

5.2 Visual inspection

During the field test programme the Field Test Institute shall make a visual inspection of the field to ensure there are no significant defects they consider to be hazardous to players. In particular there shall be no:

- failed or excessively open joints (greater than 3mm),
- no looped piles
- excessively uneven distribution of infill
- exposed irrigation sprinkler heads within the playing area
- exposed goal post sockets

Checks will also be made to ensure line markings are straight (as appropriate).

If unacceptable joints, looped piles, non-straight lines or any other defect considered hazardous to play are found they shall be reported to the Licensee who shall rectify the defects to the satisfaction of the Field Test Institute prior to the Field Test Institute issuing the Field Test Report to FIFA.

**Important note**: The visual inspection undertaken by the Test Laboratory does not constitute a formal site audit and does not remove the legal responsibility of the installation company and or the facility operator to ensure the field is safe and fit for use. Neither FIFA or its approved test laboratories accept any liability for any defects or other issues that subsequently result in a injury to a player or other users.

5.3 Material identification – first field test

In order to ensure the components of Football Turf installed on a field are the same as those previously tested in the laboratory the first field test shall include the identification tests detailed in Table 4. The maximum variation between the installed materials and the manufacturer's declaration, as detailed on the FIFA Quality Concept Laboratory Report, shall be as specified in Table 4.

5.4 Material identification – field retests

To check that the Football Turf installed on a field has not been materially altered from that tested previously any retest shall include the identification tests detailed in Table 5 and the Football Turf shall comply with the requirements of Table 5.

**Table 3 – Field Test Requirements**

| Characteristic | Test Method | Requireme | | |
|---|---|---|---|---|
| | | FIFA Recommended Two Star | | |
| Vertical ball rebound | FIFA 01 | 60cm - 85cm | | |
| Angle ball rebound | FIFA 02 | Dry field | 45% - 60% | Dry |
| | | Wet field | 45% - 80% | We |
| Ball roll | FIFA 03 | Initial assessment | 4m - 8m | |
| | | Re-tests after 12 months play | 4m – 10m | |
| Shock Absorption | FIFA 04 | 60% - 70% | | |
| Vertical Deformation | FIFA 05 | 4mm – 8mm | | |
| Rotational Resistance | FIFA 06 | 30Nm - 45Nm | | |
| Linear Friction – Stud Deceleration Value | FIFA 07 | 3.0g - 5.5 g | | |
| Linear Friction - Stud Slide Value | FIFA 08 | 130 – 210 | | |
| Surface regularity of playing surface | EN 13036 3m straightedge | <10mm | | |

**Table 4 - Material identification and consistency – first site test**

| Component | Characteristic | Test method | R manuf |
|---|---|---|---|
| Artificial turf | Mass per unit area | ISO 8543 | |
| | Tufts per unit area | ISO 1763 | |
| | Tuft withdrawal force | ISO 4919 | ≥ 90 |
| | Pile length | ISO 2549 | |
| | Pile weight | ISO 8543 | |
| | Water permeability of carpet (non infill) (1) | EN 12616 using a single ring infiltrometer in which the artificial turf carpet is sealed prior to testing | ≥180 |
| Pile yarn(s) | Pile yarn characterisation | DSC | |
| Performance infill (if supplied as part of system) | Particle size | EN 933 - Part 1 | |
| | Particle shape | prEN 14955 | |
| | Bulk density | EN 1097-3 | |

| Component | Characteristic | Test method | manuf |
|---|---|---|---|
| Stabilising infill (if supplied as part of system) | Particle size | EN 933 - Part 1 | |
| | Particle shape | prEN 14955 | |
| Stabilising infill (if supplied as part of system) | Bulk density | EN 13041 | |
| Shockpads / e-layers [2] (if supplied as part of system) | Shock Absorption | EN 14808 | |
| | Thickness | EN 1969 | ≥ 9 |

1 Outdoor pitches only. Compliance with this requirement may also be wavered by FIFA for fields locat Such wavers will be granted on a case by case basis and permission should be sought from construction.

2 When measured in at least four locations.

**Table 5 - Material identification and consistency – site retests**

| Component | Characteristic | Requirement | |
|---|---|---|---|
| Artificial grass [1] | Pile height (above primary backing) | ≤ ± 5% of the value measured on the site sample tested during the initial site test | Measurer areas of t wear or u |
| | Number of stitches per 100mm | The number of tufts per $m^2$ shall not differ by more than ± 10% of the manufacturer's declaration | |
| | Stitch spacing (mm) | | The numb by multip 100mm b |
| Performance infill [2] | Particle grading | The largest sieve retaining at least 10% by mass of the infill shall be within the range detailed in the manufacturer's declaration forming Section 4 of the product's FIFA Laboratory Test Report. | A minimu the top p on each c FIFA Har Turf.<br><br>The infill 933 Part least 10% |

1 These measurements are made to check the carpet has not been replaced

2 This test is carried out to ensure that coarser infill material has not been installed on the field

## 6 Field dimensions and markings

### 6.1 Field dimensions

The field of play must be rectangular. The length of the touch line must be greater than the length of the goal line.

Length: minimum 90.0m, maximum 120.0m

Width: minimum 45.0m, maximum 90.0m

Run-offs shall be in accordance with national and or competition rules. In the absence of any such rules a minimum of 3m per boundary is recommended. Provision of adequate run-offs does not form part of the FIFA Quality Concept.

### 6.2 Field Markings

The field shall be field marked in accordance with Law 1 - The Field of Play as detailed in the Laws of the Game.

Note: If a FIFA certified field is to be used for competition the respective competition regulations must be met and checked by the responsible local authorities.

### 6.3 Additional field marking requirements for FIFA Quality Concept Two Star fields

In accordance with the decisions of the International Football Association Board:

No kind of commercial advertising, whether real or virtual, shall be permitted on the field of play and field equipment from the time the teams enter the field of play until they have left it at half time and from the time the teams re-enter the field of play until the end of the match. In particular no advertising material of any kind may be displayed on goals nets flag-posts or their flags (Decision 3)

The reproduction of, whether real or virtual of representative logos or emblems of FIFA, confederations, member associations leagues clubs or other bodies is forbidden on the field of play and field equipment (including goal nets and areas they enclose) during playing time, as described in Decision 3 (Decision 5).

## 7 Maintenance requirements

At the time of submitting a Football Turf for laboratory testing the Licensee shall provide the Accredited Test Laboratory with a fully descriptive list (including photographs) of all equipment required to under routine maintenance of the surface. This list shall form part of the FIFA Laboratory Test Report.

At each Field Test (initial and retests) the Test Institute will compare the Licensee's list of equipment to that present on site with supportive photographic evidence. Where the maintenance equipment is held by a third party it will be necessary for the licensee to supply photographic evidence of this to the Testing Institute.

At handover of the field the Licensee shall provide the owner/operator with a maintenance log with instructions that the owner/operator complete it in accordance with the maintenance instructions.

When requesting a FIFA Field Test Report Number from FIFA in advance of the field retest the Licensee shall provide a copy of the maintenance log (in electronic format i.e. a scanned copy of original) for the preceding 12 months. If required by FIFA the Licensee shall translate the maintenance log into English.

When requesting a FIFA Field Test Report Number from FIFA in advance of an initial test or field retest the Licensee shall also confirm in writing the ground staff responsible for maintaining the field have been trained and are deemed competent; this shall include details of all training (including dates) undertaken.

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# ANNEX A

# Laboratory test report – Two Star Category

# Laboratory Test Report – Two Star

**Information for applicants**

The applicant should complete sections one, three and four of this report before sending it to their appointed FIFA accredited test laboratory together with the following samples:

- 11m x 1m of artificial turf and adequate infill materials (this surface should have no joints or inlaid lines)

- 2m x 1m of any shockpad or e-layer

- 5m length of pile yarn – if more than one yarn is used to form the pile please send one length of each

- 1m by 1m sample of artificial turf split down the middle and rejoined using the proposed jointing / seaming method

Information designated 'reference' in Section 3 will be used to verify samples submitted for laboratory test are in accordance with the manufacturer's declaration. It was also be used to verify samples installed on site are the same as those previously tested in the laboratory. **Where a test method is specified the property must be measured using it**.

On completion of the test programme the test laboratory will send the completed report directly to FIFA.

It a Football Turf is laid on a base that is designed to contribute to the dynamic performance of the surface laboratory tests shall be carried out on tests specimens laid on the base. In such cases please supply adequate materials to construct a test bed measuring a minimum of 1m by 1m by the depth required to provide the dynamic response of the artificial turf system. If the test bed is to be constructed by test laboratory please also provide full installation instructions including details of compaction levels, etc.

# Laboratory Test Report – Two Star Category

| **SECTION 1 - PRODUCT AND APPLICANT DETAILS** | | | | | |
|---|---|---|---|---|---|
| Surface name & code | | | | | |
| Applicant | | | | | |
| Address (including post code and country) | | | | | |
| Tel. | | | | | |
| Fax. | | | | | |
| Email | | | | | |
| Web | | | | | |
| Contact name | | | | | |
| Contact signature | | | | | |
| | | | | | |
| Carpet name | | | | | |
| Performance infill | | | | | |
| Stabilising infill | | | | | |
| Shockpad or e-layer | | | | | |
| Base on which tests are to be made | | Concrete | o | Unbound aggregate | o |
| | | | | | |
| SECTION 2 - RESULTS OF TEST PROGRAMME | | | | | |
| Surface passed | | Surface failed | | | |
| Signature | | Date | | | |
| Test Laboratory | | | | | |
| Laboratory reference | | | | | |



Report No. Date of report:

# Laboratory Test Report – Two Star

| Section 3 - Reference information | | | | | |
|---|---|---|---|---|---|
| **Component** | **Property** | **Test Method** | **Specification** | **Property** | **T** |
| Artificial turf | Carpet mass per unit area | ISO 8543 | | Total tufts per unit area | IS |
| | Tuft withdrawal force | ISO 4919 | | Pile length above backing | IS |
| | Total pile weight | ISO 8543 | | | |
| | Pile yarn characterisation & dtex | **Yarn A** | | **Yarn B** | |
| | | | | | |
| Performance infill | Particle size (range) | EN 933 - Part 1 | | Particle shape | p |
| | Bulk density | EN 1097-3 | | Material type | |
| Stabilising infill | Particle size (range) | EN 933 - Part 1 | | Particle shape | p |
| | Bulk density | EN 1097-3 | | Material type | |
| Shockpad | Thickness | EN 1969 | | Shock absorption | E |

| **SECTION 4 - PRODUCT DESCRIPTION** | | | |
|---|---|---|---|
| Artificial Turf | | | |
| Manufacturer | | | |
| Tuft pattern | | | |
| Pile yarn | **Yarn A** | **Yarn B** | **Yarn C** |
| Manufacturer | | | |
| Product name / code | | | |
| Pile length | mm | mm | mm |
| Pile weight | $g/m^2$ | $g/m^2$ | $g/m^2$ |
| Pile width | mm | mm | mm |
| No of tufts / $m^2$ | | | |
| Pile thickness | micron | micron | micron |
| Pile colour (RAL No) | | | |
| Primary turf backing | | | |
| Manufacturer | | | |
| Product name / code | | | |
| Reinforcement scrim | | | |
| Manufacturer | | | |
| Product name / code | | | |
| Secondary backing (coating) | | | |
| Manufacturer | | | |
| Product name / code | | | |
| Application rate | | | $g/m^2$ |
| Carpet joints | | | |
| **Stitched seams** | | | |
| Tread or Velcro manufacturer / brand name / product code | | | |
| **Bonded seams** | | | |
| Adhesive manufacturer / brand name | | | |
| Adhesive application rate | | | g/m |
| Backing film manufacturer / brand name / product code | | | |

| Performance infill | | |
|---|---|---|
| Manufacturer / supplier | | |
| Product name / code | | |
| Material | | |
| Application rate / depth | kg/m$^2$ | mm |
| **Stabilising infill** | | |
| Manufacturer / supplier | | |
| Product name / code | | |
| Material | | |
| Application rate / depth | kg/m$^2$ | mm |
| **Shockpad / e-layer (when supplied as part of system)** | | |
| Manufacturer | | |
| Product name / code | | |
| Composition (type, rubber granule grading, binder content, etc) | | |
| Nominal mass per unit area | kg/m$^2$ | |

## SECTON 5 - MAINTENANCE EQUIPMENT

The manufacturer shall provide a fully descriptive list (including photographs) of all equipment required to undertake routine maintenance of the Football Turf. This shall include:

- Tractor unit
- Drag brush
- Drag mat
- De-compaction device (this may be a service provided by the Licensee or their agent)

| SECTION 6 - LABORATORY TESTS RESULTS | | | | |
|---|---|---|---|---|
| **Property** | **Specified range** | **Test condition** | **Mean result** | **Pass / fail** |
| Vertical ball rebound | 0.6 m – 0.85 m | Dry | | |
| | | Wet | | |
| | | After simulated wear | | |
| Angle ball rebound | 45 % - 60 % | Dry | | |
| | 45 % - 80 % | Wet | | |
| Ball roll | 4 m – 8 m | Dry | | |
| | | Wet | | |
| Shock absorption | 60 % - 70 % | Dry | | |
| | | Wet | | |
| | | After simulated wear | | |
| | | -5°C[(1)] | | |
| | | 40°C | | |
| Deformation | 4 mm – 8 mm | Dry | | |
| | | Wet | | |
| | | After simulated wear | | |
| Rotational resistance | 30 Nm – 45 Nm | Dry | | |
| | | Wet | | |
| | | After simulated wear | | |
| Linear friction Stud deceleration value | 3.0 g – 5.5 g | Dry | | |
| | | Wet | | |
| Linear friction Stud slide value | 130 – 210 | Dry | | |
| | | Wet | | |

| Property | Specified range | Test condition | Mean result | Pass / fail |
|---|---|---|---|---|
| Skin / surface friction | 0.35 ų – 0.75 ų | Dry | | |
| Skin abrasion | ± 30 % | Dry | | |

**Effects of artificial weathering**

| Property | Aspect | Requirement | Result | Pass / fail |
|---|---|---|---|---|
| Pile yarn (s) | Colour change | ≥ Grey scale 3 | | |
| | Yarn tensile strength | % change ≤ 50% | | |
| Polymeric infills | Colour change | ≥ Grey scale 3 | | |
| | Visual change in composition | No change | | |

**Miscellaneous**

| Property | | Requirement | Condition | Result | Pass / fail |
|---|---|---|---|---|---|
| Joint strength | Stitched joints | ≥ 1000 N/100mm | Unaged | | |
| | | | Water aged | | |
| | Bonded joints | ≥ 25 N/100mm | Unaged | | |
| | | | Water aged | | |
| Water permeability of complete system | | >180 mm/h | N/A | | |
| Tensile strength of shock / e-layer | | ≥ 0.15 MPa | Unaged | | |
| Carpet tuft withdrawal | | ≥ 30N | Unaged | | |
| | | | Water aged | | |

# Laboratory Test Report – Two Star

| **PRODUCT IDENTIFICATION** | | | |
|---|---|---|---|
| Artificial turf and pile yarn(s) | Mass per unit area | | |
| | Tufts per unit area | | |
| | Tuft withdrawal force | | |
| | Pile length above backing | | |
| | Pile weight | | |
| | Water permeability of carpet | | |
| | Pile yarn characterisation (attach DSC graph to test report) | | |
| Performance infill | Particle size range (attach particle size grading to test report) | | |
| | Particle shape | | |
| | Bulk density | | |
| | Polymer Type | | |
| | Thermo-gravimetric analysis | % organic | |
| | | % inorganic | |
| Stabilising infill | Particle size range (attach particle size grading to test report) | | |
| | Particle shape | | |
| | Bulk density | | |
| Shockpad or e-layer (if supplied as part of system) | Shock Absorption | | |
| | Thickness | | |
| Unbound sub-bases (if tested as part of system) | Composition | | |
| | Particle size range (attach particle size grading to test report) | | |
| | Particle shape | | |
| | Thickness | | |



Report No. Date of report:

# ANNEX B

# Laboratory test report – FQC One Star Category

# Laboratory Test Report – One Star

**Information for applicants**

The applicant should complete sections one, three and four of this report before sending it to their appointed FIFA accredited test laboratory together with the following samples:

- 11m x 1m of artificial turf and adequate infill materials (this surface should have no joints or inlaid lines)

- 2m x 1m of any shockpad or e-layer

- 5m length of pile yarn – if more than one yarn is used to form the pile please send one length of each

- 1m by 1m sample of artificial turf split down the middle and rejoined using the proposed jointing / seaming method

Information designated ‘reference’ in Section 3 will be used to verify samples submitted for laboratory test are in accordance with the manufacturer’s declaration. It was also be used to verify samples installed on site are the same as those previously tested in the laboratory. **Where a test method is specified the property must be measured using it**.

On completion of the test programme the test laboratory will send the completed report directly to FIFA.

It a Football Turf is laid on a base that is designed to contribute to the dynamic performance of the surface laboratory tests shall be carried out on tests specimens laid on the base. In such cases please supply adequate materials to construct a test bed measuring a minimum of 1m by 1m by the depth required to provide the dynamic response of the artificial turf system. If the test bed is to be constructed by test laboratory please also provide full installation instructions including details of compaction levels, etc.

# Laboratory Test Report – One Star

| **SECTION 1 - PRODUCT AND APPLICANT DETAILS** | | | | | |
|---|---|---|---|---|---|
| Surface name & code | | | | | |
| Applicant | | | | | |
| Address | | | | | |
| Tel. | | | | | |
| Fax. | | | | | |
| Email | | | | | |
| Web | | | | | |
| Contact name | | | | | |
| Contact signature | | | | | |
| | | | | | |
| Carpet name | | | | | |
| Performance infill | | | | | |
| Stabilising infill | | | | | |
| Shockpad or e-layer | | | | | |
| Base on which tests are to be made | | Concrete | o | Unbound aggregate | o |
| | | | | | |
| **SECTION 2 - RESULTS OF TEST PROGRAMME** | | | | | |
| **Surface passed** | | **Surface failed** | | | |
| Signature | | Date | | | |
| Test Laboratory | | | | | |
| Laboratory reference | | | | | |

| SECTION 3 - REFERENCE INFORMATION | | | | | |
|---|---|---|---|---|---|
| **Component** | **Property** | **Test Method** | **Specification** | **Property** | **T** |
| Artificial turf | Carpet mass per unit area | ISO 8543 | | Total tufts per unit area | IS |
| | Tuft withdrawal force | ISO 4919 | | Pile length above backing | IS |
| | Total pile weight | ISO 8543 | | | |
| | Pile yarn characterisation & dtex | **Yarn A** | | **Yarn B** | |
| | | | | | |
| Performance infill | Particle size (range) | EN 933 - Part 1 | | Particle shape | p |
| | Bulk density | EN 1097-3 | | Material type | |
| Stabilising infill | Particle size (range) | EN 933 - Part 1 | | Particle shape | p |
| | Bulk density | EN 1097-3 | | Material type | |
| Shockpad | Thickness | EN 1969 | | Shock absorption | E |

| **SECTION 4 - PRODUCT DESCRIPTION** | | | |
|---|---|---|---|
| Artificial Turf | | | |
| Manufacturer | | | |
| Tuft pattern | | | |
| Pile yarn | **Yarn A** | **Yarn B** | **Yarn C** |
| Manufacturer | | | |
| Product name / code | | | |
| Pile length | mm | mm | mm |
| Pile weight | $g/m^2$ | $g/m^2$ | $g/m^2$ |
| Pile width | mm | mm | mm |
| No of tufts / $m^2$ | | | |
| Pile thickness | micron | micron | micron |
| Pile colour (RAL No) | | | |
| Primary turf backing | | | |
| Manufacturer | | | |
| Product name / code | | | |
| Reinforcement scrim | | | |
| Manufacturer | | | |
| Product name / code | | | |
| Secondary backing (coating) | | | |
| Manufacturer | | | |
| Product name / code | | | |
| Application rate | | | $g/m^2$ |
| Carpet joints | | | |
| **Stitched seams** | | | |
| Tread or Velcro manufacturer / brand name / product code | | | |
| **Bonded seams** | | | |
| Adhesive manufacturer / brand name | | | |
| Adhesive application rate | | | g/m |
| Backing film manufacturer / brand name / product code | | | |

# Laboratory Test Report – One Star

| | | |
|---|---|---|
| Performance infill | | |
| Manufacturer / supplier | | |
| Product name / code | | |
| Material | | |
| Application rate / depth | kg/m$^2$ | mm |
| stabilising infill | | |
| Manufacturer / supplier | | |
| Product name / code | | |
| Material | | |
| Application rate / depth | kg/m$^2$ | mm |
| Shockpad / e-layer (when supplied as part of system) | | |
| Manufacturer | | |
| Product name / code | | |
| Composition (type, rubber granule grading, binder content, etc) | | |
| Nominal mass per unit area | kg/m$^2$ | |

## SECTION 6 - MAINTENANCE

The manufacturer shall provide a fully descriptive list (including photographs) of all equipment required to undertake routine maintenance of the surface. This shall include:

- Tractor unit
- Drag brush
- Drag mat
- De-compaction device (this may be a service provided by the Licensee or their agent)

| SECTION 6 - LABORATORY TESTS RESULTS | | | | |
|---|---|---|---|---|
| **Property** | **Specified range** | **Test condition** | **Mean result** | **Pass / fail** |
| Vertical ball rebound | 0.6 m – 1.0 m | Dry | | |
| | | Wet | | |
| | | After simulated wear | | |
| Angle ball rebound | 45 % - 70 % | Dry | | |
| | 45 % - 80 % | Wet | | |
| Ball roll | 4 m – 10 m | Dry | | |
| | | Wet | | |
| Shock absorption | 55 % - 70 % | Dry | | |
| | | Wet | | |
| | | After simulated wear | | |
| | | 40°C | | |
| Deformation | 4 mm – 9 mm | Dry | | |
| | | Wet | | |
| | | After simulated wear | | |
| Rotational resistance | 25 Nm – 50 Nm | Dry | | |
| | | Wet | | |
| | | After simulated wear | | |
| Linear friction Stud deceleration value | 3.0 g – 6.0 g | Dry | | |
| | | Wet | | |
| Linear friction Stud slide value | 120 – 220 | Dry | | |
| | | Wet | | |

# Laboratory Test Report – One Star

| Property | Specified range | Test condition | Mean result | Pass / fail |
|---|---|---|---|---|
| Skin / surface friction | 0.35 ų – 0.75 ų | Dry | | |
| Skin abrasion | ± 30 % | Dry | | |

**Effects of artificial weathering**

| Property | Aspect | Requirement | Result | Pass / fail |
|---|---|---|---|---|
| Pile yarn (s) | Colour change | ≥ Grey scale 3 | | |
| | Yarn tensile strength | % change ≤ 50% | | |
| Polymeric infills | Colour change | ≥ Grey scale 3 | | |
| | Visual change in composition | No change | | |

**Miscellaneous**

| Property | | Requirement | Condition | Result | Pass / fail |
|---|---|---|---|---|---|
| Joint strength | Stitched joints | ≥ 1000 N/100mm | Unaged | | |
| | | | Water aged | | |
| | Bonded joints | ≥ 25 N/100mm | Unaged | | |
| | | | Water aged | | |
| Water permeability of complete system | | >180 mm/h | N/A | | |
| Tensile strength of shock / e-layer | | 0.15 MPa | Unaged | | |
| Carpet tuft withdrawal | | ≥ 30N | Unaged | | |
| | | | Water aged | | |

# Laboratory Test Report – One Star

| **Product identification** | | | |
|---|---|---|---|
| Artificial turf and pile yarn(s) | Mass per unit area | | |
| | Tufts per unit area | | |
| | Tuft withdrawal force | | |
| | Pile length above backing | | |
| | Pile weight | | |
| Artificial turf pile yarn(s) | Water permeability of artificial turf | | |
| | Pile yarn characterisation (attach DSC graph to test report) | | |
| Performance infill | Particle size range (attach particle size grading to test report) | | |
| | Particle shape | | |
| | Bulk density | | |
| | Polymer Type | | |
| | Thermo-gravimetric analysis | % organic | |
| | | % inorganic | |
| Stabilising infill | Particle size range (attach particle size grading to test report) | | |
| | Particle shape | | |
| | Bulk density | | |
| Shockpad or e-layer (if supplied as part of system) | Shock Absorption | | |
| | Thickness | | |
| Unbound sub-bases (if tested as part of system) | Composition | | |
| | Particle size range (attach particle size grading to test report) | | |
| | Particle shape | | |
| | Thickness | | |

# ANNEX C

# Field test report – FQC Two Star Category

# Field Test Report –Two Star

**Information for applicants**

An initial test may be requested by a FIFA licensee that supplied the football turf surface or the owner/operator of the field to be tested. To request an initial test the applicant must obtain a FIFA Field Test Report Number from FIFA and complete Section One of this report before sending it to their appointed FIFA accredited test laboratory. When requesting a FIFA Field Test Report Number the licensee shall provide the following information to FIFA:

- Stadium or site name and address
- Product name and code of the installed Football Turf
- Test laboratory appointed to undertake the field test - the Test Institute shall not have been involved in the design, specification or procurement of the field.
- Proposed date of the field test (tests should normally be made within four weeks of the proposed date)
- Names of the ground staff responsible for maintaining the field and details of all training (including dates) they have undertaken in relationship to the maintenance of the football turf

A FIFA field test also includes a series of laboratory tests to verify the installed materials are the same (within stated tolerances) to those tested previously in the laboratory. To enable these tests to be completed the test laboratory will need the following samples:

- sample of artificial turf measuring at least 1m by 1m
- 5kg each of all infill materials (performance and stabilising)

On receipt of the samples at the laboratory they need to be conditioned prior to test. Applicants are advised that the laboratory tests will normally take at least ten working days to complete.

On any field incorporating a shockpad or e-layer the FIFA field test includes measurements of shock absorption and thickness on the shock pad. The applicant is required to ensure the test laboratory is able to access the shockpad in each corner of the field to enable these tests to be made. The applicant also has responsibility for ensuring the installation of the shockpad in the four test positions is representative of the whole field.

On completion of the test programme the test laboratory will send the completed report directly to FIFA.

# Field Test Report – Two Star

## Section 1: Site and applicant details

| | | |
|---|---|---|
| FIFA Field Test Report Number | | |
| Type of test | **Two Star – initial test** | |
| Club (if applicable) | | |
| Address | Stadium or site name | |
| | | |
| | City | |
| | Country | |
| Stadium or site contact | | |
| Tel. | | |
| Email | | |
| | | |
| Surface name | | |
| Date pitch installed | | |
| Applicant | | |
| | | |
| Address | | |
| Applicant contact | | |
| Tel. | | |
| E-mail | | |
| Applicants Signature | | Date |

# Field Test Report – Two Star

**Section 2: Summary of results**

| | | | | | |
|---|---|---|---|---|---|
| **Field Passed** | o | | **Field failed** | o | |
| Criteria that failed (if any): | | | | | |
| Ball / Surface interaction | o | Vertical ball rebound | o | Ball roll | |
| | o | Angle ball rebound | | | |
| Player / Surface interaction | o | Shock absorbency | o | Deformation | |
| | o | Rotational resistance | o | Stud slide value | |
| | o | Stud deceleration value | | | |
| Construction Requirements | o | Regularity | o | Consistency of site and laboratory materials | |
| | | | | | |
| Specified maintenance equipment on site and operational | Yes | o | No* | o | |
| Ball roll ramp on site | Yes | o | No* | o | |
| * If no attach details to this report | | | | | |

| | | |
|---|---|---|
| Laboratory Director | | |
| Date | | |
| Test laboratory | | |
| Test laboratory project reference | | |
| FIFA Accredited Engineer on site | Name | |
| | Signature | |
| Names of other Test Engineers on site | | |
| | | |

# Field Test Report – Two Star

## Section 3: Detailed results

Ball/surface and player/surface interactions

| Property | Specified range | Test Position | | | | |
|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 |
| Vertical ball rebound | 0.60 m – 0.85 m | | | | | |
| Angle ball rebound | Dry 45 % - 60 % | | | | | |
| | Wet 45 % - 80 % | | | | | |
| Ball roll | 4.0 m – 8.0 m | | | | | |
| Shock absorption | 60 % - 70 % | | | | | |
| Deformation | 4.0 mm – 8.0 mm | | | | | |
| Rotational resistance | 30 Nm – 45 Nm | | | | | |
| Linear friction Stud deceleration | 3.0 g – 5.5 g | | | | | |
| Linear friction Stud slide | 130 – 210 | | | | | |

# Field Test Report – Two Star

## Infra-structure tests & measurements

| | | | | | | |
|---|---|---|---|---|---|---|
| Shock absorption of shockpad, when applicable | ± 5% FR of reference sample | | **Reference *** | 1 | 2 | 3 |
| | | **Result** | | | | |
| | | **Variation** | | | | |
| Thickness of shockpad, when applicable | ≥90% of reference sample | **Result** | | | | |
| | | **Variation** | | | | |

| | | | |
|---|---|---|---|
| Pitch dimensions | Length | Min. 90m Max.120m | |
| | Width | Min. 45m Max. 90m | |

* As detailed on FIFA laboratory test report

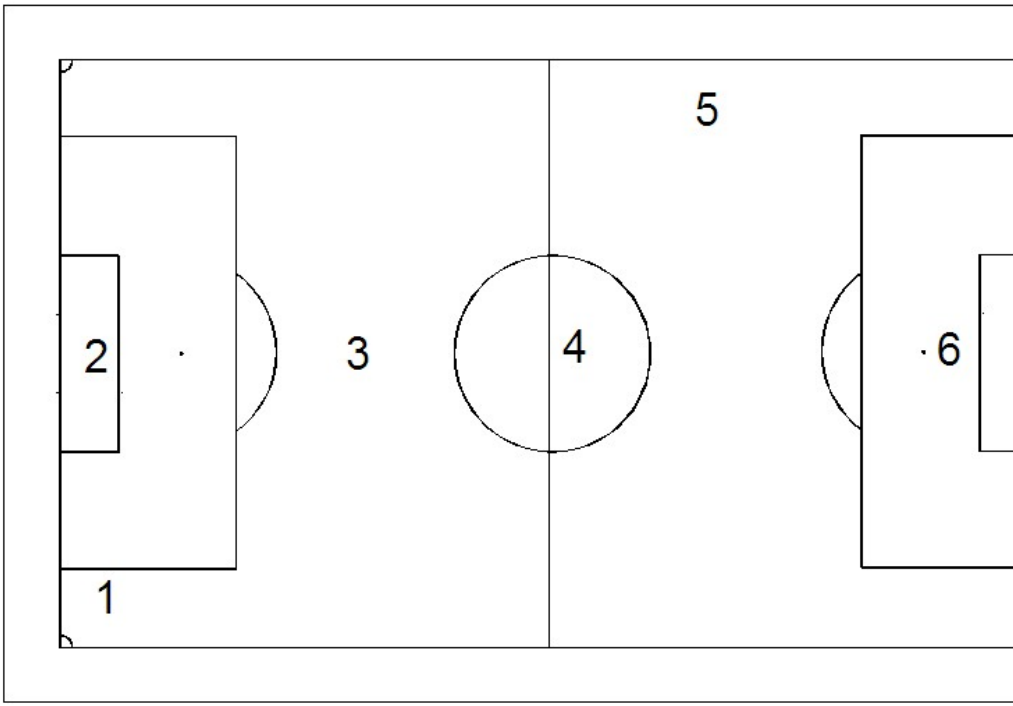
# Field Test Report – Two Star

Product identification

| Component | Property | Site sample | Manufacturer's declaration | Variation | FIFA |
|---|---|---|---|---|---|
| Artificial turf | Mass per unit area | | | | ≥ |
| | Tufts per unit area | | | | ≥ |
| | Tuft withdrawal | | | | ≥90% |
| | Pile length above backing | | | | |
| | Pile weight | | | | ≥ |
| | Dtex | | | | ≥ |
| | Yarn characterisation | | | | Sar |
| | Water Permeability | | Lab result | | ≥180mm/h labo |
| Performance infill | Particle size | | | | ≥ |
| | Particle shape | | | | Sin |
| | Bulk density | | | | |
| Stabilising infill | Particle size | | | | ≥ |
| | Particle shape | | | | Sin |
| | Bulk density | | | | ≥ |

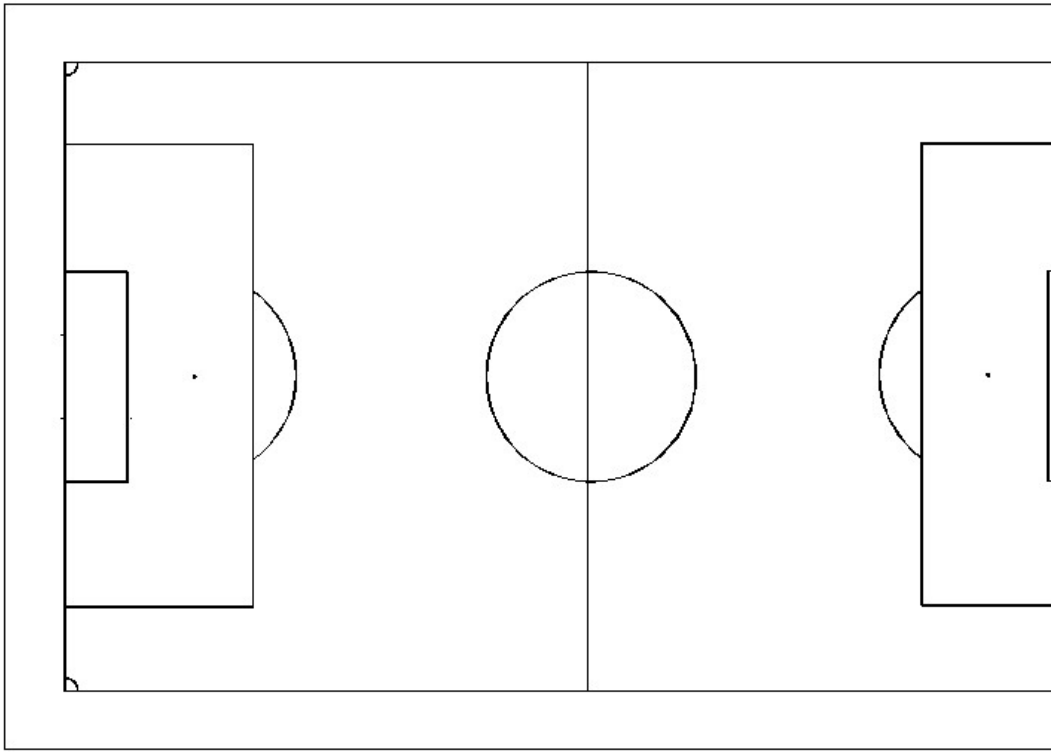
# Field Test Report – Two Star

Field test position – mark orientation on drawing



# Field Test Report – Two Star

Plan showing surface undulations exceeding 10mm – detail location, size and magnitude



# ANNEX D

# Field test report - One Star Category

# Field Test Report – One Star Category

**Information for applicants**

An initial test may be requested by a FIFA licensee that supplied the football turf surface or the owner/operator of the field to be tested. To request an initial test the applicant must obtain a FIFA Field Test Report Number from FIFA and complete Section One of this report before sending it to their appointed FIFA accredited test laboratory. When requesting a FIFA Field Test Report Number the licensee shall provide the following information to FIFA:

- Stadium or site name and address
- Product name and code of the installed Football Turf
- Test laboratory appointed to undertake the field test - the Test Institute shall not have been involved in the design, specification or procurement of the field.
- Proposed date of the field test (tests should normally be made within four weeks of the proposed date)
- Names of the ground staff responsible for maintaining the field and details of all training (including dates) they have undertaken in relationship to the maintenance of the football turf

A FIFA field test also includes a series of laboratory tests to verify the installed materials are the same (within stated tolerances) to those tested previously in the laboratory. To enable these tests to be completed the test laboratory will need the following samples:

- sample of artificial turf measuring at least 1m by 1m
- 5kg each of all infill materials (performance and stabilising)

On receipt of the samples at the laboratory they need to be conditioned prior to test. Applicants are advised that the laboratory tests will normally take at least ten working days to complete.

On any field incorporating a shockpad or e-layer the FIFA field test includes measurements of shock absorption and thickness on the shock pad. The applicant is required to ensure the test laboratory is able to access the shockpad in each corner of the field to enable these tests to be made. The applicant also has responsibility for ensuring the installation of the shockpad in the four test positions is representative of the whole field.

On completion of the test programme the test laboratory will send the completed report directly to FIFA.

# Field Test Report - One Star

## Section 1: Site and applicant details

| | | |
|---|---|---|
| FIFA Field Test Report Number | | |
| Type of test | **One Star – initial test** | |
| Club (if applicable) | | |
| Address | Stadium or site name | |
| | | |
| | City | |
| | Country | |
| Stadium or site contact | | |
| Tel. | | |
| Email | | |
| | | |
| Surface name | | |
| Date pitch installed | | |
| Applicant | | |
| | | |
| Address | | |
| Applicant contact | | |
| Tel. | | |
| E-mail | | |
| Applicants Signature | | Date |

# Field Test Report - One Star

## Section 2: Summary of results

| | | | | | |
|---|---|---|---|---|---|
| **Field Passed** | o | | **Field failed** | o | |
| Criteria that failed (if any): | | | | | |
| Ball / Surface interaction | o | Vertical ball rebound | o | Ball roll | |
| | o | Angle ball rebound | | | |
| Player / Surface interaction | o | Shock absorbency | o | Deformation | |
| | o | Rotational resistance | o | Stud slide value | |
| | o | Stud deceleration value | | | |
| Construction Requirements | o | Regularity | o | Consistency of site and laboratory materials | |
| | | | | | |
| Specified maintenance equipment on site and operational | Yes | o | No* | o | |
| Ball roll ramp on site | Yes | o | No* | o | |
| * If no attach details to this report | | | | | |

| | | |
|---|---|---|
| Laboratory Director | | |
| Date | | |
| Test laboratory | | |
| Test laboratory project reference | | |
| FIFA Accredited Engineer on site | Name | |
| | Signature | |
| Names of other Test Engineers on site | | |
| | | |

# Field Test Report - One Star

| **Test conditions** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Date(s) of test | Day 1 | | | | Day 2 | | | |
| | | | | | | | | |
| Surface condition (dry or wet) | | | | | | | | |
| Surface temperature (°C) | Min. | | Max. | | Min. | | Max. | |
| Humidity (%RH) | Min. | | Max. | | Min. | | Max. | |
| Maximum wind speed | Ball rebound tests | | | | Ball roll tests | | | |
| | m/s | | | | m/s | | | |

# Field Test Report - One Star Category

## Section 3: Detailed results

Ball/surface and player/surface interactions

| Property | Specified range | Test Position | | | | |
|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 |
| Vertical ball rebound | 0.60 m – 1.00 m | | | | | |
| Angle ball rebound | Dry 45 % - 70 % | | | | | |
| | Wet 45 % - 80 % | | | | | |
| Ball roll | 4.0 m – 10.0 m | | | | | |
| Shock absorption | 55 % - 70 % | | | | | |
| Deformation | 4.0 mm – 9.0 mm | | | | | |
| Rotational resistance | 25 Nm – 50 Nm | | | | | |
| Linear friction Stud deceleration | 3.0 g – 6.0 g | | | | | |
| Linear friction Stud slide | 120 – 220 | | | | | |

# Field Test Report - One Star Category

Infra-structure tests & measurements

| | | | | | | |
|---|---|---|---|---|---|---|
| Shock absorption of shockpad, when applicable | ± 5% FR of reference sample | | **Reference *** | 1 | 2 | 3 |
| | | **Result** | | | | |
| | | **Variation** | | | | |
| Thickness of shockpad, when applicable | ≥90% of reference sample | **Result** | | | | |
| | | **Variation** | | | | |
| | | | | | | |
| Pitch dimensions | Length | Min. 90m Max.120m | | | | |
| | Width | Min. 45m Max. 90m | | | | |

* As detailed on FIFA laboratory test report

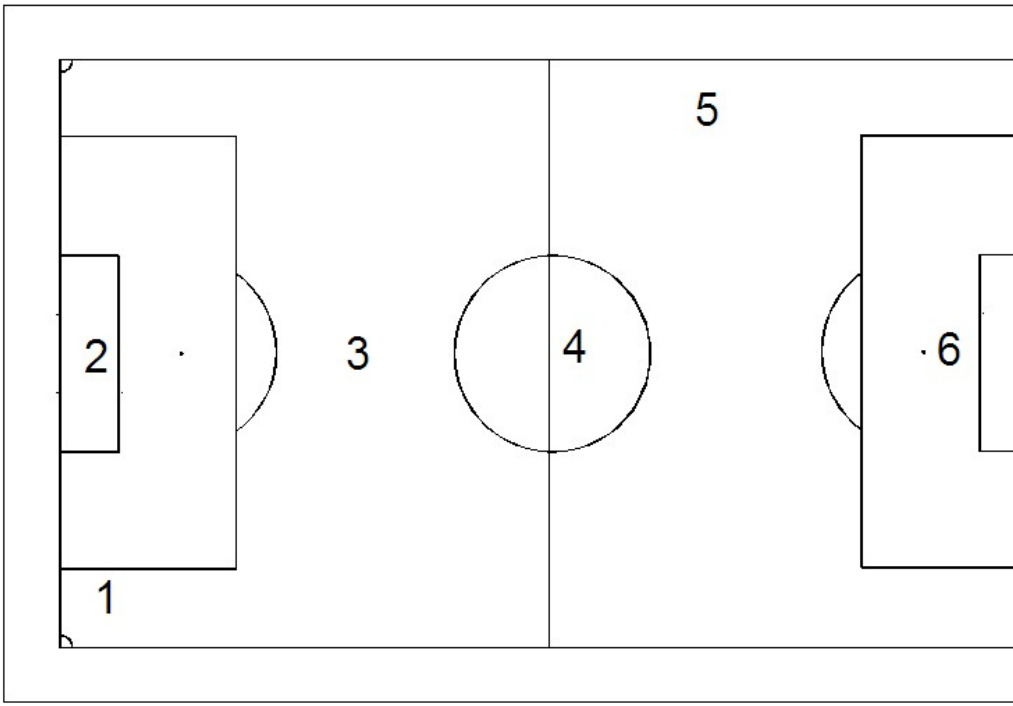
# Field Test Report - One Star Category

## Product identification

| Component | Property | Site sample | Manufacturer's declaration | Variation | FIFA |
|---|---|---|---|---|---|
| Artificial turf | Mass per unit area | | | | |
| | Tufts per unit area | | | | |
| | Tuft withdrawal | | | | ≥90% |
| | Pile length above backing | | | | |
| | Pile weight | | | | |
| | Dtex | | | | |
| | Yarn characterisation | | | | San |
| | Water Permeability | | Lab result | | ≥180mm/h labo |
| Performance infill | Particle size | | | | |
| | Particle shape | | | | Sin |
| | Bulk density | | | | |
| Stabilising infill | Particle size | | | | |
| | Particle shape | | | | Sin |
| | Bulk density | | | | |

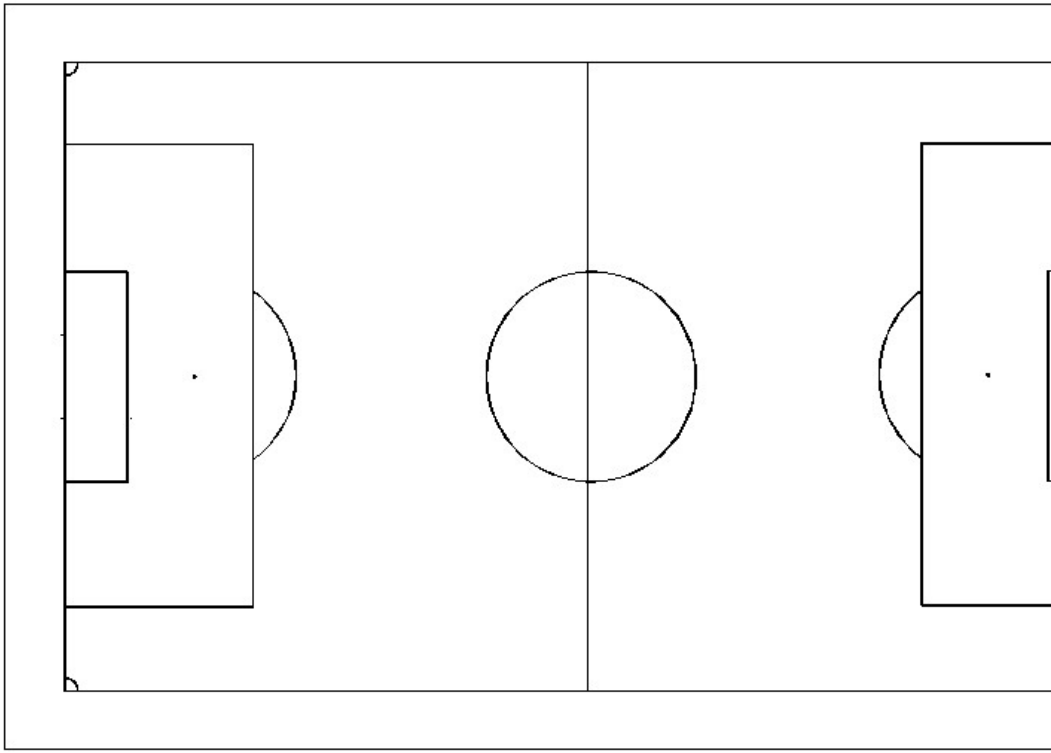
# Field Test Report - One Star Category

Field test position – mark orientation on drawing



# Field Test Report - One Star Category

Plan showing surface undulations exceeding 10mm – detail location, size and magnitude



# ANNEX E

# Field test report – FQC Two Star Category Retest

# Field Test Report – Two Star Retest

## Information for applicants

If a field is to remain certified as a FIFA Recommended Two Star installation it has to be retested 12 months or whenever it is resurfaced. Retesting may be undertaken up to three months in advance of a field's renewal date without the subsequent renewal date changing. A retest may be requested by the licensee that commissioned the initial field test or the field's owners/operators.

When requesting a retest the applicant must obtain a FIFA Field Test Report Number from FIFA (www.football.turf@fifa.com) and complete Section One of this report before sending it to their appointed FIFA accredited test laboratory. When requesting a FIFA Field Test Report Number the applicant shall provide the following information to FIFA:

- Stadium or site name and address
- Product name and code of the installed Football Turf
- Test laboratory appointed to undertake the field test - the Test Institute shall not have been involved in the design, specification or procurement of the field.
- Proposed date of the field test (tests should normally be made within four weeks of the proposed date)
- Names of the ground staff responsible for maintaining the field and details of all training (including dates) they have undertaken in relationship to the maintenance of the football turf
- A copy of the maintenance log for the field (in electronic format - i.e. a scanned copy of original) for the preceding 12 months. If required by FIFA the applicant shall translate the maintenance log into English.

In completing Section One or this report the applicant is confirming that the football turf is the same as that previously tested (i.e. the field has not been resurfaced) and that it has been maintained in accordance with the manufacturer's instructions using materials approved or specified by the manufacturer - the test institute will undertake tests to verify this.

During the field test the equipment used to maintain the football turf shall be made available for inspection by the test laboratory. Failure to make the equipment available may result in the field not being recertified.

On completion of the test programme the test laboratory will send the completed FIFA FQC Field Retest Report directly to FIFA.

# Field Test Report – Two Star Retest

## Section 1: Site and applicant details

| | | |
|---|---|---|
| FIFA Field Test Report Number | | |
| Type of test | **Two Star – retest** | |
| Club (if applicable) | | |
| Address | Stadium or site name | |
| | | |
| | City | |
| | Country | |
| Stadium or site contact | | |
| Tel. | | |
| Email | | |
| | | |
| Surface name | | |
| Date pitch installed | | |
| Applicant | | |
| | | |
| Address | | |
| Applicant contact | | |
| Tel. | | |
| E-mail | | |
| Date of initial field test | | Date of last field test |
| Applicants Signature | | Date |

## Section 2: Summary of results

# Field Test Report – Two Star Retest

| | | | | | |
|---|---|---|---|---|---|
| **Field Passed** | o | **Field failed** | o | | |
| Criteria that failed (if any): | | | | | |
| Ball / Surface interaction | o | Vertical ball rebound | o | Ball roll | |
| | o | Angle ball rebound | | | |
| Player / Surface interaction | o | Shock absorbency | o | Deformation | |
| | o | Rotational resistance | o | Stud slide value | |
| | o | Stud deceleration value | | | |
| Construction Requirements | o | Regularity | | | |

| | | |
|---|---|---|
| On the basis of the surface identification measurements (including more detailed laboratory tests where required) is the Football Turf the same product as that assessed at the Initial Field Test? | Yes | o |
| | No | o |

| | | | | |
|---|---|---|---|---|
| Specified maintenance equipment on site and operational | Yes | o | No* | o |
| * If no attach details to this report | | | | |

| | | |
|---|---|---|
| Laboratory Director | | |
| Date | | |
| Test laboratory | | |
| Test laboratory project reference | | |
| FIFA Accredited Engineer on site | Name | |
| | Signature | |
| Names of other Test Engineers on site | | |
| | | |

# Field Test Report – Two Star Retest

| **Test conditions** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Date(s) of test | Day 1 | | | | Day 2 | | | |
| | | | | | | | | |
| Surface condition (dry or wet) | | | | | | | | |
| Surface temperature (°C) | Min. | | Max. | | Min. | | Max. | |
| Humidity (%RH) | Min. | | Max. | | Min. | | Max. | |
| Maximum wind speed | Ball rebound tests | | | | Ball roll tests | | | |
| | m/s | | | | m/s | | | |

# Field Test Report - Two Star Category Retest

## Section 3: Detailed results

Ball/surface and player/surface interactions

| Property | Specified range | Test Position | | | | |
|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 |
| Vertical ball rebound | 0.60 m – 0.85 m | | | | | |
| Angle ball rebound | Dry 45 % - 60 % | | | | | |
| | Wet 45 % - 80 % | | | | | |
| Ball roll | 4.0 m – 10.0m | | | | | |
| Shock absorption | 60 % - 70 % | | | | | |
| Deformation | 4.0 mm – 8.0 mm | | | | | |
| Rotational resistance | 30 Nm – 45 Nm | | | | | |
| Linear friction Stud deceleration | 3.0 g – 5.5 g | | | | | |
| Linear friction Stud slide | 130 – 210 | | | | | |

# Field Test Report - Two Star Category Retest

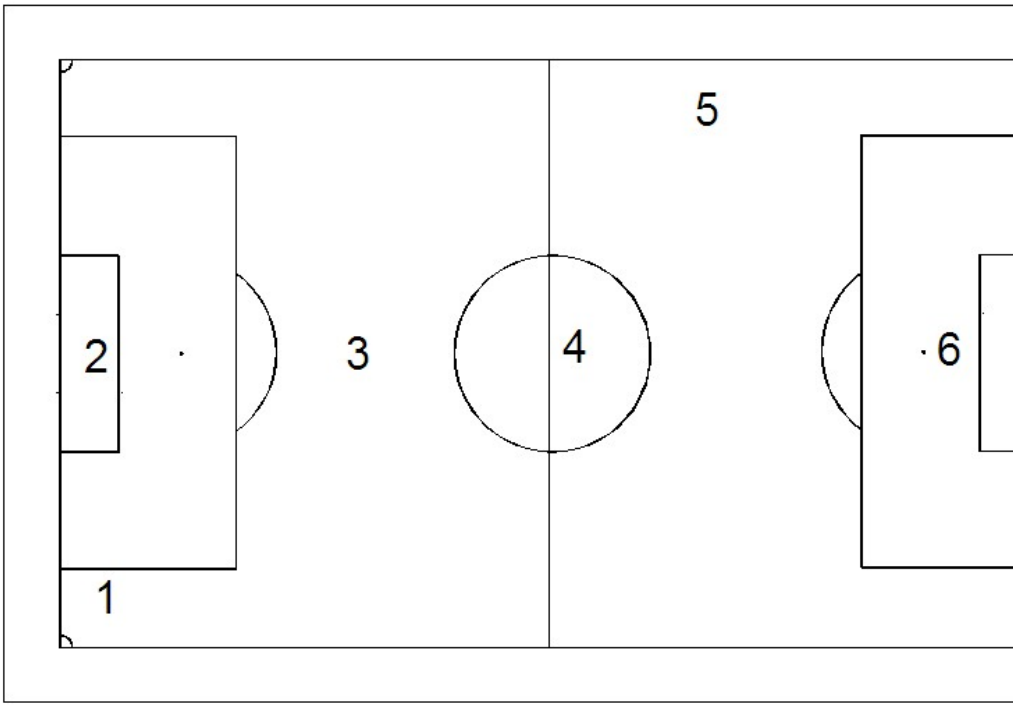
## Product identification

| **Property** | Test Position | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | Mean | Manufa decla |
| Artificial grass surface | | | | | | |
| Pile height | | | | | | |
| Stitch gauge (mm) | | | | | | |
| Tufts per 100mm | | | | | | |
| Calculated tufts per unit area | | | | | | |
| **Performance infill** | | | | | | |

| | Test Position | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | M d |
| Largest sieve retaining at least 10% of infill | | | | | | | |

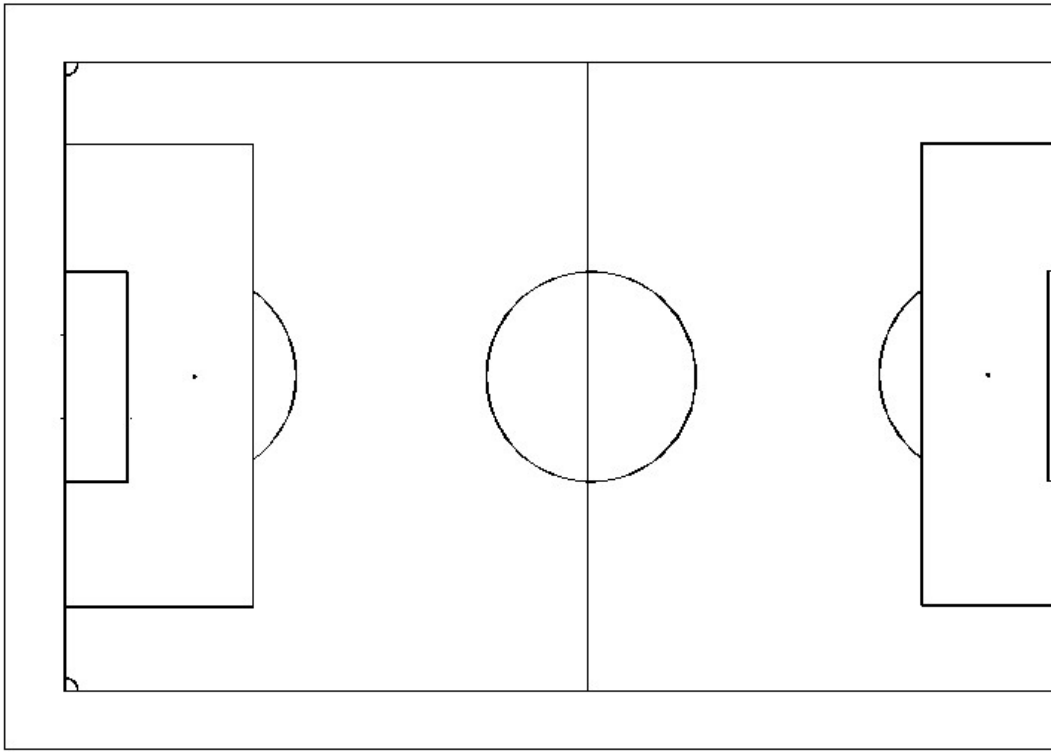
# Field Test Report - Two Star Category Retest

Field test position – mark orientation on drawing



# Field Test Report - Two Star Category Retest

Plan showing surface undulations exceeding 10mm – detail location, size and magnitude



# ANNEX F

# Field report – FQC One Star Category Retest

# Field Test Report - One Star Retest

## Information for applicants

If a field is to remain certified as a FIFA Recommended One Star installation it has to be retested three years or whenever it is resurfaced. Retesting may be undertaken up to three months in advance of a field's renewal date without the subsequent renewal date changing. A retest may be requested by the licensee that commissioned the initial field test or the field's owners/operators.

When requesting a retest the applicant must obtain a FIFA Field Test Report Number from FIFA (www.football.turf@fifa.com) and complete Section One of this report before sending it to their appointed FIFA accredited test laboratory. When requesting a FIFA Field Test Report Number the applicant shall provide the following information to FIFA:

- Stadium or site name and address
- Product name and code of the installed Football Turf
- Test laboratory appointed to undertake the field test - the Test Institute shall not have been involved in the design, specification or procurement of the field.
- Proposed date of the field test (tests should normally be made within four weeks of the proposed date)
- Names of the ground staff responsible for maintaining the field and details of all training (including dates) they have undertaken in relationship to the maintenance of the football turf
- A copy of the maintenance log for the field (in electronic format - i.e. a scanned copy of original) for the preceding 12 months. If required by FIFA the applicant shall translate the maintenance log into English.

In completing Section One or this report the applicant is confirming that the football turf is the same as that previously tested (i.e. the field has not been resurfaced) and that it has been maintained in accordance with the manufacturer's instructions using materials approved or specified by the manufacturer - the test institute will undertake tests to verify this.

During the field test the equipment used to maintain the football turf shall be made available for inspection by the test laboratory. Failure to make the equipment available may result in the field not being recertified.

On completion of the test programme the test laboratory will send the completed FIFA FQC Field Retest Report directly to FIFA.

# Field Test Report - One Star Retest

## Section 1: Site and applicant details

| | | | |
|---|---|---|---|
| FIFA Field Test Report Number | | | |
| Type of test | **One Star – retest** | | |
| Club (if applicable) | | | |
| Address | Stadium or site name | | |
| | | | |
| | City | | |
| | Country | | |
| Stadium or site contact | | | |
| Tel. | | | |
| Email | | | |
| | | | |
| Surface name | | | |
| Date pitch installed | | | |
| Applicant | | | |
| | | | |
| Address | | | |
| Applicant contact | | | |
| Tel. | | | |
| E-mail | | | |
| Date of initial field test | | Date of last field test | |
| Applicants Signature | | Date | |

# Field Test Report - One Star Retest

## Section 2: Summary of results

| | | | | | |
|---|---|---|---|---|---|
| **Field Passed** | o | **Field failed** | o | | |
| Criteria that failed (if any): | | | | | |
| Ball / Surface interaction | o | Vertical ball rebound | o | Ball roll | |
| | o | Angle ball rebound | | | |
| Player / Surface interaction | o | Shock absorbency | o | Deformation | |
| | o | Rotational resistance | o | Stud slide value | |
| | o | Stud deceleration value | | | |
| Construction Requirements | o | Regularity | | | |

| | | |
|---|---|---|
| On the basis of the surface identification measurements (including more detailed laboratory tests where required) is the Football Turf the same product as that assessed at the Initial Field Test? | Yes | o |
| | No | o |

| | | | | |
|---|---|---|---|---|
| Specified maintenance equipment on site and operational | Yes | o | No* | o |
| * If no attach details to this report | | | | |

| | | |
|---|---|---|
| Laboratory Director | | |
| Date | | |
| Test laboratory | | |
| Test laboratory project reference | | |
| FIFA Accredited Engineer on site | Name | |
| | Signature | |
| Names of other Test Engineers on site | | |
| | | |

# Field Test Report - One Star Retest

| **Test conditions** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Date(s) of test | Day 1 | | | | Day 2 | | | |
| | | | | | | | | |
| Surface condition (dry or wet) | | | | | | | | |
| Surface temperature (°C) | Min. | | Max. | | Min. | | Max. | |
| Humidity (%RH) | Min. | | Max. | | Min. | | Max. | |
| Maximum wind speed | Ball rebound tests | | | | Ball roll tests | | | |
| | m/s | | | | m/s | | | |

# Field Test Report - One Star Retest

## Section 3: Detailed results

Ball/surface and player/surface interactions

| Property | Specified range | Test Position | | | | |
|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 |
| Vertical ball rebound | 0.60 m – 1.00 m | | | | | |
| Angle ball rebound | Dry 45 % - 70 % | | | | | |
| | Wet 45 % - 80 % | | | | | |
| Ball roll | 4.0 m – 10.0 m | | | | | |
| Shock absorption | 55 % - 70 % | | | | | |
| Deformation | 4.0 mm – 9.0 mm | | | | | |
| Rotational resistance | 25 Nm – 50 Nm | | | | | |
| Linear friction Stud deceleration | 3.0 g – 6.0 g | | | | | |
| Linear friction Stud slide | 120 – 220 | | | | | |

Product identification

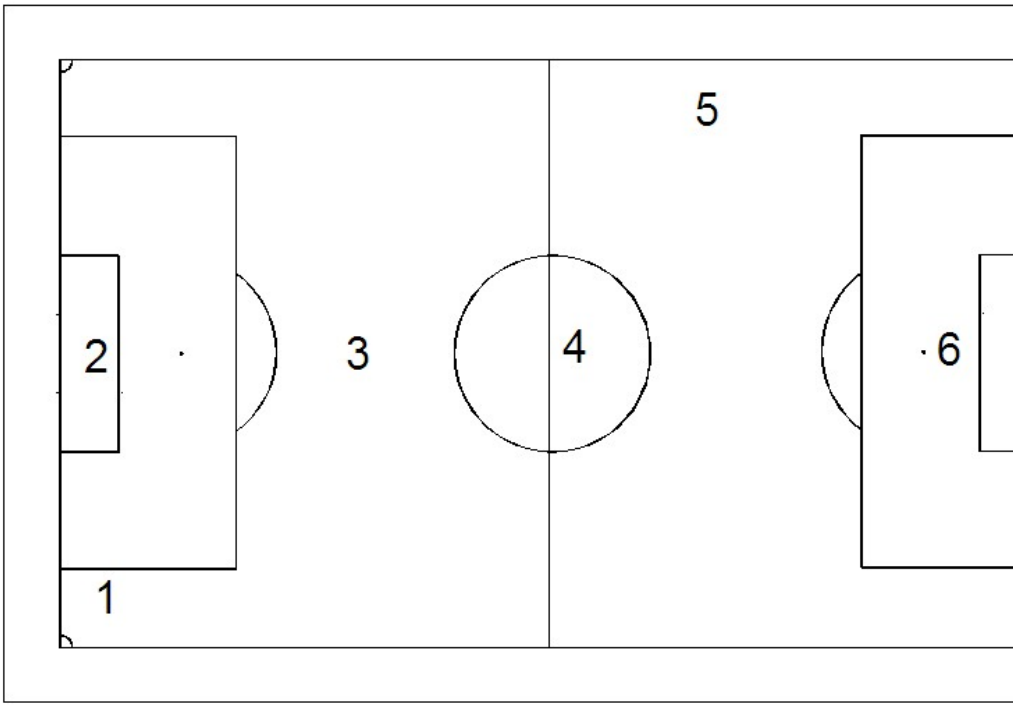
# Field Test Report - One Star Retest

| Property | Test Position | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | Mean | Manufa decla |
| Artificial grass surface | | | | | | |
| Pile height | | | | | | |
| Stitch gauge (mm) | | | | | | |
| Tufts per 100mm | | | | | | |
| Calculated tufts per unit area | | | | | | |
| **Performance infill** | | | | | | |

| | Test Position | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | M d |
| Largest sieve retaining at least 10% of infill | | | | | | | |

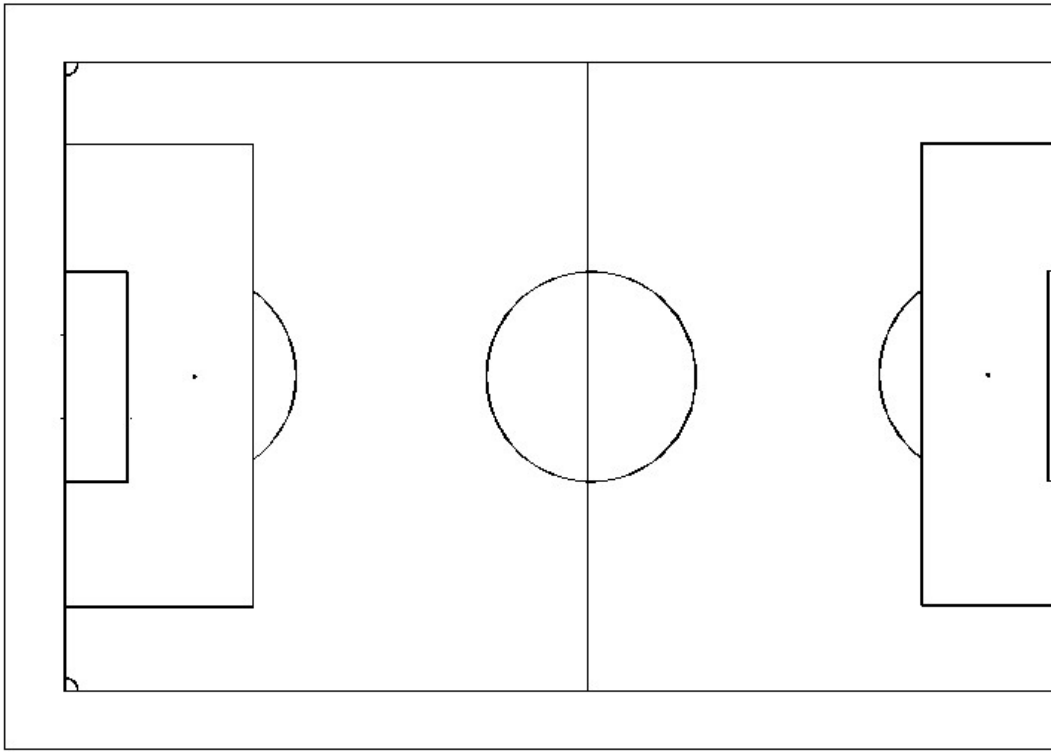
# Field Test Report - One Star Retest

Field test position – mark orientation on drawing



# Field Test Report - One Star Retest

Plan showing surface undulations exceeding 10mm – detail location, size and magnitude



## Annex G - General requirements

### G1 Gloss

It is not acceptable to incorporate materials or constructions that will cause glare from the reflection of sunlight or artificial lighting to players.

### G2 Bearing Capacity

The formation and sub-soil should have sufficient bearing capacity to support the playing surface and any machinery used to maintain the surface. The bearing capacity can be assessed using methods described by EN/TC 250/SC7. No responsibility shall be accepted for any damage caused to the surface by the use of equipment or structures (e.g. collapsible seating) that the surface was not intentionally designed for.

### G3 Staining

Every effort should be employed to use non-staining materials where practicable.

### G4 Toxicology

The manufacturer should be asked to supply to the purchaser an assurance that the sports surface together with its supporting layers, does not contain in its finished state any substance which is known to be toxic, mutagenic, teratogenic or carcinogenic when in contact with the skin. Furthermore that no such substances will be released as a vapour or dust during normal use.

### G5 Environmental Compatibility

The manufacturer and purchaser shall make abide by all local relevant environmental legislation during the construction, material utilisation, operation and disposal of the surface and it's supporting layers.

### G6 Climatic Conditions

The manufacturer and purchaser shall take into consideration the prevailing climatic conditions when designing the surface specification.

### G7 Resistance to fire

When installing an artificial turf surface the manufacturer / supplier shall ensure the completed installation complies with all relevant building and fire safety regulations.

## Annex H - Factory Quality Control Procedures

### H.1 Introduction

This specifies a factory production control system for constituent components to ensure that they conform to the relevant requirements of this standard.

The performance of the factory production control system shall be assessed according to the principles used in this document.

Note: The overall quality of the surface remains the responsibility of the licensee.

### H.2 Organization

H.2.1 Responsibility and authority

It will be necessary to produce a quality assurance line management diagram outlining the individuals responsible for quality. One individual shall be highlighted as the contact person in cases of quality disputes. These individuals should have the capability to:

- Initiate action to prevent the occurrence of product non-conformity;
- Identify, record and deal with any product quality deviations.

H.2.2 Management representative for factory production control

For every manufacturing plant the licensee must satisfy himself that an appropriately qualified person with appropriate authority will ensure that the requirements given in this document are implemented and maintained.

H.2.3 Management review

The factory production control system adopted to satisfy the requirements of this document shall be audited and reviewed at appropriate intervals to ensure its continuing suitability and effectiveness. Records of such reviews shall be maintained. It is assumed that for most manufacturers this would be covered within an ISO 9000 scheme.

### H.3 Control procedures

The licensee shall establish and maintain a factory production control manual setting out the procedures by which the requirements for factory production control are satisfied for those products he directly produces. Furthermore they should establish similar procedures for all suppliers of products that are part of their systems.

### H.4 Document and data control

Document and data control shall include those documents and data that are relevant to the requirements of this standard covering purchasing, processing, inspection of materials and the factory production control system documents.

A procedure concerning the management of documents and data shall be documented in the production control manual covering procedures and responsibilities for approval, issue, distribution and administration of internal and external documentation and data; and the preparation, issue and recording of changes to documentation.

## H.5 Sub-contract services

If any part of the operation is sub-contracted by the producer a means of control shall be established. The producer shall retain overall responsibility for all components sub-contracted.

## H.6 Knowledge of the raw material

There shall be documentation detailing the nature of the constituent parts as specified in the licensees Technical Data Sheets.

It is the licensee's responsibility to ensure that if any dangerous substances are identified their content does not exceed the limits in force.

Note: See EU Council Directive 76/769/EEC.

## H.7 Management of production

The factory production control system shall fulfil the following requirements:

- There shall be procedures to identify and control the materials.

Note: these can include procedures for maintaining and adjusting processing equipment, inspection or testing material sampled during processing, etc.

- There shall be procedures to identify and control any hazardous materials identified above to ensure that they do not exceed the limits.

- There shall be procedures to ensure that material is put into stock in a controlled manner and the storage conditions are appropriate for the materials being stored.

- Certain materials are known to deteriorate in storage. There shall be procedures to ensure that material taken from stock has not deteriorated in such a way that its conformity is compromised.

- The product shall be identifiable up to the point of sale as regards source and type.

## H.8 Inspection and test

### H.8.1 General

The licensee shall ensure that they have all the necessary facilities, equipment and trained personnel to carry out the required inspections and tests.

### H.8.2 Equipment

The licensee shall be responsible for the control, calibration and maintenance of inspection, measuring and test equipment

Accuracy and frequency of calibration shall be in accordance with the appropriate standards.

Equipment shall be used in accordance with documented procedures.

Equipment shall be uniquely identified.

Calibration records shall be retained.

H.8.3 Frequency and location of inspection, sampling and tests

The production control document shall describe the frequency and nature of inspections.

H.8.4 Records

The results of factory production control shall be recorded including sampling locations, dates and times and product tested with any other relevant information.

Where the product inspected or tested does not satisfy the requirement laid down in the specification, or if there is an indication that it shall not do so, a note shall be made in the records of the steps taken to deal with the situation (e.g. carrying out of a new test and/or measures to correct the production process).

The records required by all the clauses of this standard shall be included.

The records shall be kept for at least the statutory period.

Note: "Statutory period" is the period of time records are required to be kept in accordance with regulations applying at the place of production.

## H.9 Control of non-conforming product

Following an inspection or test that indicates that a product does not conform, the affected material shall be:

- Reprocessed; or
- Diverted to another application for which it is suitable; or
- Rejected and marked as non-conforming.

All cases of non-conformity shall be recorded by the producer, investigated and if necessary corrective action shall be taken.

Note: Corrective actions can include:

- Investigation of the cause of non-conformity including an examination of the testing procedure and making any necessary adjustments;
- Analysis of processes, operations, quality records, service reports and customer complaints to detect and eliminate potential causes of non-conformity;
- Initiating preventive actions to deal with problems to a level corresponding to the risks encountered;
- Applying controls to ensure that effective corrective actions are taken;

- Implementing and recording changes in procedures resulting from corrective action.

## H.10 Handling, storage and conditioning in production areas

The manufacturer shall make the necessary arrangements to maintain the quality of the product during handling and storage. This is of particular importance to those materials that may deteriorate in storage.

## H.11 Transport and packaging

The producer's factory production control system shall identify the extent of his responsibility in relation to storage and delivery.

Products should be packaged appropriately to prevent any damage of the materials in transit. Any precautions necessary to achieve this during handling and storage of the packaged goods shall be marked on the packaging or accompanying documents.

## H.12 Training of personnel

The producer shall establish and maintain procedures for the training of all personnel involved in the factory production system. Appropriate records of training shall be maintained.

## H.13 Minimum test frequencies for general properties

The manufacturer shall be asked to give details of the frequency which the products are tested for compliance with the product data sheet. If it is felt that these are inadequate then extra testing maybe requested and/or third party attestation.

## H.14 Communication

Before any goods are to leave the factory for site installation the product quality assurance sheets should be signed and dispatched to a third party for attestation. These documents should state unequivocally the testing that has taken place and the frequency of testing.

The minimum testing that is acceptable is full compliance with the technical data sheet for that product. If the data sheet is deemed to be inadequate more testing can be requested to show compliance with the data sheet.

Only upon approval from the third party attestation should the goods be dispatched. This does not however pass the responsibility of quality assurance onto the third party. At all times the quality assurance of the product (including its constituent parts) and the installation is the sole responsibility of the licensee.

Third party attestation would usually be provided by the test laboratory undertaking the field test.

Site samples will be taken by third party's (FIFA accredited test laboratory or FIFA's appointed representatives) in accordance with the requirements of the FIFA Quality Concept for Artificial Turf. The above quality assurance measures are additional to the provisions outlined in the FIFA Quality Concept for Artificial Turf Manual.