

# **FIFA Quality Concept for Football Turf**

**Handbook of Requirements**

**May 2009 Edition**

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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 Football Turf)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 degree of simulated use undertaken on FIFA Two Star products is designed to replicate low to moderate levels of use often found on football specific stadium fields; whilst the degree of simulated use undertaken on FIFA One Star products is designed to replicate the higher levels of use found on training and community fields. Potential installers of Football Turf fields should note, however, that experience has shown fields subjected to very high intensity use may not be able to retain the demanding performance criteria of the FIFA Quality Concept for the life of the playing surface. Failure to undertake adequate maintenance will also reduce the period of time a field may satisfy the requirements of the FIFA Quality Concept.

This edition of the manual supersedes previous editions with effect from 4<sup>th</sup> May 2009. The changes incorporated into this edition of the manual are:

FIFA Two Star Category – Laboratory tests:

- No changes

#### FIFA Two Star Category – Field tests

- Audit of maintenance equipment

#### FIFA One Star Category – Laboratory tests

- Simulated Wear test extended from 5,200 cycles to 20,200 cycles
- Shock absorption measured on frozen sample (-5°C)

#### FIFA One Star Category – Field tests

- Angle ball rebound deleted from field tests
- Stud Slide and Stud Deceleration tests deleted from field tests
- Maximum Ball Roll requirement for re-tests after 12 months play extended to 12.0m
- Audit of maintenance equipment

## 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 G) that shall be open to 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 for review.

Note – if the field fails the initial field test the test institute is still required to prepare and submit a FIFA Field Test Report informing FIFA of the failure. If a second initial test is required a new Field Test Report Number should be requested from FIFA.

### 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 four 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.

Note: If national competition rules or other requirements require field re-tests at more frequent intervals this is permitted.

## 2.5 Field retesting

Retesting of a field may be requested by the licensee or the field owner/operator or a national association/confederation or FIFA .

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.

For a field to be recertified it shall comply with the requirements detailed in this edition of the Handbook of Requirements for Football Turf.

### 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 and the Football Turf has been laboratory tested for 20,200 cycles (optional) simulated wear it is re-designated as a a FIFA Recommended One Star category for a further three years, after which a further re-test is required.

If a field fails to satisfy the FIFA Recommended Two Star category and the installed Football Turf has only been laboratory tested for 5,200 cycles simulated wear 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 four years if the installed Football Turf satisfies the laboratory test requirements of the 2009 edition of the FIFA Handbook of Requirements for Football Turf or three years if it satisfies the laboratory test requirements of an earlier edition.

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 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 2009 edition (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.

**Note:** Fields submitted for initial testing in 2009 may be surfaces with Football Turf that meets either the 2009 or 2008 edition of the FIFA Handbook of Requirements for Football Turf. **Any field submitted for test after 1<sup>st</sup> January 2010 must be surfaced with a Football Turf that meets the laboratory test requirements of the 2009 edition of the FIFA Handbook of Requirements for Football Turf.**

### 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.

If a Football Turf product is found to fully satisfy the FIFA Two Star laboratory requirements after being subjected to 20,200 cycles simulated wear it may be type approved as meeting both FIFA 2 and FIFA 1 Star laboratory test categories.

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 ( $\pm 10$  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			Requirements	
		Preparation	Temperature	Condition	FIFA Recommended Two Star	FIFA Recommended One Star
Vertical ball rebound	FIFA 01 & FIFA 09	Pre-conditioning	23°C	Dry	0.60m - 0.85m	0.60m - 1.0m
				Wet		
		Simulated Wear – 5,200 cycles		0.60m - 0.85m	N/A	
		Simulated Wear – 20,200 cycles		Dry	N/A	0.60m - 1.0m
Angle ball rebound	FIFA 02	Pre-conditioning	23°C	Dry	45% - 60%	45% - 70%
				Wet	45% - 80%	
Ball roll	FIFA 03	Pre-conditioning	23°C	Dry	4m - 8m	4m - 10m
				Wet		
Shock Absorption	FIFA 04 & FIFA 09	Pre-conditioning	23°C	Dry	60% - 70%	55% - 70%
				Wet		
		Simulated Wear – 5,200 cycles		60% - 70%	N/A	
		Simulated Wear – 20,200 cycles		Dry	N/A	55% - 70%
	Pre-conditioning	40°C	Dry	60% - 70%	55% - 70%	
	FIFA 04 1 <sup>st</sup> impact	-	-5°C	Frozen	60% - 70%	55% - 70%

Property	Test Method	Test conditions			Requirements	
		Preparation	Temperature	Condition	FIFA Recommended Two Star	FIFA Recommended One Star <sup>3</sup>
Vertical Deformation	FIFA 05 & FIFA 09	Pre-conditioning	23°C	Dry	4mm - 8mm	4mm - 9mm
		Pre-conditioning		Wet		
		Simulated Wear – 5,200 cycles		Dry	4mm - 8mm	N/A
		Simulated Wear – 20,200 cycles		Dry	N/A	4mm - 9mm
Rotational Resistance	FIFA 06 & FIFA 09	Pre-conditioning	23°C	Dry	30Nm - 45Nm	25Nm - 50Nm
		Pre-conditioning		Wet		
		Simulated Wear – 5,200 cycles		Dry	30Nm - 45Nm	N/A
		Simulated Wear – 20,200 cycles		Dry	N/A	25Nm - 50Nm

Property	Test Method	Test conditions			Requirement	
		Preparation	Temperature	Condition	FIFA Recommended Two Star	FIFA Recommended One Star <sup>3</sup>
Linear Friction - Stud Deceleration Value	FIFA 07	Pre-conditioning	23°C	Dry	3.0g - 5.5 g	3.0g - 6.0 g
				Wet		
Linear Friction - Stud Slide Value		Pre-conditioning	23°C	Dry	130 - 210	120 – 220
				Wet		
Skin / surface friction	FIFA 08	Pre-conditioning	23°C	Dry	0.35 - 0.75	0.35 - 0.75
Skin abrasion	FIFA 08	Pre-conditioning	23°C	Dry	± 30%	± 30%

Artificial Weathering (FIFA 10)				
Component	Property & test method		Requirement	
			FIFA Recommended Two Star	FIFA Recommended One Star
Artificial turf	Colour change	EN ISO 20105-A02	≥ Grey scale 3	
Pile yarn (s)	Tensile strength	EN 13864	Percentage change from unaged to be no more than 50%	
Polymeric infill	Colour change	EN ISO 20105-A02	≥ Grey scale 3	
Joint strength: stitched seams	Joint strength – unaged	EN 12228 Method 1	1000N/100mm	
	Joint strength - after immersion in hot water	EN 13744 & EN 12228 Method 1		
Joint strength: Bonded seams	Joint strength – unaged	EN 12228 Method 2	25N/100mm	
	Joint strength - after immersion in hot water	EN 13744 & EN 12228 Method 2		

Property	Test Method	Condition	Requirement	
			FIFA Recommended Two Star	FIFA Recommended One Star
Tuft withdrawal	ISO 4919	Unaged	≥30N	≥30N
	EN 13744 & ISO 4919	After immersion in hot water	≥30N	≥30N
Tensile strength of shockpads and e-layers (if supplied as part of system)	EN 12230	Unaged	0.15Mpa	0.15Mpa
Water permeability <sup>1</sup> - using a single ring infiltrometer in which the artificial turf carpet is sealed prior to infilling and testing	EN 12616	Unaged	> 180mm/h <sup>(2)</sup>	> 180mm/h <sup>(2)</sup>

- 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 requirement

**Table 2 – Product identification tests**

Component	Characteristic	Test method	Permitted variation between laboratory component and manufacture's declaration
Artificial turf	Mass per unit area	ISO 8543	$\leq \pm 10\%$
	Tufts per unit area	ISO 1763	$\leq \pm 10\%$
	Tuft withdrawal force	ISO 4919	$\geq 90\%$ of manufacturer's declaration
	Pile length above backing	ISO 2549	$\leq \pm 5\%$
	Total pile weight	ISO 8543	$\leq \pm 10\%$
	Water permeability	EN 12616 using a single ring infiltrometer	$\geq 180\text{mm/h}^{(1)}$
Pile yarn(s)	Pile yarn characterisation	DSC	Same polymer
	Pile dtex	See Note 2 below	$\leq \pm 10\%$
Performance infill (if supplied as part of system)	Particle size	EN 933 - Part 1	$\leq \pm 20\%$
	Particle shape	prEN 14955	Similar shape
	Bulk density	EN 1097-3	$\leq \pm 15\%$

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 1mm) of a minimum of 40 tufts removed from the artificial turf.

<b>Component</b>	<b>Characteristic</b>	<b>Test method</b>	<b>Permitted variation between laboratory component and manufacture's declaration</b>
Stabilising infill (if supplied as part of system)	Particle size	EN 933 - Part 1	$\leq \pm 20\%$
	Particle shape	prEN 14955	Similar shape
	Bulk density	EN 1097-3	$\leq \pm 15\%$
Shockpads / e-layers (if supplied as part of system)	Shock Absorption	EN 14808	$\leq \pm 5\%$ Force Reduction
	Thickness	EN 1969	$\geq 90\%$ of manufacturer's declaration
Unbound sub-bases (if tested as part of system)	Composition	-	Same composition
	Particle size range (attach particle size grading to test report)	EN 933 - Part 1	$\leq \pm 20\%$
	Particle shape	prEN 14955	Similar shape



## 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.

The samples of artificial turf and infill shall be supplied to the laboratory when they undertake the field test. **Where alternative suppliers of infill materials to those detailed in the original laboratory test report are to be used, samples of the infill should also be submitted in advance of construction so that compliance of these materials with the requirements of the FIFA Handbook can be determined prior to installation.** Samples should be submitted in adequate time so that if it is found they do not comply with

the requirements of the FIFA Handbook a new laboratory test using the new materials can be made prior to installation of the Football Turf and subsequent field testing.

#### 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.

#### 5.5 Maintenance equipment

For a field to be certified under the FIFA Quality Concept for Football Turf the facility operator shall ensure that all the equipment specified by the surface manufacturer for the installed Football Turf product is available to maintain the field in accordance with the manufacturer's instructions. This may either be achieved by the facility operator purchasing the equipment or entering a service agreement with a specialist maintenance contractor of a combination of both.

The facility operator shall ensure all required maintenance equipment is available for inspection by the test institute during the field test.

#### 5.6 Sprinklers

FIFA do not endorse the use of sprinklers within the playing area of a football field. However, FIFA does acknowledge that occasionally sprinkler systems have to be installed within the playing area because, primarily due to a lack of water pressure available to project water from outside of the play area onto the central portion of the field; such systems have been installed in both natural and artificial turf football fields.

One of the primary aims of the *FIFA Quality Concept for Football Turf* is to take into consideration the comfort and safety of players. Therefore where a sprinkler system has been installed within the playing area there will be an additional test requirement to check that the sprinklers do not present an additional hazard to the players. The Field Test Institute will undertake Shock Absorbency and Vertical Deformation evaluation, in accordance with this manual, on two separate sprinklers (either side of the field). The values obtained must be within the requirements for the particular performance level that the field has been constructed to meet. Neither FIFA nor the field test institute shall be liable for any damage occurring to the sprinklers as a result of these tests. In requesting/allowing a FIFA field test the facility operator is deemed to have accepted this condition of test.

It should be clearly stated by the contractor responsible for installing the Football Turf whether or not additional maintenance work is required, to ensure the consistency of the infill, after the sprinkler has been elevated and returned to its lowered position. If an additional maintenance procedure is required the Test Institute shall undertake a further test of Shock Absorbency and Vertical Deformation after the maintenance procedure to ensure the area above the sprinkler meets the requirements. Obviously to achieve this, the sprinkler system must be activated and the maintenance procedure carried out before the tests can take place.

## 5.7 Maintenance during field tests

Maintenance of the field shall not be undertaken during a field test.

**Table 3 – Field Test Requirements**

Characteristic	Test Method	Requirement			
		FIFA Recommended Two Star		FIFA Recommended One Star	
Vertical ball rebound	FIFA 01	60cm - 85cm		60cm - 100cm	
Angle ball rebound	FIFA 02	Dry field	45% - 60%	Not applicable	
		Wet field	45% - 80%		
Ball roll	FIFA 03	Initial assessment	4m - 8m	Initial assessment	4m – 10m
		Re-tests after 12 months play	4m – 10m	Re-tests after 12 months play	4m – 12m
Shock Absorption	FIFA 04	60% - 70%		55% - 70%	
Vertical Deformation	FIFA 05	4mm – 8mm		4mm – 9mm	
Rotational Resistance	FIFA 06	30Nm - 45Nm		25Nm – 50Nm	
Linear Friction – Stud Deceleration Value	FIFA 07	3.0g - 5.5 g		Not applicable	
Linear Friction - Stud Slide Value	FIFA 08	130 – 210		Not applicable	
Surface regularity of playing surface	EN 13036 3m straightedge	<10mm		<10mm	

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

<b>Component</b>	<b>Characteristic</b>	<b>Test method</b>	<b>Permitted variation between manufacturer's declaration and installed materials</b>
Artificial turf	Mass per unit area	ISO 8543	$\leq \pm 10\%$
	Tufts per unit area	ISO 1763	$\leq \pm 10\%$
	Tuft withdrawal force	ISO 4919	$\geq 90\%$ of manufacturer's declaration
	Pile length above backing	ISO 2549	$\leq \pm 5\%$
	Total pile weight	ISO 8543	$\leq \pm 10\%$
	Water permeability of carpet (non infill) <sup>(1)</sup>	EN 12616 using a single ring infiltrometer in which the artificial turf carpet is sealed prior to testing	$\geq 180\text{mm/h}$ and greater than 75% of laboratory result
Pile yarn(s)	Pile yarn characterisation	DSC	Same polymer
Performance infill (if supplied as part of system)	Particle size	EN 933 - Part 1	$\leq \pm 20\%$
	Particle shape	prEN 14955	Similar shape
	Bulk density	EN 1097-3	$\leq \pm 15\%$

<b>Component</b>	<b>Characteristic</b>	<b>Test method</b>	<b>Permitted variation between manufacturer's declaration and installed materials</b>
Stabilising infill (if supplied as part of system)	Particle size	EN 933 - Part 1	$\leq \pm 20\%$
	Particle shape	prEN 14955	Similar shape
	Bulk density	EN 1097-3	$\leq \pm 15\%$
Shockpads / e-layers <sup>(2)</sup> (if supplied as part of system)	Shock Absorption	EN 14808	$\leq \pm 5\%$ Force Reduction
	Thickness	EN 1969	$\geq 90\%$ of manufacturer's declaration

- 1 Outdoor pitches only. Compliance with this requirement may also be waived by FIFA for fields located indoors or in arid parts of the world. Such waivers will be granted on a case by case basis and permission should be sought from FIFA at the design stage of a field's construction.
- 2 When measured in at least four locations.

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

Component	Characteristic	Requirement	Sampling procedure
Artificial grass <sup>1</sup>	Pile height (above primary backing)	$\leq \pm 5\%$ of the value measured on the site sample tested during the initial site test	Measurements shall be made in four different areas of the field not subjected to high areas of wear or usage.  The number of tufts per m <sup>2</sup> shall be calculated by multiplying the number of stitches per 100mm by the stitch gauge.
	Number of stitches per 100mm	The number of tufts per m <sup>2</sup> shall not differ by more than $\pm 10\%$ of the manufacturer's declaration	
	Stitch spacing (mm)		
Performance infill <sup>2</sup>	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 minimum sample of 250g shall be taken from the top portion of the performance infill (20mm) on each of the six tests positions detailed in the FIFA Handbook of Test Methods for Football Turf.  The infill shall be graded in accordance with EN 933 Part 1 and the largest sieve retaining at least 10% by mass of the infill determined.

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.

Note: International Matches must be played on a field with following dimensions

Length:

minimum 100 m (110 yds)

maximum 110 m (120 yds)

Width:

minimum 64 m (70 yds)

maximum 75 m (80 yds)

### 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.

Note: Fields with additional sports pitch markings may be certified under the FIFA Quality Concept for Football Turf, although competition regulations may not allow this.

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.

**ANNEX A**  
**Laboratory test report**

## Information for applicants

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

- 12m 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.

If 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.

# FIFA Quality Concept for Football Turf Laboratory Test Report (2009 edition)

## Introduction

To ensure a field surfaced with Football Turf replicates the playing qualities of good quality natural grass, provides a playing environment that will not increase the risk of injury to players and is of adequate durability (providing it is adequately maintained) FIFA has developed the *FIFA Quality Concept for Football Turf*. The Quality Concept includes a series of laboratory tests that are designed to assess performance and durability of the synthetic materials that form the Football Turf and, most importantly, an assessment of individual football fields to ensure they have the playing and performance characteristics players will expect from a facility certified by FIFA.

**The *FIFA Quality Concept for Football Turf* is not a product approval scheme but is the certification that individual football fields have the required playing characteristics and have been constructed from materials of known quality.**

Full details of the *FIFA Quality Concept for Football Turf* may be obtained on FIFA's website ([www.fifa.com](http://www.fifa.com)).

## FIFA Quality Concept for Football Turf Laboratory Test Report

This is the official Football Turf Laboratory Test Report for the product detailed in Section 1. The report gives the results of the laboratory tests carried out on samples of the Football Turf and classifies the Football Turf product as being suitable for installation on FIFA Recommended Two Star or FIFA Recommended One Star category fields.

The report contains nine sections. Sections one to five are completed by the manufacturer of the Football Turf and gives information about the Football Turf product. Sections six to

This laboratory test report does not confirm or imply FIFA approval of the Football Turf product described within it. FIFA only certify individual fields that have been independently tested and shown to fully satisfy the requirements of the *FIFA Quality Concept for Football Turf*

Report number		Date of report:	
Page 1 of 17			

# FIFA Quality Concept for Football Turf Laboratory Test Report (2009 edition)

nine are completed by the FIFA accredited test laboratory and details the results of the laboratory tests.

**This test report is not valid unless it is reproduced in its entirety. The results are valid only for the complete Football Turf system described in the report.**

## Use of this report

This FIFA laboratory test report may only be used in relationship to Football Turf fields that are going to be submitted for certification under the *FIFA Quality Concept of Football Turf*. Any other use of this report is a violation of the report's copy write which is held by FIFA and breaches the terms of the FIFA Quality Concept of Football Turf licensing agreement.

Section 1 - Product Details				
Surface name				
Carpet name				
Performance infill				
Stabilising infill				
Shockpad or e-layer				
Base on which tests were be made	Concrete		Unbound aggregate	

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Report number		Date of report:	
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# FIFA Quality Concept for Football Turf Laboratory Test Report (2009 edition)

Section 2 – Football Turf manufacturer details	
Manufacturer / supplier	
Address	
Tel.	
Fax.	
Email	
Web	

Section 3 – product information				
Artificial Turf	Manufacturer			
	Tuft pattern			
	Pile yarn	Yarn A	Yarn B	Yarn C
	Manufacturer			
	Product name / code			
	Pile yarn profile			
	Pile length (mm)			
	Pile weight (g/m <sup>2</sup> )			
	Pile width (mm)			
	No of tufts / m <sup>2</sup>			
	Pile thickness (micron)			
	Pile colour (RAL No)			

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Report number		Date of report:	
---------------	--	-----------------	--

# FIFA Quality Concept for Football Turf Laboratory Test Report (2009 edition)

Artificial Turf	Primary turf backing product name / code			
	Primary turf backing manufacturer			
	Reinforcement scrim product name / code			
	Reinforcement scrim manufacturer			
	Secondary backing (coating) product name / code			
	Secondary backing (coating) manufacturer			
	Secondary backing (coating) dry application rate (g/m <sup>2</sup> )			
	Method of jointing			
	Bonded joints	Adhesive brand name		
		Adhesive manufacturer		
		Application rate (g/lm)		
		Jointing film brand name		
		Jointing film manufacturer		
	Stitched seams	Tread brand name / product code		
Tread manufacturer				
Stitch rate per lm				
Performance infill	Product name / code			
	Manufacturer			
	Material type			
	Material grading			
	Material shape			
	Application rate (g/m <sup>2</sup> )			

Specimen

This laboratory test report does not confirm or imply FIFA approval of the Football Turf product described within it. FIFA only certify individual fields that have been independently tested and shown to fully satisfy the requirements of the *FIFA Quality Concept for Football Turf*

Report number		Date of report:	
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# FIFA Quality Concept for Football Turf Laboratory Test Report (2009 edition)

Stabilising infill	Product name / code	
	Manufacturer	
	Material type	
	Material grading	
	Material shape	
	Application rate (g/m <sup>2</sup> )	
Shockpad (when supplied as part of system)	Product name / code	
	Composition (type, rubber granule grading, binder content, etc)	
	Thickness (mm)	
	Nominal mass per unit area (kg/m <sup>2</sup> )	

## Section 4 – Recommended Maintenance Equipment

specimen

This laboratory test report does not confirm or imply FIFA approval of the Football Turf product described within it. FIFA only certify individual fields that have been independently tested and shown to fully satisfy the requirements of the *FIFA Quality Concept for Football Turf*

Report number		Date of report:	
Page 5 of 17			



# FIFA Quality Concept for Football Turf Laboratory Test Report (2009 edition)

Section 5 – Product reference information							
Component	Property	Test Method	Specification	Property	Test Method		
Artificial turf	Carpet mass per unit area (g/m <sup>2</sup> )	ISO 8543		Tufts / m <sup>2</sup>	ISO 1763		
	Minimum tuft withdrawal force (N)	ISO 4919		Pile length above backing (mm)	ISO 2549		
	Total pile weight (g/m <sup>2</sup> )	ISO 8543					
	Pile yarn characterisation	Yarn A		Yarn B		Yarn C	
Pile yarn dtex							

specimen

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Report number		Date of report:	
Page 6 of 17			

## FIFA Quality Concept for Football Turf Laboratory Test Report (2009 edition)

Component	Property	Test Method	Specification	Property	Test Method	
Performance infill	Particle size (range)	EN 933 - Part 1		Particle shape	prEN 14955	
	Bulk density (g/cm <sup>3</sup> )	EN 1097-3		Material type		

Component	Property	Test Method	Specification	Property	Test Method	
Stabilising infill	Particle size (range)	EN 933 - Part 1		Particle shape	prEN 14955	
	Bulk density (g/cm <sup>3</sup> )	EN 1097-3		Material type		

Component	Property	Test Method	Specification	Property	Test Method	
Shockpad	Thickness	EN 1969		Shock absorption	EN 14808	
	Deformation	EN 14809				

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Report number		Date of report:	
Page 7 of 17			

# FIFA Quality Concept for Football Turf Laboratory Test Report (2009 edition)

Section 6 – Laboratory tests results							
Ball / surface interaction							
Property	Test condition	FIFA Two Star			FIFA One Star		
		Specified range	Result	Pass / fail	Specified range	Result	Pass / fail
Vertical ball rebound	Dry	0.6 m – 0.85 m			0.6 m – 1.0 m		
	Wet						
	After 5,200 cycles simulated wear						
	After 20,200 cycles simulated wear						
Angle ball rebound	Dry	45 % - 60 %			45 % - 70 %		
	Wet	45 % - 80 %			45 % - 80 %		
Ball roll	Dry	4 m – 8 m			4 m – 10 m		
	Wet						

Specimen

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Report number		Date of report:	
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# FIFA Quality Concept for Football Turf Laboratory Test Report (2009 edition)

Property	Test condition	FIFA Two Star			FIFA One Star		
		Specified range	Result	Pass / fail	Specified range	Result	Pass / fail
<b>Player / surface interaction</b>							
Shock absorption	Dry	60 % - 70 %			55 % - 70 %		
	Wet						
	After 5,200 cycles simulated wear						
	After 20,200 cycles simulated wear						
	-5°C <sup>(1)</sup>						
	40°C						
Deformation	Dry	4 mm – 8 mm			4mm – 9mm		
	Wet						
	After 5,200 cycles simulated wear						
	After 20,200 cycles simulated wear						

Specimen

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Report number		Date of report:	
Page 9 of 17			

# FIFA Quality Concept for Football Turf Laboratory Test Report (2009 edition)

Property	Test condition	FIFA Two Star			FIFA One Star		
		Specified range	Result	Pass / fail	Specified range	Result	Pass / fail
Rotational Resistance	Dry	30 Nm – 45 Nm			25Nm – 50 Nm		
	Wet						
	After 5,200 cycles simulated wear						
	After 20,200 cycles simulated wear						
Linear friction Stud deceleration value	Dry	3.0 g – 5.5 g			3.0 g – 6.0 g		
	Wet						
Linear friction Stud slide value	Dry	130 – 210			120 – 220		
	Wet						
Skin / surface friction	Dry	0.35 $\mu$ – 0.75 $\mu$			0.35 $\mu$ – 0.75 $\mu$		
Skin abrasion	Dry	$\pm$ 30 %			$\pm$ 30 %		

specimen

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Report number		Date of report:	
Page 10 of 17			

# FIFA Quality Concept for Football Turf Laboratory Test Report (2009 edition)

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		

specimen

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Report number		Date of report:	
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# FIFA Quality Concept for Football Turf Laboratory Test Report (2009 edition)

Product Identification				
Artificial turf	Mass per unit area			
	Tufts per unit area			
	Pile length above backing			
	Pile weight			
	Water permeability of carpet			
Performance infill	Particle size range			
	Particle shape			
	Bulk density			
	Thermo-gravimetric analysis	% organic		
		% inorganic		
Stabilising infill	Particle size range			
	Particle shape			
	Bulk density			
Shockpad or e-layer (if supplied as part of system)	Shock Absorption			
	Deformation			
	Thickness			

specimen

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Report number		Date of report:	
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# FIFA Quality Concept for Football Turf Laboratory Test Report (2009 edition)

DSC scan(s) of pile yarn(s)

**specimen**

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This laboratory test report does not confirm or imply FIFA approval of the Football Turf product described within it. FIFA only certify individual fields that have been independently tested and shown to fully satisfy the requirements of the *FIFA Quality Concept for Football Turf*.

Report number		Date of report:	
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FIFA Quality Concept for Football Turf Laboratory Test Report  
(2009 edition)

Performance infill particle grading curve

Stabilising infill particle grading curve

**specimen**

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Report number		Date of report:	
Page 14 of 17			

# FIFA Quality Concept for Football Turf Laboratory Test Report (2009 edition)

Composition of unbound sub-base (if tested as part of system)

Composition	
Particle size range	
Particle shape	
Thickness	
Compaction & test method	

Sub-base particle grading curve


**specimen**

---

This laboratory test report does not confirm or imply FIFA approval of the Football Turf product described within it. FIFA only certify individual fields that have been independently tested and shown to fully satisfy the requirements of the *FIFA Quality Concept for Football Turf*.

Report number		Date of report:	
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FIFA Quality Concept for Football Turf Laboratory Test Report  
(2009 edition)

Photographs showing the effects of simulated wear


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Report number		Date of report:	
Page 16 of 17			

# FIFA Quality Concept for Football Turf Laboratory Test Report (2009 edition)

Section 7 – Laboratory details	
Test Laboratory	
Address	

Section 8 – Conclusions of test programme		
The Football Turf surface satisfies the laboratory test requirements of	FIFA Two Star	o
	FIFA One Star	o
	FIFA Two Star and FIFA One Star	o
° delete as appropriate		

Section 9 – Report details	
Report prepared by (signature)	
Name	
Report approved by (signature)	
Name and position	
Date	

Specimen

This laboratory test report does not confirm or imply FIFA approval of the Football Turf product described within it. FIFA only certify individual fields that have been independently tested and shown to fully satisfy the requirements of the *FIFA Quality Concept for Football Turf*.

Report number		Date of report:	
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**ANNEX B**

**Field test report – FQC Two Star Category**

## **FIFA Field Tests**

### **Information for applicants**

#### 1 Information to be submitted to FIFA in advance of a field test

A field 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 a field 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 Institute. 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 Institute 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 for Initial Field Tests details of all training (including dates) they have undertaken in relationship to the maintenance of the football turf

In addition when requesting an Initial Field Test all the information detailed in Annex G.15 of the Handbook of Requirements for Football Turf shall be submitted prior to the test.

#### 2 Maintenance equipment

During all Field Test the Test Institute is required to audit the equipment provide to maintain the Football Turf surface (including a ball roll ramp) and compare it to the equipment designated by the surface manufacturer. **If the**

**equipment is not available for inspection the field will not be certified by FIFA, irrespective of its performance.** If specialist equipment is required for non-regular maintenance (e.g. decompaction of infill) and this is being undertaken by a specialist company a copy of the maintenance contract and photographic evidence of the equipment to be used shall be provided to the field test institute.

### 3 Site samples

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 Institute 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 Institute 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.

# FIFA Quality Concept for Football Turf Field Test Report – Two Star (2009 edition)

## Section 1: Site and applicant details

FIFA Field Test Report Number						
Type of test	<b>Two Star – initial test</b>					
Club (if applicable)						
Address	Stadium or site name					
	City					
	Country					
Stadium or site contact						
Tel.						
Email						
Football Turf installed						
Date of installation						
Maintenance details	Date maintenance manual supplied to site	Yes	<input type="radio"/>	No	<input type="radio"/>	
	Date of maintenance training by Football Turf manufacturer / supplier					
	Names of grounds staff trained					
	Date(s) maintenance equipment supplied to site (as part of the field test the test institute will require this equipment to be available for inspection) :	Tractor Unit				
		Drag Brush				
		Drag Mat				
Infill materials to top up penalty spot and corner areas						
Ball roll ramp						
Maintenance log						
	Other (detail)					

Field name		Report number	
Date of report:		Page	1 of 11



FIFA Quality Concept for Football Turf  
 Field Test Report – Two Star (2009 edition)

Applicant			
Address			
Applicant contact			
Tel.			
E-mail			
Applicants Signature		Date	

**specimen**

Field name		Report number	
Date of report:		Page	2 of 11

# FIFA Quality Concept for Football Turf Field Test Report – Two Star (2009 edition)

## Section 2: Summary of results

Field Passed	<input type="radio"/>	Field failed	<input type="radio"/>
Criteria that failed (if any):			
Ball / Surface interaction	<input type="radio"/>	Vertical ball rebound	<input type="radio"/> Ball roll
	<input type="radio"/>	Angle ball rebound	
Player / Surface interaction	<input type="radio"/>	Shock absorbency	<input type="radio"/> Deformation
	<input type="radio"/>	Rotational resistance	<input type="radio"/> Stud slide value
	<input type="radio"/>	Stud deceleration value	
Construction Requirements	<input type="radio"/>	Regularity	<input type="radio"/> Consistency of site and laboratory materials

Report details	
Laboratory Director (signature)	
Date	
Test laboratory	
Project No.	
FIFA Accredited Engineer on site	Name
	Signature
Names of other Test Engineers on site	

Field name		Report number	
Date of report:		Page	3 of 11

# FIFA Quality Concept for Football Turf Field Test Report – Two Star (2009 edition)

Maintenance equipment on site				
Tractor Unit	Yes	<input type="radio"/>	No	<input type="radio"/>
Drag Brush		<input type="radio"/>		<input type="radio"/>
Drag Mat		<input type="radio"/>		<input type="radio"/>
Infill materials to top up penalty spot and corner areas		<input type="radio"/>		<input type="radio"/>
Ball roll ramp		<input type="radio"/>		<input type="radio"/>
Up to date maintenance log		<input type="radio"/>		<input type="radio"/>

Sprinkler system				
Does the field contain sprinklers within the playing area or run-offs	Yes	<input type="radio"/>	No	<input type="radio"/>
If the field does contain sprinklers within the playing area or run-offs do the additional shock absorption and deformation test results fall within the required ranges.	Yes	<input type="radio"/>	No	<input type="radio"/>
Append test results and a drawing showing the position of all sprinklers (identifying those on which tests were made) to this report				

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 name		Report number	
Date of report:		Page	4 of 11

# FIFA Quality Concept for Football Turf Field Test Report – Two Star (2009 edition)

## Section 3: Detailed results

### Ball/surface and player/surface interactions

Property	Specified range	Test Position						Pass / fail
		1	2	3	4	5	6	
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							

Specimen

Field name		Report number	
Date of report:		Page	5 of 11

# FIFA Quality Concept for Football Turf Field Test Report – Two Star (2009 edition)

## Infra-structure tests & measurements

			Reference *	1	2	3	4	
Shock absorption of shockpad, when applicable	± 5% FR of reference sample	<b>Result</b>						
		<b>Variation</b>						
Thickness of shockpad, when applicable	≥90% of reference sample	<b>Result</b>						
		<b>Variation</b>						
<div style="color: red; font-size: 4em; transform: rotate(-15deg); opacity: 0.5;">specimen</div>								
Pitch dimensions	Length	Min. 90m Max.120m						
	Width	Min. 45m Max. 90m						

\* As detailed on FIFA laboratory test report

## Product identification

Field name		Report number	
Date of report:		Page	6 of 11

# FIFA Quality Concept for Football Turf Field Test Report – Two Star (2009 edition)

Component	Property	Site sample	Manufacturer's declaration	Variation	FIFA requirement	Pass / Fail
Artificial turf	Mass per unit area				$\leq \pm 10\%$	
	Tufts per unit area				$\leq \pm 10\%$	
	Tuft withdrawal				$\geq 90\%$ of reference	
	Pile length above backing				$\leq \pm 5\%$	
	Total Pile weight				$\leq \pm 10\%$	
	Dtex				$\leq \pm 10\%$	
	Yarn characterisation				Same polymer	
	Water Permeability			Lab result		$\geq 180\text{mm/h}$ and $> 75\%$ of laboratory result

specimen

Field name		Report number	
Date of report:		Page	7 of 11

# FIFA Quality Concept for Football Turf Field Test Report – Two Star (2009 edition)

Component	Property	Site sample	Manufacturer's declaration	Variation	FIFA requirement	Pass / Fail
Performance infill	Particle size				$\leq \pm 20\%$	
	Particle shape				Similar shape	
	Bulk density				$\leq \pm 15\%$	

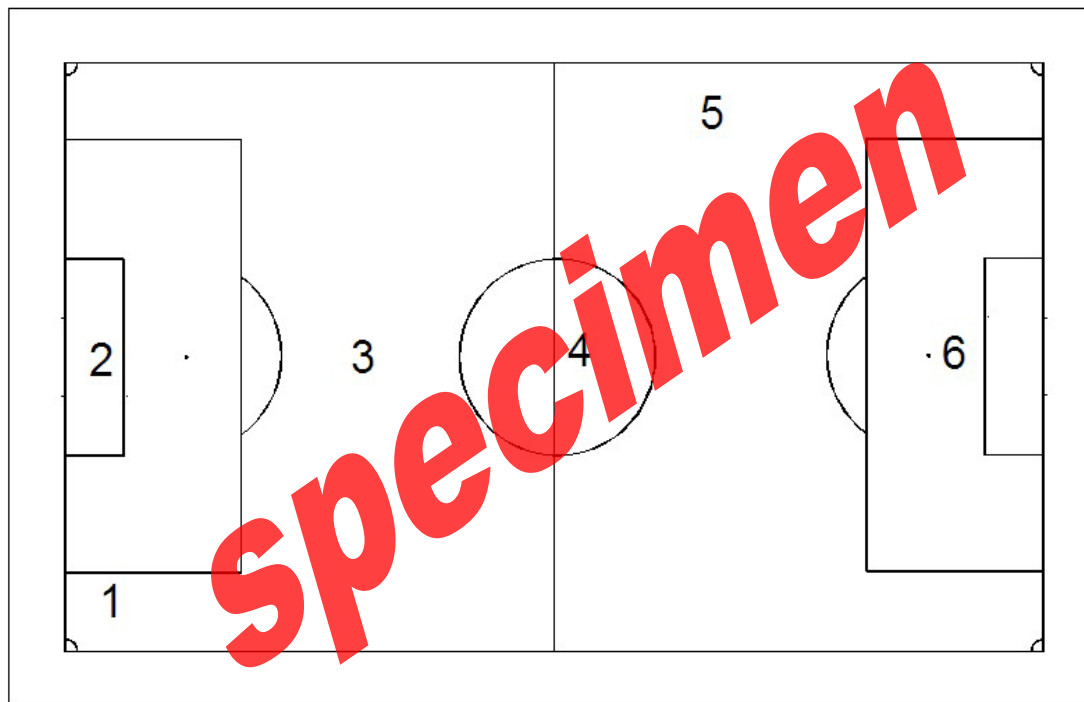
Component	Property	Site sample	Manufacturer's declaration	Variation	FIFA requirement	Pass / Fail
Stabilising infill	Particle size				$\leq \pm 20\%$	
	Particle shape				Similar shape	
	Bulk density				$\leq \pm 15\%$	

specimen

Field name		Report number	
Date of report:		Page	8 of 11

# FIFA Quality Concept for Football Turf Field Test Report – Two Star (2009 edition)

Field test position – mark orientation on drawing



Field name		Report number	
Date of report:		Page	9 of 11



FIFA Quality Concept for Football Turf Field Test Report – Two Star (2009 edition)

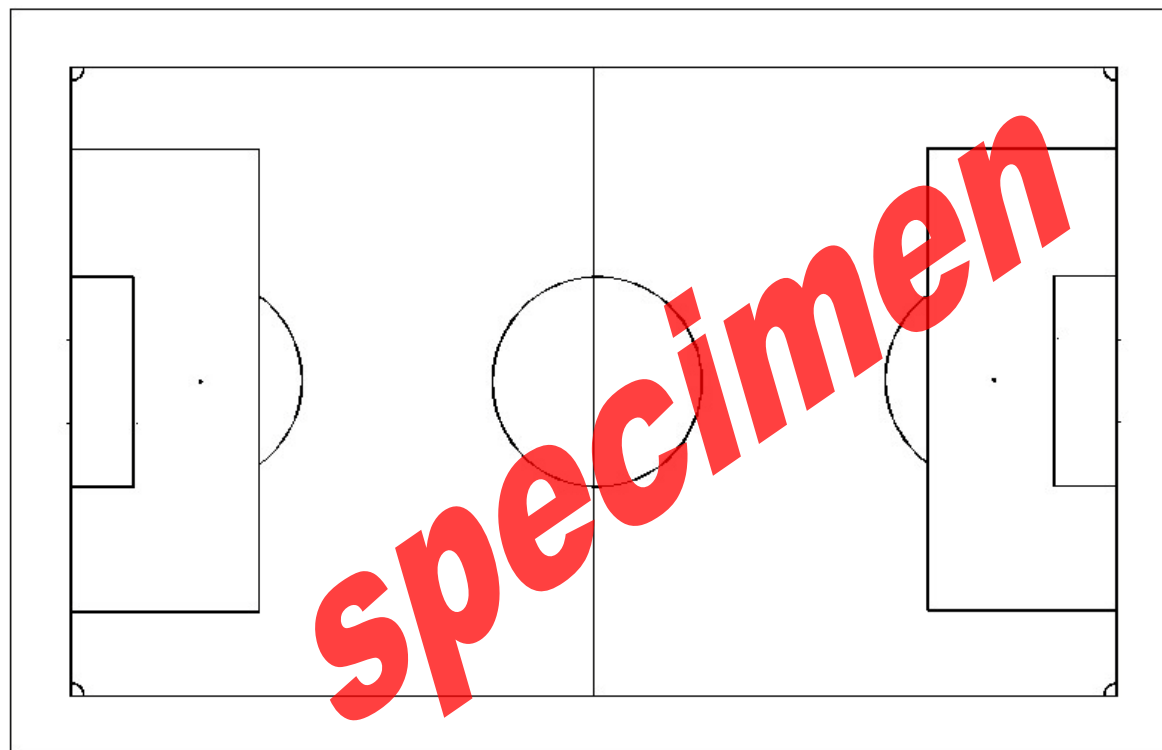
Photographic record on maintenance equipment observed on site

**specimen**

Field name		Report number	
Date of report:		Page	10 of 11

# FIFA Quality Concept for Football Turf Field Test Report – Two Star (2009 edition)

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



Field name		Report number	
Date of report:		Page	11 of 11

**ANNEX C**

**Field test report - One Star Category**

# FIFA Quality Concept for Football Turf Field Test Report – One Star (2009 edition)

## Section 1: Site and applicant details

FIFA Field Test Report Number						
Type of test	<b>One Star – initial test</b>					
Club (if applicable)						
Address	Stadium or site name					
	City					
	Country					
Stadium or site contact						
Tel.						
Email						
Football Turf installed						
Date of installation						
Maintenance details	Maintenance manual supplied to site	Yes	<input type="radio"/>	No	<input type="radio"/>	
	Date of maintenance training by Football Turf manufacturer / supplier					
	Names of grounds staff trained					
	Date(s) maintenance equipment supplied to site (as part of the field test the test institute will require this equipment to be available for inspection) :	Tractor Unit				
		Drag Brush				
		Drag Mat				
Infill materials to top up penalty spot and corner areas						
Ball roll ramp						
Maintenance log						
Other (detail)						

Field name		Report number	
Date of report:		Page	1 of 11

FIFA Quality Concept for Football Turf  
 Field Test Report – One Star (2009 edition)

Applicant			
Address			
Applicant contact			
Tel.			
E-mail			
Applicants Signature		Date	

**specimen**

Field name		Report number	
Date of report:		Page	2 of 11

# FIFA Quality Concept for Football Turf Field Test Report – One Star (2009 edition)

## Section 2: Summary of results

Field Passed	<input type="radio"/>	Field failed	<input type="radio"/>
Criteria that failed (if any):			
Ball / Surface interaction	<input type="radio"/>	Vertical ball rebound	<input type="radio"/> Ball roll
	<input type="radio"/>	Angle ball rebound	
Player / Surface interaction	<input type="radio"/>	Shock absorbency	<input type="radio"/> Deformation
	<input type="radio"/>	Rotational resistance	
Construction Requirements	<input type="radio"/>	Regularity	<input type="radio"/> Consistency of site and laboratory materials

Report details	
Laboratory Director (signature)	
Date	
Test laboratory	
Project No.	
FIFA Accredited Engineer on site	Name
	Signature
Names of other Test Engineers on site	

--

<b>Maintenance equipment on site</b>
--------------------------------------

Field name	Report number
Date of report:	Page 3 of 11

# FIFA Quality Concept for Football Turf Field Test Report – One Star (2009 edition)

Tractor Unit	Yes	o	No	o
Drag Brush		o		o
Drag Mat		o		o
Infill materials to top up penalty spot and corner areas		o		o
Ball roll ramp		o		o
Up to date maintenance log		o		o

<b>Sprinkler system</b>				
Does the field contain sprinklers within the playing area or run-offs	Yes	o	No	o
If the field does contain sprinklers within the playing area or run-offs do the additional shock absorption and deformation test results fall within the required ranges.	Yes	o	No	o
Append test results and a drawing showing the position of all sprinklers (identifying those on which tests were made) to this report				

<b>Test conditions</b>									
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 name		Report number	
Date of report:		Page	4 of 11

# FIFA Quality Concept for Football Turf Field Test Report – One Star (2009 edition)

## Section 3: Detailed results

### Ball/surface and player/surface interactions

Property	Specified range	Test Position						Pass / fail
		1	2	3	4	5	6	
Vertical ball rebound	0.60 m – 1.00 m							
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							

specimen

Field name		Report number	
Date of report:		Page	5 of 11



# FIFA Quality Concept for Football Turf Field Test Report – One Star (2009 edition)

## Infra-structure tests & measurements

			Reference *	1	2	3	4	
Shock absorption of shockpad, when applicable	± 5% FR of reference sample	<b>Result</b>						
		<b>Variation</b>						
Thickness of shockpad, when applicable	≥90% of reference sample	<b>Result</b>						
		<b>Variation</b>						
<b>specimen</b>								
Pitch dimensions	Length	Min. 90m Max.120m						
	Width	Min. 45m Max. 90m						

\* As detailed on FIFA laboratory test report

Field name		Report number	
Date of report:		Page	6 of 11

# FIFA Quality Concept for Football Turf Field Test Report – One Star (2009 edition)

## Product identification

Component	Property	Site sample	Manufacturer's declaration	Variation	FIFA requirement	Pass / Fail
Artificial turf	Mass per unit area				$\leq \pm 10\%$	
	Tufts per unit area				$\leq \pm 10\%$	
	Tuft withdrawal				$\geq 90\%$ of reference	
	Pile length above backing				$\leq \pm 5\%$	
	Total Pile weight				$\leq \pm 10\%$	
	Dtex				$\leq \pm 10\%$	
	Yarn characterisation				Same polymer	
	Water Permeability			Lab result		$\geq 180\text{mm/h}$ and $> 75\%$ of laboratory result

specimen

Field name		Report number	
Date of report:		Page	7 of 11

# FIFA Quality Concept for Football Turf Field Test Report – One Star (2009 edition)

Component	Property	Site sample	Manufacturer's declaration	Variation	FIFA requirement	Pass / Fail
Performance infill	Particle size				$\leq \pm 20\%$	
	Particle shape				Similar shape	
	Bulk density				$\leq \pm 15\%$	

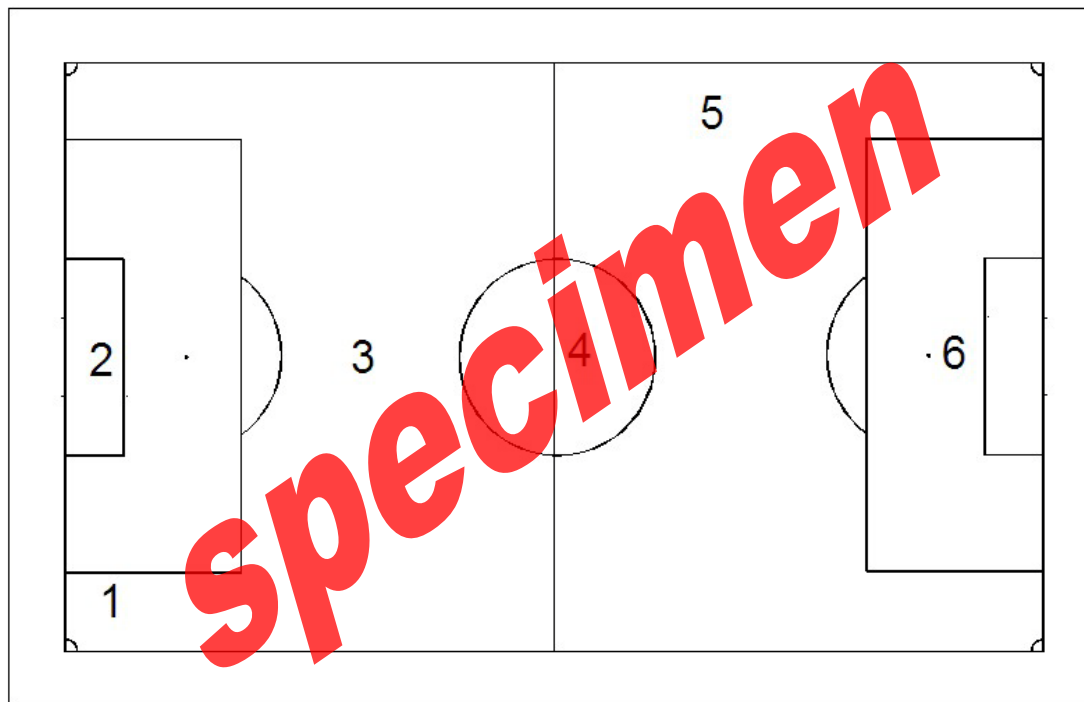
Component	Property	Site sample	Manufacturer's declaration	Variation	FIFA requirement	Pass / Fail
Stabilising infill	Particle size				$\leq \pm 20\%$	
	Particle shape				Similar shape	
	Bulk density				$\leq \pm 15\%$	

specimen

Field name		Report number	
Date of report:		Page	8 of 11

# FIFA Quality Concept for Football Turf Field Test Report – One Star (2009 edition)

Field test position – mark orientation on drawing



Field name		Report number	
Date of report:		Page	9 of 11

FIFA Quality Concept for Football Turf Field Test Report – One Star (2009 edition)

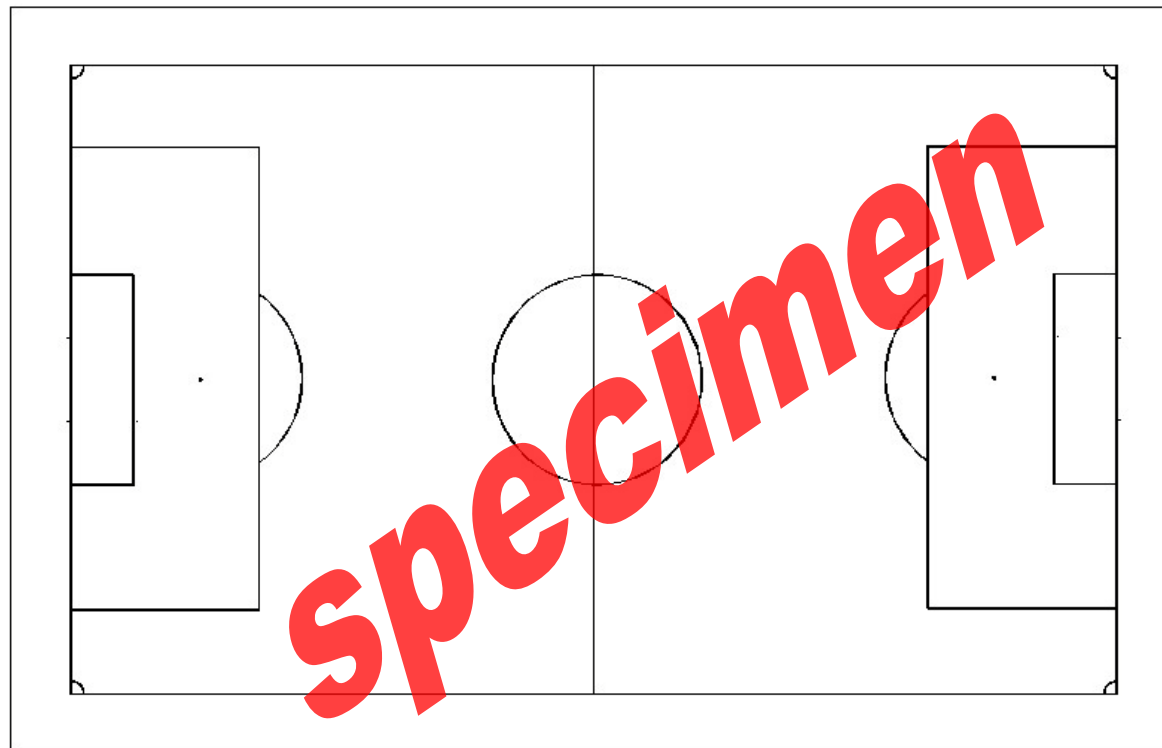
Photographic record on maintenance equipment observed on site

**specimen**

Field name		Report number	
Date of report:		Page	10 of 11

# FIFA Quality Concept for Football Turf Field Test Report – One Star (2009 edition)

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



Field name		Report number	
Date of report:		Page	11 of 11

## **ANNEX D**

### **Field test report – FQC Two Star Category Retest**

# FIFA Quality Concept for Football Turf Field Re-test Report – Two Star (2009 edition)

## Section 1: Site and applicant details

FIFA Field Test Report Number			
Type of test	<b>Two Star – retest</b>		
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	

specimen

Field name		Report number	
Date of report:		Page	1 of 8



# FIFA Quality Concept for Football Turf Field Re-test Report – Two Star (2009 edition)

## Section 2: Summary of results

<b>Field Passed</b>	<input type="radio"/>	<b>Field failed</b>	<input type="radio"/>	
Criteria that failed (if any):				
Ball / Surface interaction	<input type="radio"/>	Vertical ball rebound	<input type="radio"/>	
Player / Surface interaction	<input type="radio"/>	Shock absorbency	<input type="radio"/>	
	<input type="radio"/>	Rotational resistance		
Construction Requirements	<input type="radio"/>	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	<input type="radio"/>
			No	<input type="radio"/>
Laboratory Director				
Date				
Test laboratory				
Test laboratory project reference				
FIFA Accredited Engineer on site	Name			
	Signature			
Names of other Test Engineers on site				

Specimen

Field name		Report number	
Date of report:		Page	2 of 8

# FIFA Quality Concept for Football Turf Field Re-test Report – Two Star (2009 edition)

Maintenance equipment on site				
Tractor Unit	Yes	<input type="radio"/>	No	<input type="radio"/>
Drag Brush		<input type="radio"/>		<input type="radio"/>
Drag Mat		<input type="radio"/>		<input type="radio"/>
Infill materials to top up penalty spot and corner areas		<input type="radio"/>		<input type="radio"/>
Ball roll ramp		<input type="radio"/>		<input type="radio"/>
Up to date maintenance log		<input type="radio"/>		<input type="radio"/>

Sprinkler system				
Does the field contain sprinklers within the playing area or run-offs	Yes	<input type="radio"/>	No	<input type="radio"/>
If the field does contain sprinklers within the playing area or run-offs do the additional shock absorption and deformation test results fall within the required ranges.	Yes	<input type="radio"/>	No	<input type="radio"/>
Append test results and a drawing showing the position of all sprinklers (identifying those on which tests were made) to this report				

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 name		Report number	
Date of report:		Page	3 of 8

# FIFA Quality Concept for Football Turf Field Re-test Report –Two Star (2009 edition)

## Section 3: Detailed results

### Ball/surface and player/surface interactions

Property	Specified range	Test Position						Pass / fail
		1	2	3	4	5	6	
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 name		Report number	
Date of report:		Page	4 of 8

# FIFA Quality Concept for Football Turf Field Re-test Report –Two Star (2009 edition)

## Product identification

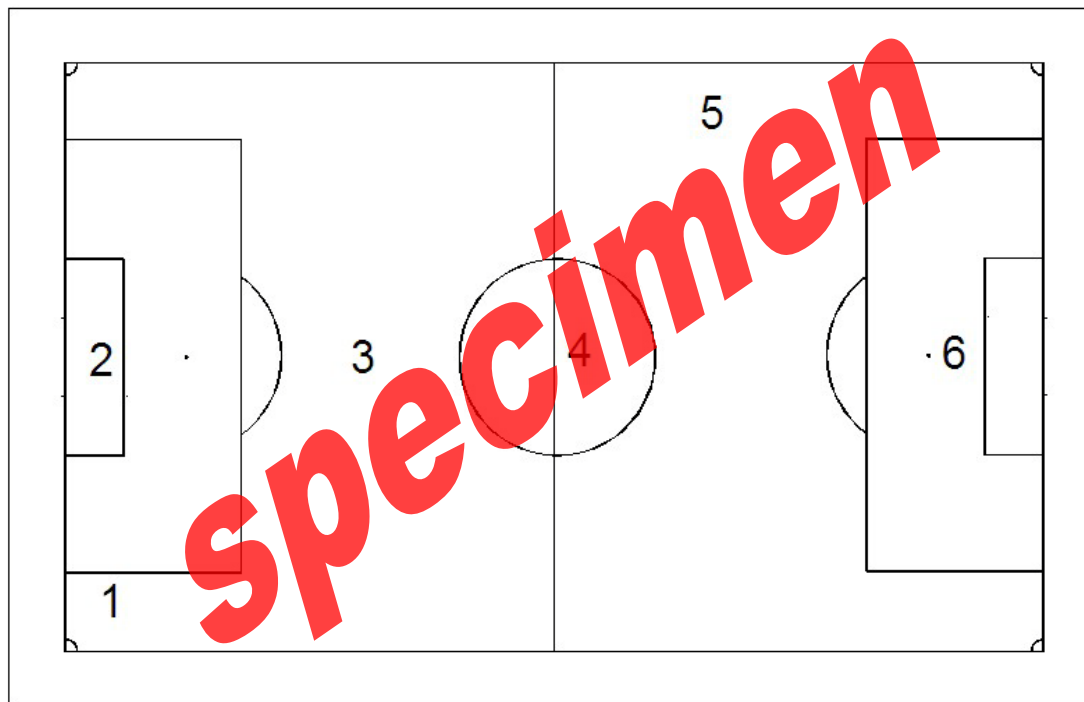
Property	Test Position					Manufacturer's declaration	% variation	Pass / fail
	1	2	3	4	Mean			
Artificial grass surface								
Pile height								
Stitch gauge (mm)								
Tufts per 100mm								
Calculated tufts per unit area								
<b>Performance infill</b>								
	Test Position							
	1	2	3	4	5	6	Manufacturer's declared range	Pass / fail
Largest sieve retaining at least 10% of infill								

specimen

Field name		Report number	
Date of report:		Page	5 of 8

# FIFA Quality Concept for Football Turf Field Re-test Report –Two Star (2009 edition)

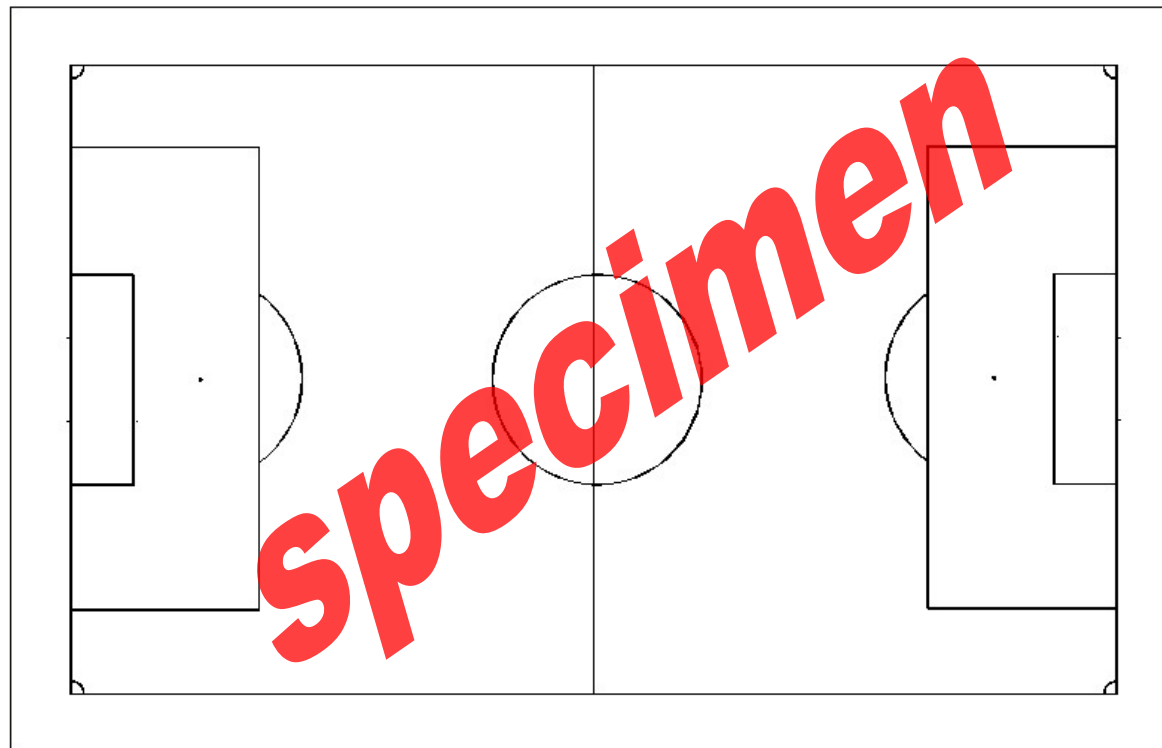
Field test position – mark orientation on drawing



Field name		Report number	
Date of report:		Page	6 of 8

# FIFA Quality Concept for Football Turf Field Re-test Report –Two Star (2009 edition)

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



Field name		Report number	
Date of report:		Page	7 of 8

# FIFA Quality Concept for Football Turf Field Re-test Report –Two Star (2009 edition)

Photographic record of maintenance equipment observed on site

**specimen**

Field name		Report number	
Date of report:		Page	8 of 8

**ANNEX E**

**Field report – FQC One Star Category Retest**



# FIFA Quality Concept for Football Turf Field Re-test Report – One Star (2009 edition)

## Section 1: Site and applicant details

FIFA Field Test Report Number			
Type of test	<b>One Star – retest</b>		
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	

specimen

Field name		Report number	
Date of report:		Page	1 of 8

# FIFA Quality Concept for Football Turf Field Re-test Report – One Star (2009 edition)

## Section 2: Summary of results

<b>Field Passed</b>	<input type="radio"/>	<b>Field failed</b>	<input type="radio"/>	
Criteria that failed (if any):				
Ball / Surface interaction	<input type="radio"/>	Vertical ball rebound	<input type="radio"/>	
Player / Surface interaction	<input type="radio"/>	Shock absorbency	<input type="radio"/>	
	<input type="radio"/>	Rotational resistance		
Construction Requirements	<input type="radio"/>	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	<input type="radio"/>
			No	<input type="radio"/>
Laboratory Director				
Date				
Test laboratory				
Test laboratory project reference				
FIFA Accredited Engineer on site	Name			
	Signature			
Names of other Test Engineers on site				

Specimen

FIFA Quality Concept for Football Turf  
Field Re-test Report – One Star (2009 edition)

Maintenance equipment on site				
Tractor Unit	Yes	<input type="radio"/>	No	<input type="radio"/>
Drag Brush		<input type="radio"/>		<input type="radio"/>
Drag Mat		<input type="radio"/>		<input type="radio"/>
Infill materials to top up penalty spot and corner areas		<input type="radio"/>		<input type="radio"/>
Ball roll ramp		<input type="radio"/>		<input type="radio"/>
Up to date maintenance log		<input type="radio"/>		<input type="radio"/>

Sprinkler system				
Does the field contain sprinklers within the playing area or run-offs	Yes	<input type="radio"/>	No	<input type="radio"/>
If the field does contain sprinklers within the playing area or run-offs do the additional shock absorption and deformation test results fall within the required ranges.	Yes	<input type="radio"/>	No	<input type="radio"/>
Append test results and a drawing showing the position of all sprinklers (identifying those on which tests were made) to this report				

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 name		Report number	
Date of report:		Page	3 of 8

# FIFA Quality Concept for Football Turf Field Re-test Report – One Star (2009 edition)

## Section 3: Detailed results

### Ball/surface and player/surface interactions

Property	Specified range	Test Position						Pass / fail
		1	2	3	4	5	6	
Vertical ball rebound	0.60 m – 1.00 m							
Ball roll	4.0 m – 12.0 m							
Shock absorption	55 % - 70 %							
Deformation	4.0 mm – 9.0 mm							
Rotational resistance	25 Nm – 50 Nm							

specimen

Field name		Report number	
Date of report:		Page	4 of 8

# FIFA Quality Concept for Football Turf Field Re-test Report – One Star (2009 edition)

## Product identification

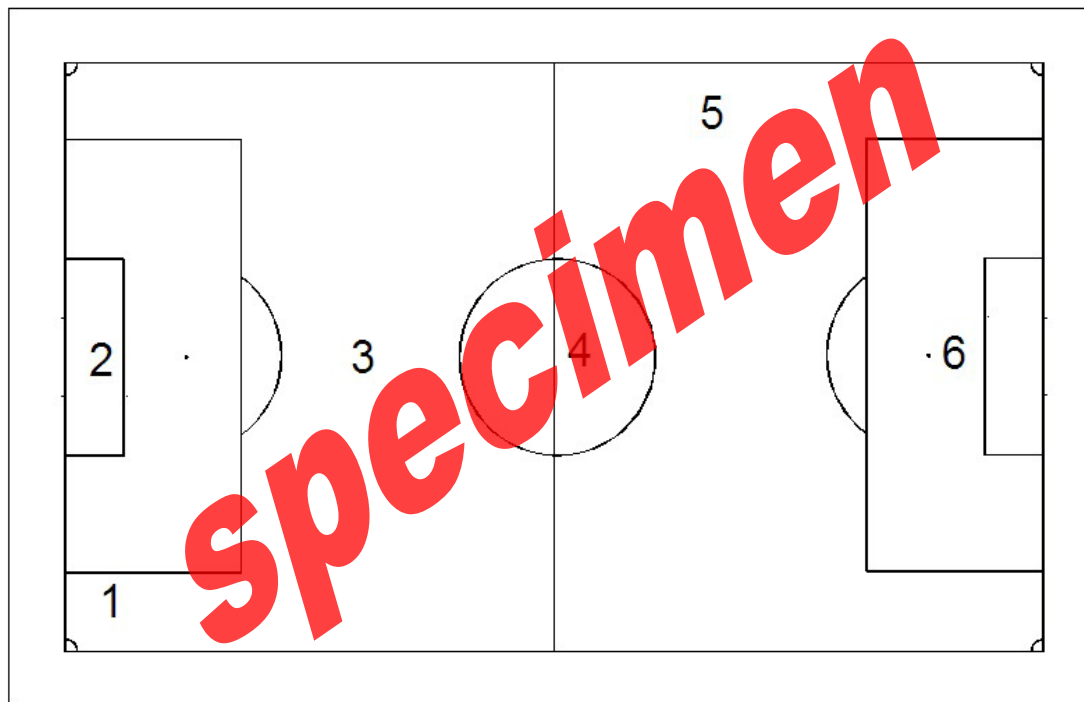
Property	Test Position					Manufacturer's declaration	% variation	Pass / fail
	1	2	3	4	Mean			
Artificial grass surface								
Pile height								
Stitch gauge (mm)								
Tufts per 100mm								
Calculated tufts per unit area								
<b>Performance infill</b>								
	Test Position					Manufacturer's declared range	Pass / fail	
	1	2	3	4	5			6
Largest sieve retaining at least 10% of infill								

specimen

Field name		Report number	
Date of report:		Page	5 of 8

# FIFA Quality Concept for Football Turf Field Re-test Report – One Star (2009 edition)

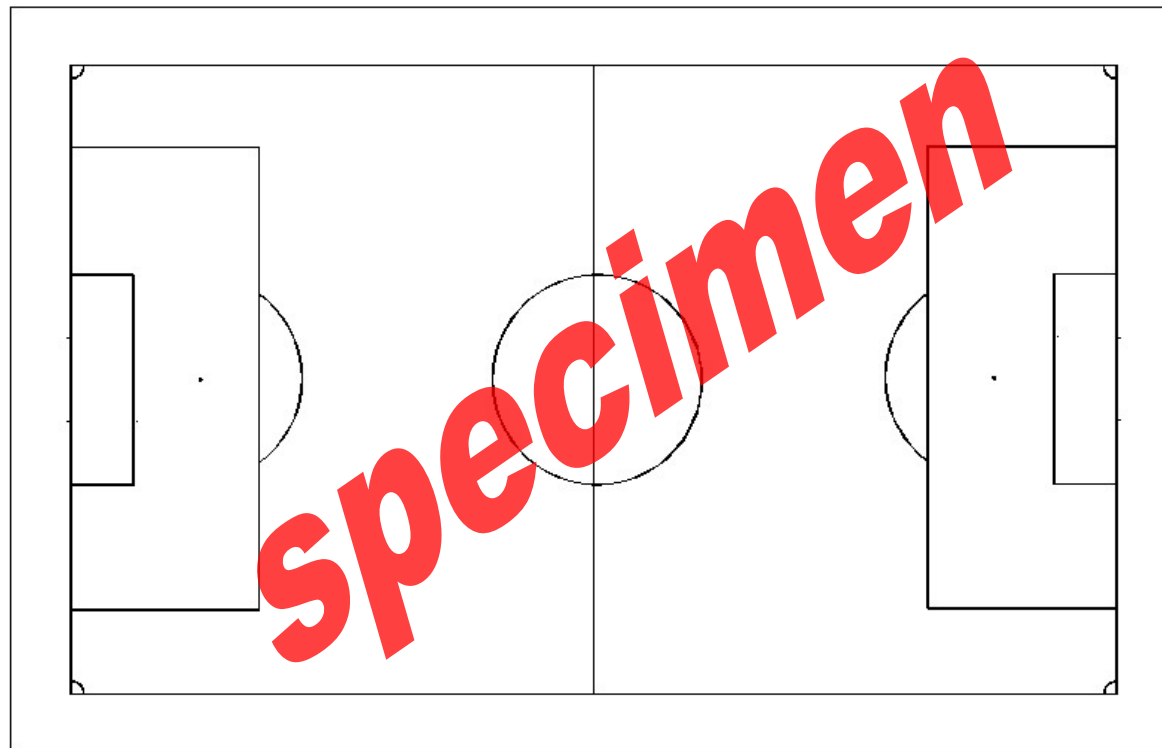
Field test position – mark orientation on drawing



Field name		Report number	
Date of report:		Page	6 of 8

# FIFA Quality Concept for Football Turf Field Re-test Report – One Star (2009 edition)

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



Field name		Report number	
Date of report:		Page	7 of 8

# FIFA Quality Concept for Football Turf Field Re-test Report – One Star (2009 edition)

Photographic record of maintenance equipment observed on site

**specimen**

Field name		Report number	
Date of report:		Page	8 of 8



## **Annex F - General requirements**

### **F1 Gloss**

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

### **F2 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.

### **F3 Staining**

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

### **F4 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.

### **F5 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.

### **F6 Climatic Conditions**

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

### **F7 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 G - Factory Quality Control Procedures**

### **G.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.

### **G.2 Organization**

#### **G.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.

#### **G.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.

#### **G.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.

### **G.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.

### **G.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.

## **G.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.

## **G.6 Knowledge of the raw material**

There shall be documentation detailing the nature of the constituent parts as specified in the licensee's 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.

## **G.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.

## **G.8 Inspection and test**

### **G.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.

### **G.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.

### G.8.3 Frequency and location of inspection, sampling and tests

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

### G.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.

## **G.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.

#### **G.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.

#### **G.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.

#### **G.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.

#### **G.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.

#### **G.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.

## G15 Design and construction verification

As requested by FIFA the FIFA licensee shall make available all design drawings and bills of quantities for any field submitted for FIFA certification together with details of materials actually used during the construction. This shall include:

- i) Depth of sub-base materials, density of sub-base materials (when compacted), tonnage of material delivered to site (checked against delivery notes)
- li Length and type of drainage pipes delivered to site (checked against delivery notes)
- ii) Quantity and quality of drainage aggregate delivered to site (checked against delivery notes)
- iii) Quantity and quality of synthetic grass delivered to site (checked against delivery notes)
- iv) Quantity and quality of infill sand delivered to site (checked against delivery notes)
- v) Quantity and quality of infill rubber/elastomer delivered to site (checked against delivery notes)
- vi) Quantity and quality of adhesive delivered to site (checked against delivery notes)
- vii) Quantity and quality of seaming tape delivered to site (checked against delivery notes)
- viii) Quantity and quality of sewing thread delivered to site (checked against delivery notes)
- ix) Quantity and quality of sports equipment delivered to site (checked against delivery notes)
- x) Quantity and quality of maintenance equipment delivered to site (checked against delivery notes)
- xi) Quantity and quality of edging kerbs delivered to site (checked against delivery notes)
- xii) Quantity and quality of haunching materials delivered to site (checked against delivery notes)
- xiii) Quantity and quality of additional contract materials delivered to site for example perimeter paths (checked against delivery notes)
- xiv) Quantity and quality of maintenance testing equipment delivered to site (checked against delivery notes)

All information shall be sent to:

FIFA  
FIFA Marketing Division  
FIFA Quality Concept for Football Turf  
FIFA STRASSE 20  
8044  
ZURICH  
SWITZERLAND