



**FIFA QUALITY CONCEPT  
REQUIREMENTS FOR ARTIFICIAL TURF SURFACES**

LABORATORY TESTS - BALL / SURFACE INTERACTION						
Property	Test Method	Test conditions			Requirements	
		Preparation	Temperature	Condition	FIFA Recommended **	FIFA Recommended *
Vertical ball rebound	FIFA 01/05-01 & FIFA 09/05-01	Pre-conditioning	23°C	Dry	0.60m - 0.85m	0.60m - 1.0m
				Wet		-
		Simulated Wear	23°C	Dry		0.60m - 1.0m
Angle ball rebound	FIFA 02/05-01	Pre-conditioning	23°C	Dry	45% - 60%	45% -70%
				Wet	45% - 80%	45% - 80%
Ball roll	FIFA 03/05-01	Pre-conditioning	23°C	Dry	4m - 8m	4m - 10m
				Wet		-

LABORATORY TESTS - PLAYER / SURFACE INTERACTION							
Property	Test Method	Test method	Test conditions			Requirement	
			Preparation	Temperature	Condition	FIFA Recommended **	FIFA Recommended *
Shock Absorption	FIFA 04/05-01 & FIFA 10/05-01	Flat foot Mean 2 <sup>nd</sup> / 3 <sup>rd</sup> impact	Pre-conditioning	23°C	Dry	60% - 70%	55% - 70%
					Wet		-
		Simulated Wear	23°C	Dry	55% - 70%		
		-	40°C	Dry	-		
		Flat foot 1 <sup>st</sup> impact	-	-5°C	Frozen	60% - 70% <sup>(1)</sup>	-
Vertical Deformation	FIFA 05/05-01 & FIFA 10/05-01	Flat foot Mean 2 <sup>nd</sup> / 3 <sup>rd</sup> impact	Pre-conditioning	23°C	Dry	4mm - 8mm	4mm - 9mm
					Wet		-
			Simulated Wear	23°C	Dry		4mm - 9mm

1 Surfaces that fail the shock absorption test at -5°C may only be installed on pitches that have an under pitch heating system or in locations that do not experience temperatures below 0°C.

**LABORATORY TESTS - PLAYER / SURFACE INTERACTION (continued)**

Property	Test Method	Test conditions			Requirement	
		Preparation	Temperature	Condition	FIFA Recommended **	FIFA Recommended *
Rotational Resistance	FIFA 06/05-01 & FIFA 10/05-01	Pre-conditioning	23°C	Dry	30Nm - 45Nm	25Nm - 50Nm
				Wet		-
		Simulated Wear	23°C	Dry		25Nm - 50Nm
Linear Friction - Stud Deceleration Value	FIFA 07/05-01	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 08/05-01	Pre-conditioning	23°C	Dry	0.35 - 0.75	-
Skin abrasion	FIFA 09/05-01	Pre-conditioning	23°C	Dry	± 30%	-

**LABORATORY TESTS - ARTIFICIAL WEATHERING (FIFA 11/05-01)**

Component	Property	Test method	Requirement	
			FIFA Recommended <b>**</b>	FIFA Recommended <b>*</b>
Artificial turf	Colour change	EN ISO 20105-A02	≥ Grey scale 3	≥ Grey scale 3
	Effects of simulated wear after artificial weathering	Visual description and photographic record	-	-
Pile yarn (s)	Tensile strength	EN 13864	Percentage change from unaged to be no more than 50%	Percentage change from unaged to be no more than 50%
Polymeric infill	Colour change	EN ISO 20105-A02	≥ Grey scale 3	≥ Grey scale 3

LABORATORY TESTS - MISCELLANEOUS PROPERTIES				
Property	Test Method	Condition	Requirement	
			FIFA Recommended **	FIFA Recommended *
Joint strength Stitched seams	EN 12228 & EN 13744	Unaged	1500N/100mm	1500N/100mm
		Immersion in hot water		
Joint strength Bonded seams	EN 12228 & EN 13744	Unaged	25N/100mm	25N/100mm
		Immersion in hot water		
Water permeability	EN 12616	Unaged	> 180mm/h	> 180mm/h
Tensile strength of shockpads and e-layers (if supplied as part of system)	EN 12230	Unaged	0.15Mpa	-

**LABORATORY TESTS - PRODUCT IDENTIFICATION TESTS & QUALITY MONITORING REQUIREMENTS**

Component	Characteristic	Test method	Variation between laboratory tested system and materials taken from site	
			FIFA Recommended **	FIFA Recommended *
Artificial turf and pile yarn(s)	Mass per unit area	ISO 8543	< ±100gm <sup>2</sup>	< ±100gm <sup>2</sup>
	Tufts per unit area	ISO 1763	< ± 10%	< ± 10%
	Tuft withdrawal force	ISO 4919	< ± 10%	< ± 10%
	Pile length	ISO 2549	< ± 5%	< ± 5%
	Pile weight	ISO 8543	< ± 10%	< ± 10%
	Pile yarn characterisation	DSC	-	-
Infill	Layer depth(s)	EN 1969	< ± 15%	< ± 15%
Individual elements of infill materials (e.g. rubber, sand, etc)	Particle size	EN 933 - Part 1	< ± 20%	< ± 20%
	Particle shape	prEN 14955	< ± 20%	< ± 20%
	Bulk density	EN 13041	< ± 10%	< ± 10%

**LABORATORY TESTS - PRODUCT IDENTIFICATION & QUALITY MONITORING REQUIREMENTS (continued)**

Component	Characteristic	Test method	Variation between laboratory tested system and materials taken from site	
			FIFA Recommended **	FIFA Recommended *
Rubber granular infill	% organic	Thermo-gravimetric analysis	-	-
	% inorganic			
	Residual compression & change in appearance	FIFA 12/05-01	-	-
Shockpads and e-layers (if supplied as part of system)	Mass per unit area	EN 430	< ± 100gm <sup>2</sup>	< ± 100gm <sup>2</sup>
	Compressive modulus	EN 604	< ± 10%	< ± 10%
	Tensile strength	EN 12230	< ± 10%	< ± 10%
	Thickness	EN 1969	< ± 15%	< ± 15%
Unbound sub-bases (when tested as part of system)	Particle size	EN 933 – Part 1	< ± 20%	< ± 20%
	Particle shape	prEN 14955	< ± 20%	< ± 20%

## FIELD TESTS - TEST SCHEDULE AND REQUIREMENTS

Fields that are normally watered prior to use shall be tested under wet conditions. Fields that are used dry or wet shall be tested under the meteorological conditions found at the time of test.

To be certified under the FIFA Quality Concept a field shall satisfy each requirement in any position on the field.

Characteristic	Test Method	Test conditions	Requirement	
			FIFA Recommended **	FIFA Recommended *
Vertical ball rebound	FIFA 01/05-01	-	60cm - 85cm	60cm - 100cm
Angle ball rebound	FIFA 02/05-01	Dry	45% - 60%	45% -70%
		Wet	45% - 80%	45% -80%
Ball roll	FIFA 03/05-01	Initial assessment	4m - 8m	4m - 10m
		After 12 months	4m – 10m	
Shock Absorption	FIFA 04/05-01	Flat foot - Mean 2 <sup>nd</sup> / 3 <sup>rd</sup> impact	60% - 70%	55% - 70%
Vertical Deformation	FIFA 05/05-01	Flat foot - Mean 2 <sup>nd</sup> / 3 <sup>rd</sup> impact	4mm - 8mm	4mm - 9mm
Rotational Resistance	FIFA 06/05-01	-	30Nm - 45Nm	25Nm - 50Nm

FIELD TESTS - TEST SCHEDULE AND REQUIREMENTS (continued)				
Linear Friction - Stud Deceleration Value	FIFA 07/05-01	-	3.0g - 5.5 g	3.0g - 6.0 g
Linear Friction - Stud Slide Value	FIFA 08/05-01	-	130 – 210	120 - 220
Surface regularity of playing surface	EN 13036	3m straightedge	≤10mm	≤10mm
Slope	Surveyors level	-	≤1% (≤0.5% recommended)	≤1% (≤0.5% recommended)
Water permeability of sub-base	EN 12616	-	≥ 180mm/h	≥ 180mm/h
Surface regularity of sub-base	EN 13036	3m straightedge	≤10mm	≤10mm
		300mm straightedge	≤ 2mm	≤ 2mm

### **Field dimensions for a 1 Star installation:**

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 90m (100yds)  
                  Maximum 120m (130yds)

Width:         minimum 45m (50yds)  
                  Maximum 90m (100yds)

### **Field dimensions and additional requirements for a 2 Star installation:**

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 100m (110yds)  
                  Maximum 110m (120yds)

Width:         minimum 64m (70yds)  
                  Maximum 750m (80yds)

For all additional requirements regarding field markings, goal- and penalty-area and corner arc "LAW 1 - The Field of Play" and the Decisions of the international F.A. Board become relevant.

### **Field Markings**

The field of play is marked with lines. These lines belong to the areas of which they are boundaries.

All lines are not more than 12cm (5ins) wide.

The field of play is divided into two halves by a halfway line.

The centre mark is indicated at the midpoint of the halfway line. A circle with a radius of 9.15m (10yds) is marked around it.

### **The Goal Area**

A goal area is defined at each end of the field as follows. Two lines are drawn at right angles to the goal line, 5.5m (6yds) from the inside of each goalpost. These lines extend into the field of play for a distance of 5.5m (6yds) and are joined by a line drawn parallel with the goal line. The area bounded by these lines and the goal line is the goal area

### **The Penalty Area**

A penalty area is defined at each end of the field as follows:

Two lines are drawn at right angles to the goal line, 16.5m (18 yds) from the inside of each goalpost. These lines extend to the field of play for a distance of 16.5m (18 yds) and are joined by a line drawn parallel with the goal line. The area bounded by these lines and the goal line is the penalty area.

Within each penalty area, a penalty mark is made 11m (12yds) from the midpoint between the goalpost and equidistant to them. An arc of a circle with a radius of 9.15m (10yds) is drawn outside the penalty area.

### **Flagposts**

A flagpost, not less than 1.5m (5ft) high, with a non pointed top and a flag is placed at each corner. Flagpost may also be placed at each end of the halfway line, not less than 1m (1 yd) outside the touch line.

### **The corner arc**

A quarter circle with a radius of 1m (1yd) from each corner flagpost is drawn inside the field of play

### **Decisions of the International F.A. Board:**

#### **Decision 3**

No kind of commercial advertising, whether real or virtual, is 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 flagposts or their flags

#### **Decision 5**

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.