

# Football turf

## Background information

November 2014

**FIFA**<sup>®</sup>

*For the Game. For the World.*

# Football turf – background information

## 1. Introduction

Artificial turf has been used for several decades, having first been developed to address the limitations of natural grass. However, the earliest versions were primarily designed for other sports and changed the game of football dramatically. FIFA acknowledges that previous generations of turf were universally disliked by the majority of football players and coaches.

Since the introduction of artificial turf, there have been extensive changes and advancements in the industry. The approach taken by FIFA over the past 14 years has been to put football and footballers at the heart of the process in developing a suitable quality programme for turf. In large part thanks to the introduction of the FIFA Quality Programme in 2001, surfaces are now designed specifically for football and in accordance with stringent criteria.

As the game's popularity continues to grow in the four corners of the globe, so does the demand for pitches in locations with challenging climatic conditions. With the deployment of new-generation artificial turf, FIFA recognised the enormous benefits these pitches would bring. Artificial turf can be used both in more extreme climates and more intensively than natural grass.

Thanks to advancements in recent years, artificial surfaces are also being used more widely at elite level including for FIFA World Cup™ qualifiers, UEFA EURO 2016 qualifiers, the UEFA Champions League (male and female), the FA Cup and the FA Women's Super League in England as well top leagues in France, the Netherlands, Norway, Sweden and the USA, amongst other leagues and competitions.

## 2. FIFA Quality Programme for Football Turf

FIFA introduced the term “football turf” as the designation for products installed as part of the FIFA Quality Programme created in 2001. The [FIFA Quality Programme for Football Turf](#) is a rigorous testing programme for artificial football surfaces. At the core of the FIFA Quality Programme for Football Turf are four basic objectives:

- Playing performance (ball/surface interaction)
- Safety (player/surface interaction)
- Durability
- Quality assurance

This quality testing scheme compares results on football turf against those on natural grass pitches in good condition so that the playing characteristics are mirrored. The football turf has to be rigorously tested both in the laboratory and in its installed location to ensure that the surface reacts to the ball as it would on a grass pitch in good condition in terms of roll and bounce.

Similarly, the tests are designed to ensure that players can play on football turf with the same confidence as they would on a natural grass pitch in good condition. Successfully tested fields are awarded one of the two FIFA RECOMMENDED marks, provided that all of the stringent criteria are met during the testing procedure.

The FIFA Quality Programme has set the industry standard and put the focus on player well-being and playing performance.

### 3. Player safety

The health and safety of players is the highest priority for FIFA and significant investment has been made in medical research related to football turf. Further information is provided in a recent interview with Professor Jan Ekstrand (FIFA.com, 7 November 2014) entitled "[The total risk of injury is the same on football turf as it is on natural grass](#)". FIFA's Medical Assessment and Research Centre (F-MARC) has commissioned a number of studies, including the following:

- [Comparison of the incidence, nature and cause of injuries sustained on grass and new generation artificial turf by male and female football players. Part 1: match injuries](#) (2007)  
Colin W. Fuller, Randall W. Dick, Jill Corlette and Rosemary Schmalz  
*"There are no major differences in either the overall level of risk or the cause of match injuries sustained on new generation artificial turf and grass in both male and female players."*
- [Comparison of the incidence, nature and cause of injuries sustained on grass and new generation artificial turf by male and female football players. Part 2: training injuries](#) (2007)  
Colin W. Fuller, Randall W. Dick, Jill Corlette and Rosemary Schmalz  
*"This study confirms that there are generally no differences between the overall incidence, severity, nature or cause of training injuries sustained on artificial turf and grass in male or female players."*
- [Comparison of injuries sustained on artificial turf and grass by male and female elite football players](#) (2011)  
Jan Ekstrand, Martin Hägglund and C.W. Fuller  
*"The principal finding in this study was that the injury risk, for both male and female elite players, is not changed significantly when playing football on third-generation artificial turf surfaces compared to playing on natural grass."*

A number of other independent studies have drawn similar conclusions, including:

- [Injury risk on artificial turf and grass in youth tournament football](#) (2012)  
T. Soligard, R. Bahr, T. E. Andersen  
*"In conclusion, there was no difference in the overall risk of acute injury in youth footballers playing on third-generation artificial turf compared with grass."*
- [A Meta-Analysis of Soccer Injuries on Artificial Turf and Natural Grass](#) (2013)  
Jay H. Williams, Emmanuel Akogyrem, and Jeremy R. Williams  
*"In this investigation, we found no evidence that playing matches or training on AT raises the risk of soccer players sustaining injury."*

Additionally, FIFA closely monitors injury rates and characteristics in all FIFA competitions, both on artificial turf and grass, and will continue to do so. To date, the data collected shows **no significant difference in the incidence, nature, cause and severity of injuries sustained on grass and artificial turf**.

### 4. FIFA RECOMMENDED pitches worldwide

In 2004, The IFAB (International Football Association Board) addressed the matter of football turf in the Laws of the Game. The IFAB decided that only surfaces which are FIFA RECOMMENDED 1 STAR, FIFA RECOMMENDED 2 STAR or IATS-tested may be used for international matches.



The FIFA RECOMMENDED 1 STAR level is mainly for recreational, community and municipal use, combining a series of stringent performance tests, resistance to high usage and durability of quality for the issuing of the highly respected FIFA certificate.



FIFA RECOMMENDED 2 STAR turf is designed specifically to mirror the best playing characteristics of professional football. FIFA final-round competitions and top UEFA competitions have the FIFA RECOMMENDED 2 STAR in their respective competition regulations.

Since then, an increasing number of big leagues have been investing in football turf and accepting the FIFA standard, particularly in countries where weather has a big influence on the state of pitches, such as Austria, Canada, the Netherlands, Norway, Sweden and Switzerland. A number of major stadiums such as the Stade de Suisse in Berne, the Astana Arena in Kazakhstan and Providence Park in Portland, USA, now use FIFA RECOMMENDED 2 STAR football turf pitches. Moreover, many established clubs such as Everton, FC Porto, Club Atlético River Plate and Bayern Munich have all installed football turf at their training grounds and for their youth academies.

In 2003, the FIFA U-17 World Cup in Finland paved the way for future FIFA events to be played on football turf with ten matches, including the final, played on turf. The next edition of the event in Peru two years later became the first international football tournament to be played entirely on football turf.

Examples of other international competitions and leagues using artificial turf include\*:

- FIFA World Cup™ qualifiers and FIFA Women's World Cup™ qualifiers
- FIFA Women's World Cup Canada 2015™
- FIFA U-20 World Cup Canada 2007
- FIFA U-17 Women's World Cup Costa Rica 2014
- FIFA U-17 Women's World Cup Azerbaijan 2012
- FIFA U-20 Women's World Cup Canada 2014
- UEFA EURO qualifiers
- UEFA Champions League (male and female), e.g. 2013-2014 Tyresö FF
- FA Cup and FA Women's Super League, England
- *Ligue 1*, France
- *Eredivisie*, Netherlands
- Major League Soccer and National Women's Soccer League, USA
- *Allsvenskan* and *Damallsvenska*, Sweden
- *Tippeligaen* and *Toppserien*, Norway

*\*While all of these competitions have featured artificial turf, this does not mean that all of the pitches were FIFA-certified installations. A full list of FIFA-certified pitches worldwide is available [here](#).*

#### 4. The FIFA Preferred Producer initiative

The FIFA Preferred Producer initiative was launched in 2009 in response to demand for higher quality, both in the product itself and in the installation process of football turf. Several companies, namely Act Global, CCGrass, Edel Grass, FieldTurf, Greenfields, Limonta Sport, Polytan, Saltex and Team Sports, are now classed as Preferred Producers.

FIFA's overall objective with this initiative is:

- to protect the interests of consumers (clubs, member associations, players and the private sector) when purchasing pitches; and
- to ensure that football turf pitches worldwide meet the FIFA requirements with regard to specific quality, performance and safety standards.

Further information about the FIFA Preferred Producer initiative is available on [www.FIFA.com/Quality](http://www.FIFA.com/Quality).

#### 5. Research and development

FIFA continues to look at ways of potentially improving the maintenance and quality of football turf pitches, just as it does with natural grass pitches. As such, research and development is a crucial part of the FIFA Quality Programme for Football Turf. FIFA commissions independent universities, companies and test

institutes to conduct research in specific areas. This includes player surveys, perception studies and case studies – all of which help to identify players' needs and further develop testing methods that are used to set FIFA standards (e.g. 1 star and 2 star).

As an example, FIFA commissioned the independent UK-based company ProZone to address a fundamental question: does the game change on football turf compared to matches on natural grass? ProZone used video technology to track every pass and ball movement and analysed 100 matches from the UEFA Champions League, UEFA Cup, Dutch Premier League and FIFA U-20 World Cup Canada 2007. The conclusion of this comprehensive study, published in 2008, was that "there are no significant differences in the objective data from the technical studies to date focusing on football turf versus top-quality natural grass."

More recently, in 2012, FIFA commissioned the Sports Technology Institute of Loughborough University to conduct a study to determine players' perceptions of playing surfaces and their influence on the game of football. Over 1,000 players from across the globe, both male and female, completed the questionnaire. A preliminary finding is that many players have never encountered a FIFA 2-star pitch or, in most cases, artificial turf in their career.

FIFA acknowledges that there is some distrust of artificial surfaces, particularly among those who have never played on artificial turf or those who have played on previous-generation turf. Hence the carrying out of a second player survey, which incorporated tests where players were blindfolded and were deprived of the senses of hearing and smell, in order to gain greater insight into how perceptions are evolving. The results of the studies conducted to date show that there is an almost automatic bias against artificial turf from players even before they have tried out the surface.

Such studies are being used to guide future research and development regarding football surfaces.

To date, the number of FIFA-certified installations worldwide amounts to approximately [2,000 pitches](#). FIFA supports its member associations by funding such surfaces across the globe through various development programmes. This has contributed significantly to the growth of the game thanks to the four key attributes associated with football turf: easier maintenance, higher usage, increased longevity and climate resistance. Each football turf pitch requires careful upkeep to safeguard its longevity and ensure a good playing performance, which is why FIFA organises regional maintenance seminars on a regular basis. More information is available here: <http://www.fifa.com/aboutfifa/footballdevelopment/news/newsid=2460337/>.

## 6. Links

FIFA's official website about football turf:

[www.FIFA.com/quality](http://www.FIFA.com/quality)

Interview with Jan Ekstrand, Professor in Sports Medicine:

['The total risk of injury is the same on football turf as it is on natural grass'](#)

Interview with football turf consultant Professor Eric Harrison:

<http://www.fifa.com/womensworldcup/news/newsid=2461003/index.html>

FIFA RECOMMENDED pitches worldwide:

<http://quality.fifa.com/en/Football-Turf/FIFA-recommended-pitches-wordwide/#/index>

*Last update: November 2014*