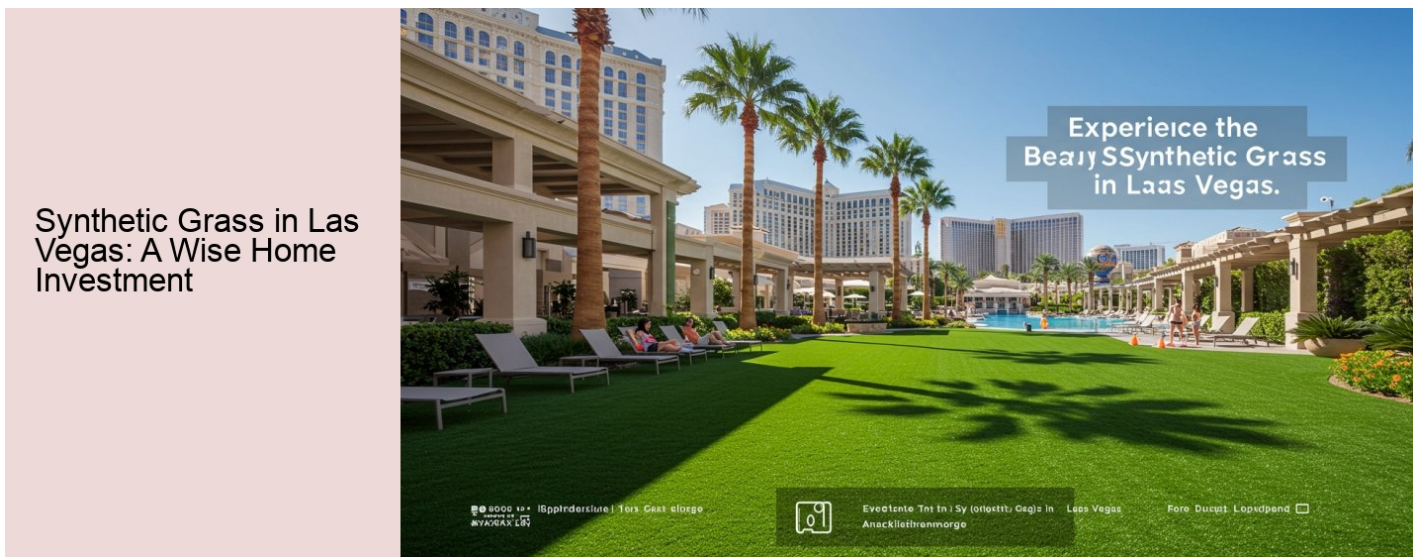


Las Vegas turf company



Decreased Maintenance with Artificial Turf

Artificial turf has been obtaining appeal among house owners in Las Vegas for its numerous advantages. Synthetic Grass: Shaping the Real Estate Landscape in Las Vegas . One of one of the most significant advantages is the reduced upkeep requirement, which makes artificial turf a more convenient and cost-effective option contrasted to all-natural yard.

Keeping an all-natural yard yard is commonly a lengthy and labor-intensive process. In the scorching warm of Las Vegas, it comes to be a lot more complicated.

Synthetic Grass in Las Vegas: A Wise Home Investment –

1. Las Vegas turf company
2. Las Vegas artificial lawn for homes
4. Las Vegas lawn alternatives
- 5.

The lawn calls for routine watering, mowing, feeding, and weeding to remain healthy and cosmetically pleasing. If overlooked, the turf begins to transform yellow or brown and may even die, which would certainly need reseeding or even full substitute of the grass.

On the various other hand, artificial turf practically gets rid of these issues. It stays flawlessly environment-friendly and lush throughout the year, regardless of the weather conditions. There is no need for normal watering, which not only saves effort and time however also contributes to water preservation – a significant issue in areas like Las Vegas. The only water demand would certainly be occasional rinsing to maintain it clean and dust-free.

Furthermore, with synthetic grass, there is no need for mowing or feeding. It stays at the best elevation for life, and theres no risk of it overgrowing or nurturing weeds. This not just minimizes the time invested in grass upkeep yet also eliminates the expense of investing in and maintaining a lawnmower or acquiring plant foods.

Synthetic grass is also much more sturdy and hard-wearing than all-natural turf. It can stand up to hefty foot traffic and extensive play activities without getting worn or damaged. This suggests you wont need to fret about changing or repairing specific sections of your lawn, which is another common maintenance task with all-natural turf.



The reduced maintenance demand with artificial turf offers homeowners in Las Las vega with more time to enjoy their outside spaces, rather than spending quality time maintaining them. It also suggests substantial expense savings in the future.

Synthetic Grass in Las Vegas: A Wise Home Investment –

1. synthetic turf for retail Las Vegas
2. Las Vegas patio grass turf gives your outdoor space a serious glow-up.
3. residential turf Spring Valley
- 5.

In a city like Las Las vega, where the climate is rough, synthetic grass confirms to be a wise and advantageous choice for homeowners, providing an evergreen, low-maintenance grass that feels and look much like natural lawn.

Ecological Advantages of Switching to Artificial Turf

As Las Las vega remains to experience the influences of a transforming climate and boosting water shortage, it is coming to be crucial for residents and organizations to locate cutting-edge ways to conserve water. One such method is with the adoption of synthetic grass or synthetic grass. This option not just provides aesthetic charm and low upkeep but additionally brings considerable ecological advantages.

Among one of the most obvious ecological advantages of changing to artificial turf is water conservation. Traditional lawn lawns need a significant amount of water to stay eco-friendly and healthy and balanced, specifically in the desert environment of Las Las vega. According to the Southern Nevada Water Authority, each square foot of all-natural lawn replaced by artificial turf conserves 55 gallons of water annually. For that reason, by switching over to artificial turf, Las Las vega locals can dramatically minimize their water usage, which is vital in a city where water is a priceless source.

Artificial turf likewise eliminates the demand for unsafe chemicals and plant foods. Most natural yards require pesticides, fertilizers, and herbicides to preserve their look and health and wellness. These substances often seep right into the ground, infecting the groundwater

and influencing the regional vegetation and animals adversely. With artificial turf, these chemicals are unneeded, making it a safer option for the setting.



One more significant ecological advantage of artificial turf is its resilience and long life. Unlike natural yard, synthetic grass does not call for reseeding or replacement because of weather changes. This long life reduces the resources used for the consistent maintenance and replacement of all-natural lawn.

In regards to air high quality, fabricated turf uses clear benefits too. Standard yards need regular mowing, which releases pollutants right into the ambience. The U.S Epa keeps in mind that gas-powered lawn mowers add dramatically to air contamination. With synthetic grass, no mowing is essential, removing these emissions totally.

Finally, artificial turf helps battle soil disintegration.

Synthetic Grass in Las Vegas: A Wise Home Investment – Las Vegas turf company

1. Las Vegas eco lawn solutions: saving water one nap-worthy yard at a time.
2. water saving lawn Las Vegas
3. Las Vegas custom lawn turf: tailored, textured, totally terrific.
4. durable fake grass Sunrise Manor
5. Las Vegas golf turf installation

In locations where the dirt is susceptible to erosion, especially in desert climates like Las Las vega, synthetic grass can provide much-needed stability. The backing material on artificial turf aids keep dirt in position, preventing erosion and promoting far better ecological health and wellness.

In conclusion, the switch to synthetic grass in Las Las vega provides several ecological advantages. From water preservation to air quality renovation, artificial turf proves to be a feasible, environmentally friendly service, particularly in locations grappling with water shortage and environment modification. As Las Vegas citizens remain to seek methods to minimize their environmental footprint, the adoption of synthetic grass will likely come to be a progressively preferred option.

Synthetic Grass in Las Vegas: A Wise Home Investment – Las Vegas artificial lawn for homes

1. residential turf contractor Las Vegas
2. Recreational turf in Summerlin South brings the fun—minus the fire ants.
3. Low water turf solutions in Las Vegas are how the smart folks stay green.
4. Las Vegas playground turf: softer landings for tougher toddlers.



Adaptability and Aesthetic Allure of Synthetic Grass in Las Las Vega

Synthetic grass, typically called synthetic grass, has actually gained enormous appeal in the arid, desert city of Las Vegas. In a city where all-natural turf is testing to expand and maintain due to water deficiency and severe warmth, artificial turf offers an attractive and functional choice. The adaptability and visual appeal of synthetic grass are among the top ten advantages of using this synthetic surface area in Las Vegas.

Allows beginning by going over the flexibility of artificial turf. One of the key benefits of synthetic grass is that it can be mounted anywhere, regardless of the climate or surface. This is particularly useful in Las Las vega, where the setting is not conducive to the growth of natural lawn. Synthetic grass can be mounted on rooftops, patios, around pool locations, pet dog runs, sports fields, and playgrounds, among others. It is likewise a favored choice for fairway and bowling eco-friendlies as a result of its even, smooth surface. This versatility suggests you can have a rich, environment-friendly lawn all year round, regardless of the weather or water restrictions.

An additional significant advantage of artificial turf is its aesthetic allure. Unlike all-natural yard, synthetic grass continues to be dynamic and environment-friendly throughout the year, enhancing the appearance of your home or service. It gives a clean, neatly polished look that is hard to attain with all-natural turf, particularly in a desert environment. The artificial turf offered today is created to look like actual turf, making it almost identical from the real thing. In addition, it does not fade under sunshine or transform brownish throughout dry spells, guaranteeing your grass looks appealing and welcoming whatsoever times.

Furthermore, synthetic grass can be customized to match your particular demands. It is available in different shades, lengths, and appearances, enabling you to produce a special and personalized outdoor space. Whether you want a soft, luxurious lawn for your kids to use or a long lasting, hard-wearing surface for high-traffic locations, there is a synthetic grass item to satisfy your needs.

To conclude, the versatility and aesthetic appeal of synthetic grass make it a superb selection for homes and services in Las Las vega. Not just does it use a functional, low-maintenance choice to natural yard, however it also enhances the look of your building, making it much more attractive and inviting.

Synthetic Grass in Las Vegas: A Wise Home Investment –

1. Las Vegas synthetic grass for weddings
2. In Henderson NV, synthetic lawns are saving water and weekends alike.
3. Las Vegas heat proof artificial grass
4. Synthetic pet turf in Las Vegas: built for zoomies and zero mess.
5. Las Vegas sports complex turf

So, if youre taking into consideration upgrading your outside area, synthetic grass can be the ideal option.

Durability and Resilience: Just How Synthetic Grass Outlasts Natural Lawn

When it concerns the durability and longevity of lawn, synthetic grass clearly beats its all-natural counterpart. This is specifically noticeable in a city like Las Las vega, where the rough desert climate can damage natural yards. In contrast, artificial turf stays lively and lavish all year round, irrespective of weather conditions. This essay looks for to highlight just how synthetic grass lasts longer than natural lawn, therefore making it among the top benefits of utilizing artificial turf in Las Vegas.

Natural yard requires a lot of maintenance to maintain it looking fresh and environment-friendly. It requires routine watering, mowing, fertilizing, and re-seeding. Even with all this treatment, it can still succumb diseases, insects, and the scorching Las Vegas heat. The long life of all-natural yard is frequently jeopardized by these elements, resulting in a damaged and uneven lawn that is neither attractive neither functional.

On the other hand, artificial turf, additionally called artificial turf, provides exceptional sturdiness and long life. It is made from premium, sturdy products that can endure heavy foot

web traffic, extreme heat, and other severe problems. This means that it stays undamaged and vibrant for several years, calling for little to no upkeep. In fact, many synthetic grass is made to last for over a years, which is considerably longer than what can be gotten out of all-natural lawn.

Another key factor that contributes to the durability of artificial turf is its resistance to parasites and conditions. Unlike natural grass, synthetic lawn does not provide a habitat for insects, neither does it experience typical lawn conditions. This removes the requirement for chemicals and fungicides, reducing both upkeep prices and ecological effect.

In addition, synthetic grass does not require watering to remain eco-friendly. This is a considerable benefit in a desert city like Las Vegas, where water is a precious source. By selecting artificial turf, homeowners can save on their water bills and contribute to water conservation initiatives.

Lastly, synthetic grass can stand up to the damage of sporting activities and various other leisure tasks better than natural turf. It offers a regular playing surface that doesn't get muddy or establish divots, making it excellent for sporting activities fields and play grounds.

In conclusion, the long life and longevity of synthetic grass much exceed that of all-natural grass, making it a useful and cost-efficient selection for Las Las vega residents. Its immune to extreme climate, insects, and conditions, and it doesn't need watering or regular upkeep. Whether for a yard, a sporting activities area, or a public park, artificial turf assures a green and lush surface area

About Poly-Turf

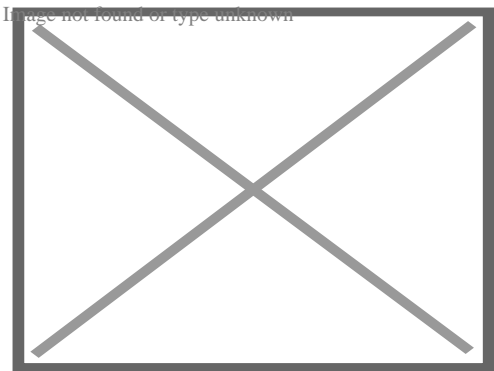
Poly-Turf was a brand of artificial turf in the very early 1970s, made by American Biltrite of Wellesley, Massachusetts. It was the first particularly created for American football, with a copyrighted split framework that included a "shock pad" in between the fabricated yard and the asphalt sub-surface. It used polypropylene for its fabricated grass blades, instead of the nylon made use of in AstroTurf and 3M's Tartan Turf.

About Artificial turf

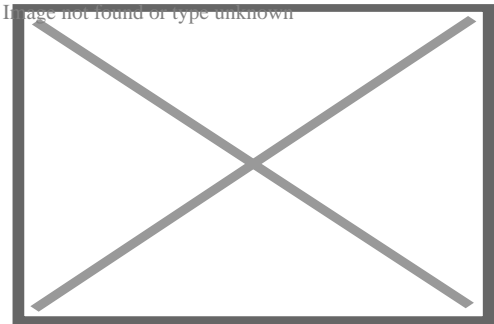
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Artificial turf with rubber crumb infill



Side view of artificial turf

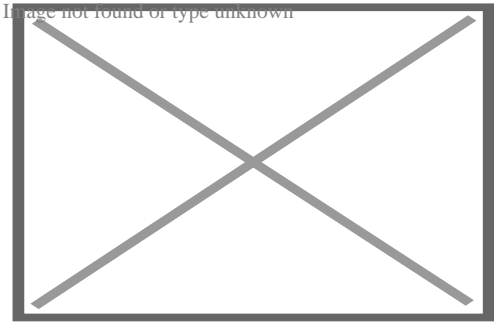


Diagram of the structure of modern artificial turf



Artificial turf square mats

Artificial turf is a surface of **synthetic fibers** made to look like natural **grass**, used in sports arenas, residential lawns and commercial applications that traditionally use grass. It is much more durable than grass and easily maintained without **irrigation** or trimming, although periodic cleaning is required. Stadiums that are substantially covered and/or at high latitudes often use artificial turf, as they typically lack enough sunlight for **photosynthesis** and substitutes for solar radiation are prohibitively expensive and energy-intensive. Disadvantages include increased risk of injury especially when used in athletic competition, as well as health and environmental concerns about the petroleum and toxic chemicals used in its manufacture.

Artificial turf first gained substantial attention in 1966, when ChemGrass was installed in the year-old **Astrodome**, developed by **Monsanto** and rebranded as **AstroTurf**, now a **generic trademark** (registered to a new owner) for any artificial turf.

The first-generation system of shortpile fibers without infill of the 1960s has largely been replaced by two more. The second features longer fibers and sand infill and the third adds recycled **crumb rubber** to the sand. Compared to earlier systems, modern artificial turf more closely resembles grass in appearance and is also considered safer for athletic competition. However, it is still not widely considered to be equal to grass. Sports clubs, leagues, unions and individual athletes have frequently spoken out and campaigned against it, while local governments have enacted and enforced laws restricting and/or banning its use.

History

[**edit**]

David Chaney, who moved to **Raleigh, North Carolina**, in 1960 and later served as Dean of the **North Carolina State University** College of Textiles, headed the team of **Research Triangle Park** researchers who created the first notable artificial turf. That accomplishment led ***Sports Illustrated*** to declare Chaney as the man "responsible for indoor major league baseball and millions of welcome mats."

Artificial turf was first installed in 1964 on a recreation area at the **Moses Brown School** in **Providence, Rhode Island**.^[1] The material came to public prominence in 1966, when **AstroTurf** was installed in the **Astrodome** in **Houston, Texas**.^[1] The state-of-the-art

indoor stadium had attempted to use natural grass during its initial season in 1965, but this failed miserably and the field conditions were grossly inadequate during the second half of the season, with the dead grass painted green. Due to a limited supply of the new artificial grass, only the infield was installed before the **Houston Astros'** home opener in April 1966; the outfield was installed in early summer during an extended Astros road trip and first used after the **All-Star** Break in July.

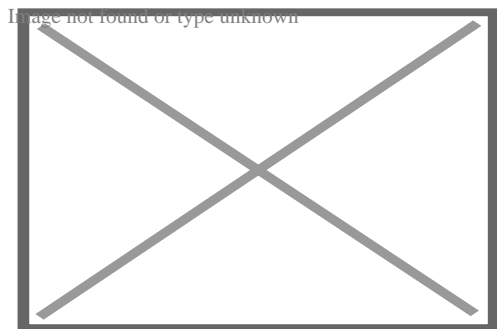
The use of AstroTurf and similar surfaces became widespread in the U.S. and Canada in the early 1970s, installed in both indoor and outdoor stadiums used for **baseball** and **football**. More than 11,000 artificial turf playing fields have been installed nationally.[2] More than 1,200 were installed in the U.S. in 2013 alone, according to the industry group the Synthetic Turf Council.[2]

Sports applications

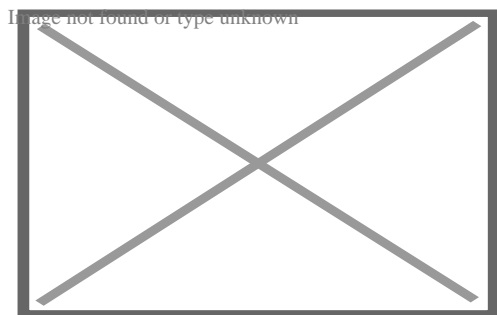
[edit]

Baseball

[edit]



Tropicana Field with its artificial turf field.

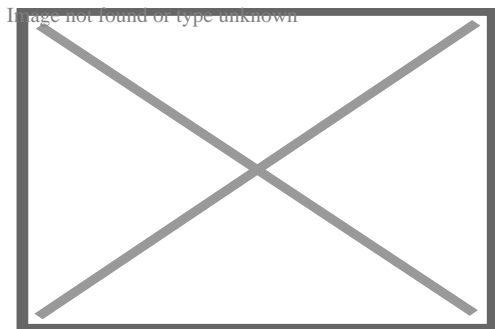


An artificial-turf field at a high school in Oregon.

Artificial turf was first used in [Major League Baseball](#) in the Houston [Astrodome](#) in 1966, replacing the grass field used when the stadium opened a year earlier. Even though the grass was specifically bred for indoor use, the dome's semi-transparent [Lucite](#) ceiling panels, which had been painted white to cut down on glare that bothered the players, did not pass enough sunlight to support the grass. For most of the [1965 season](#), the [Astros](#) played on green-painted dirt and dead grass.

The solution was to install a new type of artificial grass on the field, ChemGrass, which became known as AstroTurf. Given its early use, the term *astroturf* has since been [genericized](#) as a term for any artificial turf.[\[3\]](#) Because the supply of AstroTurf was still low, only a limited amount was available for the first home game. There was not enough for the entire outfield, but there was enough to cover the traditional grass portion of the infield. The outfield remained painted dirt until after the [All-Star Break](#). The team was sent on an extended road trip before the break, and on July 19, 1966, the installation of the outfield portion of AstroTurf was completed.

The [Chicago White Sox](#) became the first team to install artificial turf in an outdoor stadium, as they used it only in the infield and adjacent foul territory at [Comiskey Park](#) from 1969 through 1975.[\[4\]](#) Artificial turf was later installed in other new [multi-purpose stadiums](#) such as Pittsburgh's [Three Rivers Stadium](#), Philadelphia's [Veterans Stadium](#), and Cincinnati's [Riverfront Stadium](#). Early AstroTurf baseball fields used the traditional all-dirt path, but starting in 1970 with Cincinnati's Riverfront Stadium,[\[5\]](#) teams began using the "base cutout" layout on the diamond, with the only dirt being on the pitcher's mound, batter's circle, and in a five-sided diamond-shaped "sliding box" around each base. With this layout, a painted arc would indicate where the edge of the outfield grass would normally be, to assist fielders in positioning themselves properly. The last stadium in MLB to use this configuration was [Rogers Centre](#) in Toronto, when they switched to an all-dirt infield (but keeping the artificial turf) for the 2016 season.[\[6\]](#)[\[7\]](#)



Artificial turf being installed on a baseball field in Queens, New York City.

The biggest difference in play on artificial turf was that the ball bounced higher than on real grass and also traveled faster, causing infielders to play farther back than they would normally so that they would have sufficient time to react. The ball also had a truer bounce than on grass so that on long throws fielders could deliberately bounce the ball in front of the player they were throwing to, with the certainty that it would travel in a straight line and not be deflected to the right or left. The biggest impact on the game of "turf", as it came to be called, was on the bodies of the players. The artificial surface, which was generally placed over a concrete base, had much less give to it than a traditional dirt and grass field did, which caused more wear-and-tear on knees, ankles, feet, and the lower back, possibly even shortening the careers of those players who played a significant portion of their games on artificial surfaces. Players also complained that the turf was much hotter than grass, sometimes causing the metal spikes to burn their feet or plastic ones to melt. These factors eventually provoked a number of stadiums, such as the [Kansas City Royals' Kauffman Stadium](#), to switch from artificial turf back to natural grass.

In 2000, St. Petersburg's [Tropicana Field](#) became the first MLB field to use a third-generation artificial surface, [FieldTurf](#). All other remaining artificial turf stadiums were either converted to third-generation surfaces or were replaced entirely by new natural grass stadiums. In a span of 13 years, between 1992 and 2005, the [National League](#) went from having half of its teams using artificial turf to all of them playing on natural grass. With the replacement of Minneapolis's [Hubert H. Humphrey Metrodome](#) by [Target Field](#) in 2010, only two MLB stadiums used artificial turf from 2010 through 2018: Tropicana Field and Toronto's Rogers Centre. This number grew to three when the Arizona Diamondbacks switched [Chase Field](#) to artificial turf for the 2019 season; the stadium had grass from its opening in 1998 until 2018, but the difficulty of maintaining the grass in the stadium, which has a retractable roof and is located in a desert city, was cited as the reason for the switch.^[8] In 2020, Miami's [Marlins Park](#) (now [loanDepot Park](#)) also switched to artificial turf for similar reasons, while the Texas Rangers' new [Globe Life Field](#) was opened with an artificial surface, as it is also a retractable roof ballpark in a hot weather city; this puts the number of teams using synthetic turf in MLB at five as of 2023.

American football

[[edit](#)]

The first professional American football team to play on artificial turf was the [Houston Oilers](#), then part of the [American Football League](#), who moved into the [Astrodome](#) in 1968, which had installed AstroTurf two years prior. In 1969, the [University of Pennsylvania](#)'s [Franklin Field](#) in Philadelphia, at the time also home field of the [Philadelphia Eagles](#), switched from grass to AstroTurf, making it the first [National Football League](#) stadium to use artificial turf.

In 2002, [CenturyLink Field](#), originally planned to have a natural grass field, was instead surfaced with FieldTurf upon positive reaction from the [Seattle Seahawks](#) when they played on the surface at their temporary home of [Husky Stadium](#) during the 2000 and 2001 seasons. This would be the first of a leaguewide trend taking place over the next several seasons that would not only result in teams already using artificial surfaces for their fields switching to the new FieldTurf or other similar surfaces but would also see several teams playing on grass adopt a new surface. (The [Indianapolis Colts](#)' [RCA Dome](#) and the [St. Louis Rams](#)' [Edward Jones Dome](#) were the last two stadiums in the NFL to replace their first-generation AstroTurf surfaces for next-generation ones after the [2004 season](#)). For example, after a three-year experiment with a natural surface, [Giants Stadium](#) went to FieldTurf for 2003, while [M&T Bank Stadium](#) added its own artificial surface the same year (it has since been removed and replaced with a natural surface, which the stadium had before installing the turf). Later examples include [Paul Brown Stadium](#) (now Paycor Stadium), which went from grass to turf in 2004; [Gillette Stadium](#), which made the switch in 2006;^[9] and [NRG Stadium](#), which did so in 2015. As of 2021, 14 NFL fields out of 30 are artificial. NFL players overwhelmingly prefer natural grass over synthetic surfaces, according to a league survey conducted in 2010. When asked, "Which surface do you think is more likely to shorten your career?", 90% responded artificial turf.^[10] When players were asked "Is the Turf versus Grass debate overblown or a real concern"^[11] in an anonymous player survey, 83% believe it is a real concern while 12.3% believe it is overblown.

Following receiver [Odell Beckham Jr.](#)'s injury during [Super Bowl LVI](#), other NFL players started calling for turf to be banned since the site of the game, [SoFi Stadium](#), was a turf field.^[12]

[Arena football](#) is played indoors on the older short-pile artificial turf.

Canadian football

[\[edit\]](#)

The first professional [Canadian football](#) stadium to use artificial turf was [Empire Stadium](#) in [Vancouver, British Columbia](#), then home of the [Canadian Football League's BC Lions](#), which installed 3M TartanTurf in 1970. Today, eight of the nine stadiums in the CFL currently use artificial turf, largely because of the harsh weather conditions in the latter-half of the season. The only one that does not is [BMO Field](#) in Toronto, which initially had an artificial pitch and has been shared by the CFL's [Toronto Argonauts](#) since 2016 (part of the endzones at that stadium are covered with artificial turf).^[13] The first stadium to use the next-generation surface was Ottawa's Frank Clair Stadium (now [TD Place Stadium](#)), which the [Ottawa Renegades](#) used when they began play in 2002. The [Saskatchewan Roughriders' Taylor Field](#) was the only major professional sports venue in North America to use a second-generation artificial playing surface, [Omniturf](#), which was used from 1988 to 2000, followed by AstroTurf from 2000 to 2007 and FieldTurf from 2007 to its 2016 closure.^[14]

Cricket

[\[edit\]](#)

Some [cricket pitches](#) are made of synthetic grass^[15] or of a hybrid of mostly natural and some artificial grass, with these "hybrid pitches" having been implemented across several parts of the [United Kingdom](#)^[16] and Australia.^[17] The first synthetic turf cricket field in the USA was opened in [Fremont, California](#) in 2016.^[18]

Field hockey

[\[edit\]](#)

Further information: [Field hockey history § The synthetic revolution](#)

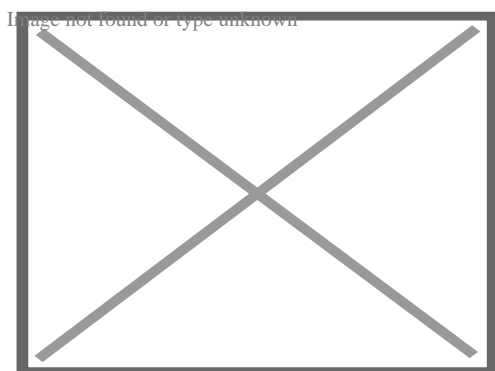
The introduction of synthetic surfaces has significantly changed the sport of **field hockey**. Since being introduced in the 1970s, competitions in western countries are now mostly played on artificial surfaces. This has increased the speed of the game considerably and changed the shape of hockey sticks to allow for different techniques, such as reverse stick trapping and hitting.

Field hockey artificial turf differs from artificial turf for other sports, in that it does not try to reproduce a grass feel, being made of shorter fibers. This allows the improvement in speed brought by earlier artificial turfs to be retained. This development is problematic for areas which cannot afford to build an extra artificial field for hockey alone. The **International Hockey Federation** and manufacturers are driving research in order to produce new fields that will be suitable for a variety of sports.

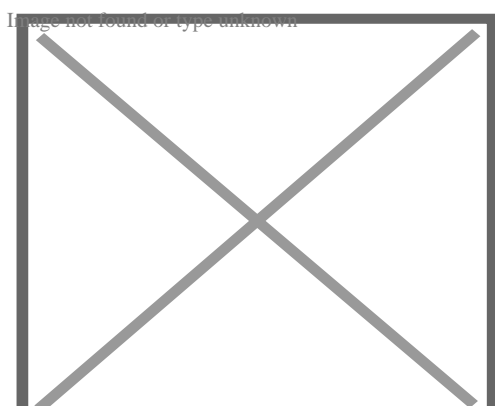
The use of artificial turf in conjunction with changes in the game's rules (e.g., the removal of offside, introduction of rolling substitutes and the self-pass, and to the interpretation of obstruction) have contributed significantly to change the nature of the game, greatly increasing the speed and intensity of play as well as placing far greater demands on the conditioning of the players.

Association football

[**edit**]



Aspmyra, Norway: home of the **football** club **FK Bodø/Glimt**



A slide tackle driving up crumbed rubber in the playing surface

The use of artificial turf, and whether they are not allowed or not, varies between different tournaments and time periods. Though grass is preferred in general in association football, artificial turf is found in areas where it is seen as impractical to maintain natural grass season-long, with causes including very cold climates (For instance [Norway's Eliteserien](#)) or multi-purpose stadiums ([Seattle's Lumen Field](#)).

Use permitted

[[edit](#)]

- [UEFA Champions League](#) (2005–)
- [UEFA Europa League](#) (2005–)
- [UEFA Conference League](#)
- [FIFA](#) national team matches (200?–)
- [UEFA](#) national team matches (2005–)
- [FA Cup](#)
- [Swiss Super League](#)
- [Allsvenskan](#)
- [Danish Superliga](#)
- [Eliteserien](#)
- [Veikkausliiga](#)
- [Meistriliiga](#)
- [Cymru Premier](#)
- [CONMEBOL](#) tournaments[19]
- [Campeonato Brasileiro Série A](#) (2016–)
- [Bolivian Primera División](#)[19]
- [Major League Soccer](#)

Use prohibited

[[edit](#)]

- [Football League First Division](#) / [Premier League](#) (1991–)
- [Football League](#) tiers 2–4 (1995–)

- Indian Super League (2015–)
- Eredivisie (2025–)
- Scottish Premiership (2026–)[20]

History in United Kingdom

[edit]

Some association football clubs in Europe installed synthetic surfaces in the 1980s, which were called "plastic pitches" (often derisively) in countries such as England. There, four professional club venues had adopted them; Queens Park Rangers's Loftus Road (1981–1988), Luton Town's Kenilworth Road (1985–1991), Oldham Athletic's Boundary Park (1986–1991) and Preston North End's Deepdale (1986–1994). QPR had been the first team to install an artificial pitch at their stadium in 1981, but were the first to remove it when they did so in 1988.

Artificial pitches were banned from top-flight (then First Division) football in 1991, forcing Oldham Athletic to remove their artificial pitch after their promotion to the First Division in 1991, while then top-flight Luton Town also removed their artificial pitch at the same time. The last Football League team to have an artificial pitch in England was Preston North End, who removed their pitch in 1994 after eight years in use. Artificial pitches were banned from the top four divisions from 1995.

Artificial turf gained a bad reputation^[neutrality is disputed] globally, with fans and especially with players. The first-generation artificial turf surfaces were carpet-like in their look and feel, and thus, a far harder surface than grass and soon became known^[by whom?] as an unforgiving playing surface that was prone to cause more injuries, and in particular, more serious joint injuries, than would comparatively be suffered on a grass surface. This turf was also regarded as aesthetically unappealing to many fans^[weasel words].

In 1981, London football club Queens Park Rangers dug up its grass pitch and installed an artificial one. Others followed, and by the mid-1980s there were four artificial surfaces in operation in the English league. They soon became a national joke: the ball pinged round like it was made of rubber, the players kept losing their footing, and anyone who fell over risked carpet burns.

Unsurprisingly, fans complained that the football was awful to watch and, one

by one, the clubs returned to natural grass.[21]

In November 2011, it was reported that a number of English football clubs were interested in using artificial pitches again on economic grounds.[22] As of January 2020, artificial pitches are not permitted in the Premier League or Football League but are permitted in the National League and lower divisions. Bromley are an example of an English football club who currently use a third-generation artificial pitch.[23] In 2018, Sutton United were close to achieving promotion to the Football League and the debate in England about artificial pitches resurfaced again. It was reported that, if Sutton won promotion, they would subsequently be demoted two leagues if they refused to replace their pitch with natural grass.[24] After Harrogate Town's promotion to the Football League in 2020, the club was obliged to install a natural grass pitch at Wetherby Road;[25] and after winning promotion in 2021 Sutton Utd were also obliged to tear up their artificial pitch and replace it with grass, at a cost of more than £500,000.[26] Artificial pitches are permitted in all rounds of the FA Cup competition.

History elsewhere

[edit]

In the 1990s, many North American soccer clubs also removed their artificial surfaces and re-installed grass, while others moved to new stadiums with state-of-the-art grass surfaces that were designed to withstand cold temperatures where the climate demanded it. The use of artificial turf was later banned by FIFA, UEFA and by many domestic football associations, but FIFA and UEFA allowed it again from the mid-2000's (UEFA from the 2005–06 season onwards), provided that the turfs are FIFA Recommended. UEFA has now been heavily involved in programs to test artificial turf, with tests made in several grounds meeting with FIFA approval. A team of UEFA, FIFA and German company Polytan conducted tests in the Stadion Salzburg Wals-Siezenheim in Salzburg, Austria which had matches played on it in UEFA Euro 2008. It is the second FIFA 2 Star approved artificial turf in a European domestic top flight, after Dutch club Heracles Almelo received the FIFA certificate in August 2005.[27] The tests were approved.[28]

FIFA originally launched its FIFA Quality Concept in February 2001.

A full international fixture for the [2008 European Championships](#) was played on October 17, 2007, between [England](#) and [Russia](#) on an artificial surface, which was installed to counteract adverse weather conditions, at the [Luzhniki Stadium](#) in Moscow.^{[29][30]} It was one of the first full international games to be played on such a surface approved by FIFA and UEFA. The latter ordered the [2008 European Champions League](#) final hosted in the same stadium in May 2008 to place on grass, so a temporary natural grass field was installed just for the final.

In 2007, UEFA stressed that artificial turf should only be considered an option where climatic conditions necessitate.^[31] One Desso "[hybrid grass](#)" product incorporates both natural grass and artificial elements.^[32]

In June 2009, following a match played at [Estadio Ricardo Saprissa](#) in Costa Rica, [American national team](#) manager [Bob Bradley](#) called on FIFA to "have some courage" and ban artificial surfaces.^[33]

FIFA designated a star system for artificial turf fields that have undergone a series of tests that examine quality and performance based on a two star system.^[34] Recommended two-star fields may be used for FIFA Final Round Competitions as well as for [UEFA Europa League](#) and [Champions League](#) matches.^[35] There are currently 130 FIFA Recommended 2-Star installations in the world.^[36]

In 2009, FIFA launched the Preferred Producer Initiative to improve the quality of artificial football turf at each stage of the life cycle (manufacturing, installation and maintenance).^[37] Currently, there are five manufacturers that were selected by FIFA: Act Global, Limonta, Desso, GreenFields, and Edel Grass. These firms have made quality guarantees directly to FIFA and have agreed to increased research and development.

In 2010, [Estadio Onnilife](#) with an artificial turf opened in [Guadalajara](#) to be the new home of [Chivas](#), one of the most popular teams in Mexico. The owner of Chivas, [Jorge Vergara](#), defended the reasoning behind using artificial turf because the stadium was designed to be "environment friendly and as such, having grass would result [in] using too much water."^[38] Some players criticized the field, saying its harder surface caused many injuries. When [Johan Cruyff](#) became the adviser of the team, he recommended the switch to natural grass, which the team did in 2012.^[39]

The [2015 FIFA Women's World Cup](#) took place entirely on artificial surfaces, as the event was played in Canada, where almost all of the country's stadiums use artificial turf due to

climate issues. This plan garnered criticism from players and fans, some believing the artificial surfaces make players more susceptible to injuries. Over fifty of the female athletes protested against the use of artificial turf on the basis of [gender discrimination](#).^{[40][41]} [Australia](#) winger [Caitlin Foord](#) said that after playing 90 minutes there was no difference to her post-match recovery – a view shared by the rest of the squad. The squad spent much time preparing on the surface and had no problems with its use in Winnipeg. "We've been training on [artificial] turf pretty much all year so I think we're kind of used to it in that way ... I think grass or turf you can still pull up sore after a game so it's definitely about getting the recovery in and getting it right", Foord said.^[42] A lawsuit was filed on October 1, 2014, in an Ontario tribunal court by a group of women's international soccer players against FIFA and the Canadian Soccer Association and specifically points out that in 1994 FIFA spent \$2 million to plant natural grass over artificial turf in [New Jersey](#) and [Detroit](#).^[43] Various celebrities showed their support for the women soccer players in defense of their lawsuit, including actor [Tom Hanks](#), NBA player [Kobe Bryant](#) and [U.S. men's soccer team](#) keeper [Tim Howard](#). Even with the possibility of boycotts, [FIFA's](#) head of women's competitions, Tatjana Haenni, made it clear that "we play on artificial turf and there's no Plan B."^{[44][45]}

The first stadium to use artificial turf in Brazil was [Atlético Paranaense's Arena da Baixada](#) in 2016. In 2020, the administration of [Allianz Parque](#), home of [Sociedade Esportiva Palmeiras](#), started the implementation of the second artificial pitch in the country.^[46]

In 2024, the [Eredivisie](#) banned artificial turfs, meaning [hybrid grass](#) and [natural grass](#) became mandatory, starting from the 2025–26 season.^[47]

In UEFA tournaments, teams who are used to playing on artificial turf are seen as having a large home advantage against teams who don't, as was the case for [Bodø/Glimt's](#) semi-final campaign in the [2024–25 UEFA Europa League](#).^[48]

Rugby union

[\[edit\]](#)

Rugby union also uses artificial surfaces at a professional level. Infill fields are used by English [Premiership Rugby](#) teams [Gloucester](#), [Newcastle Falcons](#), [Saracens F.C.](#) and the now defunct [Worcester Warriors](#), as well as [United Rugby Championship](#) teams [Cardiff](#),

Edinburgh and **Glasgow Warriors**. Some fields, including **Twickenham Stadium**, have incorporated a hybrid field, with grass and synthetic fibers used on the surface. This allows for the field to be much more hard wearing, making it less susceptible to weather conditions and frequent use.

Tennis

[[edit](#)]

Main article: **Tennis court**

Carpet has been used as a surface for indoor tennis courts for decades, though the first carpets used were more similar to home carpets than a synthetic grass. After the introduction of **AstroTurf**, it came to be used for tennis courts, both indoor and outdoor, though only a small minority of courts use the surface.^[49]^[50] Both infill and non-infill versions are used, and are typically considered medium-fast to fast surfaces under the International Tennis Federation's classification scheme.^[49] A distinct form found in tennis is an "artificial clay" surface,^[49] which seeks to simulate a **clay court** by using a very short pile carpet with an infill of the same loose aggregate used for clay courts that rises above the carpet fibers.^[49]

Tennis courts such as **Wimbledon** are considering using an artificial hybrid grass to replace their natural lawn courts. Such systems incorporate synthetic fibers into natural grass to create a more durable surface on which to play.^[51] Such hybrid surfaces are currently used for some association football stadiums, including **Wembley Stadium**.

Golf

[[edit](#)]



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Synthetic turf can also be used in the golf industry, such as on driving ranges, putting greens and even in some circumstances tee boxes. For low budget courses, particularly

those catering to casual golfers, synthetic putting greens offer the advantage of being a relatively cheap alternative to installing and maintaining grass greens, but are much more similar to real grass in appearance and feel compared to sand greens which are the traditional alternative surface. Because of the vast areas of golf courses and the damage from clubs during shots, it is not feasible to surface fairways with artificial turf.

Motor racing

[[edit](#)]

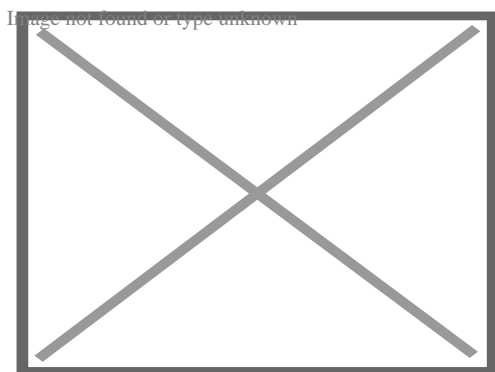
Artificial grass is used to line the perimeter of some sections of some motor circuits, and offers less grip than some other surfaces.[52] It can pose an obstacle to drivers if it gets caught on their car.[53]

Other applications

[[edit](#)]

Landscaping

[[edit](#)]



A home's yard with artificial grass.

Since the early 1990s, the use of synthetic grass in the more arid western states of the United States has moved beyond athletic fields to residential and commercial landscaping.[54] New water saving programs, as of 2019, which grant rebates for turf removal, do not accept artificial turf as replacement and require a minimum of plants.[55]

[56]

The use of artificial grass for convenience sometimes faces opposition: Legislation frequently seeks to preserve natural gardens and fully water permeable surfaces, therefore restricting the use of hardscape and plantless areas, including artificial turf. In several locations in different countries, homeowners have been fined, ordered to remove artificial turf and/or had to defend themselves in courts. Many of these restrictions can be found in local bylaws and ordinances. These not always applied in a consistent manner,[57][58][59] especially in municipalities that utilize a complaint-based model for enforcing local laws.

Sunlight reflections from nearby windows can cause artificial turf to melt. This can be avoided by adding perforated vinyl privacy window film adhesive to the outside of the window causing the reflection.

Airports

[edit]

Artificial turf has been used at airports.[60] Here it provides several advantages over natural turf – it does not support wildlife, it has high visual contrast with runways in all seasons, it reduces **foreign object damage** (FOD) since the surface has no rocks or clumps, and it drains well.[61]

Some artificial turf systems allow for the integration of **fiber-optic** fibers into the turf. This would allow for runway lighting to be embedded in artificial landing surfaces for aircraft (or lighting or advertisements to be directly embedded in a playing surface).[62]

Tanks for octopuses

[edit]

Artificial turf is commonly used for tanks containing octopusses, in particular the **Giant Pacific octopus** since it is a reliable way to prevent the octopusses from escaping their tank, as they prevent the suction cups on the tentacles from getting a tight seal.[63]

Environmental and safety concerns

[[edit](#)]

Environmental footprint

[[edit](#)]

The first major academic review of the environmental and health risks and benefits of artificial turf was published in 2014;[\[64\]](#) it was followed by extensive research on possible risks to human health, but holistic analyses of the environmental footprint of artificial turf compared with natural turf only began to emerge in the 2020s,[\[65\]](#)[\[66\]](#) and frameworks to support informed policymaking were still lacking.[\[67\]](#)[\[68\]](#) Evaluating the relative environmental footprints of natural and artificial turf is complex, with outcomes depending on a wide range of factors, including (to give the example of a sports field):[\[64\]](#)

- what ecosystem services are lost by converting a site to a sports pitch
- how resource-intensive is the landscaping work and transport of materials to create a pitch
- whether input materials are recycled and whether these are recycled again at the end of the pitch's life
- how resource-intensive and damaging maintenance is (whether through water, fertiliser, weed-killer, reapplication of rubber crumb, snow-clearing, etc.)
- how intensively the facility is used, for how long, and whether surface type can reduce the overall number of pitches required

Artificial turf has been shown to contribute to global warming by absorbing significantly more radiation than living turf and, to a lesser extent, by displacing living plants that could sequester carbon dioxide through photosynthesis;[\[69\]](#) a study at New Mexico State University found that in that environment, water-cooling of artificial turf can demand as much water as natural turf.[\[70\]](#) However, a 2022 study that used real-world data to model a ten-year-life-cycle environmental footprint for a new natural-turf soccer field compared with an artificial-turf field found that the natural-turf field contributed twice as much to global warming as the artificial one (largely due to a more resource-intensive construction phase), while finding that the artificial turf would likely cause more pollution

of other kinds. It promoted improvements to usual practice such as the substitution of [cork](#) for rubber in artificial pitches and more drought-resistant grasses and electric mowing in natural ones.^[65] In 2021, a [Zurich University of Applied Sciences](#) study for the city of [Zurich](#), using local data on extant pitches, found that, per hour of use, natural turf had the lowest environmental footprint, followed by artificial turf with no infill, and then artificial turf using an infill (e.g. granulated rubber). However, because it could tolerate more hours of use, unfilled artificial turf often had the lowest environmental footprint in practice, by reducing the total number of pitches required. The study recommended optimising the use of existing pitches before building new ones, and choosing the best surface for the likely intensity of use.^[66] Another suggestion is the introduction of [green roofs](#) to [offset](#) the conversion of grassland to artificial turf.^[71]

Maintenance

[\[edit\]](#)

Contrary to popular belief, artificial turf is not maintenance free. It requires regular maintenance, such as raking and patching, to keep it functional and safe.^[72]

Pollution and associated health risks

[\[edit\]](#)

Further information: [Artificial turf–cancer hypothesis](#)

Some artificial turf uses infill such as silicon sand, but most uses granulated [rubber](#), referred to as "[crumb rubber](#)". Granulated rubber can be made from [recycled car tires](#) and may carry [heavy metals](#), [PFAS chemicals](#), and other chemicals of environmental concern. The [synthetic fibers](#) of artificial turf are also subject to degradation. Thus chemicals from artificial turfs [leach](#) into the environment, and artificial turf is a source of [microplastics pollution](#) and [rubber pollution](#) in [air](#), [fresh-water](#), [sea](#) and [soil](#) environments.^{[73][74][75][76][77][78][64]}^{[[excessive citations](#)]} In Norway, Sweden, and at least some other places, the rubber granulate from artificial turf infill constitutes the second largest source of microplastics in the environment after the [tire](#) and [road wear](#) particles that make up a

large portion of the fine [road debris](#).^{[79][80][81]} As early as 2007, Environment and Human Health, Inc., a lobby-group, proposed a moratorium on the use of ground-up rubber tires in fields and playgrounds based on health concerns;^[82] in September 2022, the [European Commission](#) made a draft proposal to restrict the use of microplastic granules as infill in sports fields.^[83]

What is less clear is how likely this pollution is in practice to harm humans or other organisms and whether these environmental costs outweigh the benefits of artificial turf, with many scientific papers and government agencies (such as the [United States Environmental Protection Agency](#)) calling for more research.^[2] A 2018 study published in *Water, Air, & Soil Pollution* analyzed the chemicals found in samples of tire crumbs, some used to install school athletic fields, and identified 92 chemicals only about half of which had ever been studied for their health effects and some of which are known to be carcinogenic or irritants. It stated "caution would argue against use of these materials where human exposure is likely, and this is especially true for playgrounds and athletic playing fields where young people may be affected".^[84] Conversely, a 2017 study in *Sports Medicine* argued that "regular physical activity during adolescence and early adulthood helps prevent cancer later in life. Restricting the use or availability of all-weather year-round synthetic fields and thereby potentially reducing exercise could, in the long run, actually increase cancer incidence, as well as cardiovascular disease and other chronic illnesses."^[85]

The possibility that carcinogenic substances in artificial turf could increase risks of human cancer (the [artificial turf-cancer hypothesis](#)) gained a particularly high profile in the first decades of the twenty-first century and attracted extensive study, with scientific reports around 2020 finding cancer-risks in modern artificial turf negligible.^{[86][87][88][89]} But concerns have extended to other human-health risks, such as [endocrine disruption](#) that might affect early puberty, obesity, and children's attention spans.^{[90][91][92][93]} Potential harm to fish^[75] and earthworm^[94] populations has also been shown.

A study for the [New Jersey Department of Environmental Protection](#) analyzed lead and other metals in dust kicked into the air by physical activity on five artificial turf fields. The results suggest that even low levels of activity on the field can cause particulate matter containing these chemicals to get into the air where it can be inhaled and be harmful. The authors state that since no level of lead exposure is considered safe for children, "only a comprehensive mandated testing of fields can provide assurance that no health hazard on these fields exists from lead or other metals used in their construction and

maintenance."^[95]

Kinesiological health risks

^[edit]

A number of health and safety concerns have been raised about artificial turf.^[2] Friction between skin and older generations of artificial turf can cause abrasions and/or burns to a much greater extent than natural grass.^[96] Artificial turf tends to retain heat from the sun and can be much hotter than natural grass with prolonged exposure to the sun.^[97]

There is some evidence that periodic disinfection of artificial turf is required as pathogens are not broken down by natural processes in the same manner as natural grass. Despite this, a 2006 study suggests certain microbial life is less active in artificial turf.^[96]

There is evidence showing higher rates of player injury on artificial turf. By November 1971, the injury toll on first-generation artificial turf had reached a threshold that resulted in **congressional** hearings by the **House** subcommittee on commerce and finance.^{[98][99][100]} In a study performed by the National Football League Injury and Safety Panel, published in the October 2012 issue of the *American Journal of Sports Medicine*, Elliott B. Hershman et al. reviewed injury data from NFL games played between 2000 and 2009, finding that "the injury rate of knee **sprains** as a whole was 22% higher on FieldTurf than on natural grass. While MCL sprains did not occur at a rate significantly higher than on grass, rates of ACL sprains were 67% higher on FieldTurf."^[101] **Metatarsophalangeal joint** sprain, known as "**turf toe**" when the big toe is involved, is named from the injury being associated with playing sports on rigid surfaces such as artificial turf and is a fairly common injury among professional American football players. Artificial turf is a harder surface than grass and does not have much "give" when forces are placed on it.^[102]

See also

^[edit]

- **International Association for Sports Surface Sciences**
- **List of college football stadiums with non-traditional field colors**
- **Poly-Turf**

- The Flying Grass Carpet

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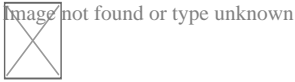
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About hybrid grass

This article is about grass reinforced with other material. For grass hybrids, see **Grass (disambiguation)**.

Hybrid grass or **reinforced natural grass** is a product created by combining natural **lawn grass** with reinforcing **synthetic fibres**. It is used for stadiums^[1] and training pitches used for **association football**,^[2] **rugby**,^[3] **gridiron football**^[4] and **cricket**.^[5] Reinforced natural grass can also be used for events and concerts. The synthetic fibres incorporated into the rootzone make the grass stronger and more resistant to damage.^[6]

A first generation of hybrid grass appeared in the 1990s. Grass roots were allowed to intertwine with a mix of soil and synthetic fibres as they grew.^[6] Three main methods exist to insert synthetic fibres in the root zone. The first is to inject fibres in the sand with a **tufting** machine.^{[7][8]}

The second method is to mix fibres, **cork** and **sand** in an automated plant and to install it afterwards on the pitch. The system was created by a laboratory at the **Arts et Métiers ParisTech**.^{[9][10][11]}

The third method is to put a **carpet** or mat with woven or tufted fibres on the surface, then to brush in sand or sand mixes to keep the fibres in an upright position and finally to seed grass mixtures on top. The natural grass roots through the mat and stabilizes the system. These systems are called carpet-based hybrid grass solutions.^[12]

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