

DO YOU KNOW WHERE YOUR TURF COMES FROM?



Knowing that different companies are utilizing different grades of products and that there is a significant amount of misinformation on the internet, the below is an opinion-based synopsis from Southwest Greens International. It is not up to us to pass judgment on the competition's product selection, installation ability or company strategy. We can, however, speak intelligently about the differences in product and why Southwest Greens has an exclusive network of certified installation based franchisees worldwide using only the highest grade of synthetic turf construction and yarn on the market. As a consumer, you should make it imperative for the turf company you are choosing to provide all the necessary test data and product information to ensure you are getting what you are paying for.

Importance of High Quality Synthetic Turf

Southwest Greens was started in 1996 in Scottsdale, Arizona. Since inception, our company has been engrained with a culture of dedication to high quality products and installation methods, which provide ultimate satisfaction among Southwest Greens' clients. Our products and installation methods have been refined and improved to what we feel are "best in class." We have made the strategic business decision to franchise our network of installers in exclusive protected territories. This allows us to maintain the dedication to high quality installations as we grow in size and scope worldwide and ultimately provide higher levels of client satisfaction amongst our entire system of franchisees.

There are two key components to research with synthetic turf BEFORE utilizing it for the end user:

The Yarn

AND

The Turf Construction

DO YOU KNOW WHERE YOUR TURF COMES FROM?

THE YARN



TenCate Grass is the global leader in synthetic grass fibers and components. They offer progressive system solutions for world markets. Our fibers and components are engineered with advanced application knowledge to meet the demanding performance standards of today's synthetic sport and landscape turf systems. TenCate Grass develops and produces materials that increase performance, reduce costs, and enable players to achieve the unachievable. TenCate supplies over 70% of the world's synthetic turf yarn market.

Southwest Greens has chosen TenCate Yarn for its Southwest Greens – Sports, Southwest Greens – Golf and Southwest Greens – Grass (Envy Lawn) Business Units

There are 5 important aspects to the yarn:

- Wearability/Durability
- U/V Protection
- Heavy Metal Safe
- Playability/Resilience “Bounce Back”
- Aesthetics

Let us address each individually below.

- **WEARABILITY/DURABILITY:**
 - **WEAR PATTERNS** show the longevity of the turf fiber itself.



Tencate Yarn Before Wear Simulation



Tencate Yarn after 12,000 cycles of Lisport Test Method

The Tencate Yarn looks as good as new!!

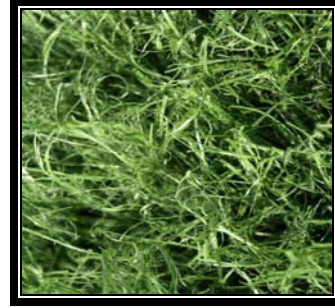
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TENCATE YARN



COMPETITOR YARN 1



COMPETITOR YARN 2

- As shown above Tencate yarn only breaks down less than 10% of its original fiber width thus reducing the amount of “splitting” that the yarn actually does over time. However, Competitor Yarn 1 sample breaks down over 60% of its original width showing the “splitting” that the yarn has illustrated while Competitor Yarn 2 sample breaks down over 80% of its original width showing significant “splitting” of the yarn from its original width. The significance of this is that the competitors yarn samples will start to show significant green residue releasing from the fibers due to its lack of wear resistance. Both Competitor 1 yarn photo and Competitor 2 yarn photo above illustrate that the yarn has failed and is no longer durable. This sample was completed with 10,000 cycles on the Lisport Test Method. **Our turf yarn manufactured by Tencate WILL LAST THE TEST OF TIME!**

- **U/V PROTECTION PACKAGE:**

- TenCate has been the leader in Research and Development in the synthetic turf industry from the very beginning. They have tested numerous U/V packages throughout the years and refuse to use anything but the best ingredients. Tencate's U/V packages have undergone natural element testing in both Phoenix, AZ and Miami, FL since 1968 and their commitment to being the best is still unwavering. Tencate's U/V packages are proprietary. The proper U/V package assists in:
 - Resisting fading
 - Resisting losing vibrancy of color
 - Resisting in color degradation as shown below
- The following pictures below illustrates yarn that has failed due to a minimal U/V package creating U/V issues as there has been an excessive fading and color degradation illustrating how the fibers turn white or gray.



TENCATE COMPETITOR YARN 1



TENCATE COMPETITOR YARN 2

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- **HEAVY METAL SAFE:**

- Much has been written in the media as of late with regards to heavy metals being contained in turf. All of Southwest Greens International turf products are classified as "Heavy Metal Safe" which means there are minimal amounts not detectable of any Heavy Metals in the turf.
- TenCate also takes maximum care to ensure that its products do not have any harmful effects on public health and the environment:
- In order to determine the concentrations of heavy metals in the TenCate® fiber styles Dr. Grunder from the Institute for Ecological Building Products has performed tests to measure the heavy metal concentrations. The requirements are based on the LAGA norm, which is a very strict German norm. The results are listed below in two sets of findings:
- 1. Heavy Metals in the Pigments (colors of the turf fibers)

Heavy metal	Unit	TenCate® PP	TenCate LSR®	TenCate® SPF	TenCate Xtreme®	NORM
Lead	mg/kg	< 3	< 3	< 3	< 3	85
Cadmium	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3	0.8
Chromium total	mg/kg	0.8	1.9	1.0	6.4	100
Copper	mg/kg	24	18	32	18	-
Mercury	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2	0.3
Zinc	mg/kg	4.4	5.3	5.0	9.4	140
Tin	mg/kg	< 5	< 5	< 5	< 5	-

'<' Means that the measured value is below the detection limit of the measuring device.

These measurements confirm that TenCate Grass uses pigments and materials without heavy metals.

AND,

- 2. Absolute concentration of Heavy Metals that are leachable (releasable) from the turf fibers:

Heavy metal	Unit	TenCate® PP	TenCate LSR®	TenCate® SPF	TenCate Xtreme®	NORM DIN 18035-7
Lead	mg/l	0.010	0.012	0.009	< 0.005	≤ 0.04
Cadmium	mg/l	< 0.0005	0.0011	< 0.0005	< 0.0005	≤ 0.005
Chromium total	mg/l	< 0.005	< 0.005	< 0.005	< 0.005	≤ 0.05
Copper	mg/l	< 0.01	0.05	< 0.01	0.05	-
Mercury	mg/l	< 0.0002	< 0.0002	< 0.0002	< 0.0002	≤ 0.001
Zinc	mg/l	0.01	0.27	0.02	0.094	≤ 3.0
Tin	mg/l	< 0.005	< 0.005	< 0.005	< 0.005	≤ 0.05

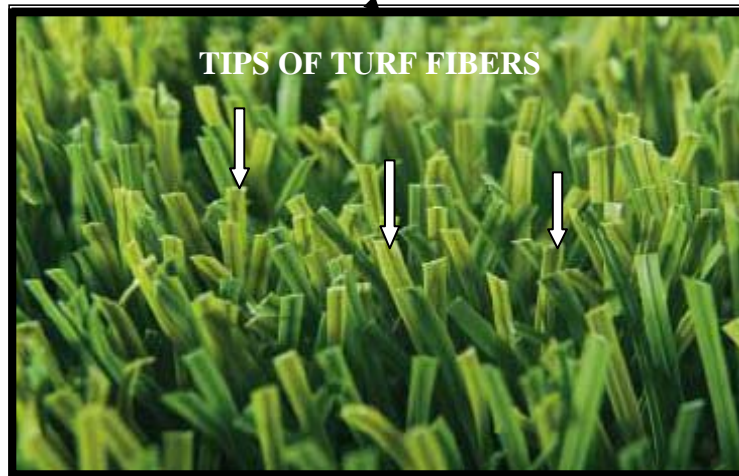
'<' Means that the measured value is below the detection limit of the measuring device.

These measurements confirm that TenCate® fibers may be used anywhere and without any restrictions in sensitive areas.

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- **PLAYABILITY/RESILIENCE “BOUNCE BACK”:**

- Surface retains superior performance characteristics and ball roll after extensive use
- Turf blade return to standing position after play (on athletic fields/landscape products) as shown below:



- By consistently exposing the tips of the fibers it reduces the wear of the turf as individuals are not playing on the sides of the yarn but on the tips thus increasing longevity
- By consistently exposing the tips of the fibers it reduces U/V damage as the tips of fibers are exposed and not the sides of the fibers thus decreasing the breakdown probability of the turf fiber

- **AESTHETICS:**

- There are two key aspects to the aesthetics of the yarn turf:
 - Less Streaking & Reduced Glare
 - Streaks look like seam lines with yarn that appears streaky
 - light dispersion assists by not making the turf look shiny



SOUTHWEST GREENS – TENCATE YARN TURF

NOTICE THE TURF IS CLEAN

DO YOU KNOW WHERE YOUR TURF COMES FROM?

- Multiple Color selections allow for a natural look to fit geography



TURF GREEN COLOR



EVERGREEN COLOR



BLEND TWO-COLOR

DO YOU KNOW WHERE YOUR TURF COMES FROM?

THE TURF CONSTRUCTION



Challenger Industries has been in business for 25 years and is still growing strong. By integrating all the manufacturing components under one roof, their products are literally built from the ground up. Challenger is proud to be the greenest manufacturer in the industry. They use very little fossil fuels in our manufacturing process, and, using our unique Duraflo backing, produce products that are 100% recyclable. Southwest Greens has had a relationship with Challenger Industries dating back to 2000 over the last 9 years.

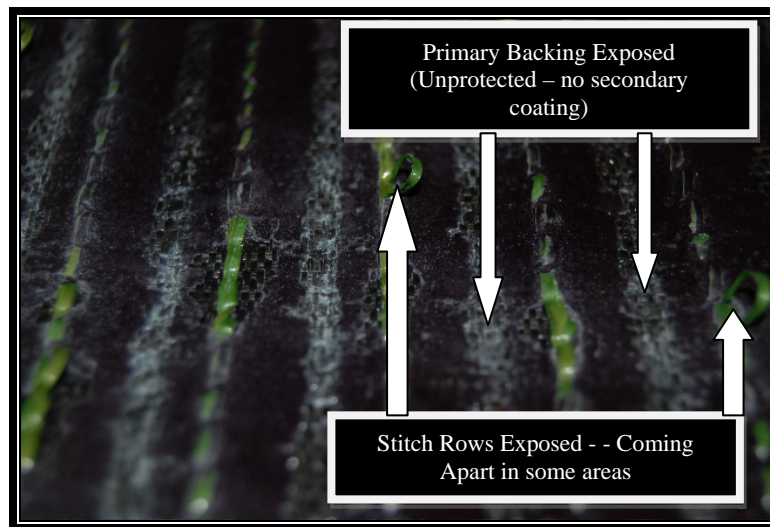
Southwest Greens has chosen Challenger Industries as its Turf Manufacturer for its Southwest Greens – Sports, Southwest Greens – Golf and Southwest Greens – Grass (Envy Lawn) Business Units

There are 4 important aspects to the turf construction:

- Secondary Backing (i.e. Coating of the Turf Roll Backing)
- Face Weight
- Warranty
- Recyclability/Environmental Benefits

Let us address each individually below.

- **SECONDARY BACKING METHODS (TYPICALLY FOUND IN THE U.S.A.)**
 - **PARTIAL URETHANE COATING**

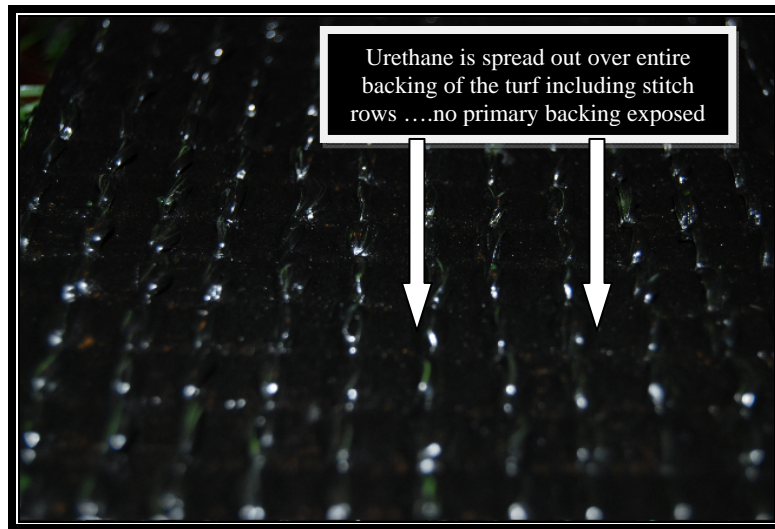


COMPETITOR 1 URETHANE COATING

DO YOU KNOW WHERE YOUR TURF COMES FROM?

- Limitations:
 - Uses less Urethane Coating thus significantly decreasing turf cost – this method can decrease the quality of the turf the end user is receiving as the turf can be jeopardized by dry-stitch areas on the back of the turf
 - ONLY Stitch rows are coated creating two issues:
 - Primary Backing (1st layer of backing which yarn is sewn into) is exposed
 - Stitch Rows not covered consistently thus exposing the stitch rows to damage over time

▪ TOTAL URETHANE COATING

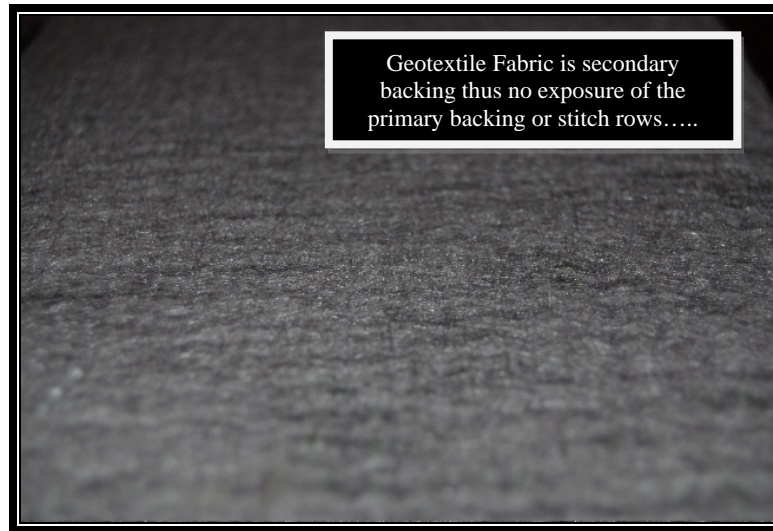


CHALLENGER INDUSTRIES URETHANE COATING

- Urethane Coating is the most common of all coating applications in the turf industry
 - Durable
 - No primary backing exposed
 - Strong: Locks the stitch rows in to place
 - Cures by a chemical process to ensure durability
- Limitations:
 - Drainage
 - Drainage permeability rates are minimal without hole punches placed through the turf
 - Hole Punches sporadically made over the turf are the main means of allowing water to penetrate the turf
 - Group of chemical compounds built from isocyanate, a very reactive material that liberates gas during reaction to produce foams of various types
 - **Not 100% recyclable**

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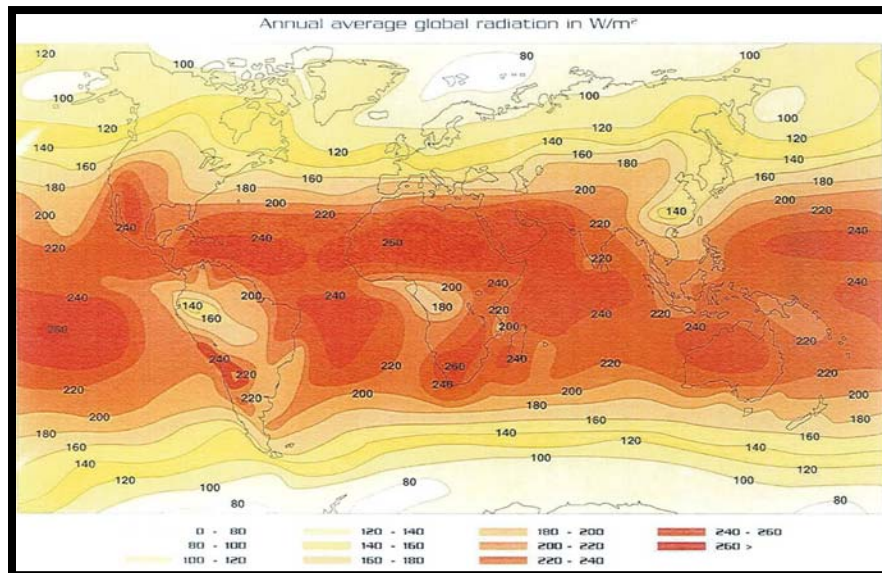
- **DURAFLO ENVIRONMENTALLY ENGINEERED BACKING SYSTEM (E.E.B.S.)**



- DuraFlo is proprietary to Challenger Industries as they have engineered their Polyolefin Hot Melt Adhesive Coater
 - Hot melt polyolefin adhesive systems have been used globally in the heavily regulated geotechnical engineering field for the better part of a decade.
 - These geosynthetic products are designed to be installed underground, providing strength and support to engineered soil structures for 100 years and beyond.
 - Furthermore, the specialty carpet industry uses this technology to add value to molded automotive carpets, modular carpets and more.
 - So, the technology is tried and true.
 - Durable
 - No primary backing exposed
 - Strong: Locks the stitch rows in to place
 - No stitch rows exposed
 - Cures by heating/cooling the adhesive glue on to the primary backing
- **100% Recyclable**
 - DuraFlo is an all polyolefin backing system, and all other components of the turf product (grass fiber and primary backing) are polyolefins as well, the EnvyLawn product line is 100% recyclable.
 - A closed-loop system can be created, where reclaimed EnvyLawn, minus the infill, can be recycled into the adhesive application process.
 - Geotextile secondary reinforcement is produced partially with postindustrial recycled polypropylene fibers.
 - Thus all the waste from the turf and the turf manufacturing process of our polyolefin EnvyLawn products can be recycled

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- When an end user is selecting a turf, the backing should be considered as if it ever needs to be thrown away dump fees/removal fees to a landfill can become an issue
- **Permeability:**
 - Duraflo backing can drain up to 400 inches per hour thus there is no need for hole punches and the Duraflo backing is permeable throughout the entire turf roll unlike urethane where it just drains where it is hole punched.
- **FACE WEIGHT**
 - Challenger Industries ensures face weights are actual tufted (sewn) face weights, not total weights of the entire turf roll. Face Weights should not be the main aspect looked at when selecting your synthetic turf system.
 - Quality of the yarn should be looked at more importantly over face/total weight as a poor quality, heavy weight product will fail just as fast as their lesser weight counter parts
- **WARRANTY**
 - **Where does the warranty come from?**
 - There are two types of warranties in manufacturing-
 - **Yarn Manufacturer Warranty:**
 - One which comes from the Yarn Manufacturers (other than manufacturing defects which are covered by Challenger Industries). The Turf Manufacturers then pass on that warranty from the Yarn Manufacturers to their customers (i.e. turf distributors) which ultimately passes through to the end user.



TYPICAL YARN WARRANTY RATING SYSTEM BY WORLD U/V CLIMATE

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- **Turf Manufacturer Warranty (Assemblers Warranty):**
 - Another which comes from the turf manufacturers that covers manufacturing defects in assembling the turf.



10 YEAR LIMITED WARRANTY AGAINST FAILURE

(PE Monofilament, XP, LSR)

- **What does each cover?**
 - **Yarn Manufacturers Warranty:**
 - Ultraviolet Degradation & Tensile Strength (Strength of the Yarn) ONLY on all turf products meaning that the turf yarn will retain at least 50% of its pile fiber from shrinkage and significant changes in texture & tensile strength (i.e. U/V package from failing and turf yarn turning white/gray).
 - If a manufacturer or distributor of turf is stating that they cover fading, ask them for a Formal Warranty document proving this. Then ensure they have the financial stability to cover this claim in case you have issues in the future with the YARN.
 - **Turf Manufacturers Warranty (Assemblers Warranty):**
 - The Turf Manufacturers assemble the yarn from the yarn manufacturers and tuft (sew) the yarn into the backing as well as coat the back of the turf. Some manufacturers do not have both tufting and coating in house and must "sub-contract" either the tufting or coating or both. Challenger tufts their own turf as well as coats their own turf with their proprietary Duraflo backing.
 - Examples of turf manufacturing defects include low lines (stitch lines sewn at a lower height than the rest of the turf rolls), delamination of the secondary backing from the primary backing, incorrect tufting (sewing) of the turf yarn into the primary backing, incorrect coating on the back of the turf roll, etc...
- **What is a separate 3rd party warranty on the turf and installation?**
 - An insurance policy to 'insure' the warranty given to customer backed by a 3rd Party Insurance Company.
 - Southwest Greens does offer this on certain projects.

Southwest Greens International has been extremely fortunate in having the opportunity to call several professional athletes, celebrities, high schools, universities, municipalities and many others as clients. With our worldwide branding, commitment to high quality turf, installations and relationships with our clients, our exclusive installation based franchisees protect our name and reputation in the synthetic industry and **ULTIMATELY PROTECTS THE END USER!!**