



**Who's the real
heavyweight champion**
...of the turf world?

fiber vs infill

AstroTurf®

WHO'S THE REAL **HEAVYWEIGHT** CHAMPION ...OF THE TURF WORLD?
IS IT HEAVY INFILL ...OR HEAVY FIBER?



Let's look at the **Tale of the Tape.**

WHAT MATERIALS GO INTO MAKING A TYPICAL TURF FIELD?

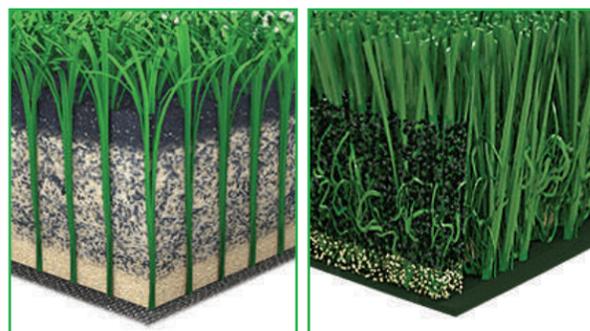
Raw materials are heated and extruded into fibers that are then tufted into a backing. This creates the carpet system. This carpet is coated to keep the fibers in place and then installed on site. After installation, the carpet system is infilled, usually with tons of sand and rubber, although there is a range of alternate infill materials available today. There are two fundamental approaches - heavy fiber weight and heavy infill weight.



Why do Some Fields Have a **Lot of Infill?**

SAND AND RUBBER ARE INEXPENSIVE

Some manufacturers tuft the rows of fiber 3/4" apart. This is known as 'wide gauge' tufting. In wide gauge systems there isn't much fiber at all. Therefore, the remaining space has to be filled up with a lot of sand and rubber just to keep the fibers from falling over.



Heavy Infill

Heavy Fiber

Why do Some Fields Have a **Lot of Fiber?**

FIBER IS EXPENSIVE

A heavier fiber content makes a field last longer. But since fiber is the most expensive part of a field, the more fiber the higher the cost of the field. Ultraviolet (UV) sun exposure causes fibers to break down which ultimately leads to field replacement. It is always the fiber that breaks down. Never the infill. So the more fiber in your field, the longer it will last.

AstroTurf® has considerably more expertise in proprietary fiber development. In the past few years alone, AstroTurf engineers have led the way with exciting new technologies. They have also perfected methods that combine several types of fibers that work together to provide a high performing, yet safe and strong system that will outlast normal wide gauge fiber systems filled with tons of sand and rubber.

Heavier for the sake of heavier is not always better.



What is the Difference in **Cost of Fiber & Infill Materials?**

THE MORE EXPENSIVE MATERIALS YOU PUT INTO A FIELD, THE MORE THE FIELD SHOULD COST.

Yet, surprisingly that is not the case. **So, the bottom line is this:**

Heavy infill turf systems are very inexpensive as compared to heavy fiber systems. Yet they still sell it at the same price.

Not a bad deal if you're the manufacturer. But in order to get away with it you have to spin the story in the right way. And spend a lot of money spinning it over and over.

HOW MUCH DOES IT REALLY COST TO MAKE YOUR TURF?

COMMODITY HEAVY INFILL SYSTEM 2"



Polyethylene - 36 oz per sq yd Cryogenic Rubber - 2.6 lbs per sq ft Sand - 3.65 lbs per sq ft

ASTROTURF 3D ROOTZONE 2"



Polyethylene - 42.6 oz per sq yd Nylon - 17.4 oz per sq yd Ambient Rubber - 2.35 lbs per sq ft Sand - 2.35 lbs per sq ft

	HEAVY INFILL SYSTEM	ASTROTURF
Fiber	.55	1.04
Rubber	.55	.40
Sand	.23	.15
TOTAL	\$1.33	\$1.59

HEAVY INFILL SYSTEM 2"	\$1.33 per sq ft
ASTROTURF 3D ROOTZONE 2"	\$1.59 per sq ft
$\$1.59 - \$1.33 = .26 \times 80,000 \text{ sq ft} = \$20,800$	
If heavy infill materials cost \$20,800 less ...why do they sell it for the same price - or higher - than AstroTurf?	



What is the Marketing Spin Used to Promote Heavy Infill?

Manufacturers of heavy infill systems say that it is better to "...play on the fill, not the fiber." But if you look at a 200 lb athlete cutting and turning on a turf surface, you can see plainly that, heavy infill or not, you are in fact playing right on the fibers.

Infill and fiber interact with each other - and cleats interact with both. And it is that cleat contact that can cause non-contact injuries. If cleats get stuck in the surface, a player's foot may not release properly, transmitting excessive torque to the athlete.

So the question is ...which type of system allows proper cleat release?

(But more on that later.)

Although athletes of all sizes can give any turf system a real workout, the biggest beating a turf field takes comes from the sun. The sun's UV rays cause PE fibers to break down. Most PE fibers are treated with various kinds of additives during the fiber manufacturing process. They tend to last for a certain period of time but eventually the sun takes its toll and the fibers start breaking down. They split and splinter and start to disintegrate. The less fiber you have, the quicker it disappears, leaving only the infill remaining on the surface.

So eventually you are indeed playing on the fill, but only because the fiber is gone! And when that happens - most facilities just buy a new field! Planned obsolescence - a marketer's dream.

The part of the field that wears out is always the fiber. Never the infill.

Which is Really the Safer System?

Popular heavy infill systems are promoted by some paid consultants within academia. Those researchers often produce what is mistakenly referred to as "independent testing."

But the truth is that research is bought and paid for. One researcher in particular has received more than \$1,000,000 from the company selling heavy weight infill systems!

Is it a coincidence that the company funding the studies comes out with flying colors in test results?

And, interestingly, two of the main universities where pro-heavy weight infill researchers have operated - have 100% AstroTurf campuses.

WHEN THE TESTING IS INDEPENDENTLY FUNDED, THE RESULTS DIFFER DRAMATICALLY.

Studies that are actually independently funded, found little support for heavy weight infill systems.

Proceedings of the Institution of Mechanical Engineers, Part P: Journal of Sports Engineering and Technology

The effects of various infills, fibre structures, and shoe designs on generating rotational traction on an artificial surface.

- M R Villwock, E G Meyer, J W Powell, A J Fouty, R C Haut

"An artificial surface with a nylon root zone yielded significantly lower peak torques than similar fibre surfaces without a nylon root zone."

"The cryogenically processed SBR infill yielded significantly higher peak torques than the ambient ground SBR. The size of infill particles and the presence of a nylon root zone may influence the compactness of the infill layer."

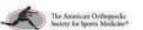
"Injuries to the lower extremity are among the most frequent injuries for all levels of sports, and often account for more than 50% of reported injuries."

"A nylon root zone is a simulated thatch layer at the base of the tufted turf. The zone provides fibre support and reduces infill compaction."

"Monofilament polyethylene fibres in conjunction with a nylon root zone produced significantly lower peak torques than other fibre types."

"Peak torques were significantly affected by infill type. The differences in torque may be due to the fineness of the infill, which is determined by the manufacturing process. A finer particle, such as cryogenically processed SBR crumb infill may develop a relatively compacted structure of infill that leads to more cleat contact and greater rotational traction."

The American Journal of Sports Medicine



An Analysis of Specific Lower Extremity Injury Rates on Grass and FieldTurf Playing Surfaces in National Football League Games

Safety Panel Investigation performed at the National Football League Injury and Safety Panel, NFL, New York, New York.

- Elliott B. Hershman, MD*, Robert Anderson, MD, John A. Bergfeld, MD, James P. Bradley, MD, Michael J. Coughlin, MD, Robert J. Johnson, MD, Kurt P. Spindler, MD, Edward Wojtys, MD, John W. Powell, PhD, ATC, for the National Football League Injury and Safety Panel

"Specifically, the observed injury rates of ACL sprains and eversion ankle sprains on FieldTurf surface were 67% and 31% higher than on grass surfaces and were statistically significant."



Michigan State Study - Funded by NFL Charities

"If the rotational traction characteristics of natural grass are the gold standard upon which artificial surfaces should be compared... the artificial surface constructed with polyethylene fibres in conjunction with a nylon root zone and ambient ground SBR crumb infill generated a lower peak torque."



Orthopedic Society for Sports Medicine

"More than 70% of ACL injuries occur without contact. Non-contact injuries happen during landing or a sharp cutting maneuver."

"Lower extremity injuries account for 50% of all sports injuries."



THERE IS NO DENYING THE FACT THAT INFILL MOVES. PERIOD.





In the 1960s, artificial turf fields were made with tight, curled nylon fibers. While abrasive, these fibers stood up to the beating that athletes exerted on the field. **You never heard of fields failing like you do today.**

When polyethylene (PE) fibers were introduced in the 1990s they were much less abrasive. But they also required infill to keep the softer, less durable fibers standing upright as well as to absorb the force of athletes falling on the field. Unfortunately, infill moves, creating safety hazards and causing durability concerns.

If the fiber fails, you don't have a field. You have a pile of sand and rubber.



The less fiber on the surface, the quicker it disappears.

Why is AstroTurf's RootZone[®] a Better Turf System?



To keep the infill in place and reduce its migration, AstroTurf created RootZone. With precise texturizing, AstroTurf's manufacturing experts ensure that the RootZone draws down optimally so that the RootZone acts like a net to encapsulate and stabilize the infill. This dramatically reduces splash, migration and the maintenance that heavy infilled systems require to keep them safe.

By reducing infill migration, the RootZone provides the answer to both safety and durability. RootZone packs significantly more fiber into the turf system, requiring less fillers.

Unlike these cheap fillers, fiber is the single most expensive and engineered component of any turf system. AstroTurf has 50+ years of development and manufacturing expertise in this area. Its fibers are engineered and feature the latest chemical and manufacturing technologies. No one even comes close. And as a result, AstroTurf PE fibers and nylon RootZone fibers are light years ahead of anyone else's.

CONSIDER THIS: If the fiber fails, you don't have a field, you have a pile of rubber. It only makes sense to invest in more fiber on the front end.

RootZone acts like a net to encapsulate and stabilize the infill.



AstroTurf has 50+ years of Fiber Engineering Expertise.

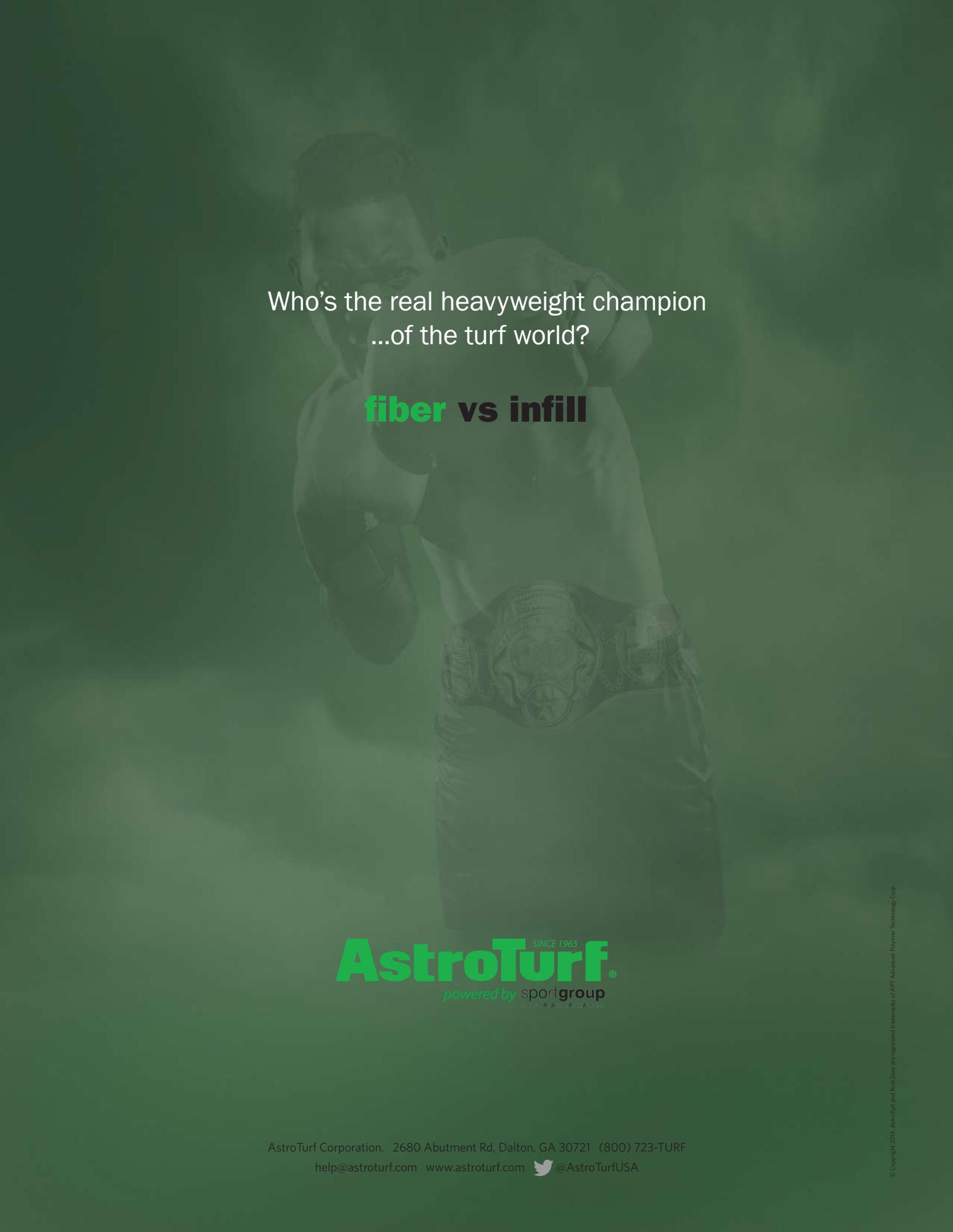


To sell the heavy infill story, our competitors need slick advertising and safety claims. But such claims are not always based on science. Science that is paid for is NOT independent. It could be considered fake science.

The two main promoters of this fake science are alone – an island unto themselves. **The NFL Study disagrees with them. Even some of their own schools have made the decision to install AstroTurf instead of heavy infill systems - on 100% of their synthetic fields!**

Just compare the costs of a popular heavy infill commodity product to the costs of AstroTurf and then ask yourself "...why does sell for more?" It should sell for less! Perhaps they should take some of the money they spend on slick marketing and put it into the product they sell.





Who's the real heavyweight champion
...of the turf world?

fiber vs infill

AstroTurf SINCE 1965
powered by **sportgroup**
100% TURF. ACTIVE. PERMANENT.

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