



FREQUENTLY ASKED QUESTIONS

about the Golden Series





FREQUENTLY ASKED QUESTIONS

about the Golden Series

What is the Golden Series?

The City of Los Angeles Recreation and Parks (LARAP) tasked AstroTurf® with building a synthetic turf that:

- ▶ Uses no rubber (SBR or otherwise)
- ▶ Yields cooler surface temperatures
- ▶ Requires no water to maintain alternative infill integrity or warranty support
- ▶ Can stand up to very heavy use under sunshine for 365 days per year and outlast the 8 year warranty
- ▶ Reduces maintenance needs

LARAP approached AstroTurf due to its unmatched experience with no-infill/light-infill turf over the last five decades, as well as its reputation for innovation and customer-centered focus.

The result was DT, a product that is now a member of a family of AstroTurf products called the Golden Series.

How did AstroTurf meet LARAP's needs?

We harnessed our history and expertise to build for the future. We looked at what worked and what didn't in the past when short pile systems dominated the market, as well as the pros and cons of the more recent, less abrasive, tall pile turf.

Bottom line: we flipped the script that has dominated the last 15 years of the turf industry. Rather than the run-of-the-mill, lightweight carpet (with 38 – 45 oz per square yard of fiber) loaded with lots of rubber and sand filler (5 LBS – 9 lbs per square foot), we built a super heavyweight, non-abrasive fiber matrix and dressed it with a really cool alternative infill called ZeoFill. We can also use sand in lieu of ZeoFill.



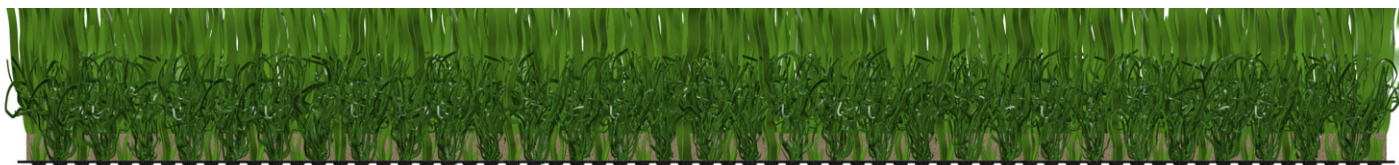
FREQUENTLY ASKED QUESTIONS

about the Golden Series

Tell us about the turf itself.

It has the benefits of previous proven turf systems ...only reconfigured and beefed up. The Golden Series DT32 system has:

- ▶ PE tall pile fiber → non-abrasive surface
- ▶ Specialized nylon RootZone® that's a high denier, dense layer to replace the infill of older systems → engineered system that provides great traction
- ▶ An extremely dense system that is 1.25" tall (vs. the standard 2.0 - 2.5") and contains 80 oz per square yard of material. That makes it about twice the traditional turf weight and eliminates the bulky infill weight of the previous turf generation.
- ▶ A deliberate and sophisticated turf structure. To achieve a high performance system, we spaced the rows on the back of the carpet at a 3/16" stitch rate. This makes it tighter and more uniform than other turf carpets. It also provides the structure for the playing fibers and provides the ultimate dimensional stability to allow less infill weight. The other part of the turf system is that we have spaced the Nylon root zone and the PE surface fibers on an A/B thread up. That means that the fibers alternate rows, keeping the PE fibers spaced at 3/8", sandwiched by the nylon structural layer. This allows the nylon to support the PE fibers and ensure they are upright at all times. We do not rely on loose commodity infill materials to support the tall pile fibers.



So you have built a shorter, denser turf system with a nylon RootZone. What goes into the turf?

The Golden Series has so much fiber—each row of fibers is only 3/16" apart. Because of all the fiber, the Golden Series doesn't need as much infill. In essence, we've replaced commodity infill materials with engineered fiber driven by technology.

A standard-sized football field will have about 160,000 lbs of infill, instead of the 400,000-700,000 lbs. of SBR style fields. That's a lot less disposal at the end of the turf's lifecycle.

As we mentioned, we use either ZeoFill or sand as ballast.



FREQUENTLY ASKED QUESTIONS

about the Golden Series

Why are more fiber and high density so important?

Fiber is the determining factor in field longevity. Infill does not wear out— it compacts and shifts over time, allowing the fibers to wear out due to UV exposure. While the fibers wear out, the black SBR rubber covers shifts around and covers the surface, leaving fields with the looks of a five o'clock shadow. The Golden Series is the densest turf carpet ever produced. Density is calculated by an industry-wide, standardized formula which dates back to turf's roots in the carpet industry and is used by HUD:

$$D = 36W/T$$

Where D=Density

W=Weight of the turf in ounces per square yard

T=Height of the turf in inches

And 36 is a constant multiplier that standardizes the units.

	Tall, Sparse Turf	Dense Turf	Golden Series
File Weight (ounces per square yard)	36 oz.	60 oz.	80 oz.
File Height (inches)	2.5"	2.0"	1.25"
Density Formula	D=36W/T	D=36W/T	D=36W/T
Specific Density	D=36(36)/2.5	D= 36(60)/2.0	D= 36(80)/1.25
DENSITY	D=518.4	D=1080	D=2304

Let's apply this industry formula to a range of turf products in the chart to the right.

As you can see, the product options (from left to right) become increasingly dense. This density translates to an increasingly robust return on investment. It is widely known that the greater the density, the more durable the carpet. A denser turf system gives more fiber to wear out over time. We caution synthetic turf buyers about confusing pile weight with density. Pile weight contributes to density, but density takes into consideration the height of the turf system as well. A manufacturer can add to the pile weight by increasing the height. However, this does not actually contribute more tufts of fiber to the turf system, which in turn would add more fiber to wear out with use.

Less infill also helps with the end-of-life disposal. ZeoFill can be disposed onsite in natural turf fields or tilled into existing soil areas for landscaping. That leaves you with only the turf to dispose of or reuse, and you won't have to pay for the disposal of SBR, which is not allowed in landfills.



FREQUENTLY ASKED QUESTIONS

about the Golden Series

Tell me about this "ZeoFill" you've mentioned. What is it exactly?

Zeolites (ZEOFILL is a brand name) are a group of organic minerals. The chemistry is very complex, but here are the highlights:

- ▶ Zeolites were formed slowly over thousands of years through crystallization in shallow marine basins when volcanic ash and rock layers reacted with alkaline groundwater.
- ▶ It has a unique three-dimensional honeycomb framework at the molecular level. This structure creates interconnected channels and pores that cause the mineral to act as a sieve that traps particles of various sizes while allowing others to pass through. This means that zeolites can absorb moisture and filter toxins like ammonia, heavy metals and VOCs. Plus they can remove odors.
- ▶ Thermal advantages – ZeoFill has a high affinity for moisture absorption. In fact, testing shows that it absorbs 81% of its weight in water. Because ZeoFill absorbs and slowly releases water, it creates an evapotranspiration effect, thereby cooling the field.
- ▶ The first known uses for zeolites date back to 3rd century A.D when the Romans discovered the minerals' usefulness as a form of water purification in their aqueducts.
- ▶ Zeolites were first discovered in the USA in the 1950's and were used in the 1970's for water filtration and radioactive waste cleanup. Over half a million tons were used in the cleanup of the Chernobyl nuclear accident as well as in Three Mile Island and the recent Fukushima meltdown.
- ▶ ZeoFill has a Moh's hardness of 4.0 – 5.0 which has been determined to be the optimal hardness. Moh's hardness levels below 4.0 can break down prematurely. Moh's hardness levels above 5.0 can abrade the turf fibers and shorten the lifespan of the field.
- ▶ ZeoFill is much more cost effective than other alternative infill options. EPDM, TPE, cork, and other options all add \$200,000 - \$300,000 to initial cost.
- ▶ ZeoFill is California Prop. 65 compliant.



Magnified view of ZeoFill, dry (top) and wet (bottom)



FREQUENTLY ASKED QUESTIONS

about the Golden Series

With so little infill... What about shock absorbency?

You must use a separate pad underneath. There are several good pads on the market. Pad technology has improved over the years and many of these pads carry 16-20 year warranties, so they can last through two turf installations. Pads are a great long term investment and performance tool for both SBR and non-SBR fields. Pads stay in place and are not subject to displacement like SBR.

What about test results?

Initial results are fantastic. The Golden Series has achieved FIFA 2 Star protocol results. FIFA compares turf performance to natural grass performance in a series of tests, and 2 Star is the highest rating. This product has proven it can handle the workload and provide a superior playing surface. There are not many SBR fields on the market today that can say the same.

What sports can be played on the Golden Series?

You name it. Football, soccer, lacrosse, field hockey, intramural sports and PE activities are all suitable activities for the Golden Series. DT was built and designed to be a workhorse, a true multi-purpose heavy use playing field. We have over 1,000,000 sq ft on the ground today.

Okay... Summarize it for me.

Golden Series is the next generation of turf. It represents the highest level of turf manufacturing, with heavy face weight and RootZone technology, and the tightest stitch gauge ever used on playing fields. The density of the product requires extreme expertise for installation and provides the Owner with assurance that the installation is completed right on day 1, without infill to hide mistakes. The Golden Series uses minimal infill, and no SBR rubber, so it complies with the most stringent environmental regulations and renders any discussion of crumb rubber moot. This next generation AstroTurf will give owners a uniform, safe and predictable place to play for years.