



WARNER LARSON
LANDSCAPE ARCHITECTS

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Sharon HighSchool
Sharon, MA

Synthetic Turf FAQ's

1. What is synthetic turf and what components make up the product?

The synthetic turf carpet includes a woven backing material and polyethylene fibers tufted into the backing. A second urethane backing material holds the fibers to the woven layer. The synthetic turf is placed on a base material comprised of open graded crushed aggregate to provide stability and drainage. The infill material is added on top of the carpet which holds the fibers vertical, provides ballast to hold it down, provides the footing for playability and resiliency for player safety. The shockpad is an interlocking expanded polypropylene composite interlocking pad material and is placed under the synthetic turf, on top of the stone, to provide additional level of cushion for player safety.

2. How is synthetic turf made?

Synthetic turf fibers are manufactured using extruded octene-based linear low density polyethylene (LLDPE) resin with added UV stabilizers and polymers. Manufacturing facilities, stitch the fibers into the woven backing in 15 feet wide rolls and apply the secondary urethane backing before shipment. Most field project orders are custom manufactured for each project.

3. How does the synthetic turf system impact the environment?

Synthetic turf is permeable so stormwater flows directly into and through the synthetic turf where much of it can find its way back into the groundwater. Groundwater replenishment is considered a positive attribute vs direct run-off into wetlands and streams. Synthetic turf eliminates the need for fertilizers and pesticides, which provides negative impacts on surrounding water environments through run-off.

Flyout and migration of infill particles could potentially find their way into the surrounding drainage courses. In our experience this rarely becomes an issue, particularly in a field surrounded by a track which provides a buffer. To minimize environmental impacts, maintenance is required to remove debris. Fields should also be replaced when they reach the end of their usable life.

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4. What are the advantages and disadvantages of organic infill?

Organic infill costs more than crumb rubber so right out of the gate there is a \$50-100,000 premium. It also can require more maintenance. The material breaks down naturally and since it is lighter in weight than crumb rubber, might move around more. Replenishment and grooming therefore is required at a higher frequency than crumb rubber infill. Organic infill is often cooler than crumb rubber due to its higher moisture retention.

5. Is crumb rubber safe?

Dozens of reports have been published in the last 10+ years. The reports generally fall into 2 categories. First there are reports that determine there is no negligible health concerns with the use of crumb rubber as the infill. Second, there are reports that note crumb rubber contains known carcinogens and advocate caution and the need for more study. Crumb rubber is not being proposed at Sharon High School.

6. Is synthetic turf safe for the users? Does it cause more injuries?

A synthetic turf field with shockpad offers additional cushion than natural grass which reduces incidents of impact injuries. Poorly maintained natural grass with ruts or bare spots from overuse are overall much less safe than synthetic turf.

7. What is the lead content of synthetic turf?

The [CPSC standard](#) for lead content in consumer products, which includes synthetic turf, is not to exceed 100ppm. For comparison, naturally occurring lead in topsoil ranges from 15-40 ppm and is considered safe for gardening at [400 ppm or less](#).

Synthetic turf manufacturers produce their product for use nationwide, including California which has strict requirements on products in accordance with Prop 65. Major synthetic turf vendors must be compliant with these standards since they do not require the Prop 65 warning label.

8. What are the different types of infill products?

Crumb rubber infill, made of recycled car tires, combined with silica sand, has been the most common infill for many years. Alternative infills are becoming more prevalent in recent years which include various products ranging from thermoplastic elastomers and acrylic coated sand to naturally derived materials, known in the industry as "organic infill". The organic infills types include coconut fibers, cork, walnut shells and softwood particles. Many of these are byproducts of other manufacturing processes. Typically, organic infill is supplemented with silica sand, a heavier material, to provide ballast for the synthetic turf. The infill type proposed for this project would be a combination of cork and

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sustainably sourced softwood.

9. What impact does heat have on synthetic turf?

Synthetic turf heats up faster and becomes hotter than natural grass raising concerns related to heat stress on athletes. Some infill materials may reach higher temperatures than others. Limiting use in early to mid-afternoon during hotter summer days is recommended. Except for pre-season fall sports, this typically only impacts summer recess activities in New England climates.

10. How durable is synthetic turf?

Compared to natural grass fields, synthetic turf fields can be used at least 3-4 times more with substantially fewer maintenance requirements. Fields have a lifecycle of 8-12 years before the fibers break down and require replacement.

11. How does the cost of synthetic turf compare with natural grass?

Construction costs of a synthetic turf field is considerably more than natural grass. We estimate around \$1,000,000 for the field at Sharon High School which includes provision for an alternative infill. A fully reconstructed natural grass field, including sod and irrigation, ranges from \$400,000 to 500,000. Maintenance of synthetic turf is estimated at \$10,000 annually while natural grass costs \$30,000 annually. When you consider Sharon's reported anticipated usage, the hourly cost of synthetic turf use is about a 1/3 of natural grass over its 8 and 16 year lifecycle when accounting for replacement costs.

12. How is synthetic turf disposed of? Is there a recycling option?

After 8-12 years, the infill and synthetic turf carpet should be removed and replaced. The cost of replacement falls in the area of \$100,000 depending on if you are replacing the carpet and/or the infill or both. The shockpad and base stone material can remain and be reused for a second and sometimes third lifecycle.

Legal and responsible disposal should follow a chain of custody to confirm it's intended destination. Current available recycling solutions include facilities that separate the infill from the carpet and repurpose or downcycle the carpet into other plastic products such as recycled plastic timbers.

There is a huge market for recycling synthetic turf in the United States. It's possible that current and future demand will spawn synthetic turf recycling companies including cradle-to- cradle recycling solutions, similar to what is available in Europe.