

by kurt meyer

SAFER, STRONGER, SMARTER

Recycled rubber can provide benefits in numerous applications, from rubberized asphalt to turf surfaces.

From safer playgrounds to stronger highways, recycled rubber can be a smart, cost-effective raw material that makes our world a better place to live.

The improved function and long-lasting characteristics of recycled rubber provide a higher rate of performance and numerous benefits that are otherwise missing from conventional products. Plus, recycled rubber offers cost benefits and the added advantage of environmental stewardship.

Used in a number of innovative surface applications, recycled rubber is manufactured as infill for synthetic turf athletic fields, as mulch for decorative landscaping and playground safety surfacing and as an additive for rubberized asphalt.

Using tire crumb material for turf fields can provide numerous benefits. First, crumb rubber cushions falls, reducing sports injuries when compared



with other athletic surfaces. Second, synthetic turf is a low-maintenance alternative to natural grass because there is no need for fertilizers, pesticides or water, saving 50,000 gallons or more per week during the growing season.

A synthetic turf football field uses 125 tons of crumb rubber made from 20,000 recycled tires. Specially designed

dust-free rubber granules provide an infill that maximizes traction, drainage and shock absorption.

As playground safety surfacing, a 6-inch layer of recycled rubber mulch will cushion a child's fall from as high as 16 feet, offering better fall protection from this height than any other material on the market.

SCRAP TIRES AT A GLANCE



RECENT PRICING HISTORY

Makers of engineered powders made from scrap tires are striving to increase the cost-per-pound yield for scrap tires vs. such markets as tire-derived fuel.



MAJOR END MARKETS

In 2007, 54 percent of scrap tires generated were fed into the tire-derived fuel market and 17 percent into crumb rubber end markets.



FLOW PATTERNS

Only a small percentage of scrap tires tend to be exported, with some tires being shipped to be re-used or retreaded in Central and South America.



SUPPLY & DEMAND FACTORS

The Rubber Manufacturers Association estimates that at the end of 2007 some 128 million scrap tires remained in stockpiles, down 87 percent from 1990.

As products made from recycled rubber become more and more popular in the marketplace, people have a right to be concerned about their health and the health of the environment. But the information now available to consumers should put any remaining concerns to rest.

Recycled rubber mulch is nontoxic, minimizes airborne dust and particles, and will not cause painful scrapes, scratches or splinters.

As decorative landscape mulch, recycled rubber has the same appearance as wood mulch with none of the drawbacks. Rubber mulch is resistant to wind and water, will not fade for at least 10 years, reduces bug and rodent infestation and will not decompose or compress. Rubber mulch saves on maintenance and replacement costs by remaining fresh for years.

On our roadways, rubberized asphalt features superior elasticity that resists cracking caused by traffic loads, temperature changes and shifting ground. Rubberized asphalt is also safer, exhibiting greater skid resistance and decreased splash and spray in wet conditions. The material also can improve nighttime visibility and decrease road noise. Noise readings have shown that rubberized asphalt reduces tire noise by an average of 4 decibels.

For a 1-mile section of a four-lane highway, 8,000 processed tires added to asphalt can create a safer, more durable road. In use for more than 40 years, rubberized asphalt is proven to diminish maintenance costs and provide a smoother, safer ride. Plus, crumb rubber offers a reliable and consistent supply of material.

SAFETY FIRST

The increasing popularity of recycled rubber as a versatile and high-performance raw material naturally led to a number of concerns primarily focused on the effect of recycled rubber on children and the environment.

Media reports have indicated that parents became alarmed when they learned their children were playing on recycled tire material at playgrounds and athletic events.

In response, hundreds of studies have been conducted during the past decade,

all reaching the same conclusion: Recycled rubber from scrap tires is safe.

The most recent study, conducted by the Corporation for Manufacturing Excellence (Manex) and the Laboratory for Manufacturing and Sustainability (LMAS) at the University of California, Berkeley, was released in April 2010.

The study focuses on the safety of crumb rubber in relation to people and the environment and is among the most comprehensive reports to date, including reviews of existing studies from the past 12 years as well as independent analysis.

Manex/Berkeley identified and assessed existing research on the benefits, advantages and safety concerns of crumb rubber. Researchers also assessed a sample from a California scrap tire recycler to support and confirm key conclusions. In addition, they obtained test results from an independent lab and then reviewed those results against some of the key health concerns regarding contamination.

The result of the analyses completed by Manex and UC Berkeley clearly states that crumb rubber results in little, if any, exposure to toxic substances, and "further, many of the chemicals of concern are already present at relatively high levels in urban environments, as a result of numerous human activities which are not presently considered controversial: driving, heating and cooling systems and regular production of household and industrial waste."

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A similar study on crumb rubber by the U.S. Environmental Protection Agency (EPA) released in December 2009 also found that concentrations of

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The EPA report is a validation of the results of continuous studies and tests conducted during the past 20 years. Recycled rubber used in consumer applications such as synthetic turf, playground safety surfacing and rubberized asphalt is safe.

materials in tire crumb are below levels considered harmful. The EPA conducted its field study from August through October 2008 and took samples from multiple locations in different parts of the country.

Similar to the conclusions of as many as 100 state-level studies, the EPA study reports that crumb rubber poses no significant health or environmental risks.

Peter Grevatt, director of the EPA's Office of Children's Health Protection, said the limited data the EPA collected during this study, which did not point to a concern "...represents an important addition to the information gathered by various government agencies."

The data came from synthetic turf fields and playgrounds, which revealed that the concentrations of components monitored in the study were below levels of concern. Particulate matter, metals and volatile organic compounds (VOCs) were measured in the air samples and compared with areas away from the crumb rubber, where the results were similar.

No tire-related fibers were observed in the air samples, and all air concentrations of particulate matter and lead were below levels of concern.

More than 90 percent of the lead in the tire crumb material was tightly bound and unavailable for absorption by people. And zinc, which is a known tire additive, was found to be below levels of concern in air and surface wipe tests.

Extractable metals from turf field blades, tire crumb materials and turf field wipe samples were low. Although there are no standards for lead in recycled tire material or synthetic turf, the average concentrations were well below the EPA standard for lead in soil and residential floor dust. All VOCs were measured at extremely low concentrations, which is typical of ambient air.

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JUST THE FACTS

Studies continue to prove that crumb rubber poses no significant risks to people or the environment.

Every day, across the nation, professional athletes compete on turf comprised of crumb rubber, children play on recycled rubber safety surfacing, and drivers travel on rubberized asphalt.

As scientists study the effects of recycled rubber, only the facts remain.

- **FACT:** Recycled rubber mulch is nonflammable. Tests conducted by the Scrap Tire Management Council in accordance with the Federal Hazardous Substance Act identified rubber mulch as "nonflammable." A flammable substance ignites and burns with a self-sustained flame at a rate that exceeds 0.1 inch per second along its major axis. Recycled rubber mulch burns at a rate less than 0.01 inch per second.
- **FACT:** Exposure to crumb rubber does not cause cancer. A January 2007 study by the California EPA determined that playing on an athletic field made partially of crumb rubber does not pose a significant risk for cancer.
- **FACT:** Ingesting dust from artificial turf that contains crumb rubber is not harmful. A March 2009 study prepared for the New York City Department of Health and Mental Hygiene found no significant health risk to people who breathe the air above synthetic turf that contains crumb rubber.
- **FACT:** Athletes are not more susceptible to Staph or MRSA infections on synthetic turf athletic fields. Two separate studies from Penn State Uni-

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Separating myth from fact is important, because parents, business owners, public policy makers and elected officials deserve to know the truth about recycled rubber and the environmental and functional benefits of crumb rubber products.

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- iversity found no evidence to suggest that athletes who play on synthetic turf are at greater risk of contracting a bacterial infection.
- **FACT:** Crumb rubber does not contain an unsafe level of lead. Consumer Product Safety Commission regulations that take effect in 2010 set a ceiling for lead content in any consumer product—a maximum of 100 parts per million (ppm). Frequent tests of crumb rubber products have yielded results that are not 50 ppm.
 - **FACT:** Athletic fields made of synthetic turf do not leach dangerous chemicals into the ground. A joint May 2009 study by the Department of Environmental Conservation and the Department of Health in New York found that crumb rubber used in synthetic turf fields poses no significant environmental threat.
 - **FACT:** Tires and crumb rubber products are not classified as hazardous waste. The U.S. EPA has never classi-

fied rubber tires or crumb rubber as hazardous waste.

Separating myth from fact is important, because parents, business owners, public policy makers and elected officials deserve to know the truth about recycled rubber and the environmental and functional benefits of crumb rubber products.

Finding new and innovative ways to re-use scrap materials serves the dual purpose of creating better products and preserving our environment. To that end, crumb rubber is a proven commodity for safer, stronger and smarter surfaces. **rt**

The author is senior vice president of sales and marketing at Pittsburgh-based Liberty Tire Recycling, one of the largest scrap tire collectors and recyclers in North America. Liberty Tire recycles more than 110 million tires annually. Through a network of manufacturing facilities from coast to coast, Liberty Tire produces 1.5 billion pounds of crumb rubber for recycled products, including artificial turf for athletic fields and tracks, rubber mulch for landscaping and playgrounds and rubberized asphalt for roads.