

# The Scrap Recycling Industry: Tires

In 2015, 122 million tires were processed by the United States recycling industry. In the past, scrap tires — generated when an old, worn tire is replaced with a new tire — were often dumped illegally in lakes, abandoned lots, and along the side of the road. Today, scrap tires are playing a much different role as an important part of the manufacturing process. Scrap tire rubber is used in the manufacture of new tires, playground surfaces, equestrian mats, and rubberized asphalt, among other products. Other cutting-edge manufacturers are combining scrap tires with materials such as scrap plastic to produce flower pots, roofing tiles, and auto parts.

A tire is a highly engineered and extensively designed product that is meant to be virtually indestructible under a variety of conditions. Because of this, tires had been difficult to recycle, but that has changed. Tire recyclers have invested millions of dollars in technologies and equipment to recycle tires, allowing scrap tires to play an important role in strengthening our economy and protecting our environment.

At tire recycling facilities, the main piece of equipment is the tire shredder, which uses powerful, interlocking knives to chop tires into smaller pieces. Shredding a tire at room temperature using such knives is called **ambient shredding**. Tires can also be shredded through a cryogenic process that uses liquid nitrogen to freeze them at a sub-zero temperature. Such temperatures cause the physical properties of the tires to change dramatically and become very brittle. The tire is placed in an enclosure in which powerful hammers smash the tire apart. Cryogenic grinding is used to make fine crumb rubber powders that are then used in products such as synthetic turf.

The non-rubber portions of the tire also are recycled. For example, the steel beads that give the tire its shape and structure are recovered by recyclers and processed into specification grade product used by steel mills for the production of new steel.

Scrap tire rubber is a highly sought material. In 2015, scrap processors produced more than 1.2 billion pounds of crumb rubber that was used in the creation of new products ranging from sidewalks to horse tracks. Tire recycling is an economically sound, environmentally-friendly activity that can contribute to the reduction of a product's overall carbon footprint. In fact, the use of recycled rubber in molded products provides between 25 - 80% lower emissions than the use of virgin plastic resins

The future for tire recycling is strong. Applications for scrap tire rubber — such as rubberized asphalt — have become recognized for their preferable properties and is gaining in prominence and widespread use. Many states already use rubberized asphalt when they design, reconstruct, or repair their roadways and it is used for several simple and straightforward reasons: it can cost less, provide safety benefits, and last longer than conventional asphalt.

## The Scrap Tire Industry

Approximately 84 percent of scrap tires come from passenger cars, while 15 percent come from light and heavy trucks. The remaining 1 percent comes from heavy equipment, aircraft, and off-road tires.

Rubberized asphalt on the roadway uses about 1,000 tires per lane mile per one inch of thickness.

Rubberized asphalt has been shown to reduce road noise by up to 4 decibels. This can either eliminate or reduce the need for sound barriers.

About one-third, or more than 400 million lbs. of all ground rubber sold in 2014 went to surfacing/ground cover markets.

A quick rule of thumb to calculate scrap tire generation is to equate one tire for every person living in the United States. With a U.S. population of more than 300 million, more than 300 million scrap tires are generated in the United States every year.

There are approximately 2.5 pounds of steel belts and bead wire in a passenger car tire.



In 2015, 1.2 billion lbs. of crumb rubber was produced using 60 million tires.



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