

# COMMONWEALTH OF KENTUCKY

## WASTE TIRE MARKET DEVELOPMENT CRUMB RUBBER GRANT PROGRAM



Division of Waste  
Management

Energy and Environment  
Cabinet

# KENTUCKY WASTE TIRE CRUMB RUBBER GRANT PROGRAM

## PLAYGROUND MULCH

### Advantages of Playground Mulch

Playground mulch appears like rubber “French fries” made from scrap tires. The material is made by shredding tires, removing the wire, and sometimes coloring with polymer coatings. The material reduces injury to children and does not have to be refurbished annually like sawdust or wood chips. It also does not track into buildings as much as sand.

### QUESTIONS & ANSWERS

**QUESTION:** What is the reason for placing protective surfaces on playground surfaces?

**ANSWER:** According to the U.S. Consumer Product Safety Commission’s (CPSC) Handbook for Public Playground Safety, more than 200,000 children are treated in U.S. hospital emergency rooms each year for injuries associated with playground equipment. Most injuries occur when children fall from the equipment.

**QUESTION:** How much material is needed?

**ANSWER:** The Handbook states that six inches of crumb rubber has a critical fall height of 10-12 feet, which is equivalent to 9 inches of wood chips or mulch, 12 inches of Engineered Wood Fibers, and more than 12 inches of sand. Side boards are used to hold in the material.

**QUESTION:** What is critical height?

**ANSWER:** Critical height is the fall height below which a life-threatening head injury would not be expected to occur.

**QUESTION:** Why use rubber mulch over other materials?

**ANSWER:** If one fails to often replace wood and sand, reduced thickness leads to injury. An owner only has to place about two inches of rubber mulch every 10 years.

**QUESTION:** What is rubber mulch?

**ANSWER:** It is rubber ground to a size of 3/8 to 2 inches.

**QUESTION:** How much does crumb rubber mulch cost?

**ANSWER:** It is about \$4.00-4.25 per SF delivered, \$5.00-5.50 installed and \$1.67-2.00 for replenishment every 10 years.

**QUESTION:** What is the savings over sand or wood mulch?

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**ANSWER:** Wood mulch costs less initially but must be replaced more often. The cost is about the same over the long term but rubber mulch only needs replenishment every ten years. Normally, the reduced wood mulch would lead to bare spots and a head injury in case of a fall. The savings may be possible from reduced liability insurance premiums.

**QUESTION:** Do the users track the material all over the place and is it hazardous to them in any way?

**ANSWER:** Playground users will track some off the area. However, like tire material itself, it is inert and will cause no harmful health affects. The larger two-inch pieces do not track from the play area.

**QUESTION:** Will the rubber catch on fire?

**ANSWER:** If a vandal adds gasoline and paper or other accelerants.

**QUESTION:** Are there harmful environmental affects?

**ANSWER:** Zinc is the primary concern. It is used in vulcanization of the rubber and becomes an inherent part of the tire. The tire material does not decompose and the zinc is not released in harmful amounts.

**QUESTION:** Will the paint rub off on children's clothing?

**ANSWER:** In the past, manufacturers colored the mulch with paint. Now, makers use a polymer mixture that adheres more readily to the tire chip, and an automated line dries the polymer on the mulch. So, it should not rub off on clothing.

**QUESTION:** Are there harmful affects from breathing tire fumes?

**ANSWER:** No, if outdoors. Some studies on smaller crumb rubber used on indoor artificial turf surfaces have shown that a minimum amount of ventilation of outdoor air is needed. Outside, this should not be a factor.

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### MATERIAL DETAIL

Contractor: If using a playground mulch supplier, such as Martin Tire Company, International Mulch Company or similar, they may furnish the calculations for the material in their bid or estimate document. ***(The mention of the example contractor's name is not an endorsement).***

Source: Kentucky waste tires would be the source of the crumb rubber and the proposed tracking system. Kentucky law requires a receipt from tire store to transporter to processor. The supplier should provide a summary of the receipts stating the source of the tires.

Quality: The size of rubber mulch may be as small as 10/20 mesh or as large as two inch rubber.

Quantity: Rubber at six inches thick (1,500 lbs/1,000 SF) will meet government recommendations for protection children at a critical fall height of 10-12 feet, or the maximum height of any playground equipment.

Cost: Call several crumb rubber producers. For example, if the quoted price is 25 cents per pound delivered, the total crumb rubber costs would be 120,000 lbs. X \$0.25 = \$30,000.

### PROMOTION DETAIL

Here are some pertinent facts about playground rubber mulch.

- The purpose of rubber mulch is to reduce the number of injuries;
- Research by the U.S. Consumer Product Safety Commission's (CPSC) Handbook for Public Playground Safety, more than 200,000 children are treated in U.S. hospital emergency rooms each year for injuries associated with playground equipment. Most injuries occur when children fall from the equipment. The increased "bounciness" and decreased bare spots should also help reduce injuries.
- The project will help find uses for tires in abandoned scrap tire piles that are breeding grounds for the Asian tiger and Eastern treehole mosquito, which carry infectious and equine encephalitis as well as the Nile Virus (see the Cabinet for Health Services Web site for the latest West Nile Virus information: [http://chs.ky.gov/publichealth/west\\_nile\\_virus.htm](http://chs.ky.gov/publichealth/west_nile_virus.htm))
- Disposal of whole tires in landfills is banned because they 'float' to the top and interfere with heavy equipment that is compacting the trash or placing the final cap.
- Americans generated 299 million scrap tires in 2005, or about one tire per person, and reused 259 million, or 87% according to the Rubber Manufacturers' Association. See [https://www.rma.org/scrap\\_tires/scrap\\_tire\\_markets/](https://www.rma.org/scrap_tires/scrap_tire_markets/) and click on US Scrap Tire Markets 2005 Report.

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- Kentuckians generate about 4 million scrap tires per year and reuse about 3 million per year, mostly as playground mulch, tire derived fuel and landfill liner protection. This project is part of an ongoing state effort to create high-use waste tire markets.
- The General Assembly created the \$1.00 per tire fee in 1998 and reauthorized it in 2006. It will sunset in 2010. (The fee does not include tire disposal costs). The Environmental and Public Protection Cabinet (EPPC) oversees this program. The fee has paid for the clean up of 14 million waste tires abandoned in piles or delivered by citizens to amnesty programs. Today, there are no major stockpiles remaining. The EPPC now focuses its major efforts on future scrap tire market development