

RUBBER BARK

ARCHITECTURAL BID SPECIFICATIONS

Rubber Bark is loose fill permanent groundcover for playgrounds and landscape applications. Recycled from California scrap tires through extensive shredding, grinding, magnets and size separation this 99.9% steel free product is color coated with non-toxic colorfast paint and sealer.

When used as directed, Rubber Bark will offer a one-time install, permanent groundcover for landscape applications that will reduce weed growth, eliminate the attraction of wood-eating insects. In properly maintained playground applications, Rubber Bark will greatly reduce the occurrence of fall injuries.

A. Composition:

Rubber Bark is composed of 100% recycled scrap tire rubber.

Particle Size: ¾ nominal
Steel content: Product is 99.9% steel free

B. Installation:

Proper site preparation, installation and maintenance are required factors to insure maximum performance of Rubber Bark.

Site preparation should include removal of any existing fill and vegetation. A border is strongly recommended for containment. A breathable weed cloth barrier is also recommended. For maximum performance, minimum depth of product is 3 .”

C. Maintenance:

If product is to get dirty it can be easily rinsed off with water. Leaves and other light weight debris can be blown off with a power blower at the appropriate distance. If any slight color fading should occur it is likely due to UV rays, therefore simply mixing the product up will rejuvenate the color.

Important: In playground applications, it is very important to level the play area on a regular basis to insure the proper depth is maintained for maximum fall height safety. This regular maintenance can be done with a large leaf rake.

D. Toxicity:

Rubber Bark is considered non-toxic. MSDS Sheets for key components available upon request.

Based on Toxicity Characteristic Leaching Procedure (TCLP) conducted on scrap tire chips (method 1311 of USEPA), the following trace metal elements were determined to be significantly lower than regulatory threshold limits: Arsenic (As), Cadmium (Cd), Chromium (Cr), Lead (Lb), Selenium (Sc), and Silver (Ag). Source: Criteria of Selecting Toxicity Characteristic Leaching

Procedure (TCLP) and Synthetic Precipitation Leaching Procedure (SPLP) Tests to Characterize Special Wastes, Dr. Chih-Shin Shieh, Florida Institute of Technology, June 30, 2001.

Oral ingestion is deemed to be low in overall hazard because ingestion of tire crumb on the ground is not likely, and the gastrointestinal tract is unlikely to be efficient in extracting toxic chemicals from tire crumb. Tire crumb does not contain chemicals with high vapor pressures; thus, exposure via inhalation is deemed inconsequential and the resulting hazard negligible. Dermal exposure is deemed to be unlikely and therefore to present low overall hazard. A carrier solvent more efficient than water would be needed to extract toxic chemicals from tire crumb in quantity, and a suitable non-polar vehicle would be required to penetrate protective skin layers for significant absorption. This was deemed implausible in a playground situation. Cancer hazard as measured by relevant in vitro predictive assays, was deemed negative. Ingestion of small amounts of tire crumb by small children will not result in an unacceptable hazard of contracting cancer. Source: Toxicological Evaluation for the Hazard Assessment of Tire Crumb for Use in Public Playgrounds, Journal of the Air & Waste Management Association, 2003.

In 1994 the Maryland Environmental Services (MES) sent 3/4 inch pieces of tire chips to a testing laboratory to be tested with hydrochloric acid (stomach acid). "Visual examination of insoluble residue appeared to indicate only fibrous reinforcing strands were dissolved by the hydrochloric acid. The tire rubber did not appear to be affected in any way; i.e. chalking, cracking, spauling, fracturing, etc." (PSI report No. 486-40013-001). Therefore, if a piece of rubber is swallowed, it should not cause any acute or chronic problems. Short-term issues, such as an upset stomach will be a function of the amount of rubber swallowed. As to the fate of the rubber chips swallowed, they are eventually evacuated from the body, just like any other non-digestible material. Source: Rubber Manufacturers Association
www.rma.org/scrap_tires/scrap_tire_markets/playgrounduse.cfm

Lead: Analysis of crumb rubber samples digested in acid revealed that the lead concentration in crumb rubber samples were well below the federal hazard standard for lead in soil and indicate that the crumb rubber from which the samples were obtained would not be a significant source of lead exposure (pg. 1 of executive summary, New York State Department of Environmental Conservation, New York State Department of Health, May 2009)

Off gassing: Overall, the findings do not indicate that these (athletic) fields are a significant source of exposure to respirable particulate matter. (pg. 3 of executive summary, New York State Department of Environmental Conservation, New York State Department of Health, May 2009)

Links to the above referenced report can be found at the Rubber Bark web site: www.rubberbark.com. Also on the web site are several other studies that have reached similar conclusions. One of these reports is from the California Integrated Waste Management Board. That report looked at the effects of oral ingestion and dermal absorption among other things. The report found that crumb rubber does not pose a significant health risk.

E. Leaching:

Increased levels of zinc and iron were found in soil tilled with raw crumb rubber particles (1/4" and less) when tested annually for 4 years. The amounts detected were below levels of concern and posed no hazards to water quality. Source: Top Dressing with Crumb Rubber on Athletic Fields, Dr. J.N. Rogers, III and J.T. Vanini, Department of Crop and Soil Sciences, Michigan State University, 1994.

Zinc that had leached from scrap tires was determined not to pose any potential harm to the environment. Source: Identification of Tire Leachate Toxicants and A Risk Assessment of Water Quality Effects Using Tire Reefs in Canals, Bulletin of Environmental Contamination and Toxicology, 578-581, Environmental Canada, 1994.

A risk assessment for aquatic life protection performed using the laboratory SPLP results found that crumb rubber derived entirely from truck tires may have an impact on aquatic life due to the release of zinc. For the other types of crumb rubber aquatic toxicity was found to be unlikely. (pg 2. of the executive summary, New York State Department of Environmental Conservation, New York State Department of Health, May 2009)

F. Flammability:

Scrap tire material is considered non-flammable based on test results from 1995 in accordance with the Federal Hazardous Substance Act (16 CFR 1500.44). A material is considered flammable if it ignites and burns with a self sustaining flame greater than 0.1 inches per second along its major axis.

G. Child safety Lead content:

Crumb rubber from recycled tires has approx 50 parts per million (ppm) lead content or LOWER - the standards set for indoor carpet from EPA are 40ppm and plastics or paint used for toys and children's furniture is currently 90ppm.

H. Sanitation:

Due to its zinc content and heat will destroy germs, bacteria and keep the surfaces "weed free" longer than alternatives ... unless you are allergic to zinc or rubber - there are no known challenges to humans or the environment from the zinc content for use in playgrounds - the "Sullivan" report is a report commissioned in 2004 by the Turf Producers Int'l organization that they HOPED would make the zinc, lead and other chemical components of recycled crumb a reason NOT TO SUPPORT its use however - the summary really states the whole truth - in Dr. Sullivan's own words - there was "no trouble found" in using recycled crumb rubber.

I. Colorfastness:

Colorfastness of product has been tested under extreme circumstances and is considered by manufacturer to be fade resistant. Customer satisfaction has been solid for over 5 years. Ag Link makes no warranty of colorfastness.

J. Safety Ratings:

Rubber Bark complies with ASTM F1292-99 as was tested by Northwest Laboratories of Seattle, Incorporated May 26, 2004 (Copy of test certification available upon request)

<u>Product</u>	<u>Install Depth</u>	<u>Critical Fall Height</u>
Rubber Bark	4 (Four inches)	9 (Nine feet)

With proper installation and maintenance, Rubber Bark will reduce fall injuries in playgrounds. However, Ag Link, Inc. and any of its affiliates or subsidiaries make no warranty of the safety of this product.

K. ADA Compliance/Wheel Chair Accessibility

Rubber Bark complies with ASTM F1951-99: Standard Specification for Determination of Accessibility of Surface Systems Under and Around Playground Equipment, tested by Testing Services, Inc. March 16, 2009 (Copy of test certification available upon request)

L. Manufacturer:

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