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Standard Practice for Use of Scrap Tires in Civil Engineering Applications[1]

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1. Scope

1.1 This practice provides guidance for testing the physical properties and gives data for assessment of the leachate generation potential of processed or whole scrap tires in lieu of conventional civil engineering materials, such as stone, gravel, soil, sand, or other fill materials. In addition, typical construction practices are outlined.

2. Referenced Documents

2.1 *ASTM Standards:* [2]

C 127 Test Method for Specific Gravity and Absorption of Coarse Aggregate

D 422 Test Method for Particle-Size Analysis of Soils

D 698 Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3 (600 kN-m/m^3))

D 1557 Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3 (2,700 kN-m/m^3))

D 2434 Test Method for Permeability of Granular Soils (Constant Head)

D 3080 Test Method for Direct Shear Test of Soils Under Consolidated Drained Conditions

D 4253 Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table

2.2 *AASHTO Standard:*

T 274 Standard Method of Test for Resilient Modulus of Subgrade Soils[3]

2.3 *USEPA Standard:*

Method 1311 Toxicity Characteristics Leaching Procedure[4]

3. Terminology

3.1 *Definitions:*

3.1.1 *baling*, *n*—a method of volume reduction whereby tires are compressed into bales.

3.1.2 *bead*, *n*—the anchoring part of the tire which is shaped to fit the rim and is constructed of bead wire wrapped by the plies.

3.1.3 *bead wire*, *n*—a high tensile steel wire surrounded by rubber, which forms the bead of a tire that provides a firm contact to the rim.

3.1.4 *belt wire*, *n*—a brass plated high tensile steel wire cord used in steel belts.

3.1.5 *buffing rubber*, *n*—vulcanized rubber usually obtained from a worn or used tire in the process of removing the old tread in preparation for retreading.

3.1.6 *carcass*, *n*—see **casing**.

3.1.7 *casing*, *n*—the basic tire structure excluding the tread (Syn. *carcass*).

3.1.8 *granulated rubber*, *n*—particulate rubber composed of mainly nonspherical particles that span a broad range of maximum particle dimension, from below 425 µm (40 mesh) to 12 mm (also refer to **particulate rubber**).[5]

3.1.9 *ground rubber*, *n*—particulate rubber composed of mainly nonspherical particles that span a range of maximum particle dimensions, from below 425 µm (40 mesh) to 2 mm (also refer to **particulate rubber**).[5]

3.1.10 *nominal size*, *n*—the average size product (chip) that comprises 50 % or more of the through put in a scrap tire processing operation; scrap tire processing operations generate products (chips) above and below the nominal size.

3.1.11 *particulate rubber*, *n*—raw, uncured, compounded or vulcanized rubber that has been transformed by means of a mechanical size reduction process into a collection of particles, with or without a coating of a partitioning agent to prevent agglomeration during production, transportation, or storage (also see definition of **buffing rubber, granulated rubber, ground rubber,** and **powdered rubber**).[5]

3.1.12 *passenger car tire*, *n*—a tire with less than a 457-mm rim diameter for use on cars only.

[1] This practice is under the jurisdiction of ASTM Committee D34 on Biotechnology and is the direct responsibility of Subcommittee D34.06 on Recovery and Reuse.

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[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

[3] *Standard Specifications for Transportation Materials and Methods of Sampling and Testing, Part II: Methods of Sampling and Testing,* American Association of State Highway and Transportation Officials, Washington, D.C.

[4] *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods,* 3rd ed., Report No. EPA 530/SW-846, U.S. Environmental Protection Agency, Washington, D.C.

[5] The defined term is the responsibility of Committee D11 on Rubber.

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