



Standard Practice for Use of Scrap Tires in Civil Engineering Applications¹

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1. Scope

1.1 This practice provides guidance for testing the physical properties, design considerations, construction practices, and leachate generation potential of processed or whole scrap tires in lieu of conventional civil engineering materials, such as stone, gravel, soil, sand, lightweight aggregate, or other fill materials.

1.2 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

2. Referenced Documents

2.1 ASTM Standards:²

- C127** Test Method for Density, Relative Density (Specific Gravity), and Absorption of Coarse Aggregate
- C136** Test Method for Sieve Analysis of Fine and Coarse Aggregates
- D698** Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12 400 ft-lbf/ft³ (600 kN-m/m³))
- D1557** Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³))
- D2434** Test Method for Permeability of Granular Soils (Constant Head)
- D3080** Test Method for Direct Shear Test of Soils Under Consolidated Drained Conditions
- D4253** Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table
- D2974** Test Methods for Moisture, Ash, and Organic Matter of Peat and Other Organic Soils

2.2 American Association of State Highway and Transportation Officials Standard:

- T 274** Standard Method of Test for Resilient Modulus of Subgrade Soils³
- M 288** Standard Specification for Geotextiles⁴

2.3 U.S. Environmental Protection Agency Standard:

- Method 1311** Toxicity Characteristics Leaching Procedure⁵

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 *chipped tire*, *n*—see *tire chip*.

3.1.9 *chopped tire*, *n*—a scrap tire that is cut into relatively large pieces of unspecified dimensions.

3.1.10 *granulated rubber*, *n*—particulate rubber composed of mainly non-spherical particles that span a broad range of

¹ This practice is under the jurisdiction of ASTM Committee D34 on Waste Management and is the direct responsibility of Subcommittee D34.03 on Treatment, 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, DC.

⁴ *Standard Specifications for Transportation Materials and Methods of Sampling and Testing, Part I: Specifications*, American Association of State Highway and Transportation Officials, Washington, DC.

⁵ *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods*, 3rd ed., Report No. EPA 530/SW-846, U.S. Environmental Protection Agency, Washington, DC.