



Standard Practice for Use of Scrap Tire-Derived Fuel¹

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1. Scope

1.1 This practice covers and provides guidance for the material recovery of scrap tires for their fuel value. The conversion of a whole scrap tire into a chipped form for use as a fuel produces a product called tire-derived fuel (TDF). This recovery practice has moved from a pioneering concept in the early 1980s to a proven and continuous use in the United States with industrial and utility applications.

1.2 Combustion units engineered to use solid fuels, such as coal or wood or both, are fairly numerous throughout the U.S. Many of these units are now using TDF even though they were not specifically designed to burn TDF. It is clear that TDF has combustion characteristics similar to other carbon-based solid fuels. Similarities led to pragmatic testing in existing combustion units. Successful testing led to subsequent acceptance of TDF as a supplemental fuel when blended with conventional fuels in existing combustion devices. Changes required to modify appropriate existing combustion units to accommodate TDF range from none to relatively minor. The issues of proper applications and specifications are critical to successful utilization of this alternative energy resource.

1.3 This practice explains TDF's use when blended and combusted under normal operating conditions with originally specified fuels. Whole tire combustion for energy recovery is not discussed herein since whole tire usage does not require tire processing to a defined fuel specification.

1.4 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:

- D 2013 Practice for Preparing Coal Samples for Analysis²
- D 2361 Test Method for Chlorine in Coal²
- D 2795 Test Method for Analysis of Coal and Coke Ash²
- D 3172 Practice for Proximate Analysis of Coal and Coke²

D 3173 Test Method for Moisture in the Analysis of Coal and Coke²

D 3174 Test Method for Ash in the Analysis Sample of Coal and Coke from Coal

D 3175 Test Method for Volatile Matter in the Analysis Sample of Coal and Coke²

D 3176 Practice for Ultimate Analysis of Coal and Coke²

D 3177 Test Method for Total Sulfur in the Analysis Sample of Coal and Coke²

D 3178 Test Method for Carbon and Hydrogen in the Analysis Sample of Coal and Coke²

D 3179 Test Method for Nitrogen in the Analysis Sample of Coal and Coke²

D 3682 Test Method for Major and Minor Elements in Combustion Residues from Coal Utilization Processes²

D 4239 Test Methods for Sulfur in the Analysis Sample of Coal and Coke Using High-Temperature Tube Furnace Combustion Methods²

D 4326 Test Method for Major and Minor Elements in Coal and Coke Ash by X-Ray Fluorescence²

D 4749 Test Method for Performing Sieve Analysis of Coal and Designating Coal Size²

D 5468 Test Method for Gross Calorific and Ash Value of Waste Materials²

D 5865 Test Method for Gross Calorific Value of Coal and Coke²

E 873 Test Method for Bulk Density of Densified Particulate Biomass Fuels³

2.2 Other Standards:

SW-846-5050 Bomb Calorimeter Preparation

SW-846-9056 Ion Chromatography

3. Terminology

3.1 Definitions:

3.1.1 *all season radial, n*—a highway tire designed to meet the weather conditions in all seasons of the year, that meets the Rubber Manufacturers Association⁴ definition of a mud and snow tire.

3.1.2 *altered tire, n*—a scrap tire which has been modified so that it is no longer capable of retaining air, holding water, or being used on a vehicle.

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

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² *Annual Book of ASTM Standards*, Vol 05.06.

³ *Annual Book of ASTM Standards*, Vol 11.05.

⁴ Available from the Rubber Manufacturers Association (RMA) 1400 K Street, NW, Suite 900, Washington, DC 20005.