



Standard Test Method for Determination of Bulk Density of Coal Using Nuclear Backscatter Depth Density Methods¹

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INTRODUCTION

Data obtained from the density of coal stockpiles is combined with volume determinations per Test Method **D6172** to complete the physical inventory of total tons. The book inventory is compared to the physical inventory for determining the accumulation of measurement difference that have occurred since the last physical inventory.

Since the physical inventory is the reference value used to compare and adjust the book inventory, it is important that the standard methods for conducting the density and volume measurements introduce the least possible error. Close adherence to the details of the procedures described in this standard is a prerequisite to the objective of this test method.

This standard test method for determination of bulk density of stockpiled coal is used for all ranks of coal. Proper density determination involves an understanding of the physical characteristics of the coal types and the stockpiling facilities.

1. Scope

1.1 This test method covers procedures for determining the bulk density of coal using instrumentation that measures the relative backscatter of nuclear gamma radiation throughout the depth of the stockpile under test.

1.2 This procedure is applicable to all ranks of coal.

1.3 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard.

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. The equipment uses*

radioactive materials, which may be hazardous to the health of users, unless proper precautions are taken.

2. Referenced Documents

2.1 *ASTM Standards:*²

D1586 Test Method for Penetration Test (SPT) and Split-Barrel Sampling of Soils

D6172 Test Method for Determining the Volume of Bulk Materials Using Contours or Cross Sections Created by Direct Operator Compilation Using Photogrammetric Procedures

2.2 *NIST Standard:*

National Institute for Standards and Technology Handbook 44, Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices³

2.3 *ASME Standard:*

ASME Pipe Codes⁴

¹ This test method is under the jurisdiction of ASTM Committee **D05** on Coal and Coke and is the direct responsibility of Subcommittee **D05.07** on Physical Characteristics of Coal.

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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 Available from National Institute of Standards and Technology (NIST), 100 Bureau Dr., Stop 1070, Gaithersburg, MD 20899-1070, <http://www.nist.gov>.

⁴ Available from American Society of Mechanical Engineers (ASME), ASME International Headquarters, Three Park Ave., New York, NY 10016-5990, <http://www.asme.org>.