



Designation: D5003/D5003M – 23

# Standard Test Method for Hardgrove Grindability Index (HGI) of Petroleum Coke<sup>1</sup>

This standard is issued under the fixed designation D5003/D5003M; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

## INTRODUCTION

Introduction of petroleum coke into the coal market in recent years has necessitated the use of many of the test methods for coal so like data would be available for comparison and blending purposes. Test Method D409 does not cover petroleum coke in its scope and its statements of precision and bias do not include petroleum coke. This test method provides the procedures and precision and bias data for the hardgrove grindability index (HGI) of petroleum coke. Use of this test method or Test Method D409 produces the same value for the sample of petroleum coke being analyzed.

### 1. Scope\*

1.1 This test method covers the determination of the hardgrove grindability index (HGI) of those petroleum cokes that contain no dedusting additive. The procedure for this test method is the same as in Test Method D409. Sections of this test method contain the significance and use of the HGI of petroleum coke, preliminary sample preparation procedures, and procedure and precision and bias data specific to petroleum coke.

NOTE 1—The size consistency (particle size distribution) of fluid petroleum coke is generally 100 % passing a 6.7 mm [0.265 in.] sieve and greater than 80 % passing a 2 mm [No. 10] sieve. Much of fluid cokes will pass a 600  $\mu$ m [No. 30] sieve. Because of this fineness the HGI value is related to the coarser particles in fluid coke and large samples are required to prepare sufficient material of the correct particle size for Test Method D409.

1.2 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.

1.2.1 *Exception*—Hardgrove grindability index is unitless.

1.3 *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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee D02 on Petroleum Products, Liquid Fuels, and Lubricants and is the direct responsibility of Subcommittee D02.05 on Properties of Fuels, Petroleum Coke and Carbon Material.

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1.4 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

### 2. Referenced Documents

2.1 *ASTM Standards:*<sup>2</sup>

D409 Test Method for Grindability of Coal by the Hardgrove-Machine Method

D2013 Practice for Preparing Coal Samples for Analysis

D4057 Practice for Manual Sampling of Petroleum and Petroleum Products

D4175 Terminology Relating to Petroleum Products, Liquid Fuels, and Lubricants

D4930 Test Method for Dust Control Material on Calcined Petroleum Coke

D6970 Practice for Collection of Calcined Petroleum Coke Samples for Analysis

D8145 Practice for Sampling of Green Petroleum Coke

### 3. Terminology

3.1 *Definitions:*

3.1.1 For definitions of terms used in this test method, refer to Terminology D4175.

3.1.2 *calcined petroleum coke, n*—petroleum coke that has been thermally treated to drive off the volatile matter and to develop crystalline structure.

<sup>2</sup> 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.

\*A Summary of Changes section appears at the end of this standard