



Designation: **B859–03 (Reapproved 2008)<sup>ε1</sup> B859 – 13**

## Standard Practice for De-Agglomeration of Refractory Metal Powders and Their Compounds Prior to Particle Size Analysis<sup>1</sup>

This standard is issued under the fixed designation B859; 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.

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<sup>ε1</sup> NOTE—Editorial changes were made in October 2008.

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### 1. Scope\*

1.1 This practice covers the de-agglomeration of refractory metal powders and their compounds in preparation for particle size analysis.

1.2 Experience has shown that this practice is satisfactory for the de-agglomeration of elemental tungsten, molybdenum, rhenium, and tantalum metal powders, and tungsten carbide. Other metal powders (for example, elemental metals, carbides, and nitrides) may be prepared for particle size analysis using this practice with caution as to effectiveness until actual satisfactory experience is developed.

1.3 With the exception of the values for mass, for which the use of the gram (g) unit is the long-standing industry practice, the values stated in SI are to be regarded as standard. No other units of measure are included in this 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.* For specific precautionary statements, see **Note 2**.

### 2. Referenced Documents

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

**B243** Terminology of Powder Metallurgy

**B330** Test Methods for Estimating Average Particle Size of Metal Powders and Related Compounds Using Air Permeability

**B430** Test Method for Particle Size Distribution of Refractory Metal Powders and Related Compounds by Turbidimetry

**B761** Test Method for Particle Size Distribution of Metal Powders and Related Compounds by X-Ray Monitoring of Gravity Sedimentation

**B821** Guide for Liquid Dispersion of Metal Powders and Related Compounds for Particle Size Analysis

**B822** Test Method for Particle Size Distribution of Metal Powders and Related Compounds by Light Scattering

2.2 *ASTM Adjunct:*

**ADJB0859** Detailed Drawings of Alternative Steel Milling Bottles<sup>3</sup>

### 3. Terminology

3.1 *Definitions*—Definitions of powder metallurgy terms can be found in Terminology **B243**.

### 4. Significance and Use

4.1 Refractory metal powders, such as tungsten and molybdenum, are usually produced by hydrogen reduction at high temperatures. Thus, they usually contain numerous large, strongly-sintered agglomerates. Many of the manufacturing processes using these powders involve a milling step or some similar treatment or depend on the individual particulate size, not on the

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<sup>1</sup> This practice is under the jurisdiction of ASTM Committee **B09** on Metal Powders and Metal Powder Products, and is the direct responsibility of Subcommittee **B09.03** on Refractory Metal Powders.

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

<sup>3</sup> Available from ASTM International Headquarters. Order Adjunct No. **ADJB0859**.

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