Australian Standard®

Refractories and refractory materials—Physical test methods

Method 2: Determination of bulk density of granular materials

PREFACE

This Standard was prepared by the Standards Australia Committee on Refractories and Refractory Materials, under the direction of the Minerals Standards Board.

The method is based on procedures presented in ISO 8840, *Refractory materials—Determination of bulk density of granular materials (grain density)* and ASTM C 357, *Test method for bulk density of granular refractory materials.*

METHOD

1 SCOPE This Standard specifies a method for the determination of the bulk density of granular refractory materials having a grain size larger than 2 mm. It consists of two procedures, viz. the arrested water absorption technique, which is applicable to granular refractory materials that are unaffected by water, and the kerosene evacuation technique, which is applicable to all granular refractory materials.

2 REFERENCED DOCUMENTS The following documents are referred to in this Standard:

AS
1141 Methods for sampling and testing aggregates
1141.2 Part 2: Basic testing equipment
2165 Burettes and bulb burettes
2646 Sampling of solid mineral fuels
2646.4 Part 4: Hard coal—Sampling from stationary situations

3 DEFINITIONS For the purpose of this Standard, the definition below applies.

3.1 Bulk density of a granular material—the ratio of the mass of a quantity of the material to the bulk volume of its grains.

4 SAMPLING AND SAMPLE PREPARATION

4.1 General Sampling shall be carried out in accordance with recognized sampling procedures.

NOTE: Guidance on sampling procedures may be found in AS 1141.2 and AS 2646.4.

The material to be tested shall be in the size range—

(a) −5.6 mm +2.0 mm for the arrested water absorption method; or

(b) −11.2 mm +2.0 mm for the kerosene evacuation method.

It shall be produced by sieving and grinding the oversize grains, with minimum production of fine material, until the coarse fraction lies within the specified range.

Any dust or loose particles adhering to the grains shall be removed before testing by washing or, with materials sensitive to moisture or humidity, by air-blowing or washing with a water-free liquid.

4.2 Test sample The approximate mass of test sample may be calculated from the following equation:

$$m = 40\ \varrho_e \quad \text{... (1)}$$

where

m = mass of test sample, in grams

ϱ_e = expected bulk density, in grams per millilitre