1774 Refractories and refractory materials—Physical test methods
1774.13—1989 Permanent dimensional change
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Sets out a method for the determination of permanent linear and volume changes of refractories after drying, firing or reheating. Not applicable to carbon-bearing refractories.
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DR 87162

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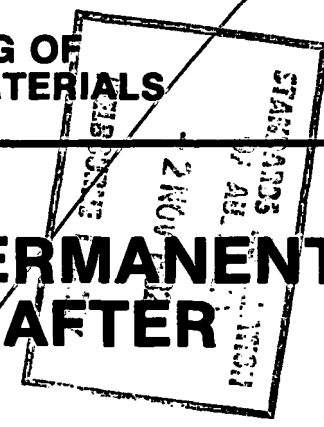
Australian Standard

METHODS FOR PHYSICAL TESTING OF REFRACTORIES AND REFRACTORY MATERIALS



AS 1774.13 THE DETERMINATION OF PERMANENT DIMENSIONAL CHANGE AFTER HEATING

1 SCOPE. This standard sets out the method for the determination of permanent linear and volume changes after the heating of dense, shaped, insulating and castable refractories.

2 REFERENCED DOCUMENT. The following standard is referred to in this standard:

AS 1774 Methods for Physical Testing of Refractories and Refractory Materials
1774.5—The Determination of Density, Porosity and Water Absorption.

3 PRINCIPLE. A test specimen is heated and cooled in a prescribed manner and the changes in linear dimensions and/or volume are determined.

4 DEFINITION. For the purpose of this standard, the following definition applies:

Permanent dimensional change—the increase or decrease in dimensions resulting from the heating and cooling of a specimen under specified conditions, expressed as a percentage of the original dimensions.

5 APPARATUS.

5.1 Drying Oven. An oven capable of maintaining a temperature of 110°C to an accuracy of ± 5°C.

5.2 Linear Measuring Equipment. Any convenient equipment capable of measuring the dimensions of the test specimens to an accuracy of 0.1 mm.

5.3 Volume Measuring Equipment. The evacuation method apparatus specified in AS 1774.5, where appropriate (see Clause 7.2.3).

5.4 Furnace.

5.4.1 *Size of heating chamber (test zone).* The heating chamber shall be of such a size that it can accommodate the test specimens in the manner described in Clause 7.3.

5.4.2 *Heating capability.* The furnace shall be capable of meeting the provisions of Clause 7.4 in an oxidizing atmosphere.

5.4.3 *Temperature constancy.* During the constant temperature period of the test the furnace shall be capable of maintaining the test zone at the required temperature to within ± 10°C as measured by the thermocouple/recorder system specified in Clauses 5.5 and 5.6.

5.4.4 *Specimen protection.* If the furnace is fired by oil or gas, means shall be adopted to prevent direct impingement of the flame on the specimen(s) or thermocouple(s).

5.5 Thermocouple. A thermocouple calibrated against a thermocouple certified by a laboratory registered for this purpose by the National Association of Testing Authorities, Australia and accurate to within ± 5°C over the required temperature range.

NOTE: Precautions should be taken to prevent errors by stray e.m.f. when using thermocouples in electrically heated furnaces.

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