Standard Method of Test for
LINEAR CONTRACTION OF MAGNESIUM OXYCHLORIDE CEMENTS

ASTM Designation: C 252 – 52

ADOPTED, 1952.1

This Standard of the American Society for Testing Materials is issued under the fixed designation C 252; the final number indicates the year of original adoption as standard or, in the case of revision, the year of last revision.

Scope

1. This method of test covers a procedure for the laboratory determination of linear changes occurring in magnesium oxychloride cements prior to the point of maximum contraction.

Apparatus

2. (a) Measuring Apparatus.—The measuring apparatus (Fig. 1) shall consist essentially of a base on which shall be rigidly mounted a section of angle brass, 1½ in. by 1½ in. in dimensions and approximately 11 in. long, to serve as a cradle for the specimen. A rigidly mounted tail piece at one end of the cradle shall be provided with a bolt for anchoring the test specimen. At the opposite end of the cradle shall be mounted a suitable measuring instrument graduated to permit reading to 0.001 in. and estimating to 0.0001 in. This instrument may be either a micrometer comparator or a dial gage. The tip of the stem of the measuring device shall be hemispherical and shall contact the end of the specimen with a total force of not less than 80 nor more than 120 g. The bolt of the tail piece and the stem of the device shall be horizontal and parallel with the long dimension of the cradle with their centers ½ in. above the apex of the cradle.

(b) Brass Pace Plates.—Pieces of light-gage, but rigid, brass cut in the form of a right triangle with the two adjacent sides each 1½ in. long shall be used to confine the ends of the test specimen. Shim stock approximately 0.010 to 0.020 in. thick is recommended. One face plate shall have soldered to its surface a brass nut of the proper size and thread to engage the bolt of the tail piece of the cradle. The other face plate shall have soldered to its surface a brass washer approximately ⅛ in. thick with a center opening sufficiently large to make a loose fit over the stem of the measuring device. The centers of the brass nut and washer, respectively, shall be ⅛ in. from the apex of the face plate and on a line bisecting the right angle. Three ¾-in. holes shall be punched in each end plate for keying to the specimen.

Storage and Test Conditions

3. (a) The preparation and subsequent testing of the test specimens shall be conducted in an atmosphere maintained at 70 ± 1°F, and at a relative humidity half lengthwise. Line the cradle with these folded papers without wrinkling and install the fixed end plate at the tail piece. Insert the other end plate at its approximate location near the opposite end of the cradle. Fill the resulting trough with the plastic cement prepared in accordance with the Standard Method for Mixing Magnesium Oxychloride Cement Compositions with Gauging Solution (ASTM Designation: C 251).2 The ce-

Fig. 1.—Apparatus for Determining Linear Contraction.

of 50 ± 5 per cent (corresponding to a wet bulb temperature range of 56.5 to 60.5 F.). All materials and apparatus shall be equilibrated to these conditions at time of use.

(b) An air circulation velocity of not less than 50 and not more than 100 ft. per min. shall be maintained in the vicinity of the molded specimens for the full duration of the test.

Procedure

4. (a) Cut four pieces of thin, non-sticky, waxed paper (kitchen type) to approximately 4 by 11 in. and fold in half lengthwise. Line the cradle with these folded papers without wrinkling and install the fixed end plate at the tail piece. Insert the other end plate at its approximate location near the opposite end of the cradle. Fill the resulting trough with the plastic cement prepared in accordance with the Standard Method for Mixing Magnesium Oxychloride Cement Compositions with Gauging Solution (ASTM Designation: C 251).2 The ce-

1 Under the standardization procedure of the Society, this method is under the jurisdiction of the ASTM Committee C-2 on Magnesium Oxychloride and Magnesium Oxysulfate Cements.

2 Appears in this publication, see Contents in Numeric Sequence of ASTM Designations at front of book.