



BS 4550 : Part 3 : Section 3.7 : 1978

UDC 666.94.01 : 620.1 : 536.413

British Standard

Methods of testing cement

Part 3. Physical tests
Section 3.7 Soundness testMéthodes d'essai du ciment
Partie 3. Essais physiques
'Section 3.7 Essai de stabilité'Prüfverfahren für Zement
Teil 3. Physikalische Prüfungen
'Abschnitt 3.7 Raumbeständigkeit'

IMPORTANT NOTE. It is recommended that this Section be read in conjunction with the information in the 'General Introduction' to BS 4550 and with the information in BS 4550 : Part 3, Section 3.1, which are both issued separately.

1. Test principle

The soundness of cement is determined by the 'Le Châtelier' method of measuring its expansion, either after immersion in cold and in boiling water or, for supersulphated cement, after immersion in cold water.

2. Apparatus

The following apparatus is required.

2.1 Small split cylinder (figure 1) of spring brass or other suitable metal of 0.50 ± 0.05 mm thickness, forming a mould 30.0 ± 0.5 mm internal diameter and 30.0 ± 0.5 mm high. The inside surface of the mould shall be thinly coated with mould oil. On either side of the split are attached two pointers (AA). The distance from these ends to the centre of the cylinder shall be 165 ± 2 mm. The split shall be not more than 1 mm wide.

2.2 Two glass plates to cover the mould.

3. Procedure

3.1 Immersion in cold and boiling water. Using the procedure described in 4.1 of Section 3.5, mix about 100 g of cement with the quantity of water required to give a paste of standard consistence. Place the mould on one glass plate and fill it with the cement paste, taking care to keep the split of the mould gently closed whilst this

operation is being performed. Next, cover the mould with the other glass plate, upon which a small weight is placed. Immerse the whole immediately in water at a temperature of 20 ± 1 °C and leave there for 24 ± 0.5 h.

Then remove the mould from the water. Measure the distance separating the indicator points to the nearest 1 mm; and again immerse in water at a temperature of 20 ± 1 °C. Bring the water to boiling point in 25 min to 30 min and keep boiling for 1 h. Next, remove the mould from the water and allow to cool. Again measure the distance separating the indicator points to the nearest 1 mm; the difference between the two measurements represents the expansion of the cement.

3.2 Immersion in cold water. Using the procedure described in 4.1 of Section 3.5, mix about 100 g of cement with the quantity of water required to give a paste of standard consistence. Place the mould on one glass plate and fill it with the cement paste, taking care to keep the split of the mould gently closed whilst this operation is being performed. Then cover the mould with the other glass plate, upon which a small weight is placed. Measure the distance separating the indicator points to the nearest 1 mm. Immerse the whole immediately in water at a temperature of 20 ± 1 °C and leave there for 24 ± 0.5 h. Then remove the mould from the water. Again measure the distance separating the indicator points to the nearest 1 mm; the difference between the two measurements represents the expansion of the cement.

4. Report

Report the expansion to the nearest 1 mm.

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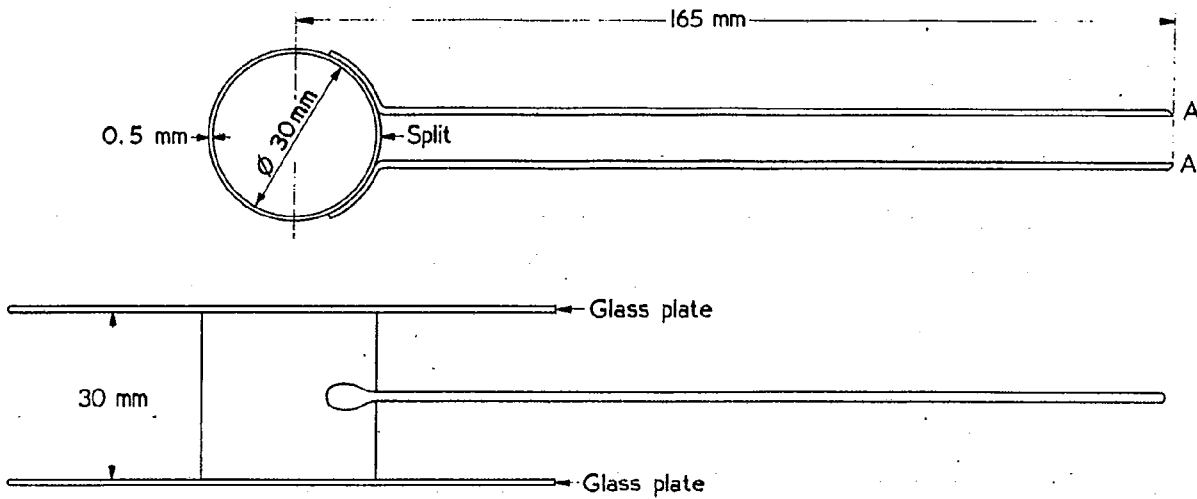


Figure 1. Apparatus for the 'Le Châtelier test'

Standards publication referred to in this Section

BS 4550 Methods of testing cement
Section 3.5 Determination of standard consistence

This British Standard, having been prepared under the direction of the Cement, Gypsum, Aggregates and Quarry Products Standards Committee, was published under the authority of the Executive Board on 30 June 1978.

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Amendments issued since publication

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Methods of testing cement
Part 3. Physical tests
Section 3.7 Soundness test

Revised text

AMD 5707
 July 1988

Title

Delete line 3 of the French title and substitute 'Section 3.7 Essai de stabilité'.
 Delete line 3 of the German title and substitute 'Abschnitt 3.7 Raumbeständigkeit'.

AMD 5707
 July 1988

Clause 2.1 Small split cylinder

In line 2, delete '0.5 mm' and substitute ' 0.50 ± 0.05 mm'.
 In line 3, delete '30 mm' twice and substitute ' 30.0 ± 0.5 mm' in each case.
 In line 7, delete '165 mm' and substitute ' 165 ± 2 mm'.
 In line 8, delete '0.5 mm' and substitute '1 mm'.

AMD 5707
 July 1988

Clause 3.1 Immersion in cold and boiling water

In paragraph 2, line 3 and line 8, delete '0.5 mm' and substitute '1 mm' in each case.

AMD 5707
 July 1988

Clause 3.2 Immersion in cold water

In paragraph 1, line 10, delete '0.5 mm' and substitute '1 mm'.
 In paragraph 2, line 3, delete '0.5 mm' and substitute '1 mm'.