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Methods of testing cements — Determination of strength

Méthodes d'essai des ciments — Détermination des résistances mécaniques



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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 679 was prepared by Technical Committee ISO/TC 74, *Cement and lime*.

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Methods of testing cements — Determination of strength

1 Scope

This International Standard specifies a method of determining the compressive and flexural strengths of cement mortar.

It describes the reference procedure; it allows the use of alternative procedures only in well defined cases provided that they do not affect the results significantly as specified in clause 11. In the event of a dispute, only the reference procedure described in this International Standard shall be used, excluding any alternatives.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards listed below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 409-1 : 1982, *Metallic materials — Hardness test — Tables of Vickers hardness values for use in tests made on flat surfaces — Part 1 : HV 5 to HV 100.*

ISO 565 : 1983, *Test sieves — Woven metal wire cloth, perforated plate and electroformed sheet — Nominal sizes of openings.*

ISO 1101 : 1983, *Technical drawings — Geometrical tolerancing — Tolerancing of form, orientation, location and run-out — Generalities, definitions, symbols, indications on drawings.*

ISO 1302 : 1978, *Technical drawings — Method of indicating surface texture on drawings.*

ISO 2591 : 1973, *Test sieving.*

ISO 3310-1 : 1982, *Test sieves — Technical requirements and testing — Part 1 : Test sieves of metal wire cloth.*

ISO 4200 : 1985, *Plain end steel tubes, welded and seamless — General tables of dimensions and masses per unit length.*

ISO 6507-1 : 1982, *Metallic materials — Hardness test — Vickers test — Part 1 : HV 5 to HV 100.*

3 Principal features of method

The method comprises the determination of the compressive, and optionally the flexural, strength of prismatic test specimens 40 mm × 40 mm × 160 mm in size.

These specimens are cast from a batch of plastic mortar containing one part by mass of cement and three parts by mass of standard sand with a water/cement ratio of 0,5. Standard sands from various sources and countries may be used provided that they have been shown to give cement strength results which do not differ significantly from those obtained using the ISO Reference sand (see clause 11).

The mortar is prepared by mechanical mixing and is compacted in a mould using standard jolting apparatus. Alternative compaction equipment and techniques may be used provided that they have been shown to give cement strength results which do not differ significantly from those obtained using the standard jolting apparatus (see clause 11).

The specimens in the mould are stored in a moist atmosphere for 24 h and then the demoulded specimens are stored under water until strength testing.

At the required age, the specimens are taken from their wet storage, broken in flexure into two halves and each half tested for strength in compression.

4 Laboratory and equipment

4.1 Laboratory

The laboratory where preparation of specimens takes place shall be maintained at a temperature of 20 °C ± 2 °C and a relative humidity of not less than 50 %.

A laboratory temperature of 25 °C ± 2 °C or 27 °C ± 2 °C may be maintained in warm countries, provided the temperature is stated in the test report.

The moist air room or the large cabinet for storage of the specimens in the mould shall be continuously maintained at a temperature of 20 °C ± 1 °C and a relative humidity of not less than 90 %.

The temperature of the water in the storage containers shall be maintained at 20 °C ± 1 °C.