INTERNATIONAL STANDARD

ISO 29582-1

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Methods of testing cement — Determination of the heat of hydration —

Part 1: Solution method

Méthodes d'essai des ciments — Détermination de la chaleur d'hydratation —

Partie 1: Méthode par dissolution

Reference number
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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 29582-1 was prepared by Technical Committee ISO/TC 74, *Cement and lime*.

ISO 29582 consists of the following parts, under the general title *Methods of testing cement — Determination of the heat of hydration*:

— *Part 1: Solution method*

— *Part 2: Semi-adiabatic method*

Methods of testing cement — Determination of the heat of hydration —

Part 1: Solution method

1 Scope

This part of ISO 29582 describes a method of determining the heat of hydration of cements by means of solution calorimetry, also known as the solution method. The heat of hydration is expressed in joules per gram of cement.

This part of ISO 29582 is applicable to cements and hydraulic binders, whatever their chemical composition.

NOTE 1 Another procedure, called the semi-adiabatic method, is described in ISO 29582-2. Either procedure can be used independently.

NOTE 2 It has been demonstrated that the best correlation between the two methods is obtained at 7 d for the solution method in this part of ISO 29582 compared with 41 h for the semi-adiabatic method in ISO 29582-2.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 197-1, *Cement — Part 1: Composition, specifications and conformity criteria for common cements*

3 Principle

The method consists of measuring the heats of solution, in an acid mixture, of anhydrous cement and cement hydrated under standardized conditions for a predetermined period of time, e.g. 7 days.

These standardized hydration conditions are as follows:

— water/cement ratio of 0,40;

— use of neat cement paste;

— storage at a constant temperature of (20,0 ± 0,2) °C during the whole hydration process.

The heat of hydration for each period, H_i, is obtained from the difference between the heat of solution of anhydrous cement, Q_a, and that of hydrated cement, Q_i.