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**Test methods for sprayed concrete —**  
**Part 1:**  
**Flash setting accelerating admixtures**  
**— Setting time**

*Méthodes d'essai pour le béton projeté —*

*Partie 1: Adjuvants activateurs — Temps de prise*



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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 71, *Concrete, reinforced concrete and pre-stressed concrete*, Subcommittee SC 1, *Test methods for concrete*.

A list of all parts in the ISO 23945 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

## Introduction

Sprayed concrete is widely used for the stabilization of structures in a very short time and for concrete applications without using moulds. In addition to being ideal for ground support in tunnelling and mining, sprayed concrete is also used in repairs, restoration, new construction and many other fields.

The requirements for properties, test methods, standards and specifications for the spray-forming process of concrete are different from those of cast-forming concrete. This document is intended to provide a normative test method for determining the effect on the setting time of cement paste by flash setting accelerating admixtures for sprayed concrete.

This document is applied under various climatic and geographical conditions, various levels of protection and under different established regional traditions and experiences. Consequently, this document includes conditions for tests covering standard test conditions and tropical and subtropical regional environments.

This document is intended for use with other parts of the ISO 23945 series, which are intended to be developed and which will provide requirements associated with the level of quality specified and the methods to be employed for the execution of sprayed concrete.



# Test methods for sprayed concrete —

## Part 1:

# Flash setting accelerating admixtures — Setting time

## 1 Scope

This document specifies the test method, sampling, procedure and determination of cement paste containing a flash setting accelerating admixture for sprayed concrete. Related terms and definitions are also given.

This document does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this document to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

ISO 679, *Cement — Test methods — Determination of strength*

ISO 9597, *Cement — Test methods — Determination of setting time and soundness*

ISO 22904, *Additions for concrete*

ISO 22965 (all parts), — *Concrete*

ISO 29581-1, *Cement — Test methods — Part 1: Analysis by wet chemistry*

ISO 29581-2, *Cement — Test methods — Part 2: Chemical analysis by X-ray fluorescence*

EN 196-2, *Method of testing cement — Part 2: Chemical analysis of cement*

EN 196-6, *Methods of testing cement — Part 6: Determination of fineness*

ASTM C187-16:2016, *Standard Test Method for Amount of Water Required for Normal Consistency of Hydraulic Cement Paste*

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

### 3.1

#### **flash setting accelerating admixture**

admixture to develop very early setting and very early hardening of sprayed concrete

Note 1 to entry: For more information on admixture, see ISO 19596.