INTERNATIONAL STANDARD

ISO 1920-14

First edition
2019-11

Testing of concrete —

Part 14: Setting time of concrete mixtures by resistance to penetration

Essais du béton —
Partie 14: Temps de prise des mélanges de béton selon l'essai de résistance à la pénétration

Reference number
ISO 1920-14:2019(E)

© ISO 2019



COPYRIGHT PROTECTED DOCUMENT

© ISO 2019

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Fax: +41 22 749 09 47
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

 © ISO 2019 – All rights reserved

Contents

Page

Foreword ..... **iv**
1 Scope **1**
2 Normative references **1**
3 Terms and definitions **1**
4 Principle **1**
5 Apparatus **2**
6 Preparation of mortar specimens **2**
7 Storage of mortar specimens **3**
8 Number of specimens **3**
9 Procedure **3**
10 Plotting test results and calculation **4**
11 Report **5**

© ISO 2019 – All rights reserved

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).

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).

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.

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

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.

A list of all parts in the ISO 1920 series can be found on the ISO website.

© ISO 2019 – All rights reserved

Testing of concrete —

Part 14: Setting time of concrete mixtures by resistance to penetration

1 Scope

This document covers the method for determining the setting time of concrete with slump greater than zero, by testing mortar sieved from the concrete mixture. The initial setting time and the final setting time are the time intervals required for the mortar sieved from the concrete mixture to reach the specified values of penetration resistance after the initial contact of cement and water.

The method can be used for determining the effect of variables such as temperature, type and content of cement, concrete mix proportions and admixtures, on the time of setting and hardening characteristics of concrete.

This test method is applicable under controlled laboratory conditions, as well as under field conditions.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

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

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

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1
initial setting time
time elapsed, after the initial contact of cement and water, till the mortar (sieved from the concrete) acquires a penetration resistance of 3,5 N/mm^2

3.2
final setting time
time elapsed, after the initial contact of cement and water, till the mortar (sieved from the concrete) acquires a penetration resistance of 27,6 N/mm^2

4 Principle

A mortar sample is obtained by sieving a representative sample of fresh concrete. The mortar sample is placed in a container and stored at a specified ambient temperature. The resistance of the mortar to penetration by standard needles is measured at regular time intervals. The time of initial and final setting are determined from a plot of penetration resistance versus elapsed time.

© ISO 2019 – All rights reserved