INTERNATIONAL STANDARD

ISO 4784

First edition
2022-01

Building and civil engineering sealants — Determination of surface cure time

Mastics pour le bâtiment et le génie civil — Détermination du temps de polymérisation en surface

Reference number
ISO 4784:2022(E)

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

Published in Switzerland

Contents

Page

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 59, *Buildings and civil engineering works,* Subcommittee SC 8, *Sealants*.

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.

Building and civil engineering sealants — Determination of surface cure time

1 Scope

The document specifies a method for the determination of the surface cure of one- and multi-component sealants.

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 6927, *Building and civil engineering sealants — Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 6927 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/

4 Principle

The surface cure time of a freshly applied sealant is determined by lightly touching the surface of the curing sealant with a polyethylene film at certain time intervals until the sealant no longer attaches itself to the film and the film appears clean when peeled from the sealant's surface.

5 Apparatus and materials

5.1 Template

Rectangular metal, high-density polyethylene (HDPE), polypropylene (PP) frame with internal dimensions of (150 ± 5) mm (length), (38 ± 2) mm (width), (6,0 ± 0,5) mm (depth).

5.2 Base plate

Rectangular metal or high-density polyethylene (HDPE) or polypropylene (PP) base plate with dimensions of (150 ± 5) mm (length), (75 ± 5) mm (width), and (2,0 ± 0,5) mm (thickness).

5.3 Polyethylene film

Strip of clear low-density polyethylene (LDPE) film with dimensions of (150 ± 5) mm (length), (20 ± 2) mm (width), and (100 ± 10) µm (thickness).

5.4 Weight

Metal plate with dimensions of (40 ± 1) mm (length) and (30 ± 1) mm (width), and weighing (30,0 ± 0,5) g.

5.5 Timer

Stop watch or other suitable timer with a reading precision of at least 1 s.

6 Conditioning

Store supplies of the sealant in the original closed container(s) for a minimum of 16 h at (23 ± 2) °C and (50 ± 10) % relative humidity.

7 Preparation of test specimen

Prepare the test specimen(s) at standard conditions at (23 ± 2) °C and (50 ± 10) % relative humidity.

For multi-component sealants, thoroughly mix appropriate quantities of base component with curing agent following the manufacturer's instruction. One-component sealants can be applied directly from the original package.

Pour or fill the sealant into the template (5.1) mounted onto the base plate (5.2) and tool the surface flat using a straight metal spatula to achieve a uniform thickness. Record the time when the sealant specimen is scraped level with the spatula.

Considerations should be given to the total number of specimens that need to be prepared depending on how much information on the surface cure behaviour is already known to the experimenter.

8 Test procedure

8.1 General

Testing shall occur at standard conditions at (23 ± 2) °C and (50 ± 10) % relative humidity.

8.2 Screening test (optional)

If the surface cure time is unknown, pre-test the test specimen by lightly touching the surface of the sealant with a strip of polyethylene wrapped over the end of a finger.

Each test shall be carried out at a different location on the sealant's surface. After the surface of the sealant is lightly touched with the polyethylene wrapped finger, the finger is immediately withdrawn from the surface and examined to see if sealant is transferred to the polyethylene film. Pre-testing is completed when no sealant is picked up on the polyethylene strip.

The following time intervals shall be used for the pre-testing: each minute for the first 10 min, each 2 min for the next 10 min, each 10 min for the next 160 min, each hour for the next 21 h, each day until a positive result is achieved or until 21 d has elapsed.

If the surface cure time occurred at an occasion during nights or weekends, start the test over, at such a time where the anticipated final point will occur during working hours.

After an estimate of the surface cure time has been determined, the pre-test shall be repeated, starting closer to the estimated surface cure time and choosing a shorter interval for testing. Intervals shall be systematically shortened (day -> hour -> 10 min -> 2 min), until the surface cure time has been determined within the shortest time interval.