
**Building and civil engineering
sealants — Determination of cured
thickness of one-component sealant —**

**Part 2:
Cylindrical cup test method**

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Contents

Page

Foreword	iv
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Principle	1
5 Apparatus and materials	2
5.1 Cylindrical cup.....	2
5.2 Scraper.....	2
5.3 Thickness calliper.....	2
6 Conditioning	2
7 Preparation of test specimen	2
8 Test procedure	2
9 Calculation and expression of the test result	3
9.1 Cured thickness.....	3
9.2 Cure duration required for 2,00 mm cured thickness.....	3
10 Test report	3

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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).

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*.

A list of all parts in the ISO 24070 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.

Building and civil engineering sealants — Determination of cured thickness of one-component sealant —

Part 2: Cylindrical cup test method

1 Scope

This document specifies a method for the determination of the cured thickness of one-component sealants using a cylindrical cup test method.

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, *Buildings and civil engineering works — Sealants — Vocabulary*

3 Terms and definitions (standards.iteh.ai)

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

4 Principle

The cured thickness is determined by:

- filling the one-component sealant into a cylindrical cup made from an anti-adherent material or a material that is made anti-adherent with the help of a release spray;
- tooling the sealant flat with the surface of the cylindrical cup;
- allowing the sealant to cure under specified conditions for a specified period of time; and
- removing the cured sealant layer from the cylindrical cup.

The thickness of the cured sealant section is determined at the centre of the cured disk of sealant.

5 Apparatus and materials

5.1 Cylindrical cup

The cylindrical cup conforms to the following dimensions: inner diameter: 35 mm to 75 mm, depth (measured along the wall): 35 mm to 50 mm, and wall thickness: 1 mm to 3 mm.

NOTE Frequently, disposable cartridge plungers made from high-density polyethylene (HDPE) or polypropylene (PP) are used as cylindrical cups.

5.2 Scraper

The scraper is a spatula or other tooling implement to smooth and shape the sealant surface by removing excess material. The width of the scraper shall exceed the width of the cylindrical cup by a minimum of 20 mm.

5.3 Thickness calliper

The thickness calliper has a reading accuracy of 0,1 mm for measuring the thickness of the fully cured sealant cross-section.

6 Conditioning

Condition the cylindrical cups and supplies of the sealant in the original closed container(s) for a minimum of 16 h at $(23 \pm 2) ^\circ\text{C}$ and $(50 \pm 10) \% \text{RH}$ (relative humidity).

7 Preparation of test specimen

For each cure duration to be studied, prepare three test specimens by filling three cylindrical cups with sealant, while ensuring that no air pockets are formed. Level the sealant flush with the face of the cup using the scraper, drawing it across the filled cup so that excess sealant is removed.

For example, if six time-intervals (e.g. 8 h, 24 h, 48 h, 72 h, 96 h and 168 h) are considered as cure duration, prepare 18 cylindrical cup specimens.

8 Test procedure

The sealant shall be exposed to standard conditions, i.e. $(23 \pm 2) ^\circ\text{C}$ and $(50 \pm 10) \% \text{RH}$, during cure and testing. Other permissible climate conditions for sealant curing and testing may be chosen as agreed between the parties concerned.

NOTE 1 Storing sealants of different material types or cure systems in close proximity to each other during cure can lead to erroneous results as the by-products that occur during the cure of one sealant can affect the cure rate of another sealant.

NOTE 2 Typically, for health and safety reasons, the sealant test specimens are allowed to cure in a well-ventilated environment. Since the rate of air exchange in the proximity of the curing sealant specimens can affect cure speed, it is possible that the results obtained in the well-ventilated laboratory environment are not fully transferrable to the curing progress observed in the field.

At any time during the curing process, as agreed between the parties concerned, when information on the cured thickness is desired, carefully remove the cured sealant from the cylindrical cup.

NOTE 3 Typically, a duration of 8 h, 24 h, 48 h, 72 h, 96 h and/or 168 h or longer is chosen for the curing process.

Remove any uncured sealant from the cured sealant layer by carefully wiping it off with the scraper (5.2) and measure and record the thickness of the cured sealant layer at the centre of the cured sealant disk using the thickness calliper (5.3).

9 Calculation and expression of the test result

9.1 Cured thickness

The cured thickness shall be expressed as the thickness (in millimetres) of cured sealant section observed at the centre of the cured sealant disk after the specified cure duration.

EXAMPLE Cured thickness: 3,5 mm in 24 h.

9.2 Cure duration required for 2,00 mm cured thickness

The raw data and the arithmetic averages of thickness values obtained after each cure duration shall be plotted and the time to achieve 2,00 mm of cured thickness shall be determined through linear interpolation of the two closest data points.

10 Test report

The test report shall contain the following information:

- a) test laboratory's name and date of test;
- b) a reference to this document, i.e. ISO 24070-2:2021;
- c) name, type (chemical family) and colour of sealant;
- d) batch of sealant from which the test specimens were produced;
- e) dimensions and material type of cylindrical cup;
- f) climate conditions during curing process and testing;
- g) cured thickness after specified cure duration(s) and/or cure duration required for 2,00 mm cured thickness;
- h) any deviations from this document.