INTERNATIONAL STANDARD

ISO 11003-2

Third edition
2019-06

Adhesives — Determination of shear behaviour of structural adhesives —

Part 2: Tensile test method using thick adherends

Adhésifs — Détermination du comportement en cisaillement d'adhésifs structuraux —

Partie 2: Méthode d'essai en traction sur éprouvette épaisse

Reference number
ISO 11003-2:2019(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 ... **2**

5 Apparatus ... **3**

6 Specimen ... **3**
6.1 Specimen dimensions and configuration ... 3
6.2 Adherends ... 4
6.3 Preparation of surfaces before bonding ... 4

7 Test specimen ... **5**
7.1 Preparation ... 5
7.1.1 Specimens with flat-ended adherends ... 5
7.1.2 Specimens with stepped adherends ... 6
7.2 Number of specimens ... 6

8 Procedure ... **8**

9 Calculations ... **10**
9.1 Symbols used ... 10
9.2 Average shear stress τ in the adhesive ... 10
9.3 Shear strain γ in the adhesive ... 10
9.4 Stress strain curve ... 12
9.5 Shear modulus of the adhesive ... 12

10 Precision ... **12**

11 Test report ... **12**

Annex A (informative) **Suitable extensometer design** ... **14**

© 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 61, *Plastics*, Subcommittee SC 11, *Products*.

This third edition cancels and replaces the second edition (ISO 11003-2:2001), which has been technically revised. The main changes compared to the previous edition are as follows:

— the scope now specifies that this document does not apply in case of adhesion failure;

— revision of former subclause 8.3 (now 9.3), "Shear strain γ in the adhesive".

A list of all parts in the ISO 11003 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.

© ISO 2019 – All rights reserved

Adhesives — Determination of shear behaviour of structural adhesives —

Part 2: Tensile test method using thick adherends

1 Scope

This document specifies a test method for determining the shear behaviour of an adhesive in a single lap joint bonded assembly when subjected to a tensile force.

The test is performed on specimens consisting of thick, rigid adherends, with a short length of overlap, in order to obtain the most uniform distribution of shear stresses possible and to minimize other stress states which initiate failure.

This test method may be used to determine:

— the shear-stress against shear-strain curve to failure of the adhesive;

— the shear modulus of the adhesive;

— other adhesive properties that can be derived from the stress/strain curve such as secant shear modulus and maximum shear stress;

— the effect of temperature, environment, test speed, etc., on these properties.

This document does not apply in case of adhesion failure.

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 291, *Plastics — Standard atmospheres for conditioning and testing*

ISO 683-3, *Heat-treatable steels, alloy steels and free-cutting steels — Part 3: Case-hardening steels*

ISO 14737, *Carbon and low alloy cast steels for general applications*

ISO 17212, *Structural adhesives — Guidelines for the surface preparation of metals and plastics prior to adhesive bonding*

ISO 4995, *Hot-rolled steel sheet of structural quality*

ISO 10365, *Adhesives — Designation of main failure patterns*

3 Terms and definitions

No terms and definitions are listed in this document.

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

© ISO 2019 – All rights reserved