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Adhesives — Determination of shear behaviour of structural adhesives —

Part 1: Torsion test method using butt-bonded hollow cylinders

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

Partie 1: Méthode d'essai en torsion de cylindres creux collés bout à bout

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Foreword

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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).

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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 11003-1:2001), which has been technically revised. The main changes compared to the previous edition are as follows:

— correction of the formula for angular displacement in 7.2;

— updated references.

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.

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Adhesives — Determination of shear behaviour of structural adhesives —

Part 1: Torsion test method using butt-bonded hollow cylinders

1 Scope

This document specifies a shear test for the characterization of adhesives in a bond. The shear stress/strain properties of the adhesive (including the shear modulus) are useful for advanced design work, such as in finite element analysis methods.

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 10365, *Adhesives — Designation of main failure patterns*

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

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

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

4 Principle

The shear deformation of the adhesive in an annular bond between two hollow cylinders, and the corresponding torque, are measured and recorded up to failure of the joint.

5 Apparatus

5.1 Torsion-testing machine, with a capacity of at least 300 N·m and preferably of 1 000 N·m. Alternatively, a suitably adapted tensile-testing machine may be used. The machine shall include equipment for recording the torque instantaneously with an error of less than 1 %. The gripping heads shall be accurately aligned and, if no hydraulic gripping mechanism is available, all bolts and holes shall be precisely machined so that the specimens are mounted in the apparatus and tested free of uncontrolled loads. The machine shall be equipped with an adequately thermostatted chamber if tests are to be carried out at temperatures different from the ambient temperature.

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