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SIST EN ISO 9142:2004

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN ISO 9142

December 2003

ICS 83.180

Supersedes EN 29142:1993

English version

Adhesives - Guide to the selection of standard laboratory ageing conditions for testing bonded joints (ISO 9142:2003)

Adhésifs - Guide pour la sélection de conditions normales d'essai de vieillissement en laboratoire des assemblages collés (ISO 9142:2003)

Klebstoffe - Auswahlrichtlinien für Labor-Alterungsbedingungen zur Prüfung von Klebverbindungen (ISO 9142:2003)

This European Standard was approved by CEN on 8 December 2003.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and United Kingdom.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: rue de Stassart, 36 B-1050 Brussels

EN ISO 9142:2003 (E)

CORRECTED 2004-03-03

Foreword

This document (EN ISO 9142:2003) has been prepared by Technical Committee ISO/TC 61 "Plastics" in collaboration with Technical Committee CEN/TC 193 "Adhesives", the secretariat of which is held by AENOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2004, and conflicting national standards shall be withdrawn at the latest by June 2004.

This document supersedes EN 29142:1993.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

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Endorsement notice

The text of ISO 9142:2003 has been approved by CEN as EN ISO 9142:2003 without any modifications.

NOTE Normative references to International Standards are listed in Annex ZA (normative).

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Annex ZA (normative)

Normative references to international publications with their relevant European publications

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

NOTE Where an International Publication has been modified by common modifications, indicated by (mod.), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
ISO 175	1999	Plastics - Methods of test for the determination of the effects of immersion in liquid chemicals	EN ISO 175	2000
ISO 291	1997	Plastics - Standard atmospheres for conditioning and testing	EN ISO 291	1997
ISO 483	1988	Plastics - Small enclosures for conditioning and testing using aqueous solutions to maintain relative humidity at constant value	EN ISO 483	1999
ISO 4892-1	1999	Plastics - Methods of exposure to laboratory light sources - Part 1: General guidance	EN ISO 4892-1	2000
ISO 4892-2	1994	Plastics - Methods of exposure to laboratory light sources - Part 2: Xenon-arc sources	EN ISO 4892-2	1999
ISO 4892-3	1994	Plastics - Methods of exposure to laboratory light sources - Part 3: Fluorescent UV lamps	EN ISO 4892-3	1999

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INTERNATIONAL STANDARD

ISO
9142

Second edition
2003-12-15

Adhesives — Guide to the selection of standard laboratory ageing conditions for testing bonded joints

*Adhésifs — Guide pour la sélection de conditions normales d'essai de
vieillessement en laboratoire des assemblages collés*

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ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
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ISO 9142:2003(E)**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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 9142 was prepared by Technical Committee ISO/TC 61, *Plastics*, Subcommittee SC 11, *Products*.

This second edition cancels and replaces the first edition (ISO 9142:1990), of which it constitutes a minor revision.

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Adhesives — Guide to the selection of standard laboratory ageing conditions for testing bonded joints

1 Scope

This International Standard describes laboratory ageing conditions under which adhesive joints may be exposed to various environmental influences — climatic or chemical — for the purpose of assessing the effects of such influences on certain properties.

The ageing conditions are applicable to bonded assemblies and may be used to constitute a set of tests for the evaluation of an adhesive.

The results obtained using the procedures described in this International Standard are not necessarily applicable to the determination of the service life of a bonded assembly because there is no direct relation between the test results and the behaviour of a bonded assembly over a period of time under service conditions. However, for certain specific applications, experience with the procedures may enable a correlation to be established.

NOTE The ageing conditions should preferably be related to the specific application of the adhesive.

2 Normative references

The following referenced documents are indispensable for the application 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 175:1999, *Plastics — Methods of test for the determination of the effects of immersion in liquid chemicals*

ISO 291:1997, *Plastics — Standard atmospheres for conditioning and testing*

ISO 483:1988, *Plastics — Small enclosures for conditioning and testing using aqueous solutions to maintain relative humidity at constant value*

ISO 3205:1976, *Preferred test temperatures*

ISO 4587:2003, *Adhesives — Determination of tensile lap-shear strength of rigid-to-rigid bonded assemblies*

ISO 4588:1995, *Adhesives — Guidelines for the surface preparation of metals*

ISO 4892 (all parts), *Plastics — Methods of exposure to laboratory light sources*

ISO 6238:2001, *Adhesives — Wood-to-wood adhesive bonds — Determination of shear strength by compression loading*

ISO 9227:1990, *Corrosion tests in artificial atmospheres — Salt spray tests*

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3 Materials

- 3.1 **De-ionized or distilled water**, having a conductivity less than 200 $\mu\text{S/m}$.
- 3.2 **Materials for ageing tests** under special environmental conditions (see appropriate annex).

4 Apparatus

- 4.1 **Conditioning chamber**, meeting the requirements of ISO 483, capable of being maintained at a temperature of $(23 \pm 2)^\circ\text{C}$ and a relative humidity of $(50 \pm 5)\%$.
- 4.2 **Dry-heat chamber**, ventilated and adjustable to a temperature between 20°C and 200°C .
- 4.3 **Humid chamber**, meeting the requirements of ISO 483, adjustable to a relative humidity between 25 % and 100 %. The chamber shall be equipped with
- a device to enable the temperature to be measured to within 1°C ;
 - a device to enable the relative humidity to be measured to within 3 % R.H.
- 4.4 **Cold chamber**, adjustable to temperatures of $(-20 \pm 3)^\circ\text{C}$ and $(-40 \pm 3)^\circ\text{C}$.
- 4.5 **Controlled-pressure chamber**, capable of operating at a pressure of $0,6\text{ MPa}^1$) and at an underpressure of $0,092\text{ MPa}$.

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5 Specimens

- 5.1 **Number and type** <https://standards.iteh.ai/catalog/standards/sist/d1aa1d7a-ca50-4ddd-92c9-49451ae81ed8/sist-en-iso-9142-2004>

The number of test specimens, and the type used, will depend on the properties to be measured and the required ageing conditions. The test specimens shall be prepared in accordance with the requirements of the appropriate ISO standard test method. Prepare a sufficient number of specimens to provide homogeneous sets of samples for testing and to provide control samples. The following International Standards, which do not constitute an exhaustive list, are applicable: ISO 4587, ISO 4588, ISO 6238.

5.2 Conditioning

Specimens shall be conditioned in the conditioning chamber (4.1) for a minimum duration of 24 h before being subjected to ageing. The conditioning shall be carried out after the adhesive has been cured in accordance with the materials specification or the methods specified by the manufacturer of the adhesive.

6 Procedure

6.1 Tests before ageing

Determine the properties required for the sample under test by the appropriate test method, using specimens conditioned in accordance with 5.2.

1) 1 MPa = 10 bar