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SWEDISH STANDARDS INSTITUTE

## Aerospace series – Sealants – Test methods – Determination of low-temperature flexibility

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The European Standard EN 3102:2013 has the status of a Swedish Standard. This document contains the official version of EN 3102:2013.

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

# EN 3102

February 2013

ICS 49.025.99

English Version

# Aerospace series - Sealants - Test methods - Determination of low-temperature flexibility

Série aérospatiale - Produits d'étanchéité - Methodes d'essai - Détermination de la flexibilité à basse température

Luft- und Raumfahrt - Dichtmassen - Prüfverfahren - Bestimmung der Kälteflexibilität

This European Standard was approved by CEN on 24 August 2012.

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 CEN-CENELEC 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 CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

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EUROPÄISCHES KOMITEE FÜR NORMUNG

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# Foreword

This document (EN 3102:2013) has been prepared by the Aerospace and Defence Industries Association of Europe - Standardization (ASD-STAN).

After enquiries and votes carried out in accordance with the rules of this Association, this Standard has received the approval of the National Associations and the Official Services of the member countries of ASD, prior to its presentation to CEN.

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 August 2013, and conflicting national standards shall be withdrawn at the latest by August 2013.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

According to the CEN/CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

# 1 Scope

This European Standard defines the test method for the determination of the operability of a cured sealant during and after submission to a bending load at low temperatures (low-temperature flexibility).

# 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 2090, *Aerospace series - Aluminium alloy AL-P2024-T3 - Clad sheet and strip 0,3 mm <a <6 mm*

ISO 1817, *Rubber, vulcanized — Determination of the effect of liquids*

ISO 7500-1, *Metallic materials — Verification of static uniaxial testing machines — Part 1: Tension/ compression testing machines — Verification and calibration of the force-measuring system*

# 3 Terms and definitions

For the purposes of this document, the following definition applies:

**3.1**
**Low-temperature flexibility**
The resistance of a sealant to cracking when submitted to a bending load at low temperatures using the test equipment as described in 5.1

# 4 Principle of the method

The sealant is applied on a strip of material (substrate). After curing of the sealant, the test pieces are directly and/or after exposure to the test media submitted to a bending test at low temperatures.

Following this bending test, the test pieces are visually inspected in order to detect any cracking.

# 5 Apparatus and accessories

## 5.1 Apparatus

— Tensile testing machine (suitable for tensile and compression tests) in accordance with ISO 7500-1, category 1, allowing for a speed of 960 mm/min;

— mounting device — adapted to the tensile testing machine — for clamping of test pieces. The mounting device shall ensure the clamping of the test piece sideways from the sealant over a length of 75 mm. Installations allowing for the mounting of several test pieces simultaneously may also be used (an example of such a device is given in figure 1);

— load application device (adapted to the traverse of the tensile testing machine);

— cold chamber (adapted to the above-mentioned tensile testing machine, in which the required test temperature can be set (temperature tolerance: ± 1 °C);

— oven with forced aeration (temperature tolerance: ± 1 °C);

— spatula.