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Mekanisk provning av svetsar i metalliska material – Dragprovning av kors – och överlappsförband (ISO 9018:2015)

Destructive tests on welds in metallic materials – Tensile test on cruciform and lapped joints (ISO 9018:2015)

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Denna standard ersätter SS-EN ISO 9018:2004, utgåva 1.

The European Standard EN ISO 9018:2015 has the status of a Swedish Standard. This document contains the official English version of EN ISO 9018:2015.

This standard supersedes the Swedish Standard SS-EN ISO 9018:2004, edition 1.

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EUROPEAN STANDARD

EN ISO 9018

NORME EUROPÉENNE

EUROPÄISCHE NORM

November 2015

ICS 25.160.40

Supersedes EN ISO 9018:2003

English Version

Destructive tests on welds in metallic materials - Tensile test on cruciform and lapped joints (ISO 9018:2015)

Essais destructifs des soudures sur matériaux métalliques - Essai de traction des assemblages en croix et à recouvrement (ISO 9018:2015)

Zerstörende Prüfung von Schweißverbindungen an metallischen Werkstoffen - Zugversuch am Doppel-T-Stoß und Überlappstoß (ISO 9018:2015)

This European Standard was approved by CEN on 26 September 2015.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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European foreword

This document (EN ISO 9018:2015) has been prepared by Technical Committee ISO/TC 44 “Welding and allied processes” in collaboration with Technical Committee CEN/TC 121 “Welding and allied processes” the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by May 2016, and conflicting national standards shall be withdrawn at the latest by May 2016.

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.

This document supersedes EN ISO 9018:2003.

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Endorsement notice

The text of ISO 9018:2015 has been approved by CEN as EN ISO 9018:2015 without any modification.

Destructive tests on welds in metallic materials — Tensile test on cruciform and lapped joints

1 Scope

This International Standard specifies the sizes of test pieces and test specimens, and the procedure for carrying out tensile tests, for determining the tensile strength and location of fractures in welded joints with transverse stressed fillet welds.

It is applicable to metallic materials with welded cruciform and lapped joints on plates, where the term *plate* — alone or in combination — refers to plates, sheets, extruded bars or other solid sections.

Information concerning the evaluation of test results is not included in this International Standard.

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.

ISO 6892-1, *Metallic materials — Tensile testing — Part 1: Method of test at room temperature*

3 Symbols and abbreviated terms

The symbols used for the tensile tests are specified in [Table 1](#) and [Figures 1](#) to [5](#).

Table 1 — Symbols and abbreviated terms

Symbol	Designation	Unit
a, a_1, a_2, a_3, a_4	Fillet weld throat thickness	mm
A_f	Fracture area ($w_f \times b$)	mm ²
b	Width of the test specimen equal to the length of fracture surface	mm
c	Free length between section to be tested and grips of testing device	mm
d	Length of test plates used	mm
f	Gap width for lapped specimens	mm
F_m	Maximum load sustained by the test specimen during testing	N
L_t	Total length of the test specimen	mm
R_m	Tensile strength (F_m/A_f)	MPa
t_1, t_2, t_3	Thicknesses of the materials used to prepare test pieces and test specimens	mm
w_f	Width of the fracture surface ^a	mm

^a See [Figure 1](#).

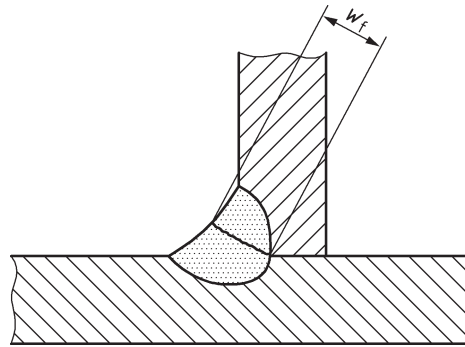


Figure 1 — Definition of width of fracture surface

4 Principle

An increasing tensile load is continuously applied to a test specimen taken from a welded joint until rupture occurs.

Unless otherwise specified, the test shall be carried out at $23\text{ °C} \pm 5\text{ °C}$.

Unless otherwise stated, the general principles of ISO 6892-1 apply.

5 Test pieces and test specimens

5.1 Test pieces

The test pieces shall be prepared and welded in accordance with the relevant application standard and [Figures 2](#) and [4](#). Linear misalignment and angular distortion of the test pieces should be kept to a minimum and recorded on the test report.

5.2 Test specimens

5.2.1 Dimensions

The dimensions of the test specimens shall be in accordance with [Figures 3](#) and [5](#). The weld axis shall remain perpendicular to the longitudinal direction of the specimen.

5.2.2 Marking

Each test specimen shall be marked to identify its exact location in the test piece. If required by the relevant application standard, the direction of working (e.g. rolling or extrusion) shall be marked.

5.3 Heat treatment and/or ageing

No heat treatment shall be applied to the welded joint or to the test specimen unless it is specified or permitted by the relevant application standard dealing with the welded joint to be tested. Details of any heat treatment shall be recorded in the test report; see [Annex A](#) for an example of a test report. If natural ageing of aluminium alloys takes place, the time between welding and testing shall be recorded.

5.4 Extraction of test pieces

5.4.1 General

The mechanical or thermal processes used to extract the test specimen shall not change the properties of the test specimen in any way.

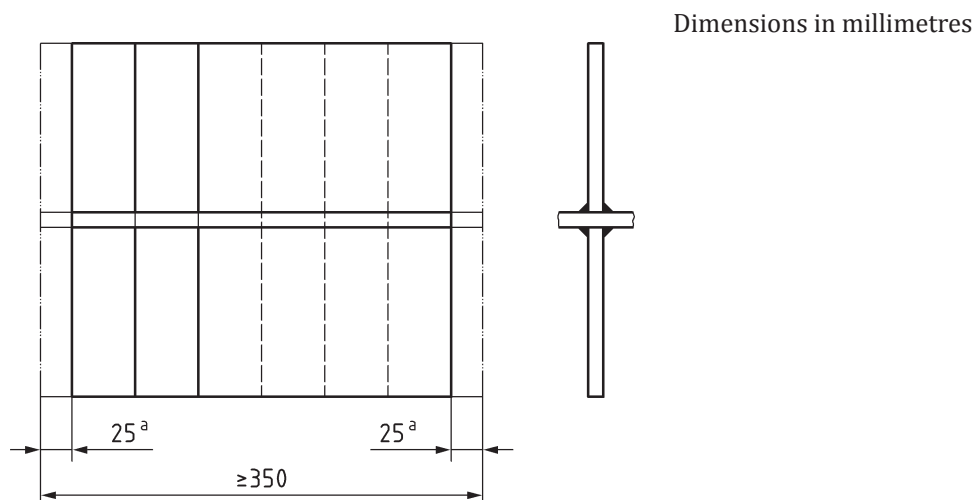
5.4.2 Steel

Sawing or milling shall be used.

If thermal cutting or other cutting methods that could affect the cut surface are used to cut the test specimen from the test piece, the cuts shall be at least 8 mm from the edge surface of the test specimen.

5.4.3 Surface preparation

The final stages of preparation shall be obtained by machining or grinding, suitable precautions being taken to avoid superficial strain hardening or excessive heating of the material. The surfaces shall be free from scratches or notches transverse to the test specimen direction in the free length to be tested, except for undercut which shall not be removed unless required by the relevant application standard.



^a End pieces are to be discarded.

Figure 2 — Location of specimen from a cruciform connection