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Investigation of brazeability with spreading and gap-filling test (ISO 5179:2021)

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

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English Version

**Investigation of brazeability with spreading and gap-filling
test (ISO 5179:2021)**Étude de l'aptitude au brasage au moyen d'un essai de
mouillage et de capillarité (ISO 5179:2021)Untersuchung der Hartlötbarkeit anhand der
Verteilung und mittels der Spaltfüllprüfung (ISO
5179:2021)

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EN ISO 5179:2023 (E)

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European foreword

The text of ISO 5179:2021 has been prepared by Technical Committee ISO/TC 44 "Welding and allied processes" of the International Organization for Standardization (ISO) and has been taken over as EN ISO 5179:2023 by 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of an identical text or by endorsement, at the latest by November 2023, and conflicting national standards shall be withdrawn at the latest by November 2023.

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Endorsement notice

The text of ISO 5179:2021 has been approved by CEN as EN ISO 5179:2023 without any modification.

INTERNATIONAL STANDARD

ISO 5179

Second edition
2021-03

Investigation of brazeability with spreading and gap-filling test

*Étude de l'aptitude au brasage au moyen d'un essai de mouillage et
de capillarité*



Reference number
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ISO 5179:2021(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.

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 44, *Welding and allied processes*, Subcommittee SC 13, *Brazing materials and processes*.

This second edition cancels and replaces the first edition (ISO 5179:1983), which has been technically revised.

The main changes compared to the previous edition are as follows:

- the spreading test has been added;
- the T-joint test has been added.

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 <https://www.iso.org/members.html>.

Official interpretations of ISO/TC 44 documents, where they exist, are available from this page: <https://committee.iso.org/sites/tc44/home/interpretation.html>.

Introduction

When designing and making a brazed joint, quite apart from the physical properties of the brazing alloy and the mechanical properties which can be expected from the joint, it is important to know the brazeability as a function of the operating conditions adopted. The determination of wettability has already been the subject of numerous investigations and proposals regarding testing methods. In carrying out these investigations, the most frequently used methods are based on the spreading of a drop, or on the measurement of surface tension, but they in fact only take one element of the problem into account. It is important to know not only the way in which the liquid filler metal wets the surface of the parent material but also how this same liquid filler metal behaves in a given gap between the joint components when diffusion takes place.

In this document, brazeability is defined as a total degree of joinability. The joinability consists of both wettability and fluidity to permit distribution into a joint, i.e. ability to fill a joint gap, although total brazeability includes performance of the physical, and mechanical properties in services.

As the tests to be designated for brazeability, three methods are introduced in this document. The traditional varying gap test is described for the most real ability to fill the gap, but it requires a private sample preparation and special evaluation technique with X-ray device. The T-joint test is newly developed to investigate ability to fill the gap in an easier manner. It can be easily operated at industrial laboratories. Moreover, a simple spreading test is designated for practical convenience.

Investigation of brazeability with spreading and gap-filling test

1 Scope

This document specifies three test methods for investigating brazeability.

A spreading test shows testing method with measurement of the spread area of the filler metals.

A T-joint test describes a scheme to construct a T-shape design by the test pieces and a testing method.

A varying gap test describes a test piece and a testing method for assessing the influence of the various parameters which can influence brazing during manufacture as a function of clearances.

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 857-2, *Welding and allied processes — Vocabulary — Part 2: Soldering and brazing processes and related terms*

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