



SLOVENSKI STANDARD SIST EN ISO 18785-3:2021

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Točkovno varjenje z gnetenjem - Aluminij - 3. del: Kvalifikacija varilcev (ISO 18785-3:2018)

Friction stir spot welding - Aluminium - Part 3: Qualification of welding personnel (ISO 18785-3:2018)

Rührreibpunktschweißen - Aluminium - Teil 3: Qualifizierung der Bediener von Schweißeinrichtungen (ISO 18785-3:2018)

Soudage par friction-malaxage par points - Aluminium - Partie 3: Qualification du personnel en soudage (ISO 18785-3:2018)

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Ta slovenski standard je istoveten z: EN ISO 18785-3:2021

ICS:

25.160.01	Varjenje, trdo in mehko spajkanje na splošno	Welding, brazing and soldering in general
77.120.10	Aluminij in aluminijeve zlitine	Aluminium and aluminium alloys

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EUROPEAN STANDARD

EN ISO 18785-3

NORME EUROPÉENNE

EUROPÄISCHE NORM

January 2021

ICS 25.160.01

English Version

Friction stir spot welding - Aluminium - Part 3: Qualification of welding personnel (ISO 18785-3:2018)

Soudage par friction-malaxage par points - Aluminium
- Partie 3: Qualification du personnel en soudage (ISO
18785-3:2018)

Rührreibpunktschweißen - Aluminium - Teil 3:
Qualifizierung der Bediener von Schweißeinrichtungen
(ISO 18785-3:2018)

This European Standard was approved by CEN on 6 December 2020.

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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.

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European foreword

The text of ISO 18785-3:2018 has been prepared by Technical Committee ISO/IIW "International Institute of Welding" of the International Organization for Standardization (ISO) and has been taken over as EN ISO 18785-3:2021 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of an identical text or by endorsement, at the latest by July 2021, and conflicting national standards shall be withdrawn at the latest by July 2021.

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

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INTERNATIONAL
STANDARD

ISO
18785-3

First edition
2018-11

**Friction stir spot welding —
Aluminium —**

**Part 3:
Qualification of welding personnel**

Soudage par friction-malaxage par points — Aluminium —

Partie 3: Qualification du personnel en soudage

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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).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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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 the IIW, *International Institute of Welding*, Commission III, *Resistance welding, solid state welding and allied joining processes*.

Any feedback, question or request for official interpretation related to any aspect of this document should be directed to IIW via your national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

A list of all parts in the ISO 18785 series can be found on the ISO website.

Introduction

Welding processes are widely used in the fabrication of engineered structures. During the second half of the twentieth century, fusion welding processes, wherein fusion is obtained by the melting of parent material and usually a filler metal, dominated the welding of large structures. In 1991, friction stir welding (FSW), which is carried out entirely in the solid phase (no melting), was invented.

Friction stir spot welding (FSSW) processes are spot-like variants of the FSW process. Unlike FSW, there is minimal or no traverse motion of the tool. In basic FSSW, the joint is created by plunging a rotating tool into the work piece and retracting the tool out of the overlapping sheets. Other FSSW variants include additional tool movements. Frictional heat is generated from the contact between the tool and the material to be welded resulting in softening of this material. The softened material is stirred to form a metallurgical connection which is aided by the forge action applied by the tool shoulder contacting the upper sheet surface.

The increasing use of FSSW has created the need for a FSSW standard in order to ensure that welding is carried out in the most effective way and that appropriate control is exercised over all aspects of the operation. The ISO 18785 series focuses on the FSSW of aluminium because, at the time this document was developed, the majority of commercial applications for FSW involved aluminium. Examples include railway cars, consumer products, food processing equipment, automotive components, aerospace structures, and marine vessels.

To be effective, welded structures should be free from serious problems in production and in service. To achieve that goal, it is necessary to provide controls from the design phase through material selection, fabrication, and inspection. For example, poor design can create serious and costly difficulties in the workshop, on site, or in service. Incorrect material selection can result in welding problems such as cracking. Welding procedures need to be correctly formulated and approved to avoid imperfections. To ensure the fabrication of a quality product, management needs to understand the sources of potential trouble and introduce appropriate quality and inspection procedures, and supervision should be implemented to ensure that the specified quality is achieved.