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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 41979.3-2022

**Friction stir spot welding - Aluminium and its alloys - Part 3:
Qualification of welding operators**

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Table of Contents

Preface	
Introduction	
1 Scope	1
2 Normative references	1
3 Terms and Definitions	1
4 Assessment Requirements	1
5 Qualifications	4
Appendix A (informative) Operational knowledge of welding equipment functions	5
Appendix B (Informative) Format of Friction Stir Spot Welding Operator Qualification Certificate	6

foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for Standardization Work Part 1. Structure and Drafting Rules for Standardization Documents" drafting.

This document is the third part of GB/T 41979 "Friction Stir Spot Welding of Aluminum and Aluminum Alloys". GB/T 41979 has issued the following

part.

- Part 1. Terms and definitions;
- Part 2. Design of welded joints;
- Part 3. Skill assessment of welding operators;
- Part 4. Welding procedure specification and qualification;
- Part 5. Quality and inspection requirements.

This document is modified to adopt ISO 18785-3:2018 "Friction Stir Welding of Aluminum Part 3. Skill Assessment of Welding Operators".

Compared with ISO 18785-3:2018, this document has structural adjustments, and 4.5.2.2.1 and 4.5.2.2.2 of ISO 18785-3:2018

merged.

The technical differences between this document and ISO 18785-3:2018 and their reasons

are as follows.

--- Replaced ISO 18785-1 with the normative reference GB/T 41979.1, and added the normative reference GB/T 3375 (see

Chapter 3), in order to facilitate the practical application in our country;

---Change the note of ISO 18785-3.2018 to the text to adapt to my country's technical conditions and increase operability (see 4.1, 4.6);

--- Replaced ISO 18785-4 (see 4.4.2, 4.4.3, 4.5.2.2, 4.5.2.3) with the normatively referenced GB/T 41979.4 to accommodate

my country's technical conditions, increase operability;

--- Replaced ISO 18785-5 (see 4.5.2.1) with the normatively quoted GB/T 41979.5 to adapt to the technical conditions of our country, adding

Increase operability;

---Replace ISO 17636-1, GB/T 3323.2, GB/T 11345 with normative references GB/T 3323.1,

ISO 17636-2, ISO 17640 (see 4.5.2.3), in order to adapt to my country's technical conditions and increase operability.

The following editorial changes have been made to this document.

--- Change the name of the standard to "Friction Stir Spot Welding of Aluminum and Aluminum Alloys Part 3.Skill Assessment of Welding Operators";

--- Deleted the reference to ISO 18785-3.2018.

Please note that some contents of this document may refer to patents. The issuing agency of this document assumes no responsibility for identifying patents.

Introduction

Friction stir spot welding, as a solid-phase point joining process, is more and more widely used in aerospace, automobiles, rail vehicles, etc.

Various industrial fields. It has the advantages of no need for filling materials, no melting of materials, small heat input, small welding deformation, and high mechanical properties. The method works

It is used for solid-phase welding of various materials, and is currently the most mature and widely used in aluminum and aluminum alloys. The application of this technology greatly

It improves the reliability and manufacturing accuracy of the components and plays an important role. It is important to formulate general standards for friction stir spot welding of

aluminum and aluminum alloys.

Want meaning.

In terms of friction stir spot welding of aluminum and aluminum alloys, there is no standard to follow in my country at present, and the standard specification is in a blank state.

and the standard specifications for friction stir spot welding of aluminum and aluminum alloys, which is conducive to unifying the relevant specifications and guiding the specifics of friction stir spot welding of aluminum and aluminum alloys.

Implementation work. GB/T 41979 "Friction Stir Spot Welding of Aluminum and Aluminum Alloys" is a general standard for friction stir spot welding of aluminum and aluminum alloys.

The following parts are composed.

--- Part 1.Terms and definitions. The aim is to define terms and definitions for friction stir spot welding.

--- Part 2.Design of welded joints. The purpose is to unify the joint design standard.

--- Part 3.Skill assessment of welding operators. The purpose is to establish common terms of use for operator skill assessment.

--- Part 4.Welding procedure specification and evaluation. The purpose is to provide guidance for welding procedure specification and qualification.

--- Part 5.Quality and inspection requirements. The purpose is to provide technical basis for the production and inspection of friction stir spot welding products.

This document, as a general standard for friction stir spot welding of aluminum and aluminum alloys, specifies the skills assessment of welding operators and other aspects

This will help to unify the skill assessment specifications for friction stir spot welding operators nationwide, as well as the principles and methods of skill assessment examinations.

In order to facilitate the promotion and application of aluminum and aluminum alloy friction stir spot welding technology in various industries in our country.

Friction stir spot welding of aluminum and aluminum alloys

Part 3.Skill assessment of welding operators

1 Scope

This document specifies the skill assessment requirements for friction stir spot welding operators of aluminum and aluminum alloys.

This document is applicable to welding operators of friction stir spot welding of aluminum

and aluminum alloys. This document is not applicable to those who specialize in the installation of automatic welding equipment

unloading personnel.

2 Normative references

The contents of the following documents constitute the essential provisions of this document through normative references in the text. Among them, dated references

For documents, only the version corresponding to the date is applicable to this document; for undated reference documents, the latest version (including all amendments) is applicable to

this document.

GB/T 3323.1 Radiographic testing for non-destructive testing of welds - Part 1.X-ray and gamma-ray film techniques (GB/T 3323.1-

2019 ISO 17636-1.2013, MOD)

GB/T 3323.2 Radiographic testing for non-destructive testing of welds - Part 2.X and gamma ray techniques using digital detectors

(GB/T 3323.2-2019.ISO 17636-2.2013, MOD)

GB/T 3375 Welding Terminology

GB/T 11345 Ultrasonic testing technology, inspection level and assessment for non-destructive testing of welds (GB/T 11345-2013, ISO 17640.

2010, MOD)

GB/T 41979.1 Friction stir spot welding of aluminum and aluminum alloys Part 1.Terms and definitions (GB/T 41979.1-2022,

ISO 18785-1.2018, MOD)

GB/T 41979.4 Friction stir spot welding of aluminum and aluminum alloys - Part 4.Welding procedure specification and qualification (GB/T 41979.4-

2022, ISO 18785-4.2018, MOD)

GB/T 41979.5 Friction stir spot welding of aluminum and aluminum alloys Part 5.Quality and inspection requirements (GB/T 41979.5-2022,

ISO 18785-5.2018, MOD)

3 Terms and Definitions