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

GB/T 41979.5-2022

**Friction stir spot welding - Aluminium and its alloys - Part 5:
Quality and inspection requirements**

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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 part 5 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 18785-5.2018 "Friction Stir Welding Aluminum Part 5. Quality and Inspection Requirements".

Compared with ISO 18785-5.2018, this document has structural adjustments. For a list of structure number changes between the two documents, see

Appendix A.

The technical differences between this document and ISO 18785-5.2018 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;

--- Increase the normative reference GB/T 41979.3 (see 4.1), so as to facilitate the practical application in our country;

--- Replace ISO 9712 and ISO 20807 (see 4.2.2) with the normative references GB/T 9445 and GB/T 32080, respectively, to suit

In response to the technical conditions of our country, the operability is increased;

--- Replaced ISO 17637 (see 4.10.4.2) with the normatively quoted GB/T 32259 to adapt to my country's technical conditions, adding

Operability;

--- Replaced ISO 3452 (all parts) with normative references GB/T 18851.1, GB/T 18851.5, GB/T 18851.6

(See 4.10.4.3) to adapt to the technical conditions of our country and increase operability;

--- Replace ISO 17636 (all parts) with normative references GB/T 3323.1, GB/T 3323.2 (see 4.10.4.4), with

Adapt to the technical conditions of our country and increase operability;

--- ISO 17640 was replaced by GB/T 11345 with normative references, and GB/T 40733 with normative references was added (see

4.10.4.5), to adapt to the technical conditions of our country and increase operability;

--- Replaced ISO 10447 (see 4.10.4.6) with the normatively quoted GB/T 39165 to adapt to the technical conditions of our country, adding

Operability;

--- Replaced ISO 14273 (see 4.10.4.7) with the normatively quoted GB/T 39167 to adapt to the technical conditions of our country, adding

Operability;

--- Replaced ISO 14272 (see 4.10.4.8) with the normatively quoted GB/T 39081 to adapt to the technical conditions of our country, adding

Operability;

--- Replaced ISO 9015-1 and ISO 9015-2 (see 4.10.4.9) with normative references GB/T 2654 and GB/T 27552, respectively, to suit

In response to the technical conditions of our country, the operability is increased;

--- Increase the normative reference GB/T 22087 (see Appendix B), in order to facilitate the practical application in our country;

--- Modified the schematic diagram of interface residue in Appendix B, and added the classification and acceptance criteria of defects (see Table B.1), which is more convenient understand;

--- Footnote d of Table B.1 has been added to adapt to my country's technical conditions and increase operability;

--- Deleted 4.1, 4.2.1, 4.2.2 of ISO 18785-5:2018.

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 5. Quality and Inspection Requirements".

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 is a general standard for friction stir spot welding of aluminum and aluminum alloys, which specifies the relevant quality and inspection requirements, etc.

It is beneficial to unify the relevant specifications of product quality and guide the specific implementation of inspection, improve the product quality of friction stir spot welding components, and facilitate

The promotion and application of aluminum and aluminum alloy friction stir spot welding technology in various industries in my country.

Friction stir spot welding of aluminum and aluminum alloys

Part 5.Quality and inspection requirements

1 Scope

This document specifies the quality and inspection requirements for friction stir spot welding of aluminum and aluminum alloys.

This document applies to friction stir spot welding of aluminum and its aluminum alloys.

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 2654 Test method for hardness of welded joints (GB/T 2654-2008, ISO 9015-1.2001, IDT)

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