

ICS 25.160.01

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

GB/T 41979.1-2022

**Friction stir spot welding - Aluminium and its alloys - Part 1:
Vocabulary and definition**

Issued on: October 12, 2022

Implemented on: October 12, 2022

**Issued by: State Administration for Market Regulation, China National
Standardization Administration**

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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 the first 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 18785-1.2018 "Friction Stir Welding Aluminum Part 1. Terminology".

Compared with ISO 18785-1.2018, 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 18785-1:2018 and their reasons are as follows.

---Replace ISO /T R25901-1, GB/T 3375, GB/T 34630.1, GB/T 19805 with normative reference

ISO 25239-1, ISO 14732 (see Chapter 3), for practical application in our country;

--- Added the term "stirring head" and its definition (see 3.2), because the stirring head is mentioned in 3.3, it needs to be defined;

---Modify the definition of "welding operator", and define the personnel who set up and operate friction stir spot welding equipment as welding operator

(See 3.14), which is more in line with my country's national conditions.

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 1. Terms and Definitions";

--- Deleted the references of ISO 18785-1:2018;

--- Added index.

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 aluminum alloy friction stir spot welding standard specification, which is conducive to unifying the relevant specifications and guiding the specific practice of aluminum and aluminum alloy friction stir spot welding

construction 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 next part is 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, defines the relevant terms and definitions, so that it can be used nationwide

The terms and definitions of friction stir spot welding of aluminum and aluminum alloys in the internal specification standardize the terminology across the country, so as to promote the understanding of stir spot welding by relevant practitioners

An accurate description and understanding of the friction spot welding technique.

Friction stir spot welding of aluminum and aluminum alloys

Part 1. Terms and Definitions

1 Scope

This document defines terms and definitions for friction stir spot welding (FSSW) of aluminum and its 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 3375 Welding Terminology

GB/T 19805 Skills Assessment of Welding Operators (GB/T 19805-2005, ISO 14732.1998, IDT)

GB/T 34630.1 Friction stir welding aluminum and aluminum alloys Part 1. Terms and definitions (GB/T 34630.1-2017,

ISO 25239-1.2011, MOD)

3 Terms and Definitions

GB/T 3375, GB/T 34630.1, GB/T 19805 and the following terms and definitions apply to this document.

3.1

The frictional heat generated by pressing in and out of the base metal by rotating the stirring needle (3.3) or the stirring sleeve (3.18.2) (with or without lateral movement of the stirring needle)

In this way, the base metal enters the plastic state and is stirred and connected, thereby forming a solid-phase connection method with a small and discontinuous lap weld with a small aspect ratio.

see picture 1.

a) Rotate b) Press in c) Exit

Figure 1 Basic principle of friction stir spot welding

3.2

Stirring tool

Welding tools used in the friction stir spot welding process.