



JAPANESE
INDUSTRIAL
STANDARD

Translated and Published by
Japanese Standards Association

JIS Z 3805 : 2022

(JWES/JSA)

Standard qualification test and
acceptance requirements for welding
technique of titanium

ICS 25.160.01

Reference number : JIS Z 3805 : 2022 (E)

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Z 3805 : 2022

Date of Establishment: 1997-08-20

Date of Revision: 2022-09-20

Date of Public Notice in Official Gazette: 2022-09-20

Investigated by: Japanese Industrial Standards Committee
Standards Board for ISO area

JIS Z 3805 : 2022, First English edition published in 2023-10

Translated and published by: Japanese Standards Association
Mita MT Building, 3-13-12, Mita, Minato-ku, Tokyo, 108-0073 JAPAN

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Foreword

This Japanese Industrial Standard has been revised by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee as the result of proposal for revision of Japanese Industrial Standard submitted by The Japan Welding Engineering Society (JWES)/Japanese Standards Association (JSA) with a draft being attached, based on the provision of Article 12, paragraph (1) of the Industrial Standardization Act applied mutatis mutandis pursuant to the provision of Article 16 of the said Act. This edition replaces the previous edition (**JIS Z 3805 : 1997**), which has been technically revised.

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Standard qualification test and acceptance requirements for welding technique of titanium

1 Scope

This Japanese Industrial Standard specifies the standard qualification test and acceptance requirements for welders' welding technique of titanium by TIG welding and MIG welding in the atmosphere. However, the TIG semi-automatic welding shall be excluded.

2 Normative references

Part or all of the provisions of the following standards, through reference in this text, constitute provisions of this Standard. The most recent editions of the standards (including amendments) indicated below shall be applied.

- JIS H 4600 *Titanium and titanium alloys — Sheets, plates and strips*
- JIS H 4630 *Titanium and titanium alloys — Seamless pipes*
- JIS H 4635 *Titanium and titanium alloys — Welded pipes*
- JIS Z 3001-1 *Welding and allied processes — Vocabulary — Part 1 : General*
- JIS Z 3001-2 *Welding and allied processes — Vocabulary — Part 2 : Welding processes*
- JIS Z 3001-4 *Welding and allied processes — Vocabulary — Part 4 : Imperfections in welding*
- JIS Z 3001-7 *Welding and allied processes — Vocabulary — Part 7 : Arc welding*
- JIS Z 3122 *Methods of bend test for butt welded joint*
- JIS Z 3253 *Shielding gases for fusion welding and thermal cutting*
- JIS Z 3331 *Welding rods and solid wires for welding of titanium and titanium alloys*

3 Terms and definitions

For the purpose of this Standard, the following terms and definitions, and those given in JIS Z 3001-1, JIS Z 3001-2, JIS Z 3001-4 and JIS Z 3001-7 apply.

3.1

jig for auxiliary gas shield

instrument other than a torch for covering the weld with shielding gas to prevent oxidation and nitriding of the weld

4 Classification of qualification test for welding technique

The qualification test for welding technique shall be classified as given in Table 1 according to the welding process, welding position, thickness class of the test material, type of joint and use of backing metals. The symbols and the shape of groove shall be as given in Table 1.

Table 1 Classification of qualification test for welding technique

Designation	Welding process	Welding position	Thickness class of test material (mm)	Joint type	Use of backing metal ^{a)}	Groove shape
RT-F	TIG welding	Flat	Plate thickness : 3	Butt joint of plates	N	Single V or square
RT-V		Vertical				
RT-H		Horizontal				
RT-O		Overhead				
RT-P		Horizontally and vertically fixed	Wall thickness : 3	Butt joint of pipes		
RM-F	MIG welding	Flat	Plate thickness : 6	Butt joint of plates	A	Single V
Note ^{a)} A : Backing metal is used. N : No backing metal is used.						

5 Welding process

Test materials shall be welded by either of the following :

- a) TIG welding
- b) MIG welding

6 Welding position

6.1 Welding position of plates

Plates shall be welded at the flat position, vertical position, horizontal position or overhead position. The details are shown in Figure 1.

6.2 Welding position of pipes

Pipes shall be welded at the horizontally fixed position or vertically fixed position. The details are shown in Figure 2.