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PEOPLE'S REPUBLIC OF CHINA**

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**Fasteners - Studs and ceramic ferrules for arc stud welding
(English Translation)**

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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 is required.

This document replaces GB/T 10433-2002 "Cylindrical head welding nails for arc stud welding", GB/T 902.2-2010 "Cylindrical head welding nails for arc stud welding" GB/T 902.3-2008 "Welding studs for energy storage welding", GB/T 902.4-2010 "Welding studs for short cycle arc stud welding" GB/T 10432.1-2010 Headless welding nails for arc stud welding, GB/T 10432.2-2016 Headless welding nails for short cycle arc stud welding this document is based on GB/T 10433-2002 and integrates GB/T 902.2-2010, GB/T 902.3-2008, GB/T 902.4-2010, GB/T 10432.1-2010, GB/T 10432.2-2016 and GB/T 10432.3-2010. Compared with GB/T 10433-2002 and other documents, in addition to structural adjustments and editorial changes in addition, the main technical changes are as follows.

- a) Added terms and definitions (see Chapter 3);
- b) Added symbols and abbreviations (see Chapter 4);
- c) Added that the stud can be made of two different materials by friction welding (see

5.3.1);

d) Increased CEV ($CEV < 0.38$) values (see Table 2);

e) Added materials for SD3 that comply with ISO 15510 (see Table 2);

f) Added materials for PT, UT and IT that comply with ISO/TR 15608 (see Table 2);

g) Added full thread studs (FD), nearly full thread studs (MD) and insulated pins/nails (ND) (see Chapter 6);

h) Dimensions d3 and h4 are changed to reference dimensions (see Chapter 6, GB/T 10433-2002 and other documents);

i) The expression of the stud head angle has been changed (see Figures 1 to 5, 7 to 14, GB/T 10433-2002 and other documents);

j) The name of threaded stud is changed to partially threaded stud (PD) (see 6.4, 3.2 of GB/T 902.2-2010);

k) "ymin" in row 12 is changed to "y 2P" (see Table 5, Table 1 of GB/T 902.2-2010);

l) In column d1, "ymin" is changed to "y 2P" (see Table 6, Table 2 of GB/T 902.2-2010);

m) In column D6, "b" is changed to "b 2P", and the values of M5 and M8 are changed from 7 mm and 9.5 mm to 7.5 mm and 12 mm (see

Table 9, Table 3 of GB/T 902.2-2010);

n) Table 10 The dimensional tolerance of the middle rod diameter is changed from unidirectional negative deviation (h14) to "d1±0.4" (see Table 10, GB/T 10433-2002

Table 1);

o) In Table 13, "bmin" is changed to "bmin 2P" (see Table 13, Table 2 of GB/T 902.4-2010);

p) In Table 16, "b" is changed to "bmin 2P" (see Table 16, Table 2 of GB/T 902.3-2008);

q) Added the internal thread specification M6 of IT type stud (see Table 16);

r) Added the statement that studs and ferrules are usually systematically coordinated by the same manufacturer (see Chapter 7).

This document is modified to adopt ISO 13918:2017 "Studs and ceramic ferrules for arc stud welding".

Compared with ISO 13918:2017, this document has the following structural adjustments.

--5.1 corresponds to 5.3.1 in ISO 13918:2017, 5.2 corresponds to 5.3.2 in ISO 13918:2017, and 5.3 corresponds to ISO 13918.

5.3.3 in 2017;

--Table 19 corresponds to Table 18 in ISO 13918:2017;

--10.2 corresponds to 10.2 and 10.3 in ISO 13918:2017, and 10.2.1 corresponds to 10.2 and 10.2.2 in ISO 13918:2017 Corresponds to 10.3 in ISO 13918:2017.

The technical differences between this document and ISO 13918:2017 and their reasons are as follows.

--Added the elongation after fracture, inner diameter of ceramic ring, outer diameter of ceramic ring clamping, and outer diameter of ceramic ring for machined specimens (gauge length is 5 times the diameter).

diameter, ceramic ring height, tensile strength, upper yield strength of machined specimens, and specified plastic elongation of machined specimens are the stipulations for the symbols of stress, etc. at 0.2% (see Chapter 4) are provided for the convenience of the reader;

-- Deleted 5.1 Ordering Information, 5.2 Hazardous Substances and 5.4 Durability (see Chapter 5) as they are not closely related to the technical requirements;

-- The normative reference GB/T 3098.1 replaces ISO 898-1 (see 5.3.1), and GB/T 3098.6 replaces ISO 3506-1 (see 5.1.3.1), GB/T 3103.1 replaced ISO 4759-1 (see 6.1), GB/T 16672 replaced ISO 6947 (see 6.1) to adapt to my country's technical conditions;

--ISO 16120-2 (see 5.3.1) was replaced by the normative reference GB/T 24242.2 to adapt to my country's technical conditions;

--Added the requirements for mechanical properties test methods for studs (see 5.3.1) to unify the mechanical properties test methods;

--The performance and test methods of shear studs after welding have been added (see 5.3.1 and Appendix A) to ensure the quality of shear stud welding.

-- Added "The material of the ceramic ring shall be determined by the manufacturer under the premise of meeting the welding performance." (see 5.3.1) to ensure the quality of the ceramic ring material.

quality;

--According to the basic dimension d2 in Table 1 of GB/T 196-2003, the d2 value of M16 is changed to 14.70 (see Table 4 and Table 5).

Conform to the basic thread size;

--On the premise of ensuring welding performance, the d5 value of specifications 10, 13 and 16 is changed to the value of GB/T 10433-2002 (see

Table 10) to reduce the changes in tools and dies used in product production;

--Based on actual usage, the shear studs have been increased to specification 8, and the

shear studs of specifications 9.5, 12.7 and 25.4 have been deleted (see

Table 10), to adapt to my country's national conditions;

--On the premise of ensuring the minimum clamping thickness, change the value of h5 to 2P (see Table 11 and Table 14) to facilitate processing;

--Added requirements for the inner diameter D7 of the ceramic ring and the outer diameter d8 of the clamping, and the tolerance of the outer diameter d9 was changed to ± 1 (see Table 17) to unify the ceramic ring size;

--UF 3 and UF 25 ceramic rings were added, and the outer diameter d9 of the ceramic ring RF 16 was changed to 26.5/32.5 b (see Table 17) to meet the welding requirements.

Used with studs;

--Deleted UF 12.7 and MF 20 ceramic rings in ISO 13918:2017 (see Table 17) because there are no matching specifications for welding studs;

-- Added "The finished stud should be free of burrs that affect its use." (see 8.2) to ensure the surface quality of the shear stud;

-- Added the chemical composition analysis deviation requirements and normative references to GB/T 222 (see 9.2) to ensure the quality of raw materials;

--Deleted the provision that "notch impact test may not be performed on cold-formed materials" (see 9.2), because there is no notch impact test.

product;

--Added the mechanical properties of SD type welding studs, the diameter requirements of machined specimens (see 9.3) to unify the tensile test of machined specimens condition;

--ISO 4042 (see 10.2.1) has been replaced by the normative reference GB/T 5267.1 to adapt to my country's technical conditions;

--Added information requirements for stud and ferrule marking (see 11.1 and 11.2) to standardize product marking;

-- Added normative references to GB/T 1237 (see 11.1), GB/T 228.1 (see Appendix A) and GB/T 16825.1 (see Appendix A) to comply with my country's basic standards for fasteners.

The following editorial changes were made to this document.

--To coordinate with the existing standards, the name of the standard is changed to "Studs and Ceramic Rings for Arc Stud Welding of Fasteners";

--Incorporates the amendments to ISO 13918:2017/Amd 1.2021, and the outer margins of the clauses involved are marked with vertical Straight double lines (||) are marked;

-- ISO 16228 is replaced by the informative reference GB/T 39310 (see 9.1).