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

GB/T 44509-2024

**Welding procedure qualification test for spot, seam and
projection welding**

点焊、缝焊和凸焊的焊接工艺评定试验

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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 modified to adopt ISO 15614-12:2021 "Welding procedure specifications and qualification of welding procedure tests for metallic materials - Part 12. Spot welding, seam welding and projection welding. The technical differences between this document and ISO 15614-12:2021 and their reasons are as follows:

--- In order to adapt to my country's technical conditions, the scope was modified and the part referring to ISO 4063 in Chapter 1 was deleted (see Chapter 1);

--- Replaced ISO 669.2016 (see Chapter 3) with normative references GB/T 8366, replaced ISO 669.2016 with normative references GB/T 19866 Replaced ISO 15607.2019 (see Chapter 3), replaced ISO 15609-5 with the normative reference GB/T 19867.5. 2011 (see Chapter 4, Chapter 9) to apply my country's technical requirements;

--- Added references to GB/T 3375 (see Chapter 3), GB/T 4156 (see 6.2.1), GB/T 15823 (see 6.2.1), GB/T 26955 (see 6.2.1), GB/T 39081 (see 6.2.1), GB/T 39082 (see 6.2.1), GB/T 39165 (see 6.2.1), GB/T 39166 (see 6.2.1), GB/T 39167 (see 6.2.1) and ISO 17654 (see 6.2.1) to adapt to my country's technology Conditions, increase operability;

--- ISO 17677-1.2019 was deleted to adapt to my country's technical conditions;

--- In order to ensure the normativeness of the standard, the recommended clauses in 6.1, 7.1 are changed to required clauses. The following editorial changes were made to this document.

--- To coordinate with the existing standards, the name of the standard is changed to "Welding procedure qualification test for spot welding, seam welding and projection welding". Please note that some of the contents of this document may involve patents. The issuing organization of this document does not assume the responsibility for identifying patents. This document is proposed and coordinated by the National Welding Standardization Technical Committee (SAC/TC55). This document was drafted by: CRRC Tangshan Locomotive and Rolling Stock Co., Ltd., China Machinery Engineering Institute Group Harbin Welding Research Institute Co., Ltd., Beihe Steel Material Technology Research Institute Co., Ltd., Zhejiang Yinlun Machinery Co., Ltd., Ningbo Labor Safety Technology Service Co., Ltd., Che Yongji Motor Co., Ltd., China Aviation Manufacturing Technology Research Institute, Shanxi Machinery Product Quality Supervision and Inspection Station Co., Ltd., Anhui Xinfu New Energy Technology Co., Ltd., Harbin Anyudi Aviation Industry Co., Ltd., Fujian Industrial Equipment Installation Co., Ltd., Anhui Shuangjun Intelligent Technology Co., Ltd., Fushun Special Equipment Supervision and Inspection Institute, Shanghai Jiaotong University, Guangdong Gangzhong Green Building Technology Co., Ltd., Shenzhen Ai Lei Laser Technology Co., Ltd. and Changchun Sanyou Auto Parts Manufacturing Co., Ltd. The main drafters of this document are. Hou Zhenguo, Fu Wenjun, Zhang Caidong, Mai Xiaobo, Guo Xiao, Xie Guisheng, Wan Xiaohui, Zhu Baoquan, Zhang Xiaolong, Guo You, Lu Erjing, Xu Yujun, Ma Cheng, Wang Lei, Wang Weiyi, Sun Xiangguang, Li Yongbing, Fan Zhizhong, Cao Yukun, Cheng Chuanfeng, Xia Yujun, Su Jinhua, Shen Jieguo, Xu Hui, Jiang Lijun, Yin Shanwen, Xia Qihang. Welding procedure qualification tests for spot welding, seam welding and projection welding

1 Scope

GB/T 44509-2024 sets the welding procedure qualification test for spot, seam and projection welding, adopting ISO 15614-12 with modifications. Resistance welding is

qualified differently from arc welding because the weld is made inside the joint and cannot be inspected visually or radiographically: the evidence that the procedure works comes from destructive tests on representative coupons, and the qualification then covers a defined range of thickness, coating and material around what was tested. The standard sets the preliminary welding procedure specification, the qualification test itself, the test pieces and specimens with their shapes and sizes and how they are welded, the testing and inspection - the test scope, the preparation of specimens, the visual inspection and the retest provisions - and the range of qualification conferred, together with the welding procedure qualification record. It takes effect on 1 April 2025.

This document specifies the welding procedure qualification test methods and requirements for spot welding, seam welding and projection welding. This document is applicable to welding procedure qualification tests for spot welding, seam welding and projection welding of metallic materials. NOTE This document is also applicable to welding procedure qualification tests for projection welding processes such as nut welding, stud welding and wire cross projection welding.

2 Normative references

The contents of the following documents constitute essential clauses of this document through normative references in this document. For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to This document.

GB/T 3375 Welding terminology

GB/T 4156 Erichsen cupping test for metal sheets and strips (GB/T 4156-2020, ISO 20482. 2013, IDT)

GB/T 8366 Resistance welding Mechanical and electrical requirements for resistance welding equipment (GB/T 8366-2021, ISO 669.2016, IDT)

GB/T 15823 Non-destructive testing helium leak detection method

GB/T 19866 General principles for welding procedure specification and qualification (GB/T 19866-2005, ISO 15607.2003, IDT)

GB/T 19867.5 Resistance welding procedure specification (GB/T 19867.5-2008, ISO 15609-5.2004, IDT)

GB/T 26955 Destructive testing of welds on metallic materials Macroscopic and microscopic examination of welds (GB/T 26955-2011, ISO 17639. 2003, MOD)

GB/T 39081 Cross tensile test method for resistance spot welding and projection welding joints (GB/T 39081-2020, ISO 14272. 2016,MOD)

GB/T 39082 Test method for Vickers hardness of resistance spot welding, projection welding and seam welding joints (GB/T 39082-2020, ISO 14271. 2017,MOD)

GB/T 39165 Peeling and chiseling test method for resistance spot welding and projection welding joints (GB/T 39165-2020, ISO 10447. 2015,MOD)

GB/T 39166 Mechanical peel test method for resistance spot welding, projection welding and seam welding joints (GB/T 39166-2020, ISO 14270. 2016,MOD)

GB/T 39167 Tensile shear test method for resistance spot welding and projection welding joints (GB/T 39167-2020, ISO 14273. 2016,MOD)

ISO 17653 Resistance welding - Destructive testing of welds in metallic materials - Torsion testing of resistance spot welds

3 Terms and definitions

The terms and definitions defined in GB/T 3375, GB/T 8366 and GB/T 19866 apply to this document.