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

GB/T 25774.2-2023

Replacing GB/T 25774.2-2016

**Test methods for welding consumables - Part 2: Preparation of
butt weld single-run and two-run technique test pieces and
specimens for mechanical properties in steel**

(English Translation)

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents" Drafting:

This document is Part 2 of GB/T 25774 "Inspection of Welding Materials": GB/T 25774 has released the following parts:

---Part 1: Preparation of mechanical properties specimens of steel, nickel and nickel alloy deposited metals;

---Part 2: Preparation of mechanical properties specimens for single-sided single-pass welding and double-sided single-pass welded joints of steel;

---Part 3: Preparation and inspection of T-joint fillet weld specimens:

This document replaces GB/T 25774.2-2016 "Inspection of Welding Materials Part 2: Single-sided single-pass welding and double-sided single-pass welding of steel "Preparation and Inspection of Mechanical Properties of Joints", compared with GB/T 25774.2-2016, in addition to structural adjustments and editorial changes, the main the technical changes are as follows:

a) Added technical requirements for the allowable deviation of the bevel angle for three specimen types (see 6.1);

b) Added technical requirements for type 2:6 test pieces (see 6.1);

- c) Changed the technical requirements for sampling position and number of specimens according to different welding conditions (see 9.1:1, Chapter 8 of the:2016 edition);
- d) Added requirements for sampling location of type 2:6 test pieces (see 9.1:1);
- e) The symbol for the size of the V-notch impact specimen has been changed (see 9.3:3, Chapter 8 of the:2016 edition);
- f) Added a technical requirement for machining allowable deviations for automatic positioning of impact specimens (see 9.3:3);
- g) Deleted the re-inspection and test reports (see Chapters 9 and 10 of the:2016 edition):

This document is modified to adopt ISO 15792-2:2020 "Test methods for welding materials Part 2: Single-sided and double-sided welding tests of steel Preparation of parts and specimens":

The technical differences between this document and ISO 15792-2:2020 and their reasons are as follows:

- Replaced ISO 13916 with normatively cited GB/T 18591, and added recommended temperature measurement points (see 7.2) to suit our country skills requirement;
- The sampling position of the weld metal tensile test specimen of type 2:6 test piece has been added (see Figure 2) to facilitate the execution of this document;
- Replaced ISO 4136:2012 (see 9.2:1) with normatively cited GB/T 2651 to adapt to my country's technical conditions and increase the availability operability;
- Replaced ISO 5178 (see 9.2:2) with normatively quoted GB/T 2652, and added tensile test specimen drawings and dimensions (see Figure 4 and Table 2) to facilitate the execution of this document;
- Replaced ISO 9016:2012 with normative reference GB/T 2650-2022 (see 9.3:1), consistency between the two documents the degree is modified to adapt to my country's technical conditions and increase operability;
- Added V-notch impact specimen drawings and dimensions (see Figure 5 and Table 3) to facilitate the execution of this document:

The following editorial changes have been made to this document:

- In order to coordinate with the existing standards, the name of the standard is changed to "Inspection of Welding Materials Part 2: Single-sided single-pass welding and double-sided single-pass welding of steel Preparation of mechanical properties specimens for pass welding joints";
- Deleted the "References" chapter:

Please note that some content in this document may be subject to patents: The publisher of

this document assumes no responsibility for identifying patents:

Introduction

The mechanical properties, multi-position adaptability and root penetration of T-joint fillet welds are important indicators for the classification or inspection of welding materials:

The specimen preparation process has a great impact on its final results:

GB/T 25774 "Inspection of Welding Materials" standardizes the mechanical properties and preparation of T-joint fillet weld specimens, welding materials Product standards all quote this series of documents, and the unified requirements for sample preparation are conducive to the implementation of product standards: GB/T 25774 is welding materials the universal sample preparation method standard consists of the following three parts:

---Part 1: Preparation of mechanical properties specimens of steel, nickel and nickel alloy deposited metals: The purpose is to provide for the preparation of steel, nickel the test piece base material, preparation requirements, welding conditions and sample requirements required for arc welding materials deposited metal mechanical properties test specimens:

---Part 2: Preparation of mechanical properties specimens of single-sided single-pass welded and double-sided single-pass welded joints of steel: The purpose is to provide for the application the specimen master required for preparing mechanical properties specimens of single-sided single-pass welding and double-sided single-pass welding joints of steel arc welding materials:

Materials, preparation requirements, welding conditions and sample requirements:

---Part 3: Preparation and inspection of T-joint fillet weld specimens: The purpose is to provide for the preparation of steel and nickel welding materials the test piece base material, preparation requirements and inspection requirements required for T-joint fillet weld specimens:

When submerged arc welding wires and flux-cored welding wires are used for single-sided single-pass welding or double-sided single-pass welding, they may be classified and tested in accordance with the provisions of this document: when when a welding material is required to be single-sided single-pass welding or double-sided single-pass welding according to product classification standards, it should be noted that deposition may no longer be required:

Metal testing: The test conditions and specified inspection results described in this document are not suitable as requirements for process qualification:

Examination of welding materials part 2:

Single-sided single-pass welding and double-sided single-pass welding of steel Preparation

of mechanical properties specimens of welded joints

1 Scope

This document specifies the preparation of tensile and impact test specimens for single-sided single-pass welded and double-sided single-pass welded joints of steel welding consumables:

This document is applicable to the determination of the mechanical properties of welded joints of steel arc welding materials under single-sided single-pass welding and double-sided single-pass welding conditions:

sample preparation:

This document does not apply to electroslag welding and gas-electric vertical welding:

2 Normative reference documents

The contents of the following documents constitute essential provisions of this document through normative references in the text: Among them, the dated quotations for undated referenced documents, only the version corresponding to that date applies to this document; for undated referenced documents, the latest version (including all amendments) applies to this document:

GB/T 2650-2022 Destructive testing of metal material welds and impact testing (ISO 9016:2022, MOD) GB/T 2651 Destructive testing of welds of metallic materials Transverse tensile test (GB/T 2651-2023, ISO 4136:2022, MOD) GB/T 2652 Destructive testing of welds of metallic materials Longitudinal tensile test of weld metal of molten welding joints (GB/T 2652-2022, ISO 5178:2019, IDT) GB/T 18591 Guidelines for measurement of welding preheating temperature, interpass temperature and preheating maintenance temperature (GB/T 18591-2001, idt ISO 13916:1996)

3 Terms and definitions

There are no terms or definitions to be defined in this document:

4 General rules

The welding consumables tested should be representative products that the manufacturer needs to classify or inspect: Welding shall be prepared in accordance with the requirements of this document Tensile and impact specimens of joints: