



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

GB/T 25774.1-2023

**Test methods for welding consumables - Part 1: Preparation of
deposited metal test pieces and specimens for mechanical
properties in steel, nickel and nickel alloys**

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Foreword

This document was drafted in accordance with the rules provided in GB/T 1.1-2020 Directives

for Standardization - Part 1.Rules for the Structure and Drafting of Standardizing Documents.

This document is Part 1 of GB/T 25774 Test Methods for Welding Consumables. GB/T 25774

has issued the following parts.

---Part 1.Preparation of Deposited Metal Test Pieces and Specimens for Mechanical Properties in Steel, Nickel and Nickel Alloys;

---Part 2.Preparation of Butt Weld Single-run and Two-run Technique Test Pieces and Specimens for Mechanical Properties in Steel;

---Part 3.Preparation and Testing of a Fillet Weld Specimens for T-joint.

This document serves as a replacement for GB/T 25774.1-2010 Test Methods for Welding Consumables - Part 1.Preparation and Testing of Deposited Metal Specimens for Mechanical

Properties in Steel, Nickel and Nickel Alloys. In comparison with GB/T 25774.1-2010, apart

from structural adjustments and editorial modifications, the main technical changes are as follows.

- a) The types of test pieces 1.8, 1.9, 2.0, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8 and 2.9 are deleted (see Chapter 5 of Version 2010);
- b) The test plate widths for types 1.3 and 1.4 are modified (see 6.1; Chapter 5 of Version 2010);
- c) The allowable deviations for test plate thickness and root gap are added (see 6.1);
- d) The symbol and dimensional tolerances for the diameter of tensile specimens are modified (see 9.2; Chapter 8 of Version 2010);
- e) The shape tolerances for the diameter of tensile specimens are added (see 9.2);
- f) The symbols for the dimensions of V-notch impact specimens are modified (see 9.3; Chapter 8 of Version 2010);
- g) A technical requirement for the allowable deviations of machining for automatically positioned impact specimens is added (see 9.3);
- h) Re-inspection and test report are deleted (see Chapter 9 and Chapter 10 of Version 2010).

This document modifies and adopts ISO 15792-1:2020 Welding Consumables - Test Methods -

Part 1. Preparation of All-weld Metal Test Pieces and Specimens in Steel, Nickel and Nickel Alloys.

Test Methods for Welding Consumables - Part 1.

Preparation of Deposited Metal Test Pieces and Specimens
for Mechanical Properties in Steel, Nickel and Nickel Alloys

1 Scope

This document specifies the preparation of deposited metal tensile and impact specimens of

steel, nickel and nickel alloy welding consumables.

This document applies to the preparation of specimens for arc welding consumable classification tests of steel, nickel and nickel alloys, or for other tests of determining the

mechanical properties of deposited metal.

2 Normative References

The contents of the following documents constitute indispensable clauses of this document through the normative references in the text. In terms of references with a specified date, only

versions with a specified date are applicable to this document. In terms of references without a

specified date, the latest version (including all the modifications) is applicable to this document.

GB/T 2650-2022 Destructive Tests on Welds in Metallic Materials - Impact Tests (ISO 9016:2022, MOD)

GB/T 2652 Destructive Tests on Welds in Metallic Materials - Longitudinal Tensile Test on Weld Metal in Fusion Welded Joints (GB/T 2652-2022, ISO 5178:2019, IDT)

GB/T 18591 Welding - Guidance on the Measurement of Preheating Temperature, Interpass

Temperature and Preheat Maintenance Temperature (GB/T 18591-2001, ISO 13916:1996, IDT)

3 Terms and Definitions

This document does not have terms or definitions that need to be defined.

4 General

The welding consumables under test shall be representative of the products required for classification or inspection by the manufacturer. Tensile and impact specimens of deposited metal shall be prepared in accordance with the requirements of this document.

5 Base Material for Tests

The base material for tests shall match the deposited metal of the welding consumables under

test. If other base materials are used, at least two insulating layers shall be welded to the groove

face and the backing plate surface using the welding consumables under test. The

thickness of

the insulating layers after machining shall be no less than 3 mm to ensure that the deposited

metal is not affected by dilution of the base material.

6.1 The specimens shall be prepared in a V-groove configuration with a backing plate. The

backing plate shall be welded to the back of the test piece, as shown in Figure 1 and Table 1.

6.2 To prepare specimens, before welding, the test plate shall be backward deformed or

restrained to ensure that the prepared test pieces are sufficiently flat. After welding, the test pieces shall not be straightened, and test pieces with angular deformation exceeding 5° shall be scrapped.

6.3 The types and dimensions of the test pieces are shown in Table 1. The types of test pieces

selected for welding consumable classification shall comply with the provisions of the relevant

product standards.

7 Welding Conditions

7.1 The test pieces shall be prepared in the flat welding position. Unless otherwise specified in

the product standards of welding consumables, welding in other positions is permitted.

7.2 When welding is initiated, the test plate shall be heated to a preheat temperature specified

in the product standards of welding consumables and maintained at the interpass temperature

specified in the product standards during welding. If the test plate temperature exceeds the specified temperature, it shall be naturally cooled. If welding must be interrupted, the test plate