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**ENERGY INDUSTRY STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

NB/T 47018.8-2022

**Technical conditions for ordering welding materials for
pressure equipment - Part 8: Zirconium and zirconium alloy
welding wires and filler wires**

(English Translation)

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Foreword

This Document was drafted as per the rules specified in GB/T 1.1-2020 Directives for Standardization - Part 1: Rules for the Structure and Drafting of Standardizing Documents.

This Document is Part 8 of NB/T 47018 Technical Specification of Welding Materials for Pressure Equipment. NB/T 47018 consists of the following parts:

- Part 1: General Rules of Procurement;
- Part 2: Electrodes for Steel;
- Part 3: Steel Electrodes and Rods for Gas Shielded Arc Welding;
- Part 4: Electrodes and Fluxes for Submerged Arc Welding;
- Part 5: Stainless-Steel Strip Electrodes and Fluxes for Overlay Welding;
- Part 6: Aluminum and Aluminum Alloy Welding Wires and Filler Wires;
- Part 7: Titanium and Titanium Alloy Welding Wires and Filler Wires.

Please note some contents of this Document may involve patents. The issuing agency of this

Document shall not assume the responsibility to identify these patents.

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Specification of Welding Materials for Pressure Equipment -
Section 8: Zirconium and Zirconium-Alloy Welding Electrodes
and Rods

1 Scope

This Document specifies the designation compilation, technical requirements, test methods, inspection rules and product identification of zirconium and zirconium alloy welding wires and filler wires.

This Document is applicable to zirconium and zirconium alloy welding wires and filler wires for gas tungsten arc welding, gas metal arc welding and plasma arc welding of pressure equipment and other suitable melting welding methods.

2 Normative References

The provisions in following documents become the essential provisions of this Document through reference in this Document. For the dated documents, only the versions with the dates

indicated are applicable to this Document; for the undated documents, only the latest version

(including all the amendments) is applicable to this Document.

GB/T 2653 Bend test methods on welded joints

GB/T 26314 Designation and composition of zirconium and zirconium alloys

GB/T 8769 Zirconium and zirconium alloy bars and wires

GB/T 13747 (all parts) Methods for chemical analysis of zirconium and zirconium alloys

GB/T 5168 Microstructure and macrostructure examination for titanium and titanium alloys

NB/T 47018.1 Technical permission of welding materials for pressure equipment - Part 1: General rule

NB/T 47013.2 Nondestructive testing of pressure equipment - Part 2: Radiographic testing

AWS A5.24 Zirconium and zirconium alloy welding wire and filler wire

6.1 Inspection items

Each batch of welding wire and filler wire shall be subject to chemical composition, size, metallographic inspection (macrostructure), surface and macroscopic quality, weld metal radiographic inspection and bending test.

6.2.1 Each batch of welding wire and filler wire shall be sampled on the finished product for C,

O, H and N content analysis. The content of other compositions shall be reported according to

the analysis results of the original ingot. Arbitration analysis shall be sampled on the finished

welding wire and filler wire.

6.2.2 Take 2 coils (or pieces) of each batch of welding wire and filler wire at random, and

respectively take 1 specimen at each end of each piece for transverse metallographic inspection (macrostructure).

6.2.3 The size, surface and macroscopic quality of welding wire and filler wire shall be

inspected piece/coil by piece/coil.

7.1 The welding wire is supplied in the form of welding wire coils and welding wire reels with

internal support; and the filler wire is supplied in the form of coils, reels or straight bars with internal support. The welding wire can also be supplied in other forms after the supplier and the purchaser agree.

7.2 The welding wire and the filler wire shall meet the requirements of continuous feeding in

automatic or semi-automatic welding equipment.

7.3 The welding wire of each welding wire coil and welding wire reel shall be a continuous

length of welding wire of the same furnace number. The winding of the welding wire is not allowed to have sharp bends, kinks, waves, embedding, overlaps; and can be unwound freely

without hindrance. The outer end of the welding wire shall be fixed and marked, which is obvious and easy to find.

7.4 When the welding wire has a joint, it shall be properly processed so as not to affect its

uniform and continuous feeding in the welding equipment.