

Filler rods and wires for gas-shielded arc welding —

Part 2: Specification for stainless steels

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Welding Standards Policy Committee (WEE/-) to Technical Committee WEE/39, upon which the following bodies were represented:

- Aluminium Federation
- Association of Welding Distributors
- British Association for Brazing and Soldering
- British Compressed Gases Association
- British Constructional Steelwork Association Ltd.
- British Shipbuilders
- British Steel Industry
- Electricity Supply Industry in England and Wales
- Engineering Equipment and Materials Users' Association
- Power Generation Contractors' Association (BEAMA Ltd.)
- Process Plant Association
- Welding Institute
- Welding Manufacturers' Association (BEAMA Ltd.)
- Coopted Members

The following bodies were also represented in the drafting of the standard, through subcommittees and panels:

- British Non-ferrous Metals Federation
- British Nuclear Fuels Limited
- British Railways Board
- British Steel Industry (Wire Section)
- Stainless Steel Wire Industry Association
- United Kingdom Atomic Energy Authority

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Foreword

This revision of this Part of BS 2901 has been prepared under the direction of the Welding Standards Policy Committee. BS 2901 is published in Parts covering the following types of consumables.

- a) Part 1 covers ferritic steels.
- b) Part 2 covers stainless steels.
- c) Part 3 covers copper and copper alloys.
- d) Part 4 covers aluminium and aluminium alloys and magnesium alloys.
- e) Part 5 covers nickel and nickel alloys.

This Part of BS 2901 supersedes BS 2901-2:1983 which is withdrawn.

In accordance with current practice, in deciding on the dimensions of wires and reels account has been taken of appropriate ISO (International Organization for Standardization) specifications.

Although the rods and wires specified in this Part of BS 2901 are all suitable for some form of gas-shielded arc welding, certain rods and wires are not suitable for use with particular shielding gases. The chemical composition of the deposited weld metal is not specified because this depends on the shielding gas used and the particular welding conditions. It is necessary, therefore, to ascertain from the supplier whether the rods or wires are suitable for use with a particular shielding gas. Also for some applications a particular chemical composition may need to be selected from the range specified for the appropriate type of rod or wire.

In this revision 14 new alloys have been introduced.

Product certification. Users of this British Standard are advised to consider the desirability of third party certification of product conformity with this British Standard based on testing and continuing surveillance, which will be coupled with assessment of a supplier's quality systems against the appropriate Part of BS 5750.

Enquiries as to the availability of third party certification schemes will be forwarded by BSI to the Association of Certification Bodies. If a third party certification scheme does not already exist, users should consider approaching an appropriate body from the list of Association members.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 8, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

1 Scope

This Part of BS 2901 specifies requirements and chemical compositions for austenitic and ferritic/martensitic stainless steel filler rods and wires for gas-shielded arc welding, i.e. TIG-welding and MIG-welding.

NOTE The titles of the publications referred to in this Part of BS 2901 are listed on the inside back cover.

2 Chemical composition

The rods and wires shall have a chemical composition in accordance with Table 1 for the particular type ordered. If the delta-ferrite content in the deposited weld metal is important, then the purchaser shall indicate that he requires this to be determined at the time of placing the order.

NOTE 1 The method to be used and the acceptable limits are to be the subject of agreement between the purchaser and the supplier.

For the purposes of determining compliance with composition limits, any value obtained from the analysis shall be rounded to the same number of decimal places as used in this standard in expressing the specified limit. The following rules shall be used for rounding.

a) When the figure immediately after the last figure to be retained is less than five, then the last figure to be retained shall be kept unchanged.

b) When the figure immediately after the last figure to be retained is either:

- 1) greater than five; or
- 2) equal to five and followed by at least one figure other than zero;

then the last figure to be retained shall be increased by one.

c) When the figure immediately after the last figure to be retained is equal to five, and followed by zeros only, then the last figure to be retained shall be left unchanged if even, and increased by one if odd.

In cases of dispute regarding the chemical composition of the rods and wires, sampling and check analysis shall be carried out.

NOTE 2 Some suitable methods are given in BS Handbook No. 19.

NOTE 3 The purchaser should indicate whether a test certificate for the analysis of rods and wires is required.

3 Diameters and tolerances

The diameters of rods and wires shall be selected from the values given in Table 2 with tolerances appropriate to the specified diameters.

4 Condition of rods and wires

4.1 Finish

Rods and wires shall have a smooth finish, free from surface imperfections, corrosion products, grease or other foreign matter which would adversely affect the quality of the weld or the operation of the welding equipment.

4.2 Cast and helix of wire

The cast of spooled filler wire shall be such that one complete loop or circle of wire taken from the spool, when laid on a flat surface without restraint, shall form a circle or part thereof with maximum and minimum diameters as given in Table 3.

The vertical separation between any part of the loop used to determine the cast and the flat surface on which it is laid shall not exceed the value for helix given in Table 3.

NOTE Although cast and helix have been specified it should be noted that other factors which cannot be quantified also affect the feeding of a wire.

5 Reels of wire

The size and type of reel (spool, rim or coil) on which the particular diameter of wire is to be supplied shall conform to the appropriate dimensions and mass given in Figure 1 and Table 4 and Table 5, Figure 2 and Table 6 and Table 7 or Figure 3 and Table 8 and Table 9. For wire baskets the dimensions shall be as given in Figure 4 and Table 10 and the maximum mass shall be 18 kg.

NOTE 1 It is necessary for the purchaser to designate the type and size at the time of placing the order.

The flanges of spools shall be sufficiently robust to avoid becoming deformed in normal state.

NOTE 2 The barrel diameter for spools should be as large as possible to permit satisfactory feeding of the wire.

6 Reeling conditions

The wire shall be wound on the reel in one continuous length and shall be free from kinks, waves, sharp bends or twists, so that it is free to unwind without restriction.

The outer layer of wire shall be not closer than 3 mm to the flange periphery on spools having a flange diameter of 100 mm and not closer than 10 mm to the flange periphery on spools having other flange diameters.