

Specification for

Electrodes and fluxes for the submerged arc welding of austenitic stainless steels

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- British Association for Brazing and Soldering
- British Railways Board
- British Shipbuilders
- British Steel Industry
- British Steel Industry (Wire Section)
- Electricity Supply Industry in England and Wales
- Engineering Equipment and Materials Users' Association
- Process Plant Association
- Society of Motor Manufacturers and Traders Limited
- Water-tube Boilermakers Association
- Welding Institute
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Foreword

This revision of this British Standard, which has been prepared under the direction of the Welding Standards Committee, supersedes BS 5465:1977, which is withdrawn.

As with the 1977 edition the basis of the standard is the chemical composition of the deposited weld metal which, as before, has been aligned with BS 2926.

However, in addition chemical compositions of electrodes are now introduced and where possible these align with those given in BS 2901-2.

This standard has been written in a manner that will not inhibit developments in wire/flux combinations. Factors other than weld metal composition can influence the suitability of any wire/flux combination and these have to be taken into account relative to the particular fabrication, e.g. weld contour, penetration and appearance. The user is advised, therefore, to carry out welding procedure tests to simulate his product application. Although combinations of wires and fluxes supplied by different companies may comply with this standard, individual wires and fluxes are not necessarily interchangeable.

It has been assumed in the drafting of this British Standard that the execution of its provisions is entrusted to appropriately qualified and experienced people.

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 British Standard specifies requirements for bare electrode wire (solid or cored), strip electrodes and fluxes for the submerged arc welding of austenitic stainless steels based on weld metal composition.

NOTE 1 Information on flux types for submerged arc welding and surfacing and process characteristics is given in Appendix A.

NOTE 2 The titles of the publications referred to in this standard are listed on the inside back cover.

2 Information to be supplied by the purchaser

When ordering an electrode and flux combination that complies with this standard, purchasers shall state:

- the number and date of this British Standard, i.e. BS 5465:1987;
- the classification according to the composition of the weld metal (see clause 3 and Table 1);
- the size of electrode (see clause 4) and the dimensions and mass of coil (see clause 6);
- whether test certificates are required for flux and/or electrode composition (see clauses 9 and 10);
- whether certificates are required for initial and/or periodic weld metal analysis tests carried out by the manufacturer (see 11.3);
- whether any additional tests are required, e.g. ferrite content, mechanical properties and confirmatory weld metal analysis on the batches of electrode and flux supplied (see clause 12).

NOTE Where a purchaser orders electrodes without specifying the flux to be used, the designation for electrodes and composition limits given in Table 2 may be used and reference made to this standard but the weld metal classification should not be quoted. If electrodes and flux are ordered separately (whether from the same or different manufacturers) it should not be assumed that the weld metal deposited will comply with a particular classification given in Table 1. In such circumstances the purchaser is recommended to seek guidance from the manufacturer(s) or carry out his own tests to ensure the electrode/flux combination meets his particular requirements.

3 Classification

The classification of electrode/flux combination, according to the composition of the deposited weld metal, shall be indicated by the following coding, as relevant, each figure in the following sequence being separated from the next figure by a full stop (see Table 1):

- | | |
|--|--------------------------------|
| the letter S for submerged arc welding; | } always present in the coding |
| a figure indicating the chromium content; | |
| a figure indicating the nickel content; | |
| a figure indicating the molybdenum content; | |
| the letter L indicating a low carbon content version; | |
| the symbol Nb indicating the presence of niobium as a stabilizing element. | |

Example:

Weld metal with the following composition will be classified as follows:

	S	19.	12.	3	L
Deposited by submerged arc welding					
Chromium content between 17 % and 20 %					
Nickel content between 10.5 % and 14 %					
Molybdenum content between 2.0 % and 3.0 %					
Carbon content below 0.04 %					

NOTE Manufacturers of electrodes and flux combinations which comply with this standard should provide on request current lists of their product range with details of compliance. Additionally they should provide guidance on the weld metal composition and properties likely to be achieved in circumstances where dilution with parent metal is significantly different from that in the tests carried out in accordance with this standard.