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BSI Group
389 Chiswick High Road
London, W4 4AL
United Kingdom

T: +44 20 845 086 9001
F: +44 20 8996 7400
cservices@bsigroup.com
bsigroup.com

British Standards Limited
Registered in England no: 07864997
Registered address: 389 Chiswick High Road
London, W4 4AL, United Kingdom

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British Standards Institution.

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FORMED IN 1901 AS THE ENGINEERING STANDARDS COMMITTEE.
INCORPORATED IN 1918 AS THE BRITISH ENGINEERING STANDARDS ASSOCIATION.

BRITISH STANDARD SPECIFICATION

FOR

HIGH TENSILE STRUCTURAL STEEL

FOR

BRIDGES, ETC., AND GENERAL BUILDING CONSTRUCTION.

LONDON:
PUBLISHED BY THE BRITISH STANDARDS INSTITUTION,
PUBLICATIONS DEPARTMENT,
28, VICTORIA STREET, LONDON, S.W.1.
Telegrams: Standards, Sowest, London.
Telephones: Victoria 3127 &

May, 1934.

The Iron and Steel Industry Committee, under whose supervision this British Standard was prepared, consists of representatives from the following Government Departments and Scientific and Industrial Organisations :—

- Admiralty.
- *Air Ministry.
- *Crown Agents for the Colonies.
- *High Commissioner for India.
- *Home Office.
- *War Office.
- Alloy Steel Makers' Association.
- Association of Drop Forgers and Stampers.
- *Bridge and Constructional Ironwork Association.
- British Cast Iron Research Association.
- *British Engineers' Association.
- British Electrical and Allied Manufacturers' Association.
- *British Steelworks Association.
- Council of British Wrought Iron Associations.
- British Ironfounders' Association.
- Federation of Civil Engineering Contractors.
- Institution of Automobile Engineers.
- Institution of British Foundrymen.
- Iron and Steel Institute.
- Iron and Steel Industrial Research Council.
- *Iron and Steel Trades Employers' Association.
- *National Federation of Iron and Steel Manufacturers.
- National Ironfounding Employers' Association.
- *Railway Companies of Great Britain.
- *Shipbuilding Employers' Federation.
- Society of British Aircraft Constructors.
- General Steel Castings Association.

The Government Departments and Scientific and Industrial Organisations marked with an asterisk in the above list, together with the following, were directly represented on the committee entrusted with the preparation of this British Standards :—

- Department of Scientific and Industrial Research.
- H.M. Office of Works.
- Ministry of Health.
- Ministry of Transport.
- British Corporation Register of Shipping and Aircraft.
- Institute of Naval Architects.
- Institution of Civil Engineers.
- Institution of Engineers and Shipbuilders in Scotland.
- Institution of Mechanical Engineers.
- Institution of Municipal and County Engineers.
- Institution of Structural Engineers.
- Lloyds Register of Shipping and Aircraft.
- National Federation of Building Trades Employers.
- North East Coast Institution of Engineers and Shipbuilders.
- Royal Institute of British Architects.

This Specification, having been approved by the Iron and Steel Industry Committee and endorsed by the Chairman of the Engineering Divisional Council, was published by the authority of the General Council as a British Standard on 14th May, 1934.

NOTE.

ʼn order to keep abreast of progress in the Industries concerned, ʼritish Standard Specifications are subjected to periodical

ʼions for improvements, addressed to the British ʼnstitution, 28, Victoria Street, London, S.W. will ʼt all times. They will be recorded, and ʼ the notice of the Committees charged w ʼifications to which they refer.

No. 548 – 1934.

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FOREWORD.

In recent years there has been an increasing tendency to adopt higher working stresses in steel structures and in order to permit such increased working stresses, structural steel of higher tensile strength than provided in B.S.S. No. 15 has been developed, such steel allows appreciable reduction in weight where this is advantageous.

This Specification relates to structural steel having a tensile range of 37 to 43 tons per square inch with a guaranteed minimum yield point.

The carbon content specified is alone insufficient to give the specified mechanical properties which depend in part upon alloying elements. In order to give the Manufacturer freedom in the selection of the alloying elements he considers appropriate, the limits for these have not been specified. Limits have, however, been laid down for carbon, sulphur, phosphorus and copper, the inclusion of the latter being at the option of the Purchaser.

Rivet steel with a lower carbon content having a tensile strength of 30 to 35 tons per square inch is included in the Specification.

In other respects the Specification follows the lines of B.S.S. No. 15—Mild Steel for Building and General Engineering Construction.

To preclude confusion with mild structural steel this Specification provides for the distinctive marking of high tensile structural steel and this requirement should in the interests of all concerned be most strictly observed.

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Note.—The Institution desires to call attention to the fact that this Specification is intended to include the technical provisions necessary for the supply of the material herein referred to, but does not purport to comprise all the necessary provisions of a contract.

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The figures in British measures are to be regarded as the Standard. Approximate metric equivalents are given for the convenience of users in countries in which the metric system has been generally adopted.

Process of Manufacture.

1. The steel shall be made by the Open Hearth Process (Acid or Basic), or Acid Bessemer Process, unless one of these processes is specially required or specified, and shall show on analysis that carbon, sulphur and phosphorus content respectively does not exceed the following limits :—

Carbon ..	..	maximum 0·30 per cent for material other than rivet bars.
" ..	..	maximum 0·25 per cent for rivet bars.
Sulphur	..	maximum 0·05 per cent.
Phosphorus	..	maximum 0·05 per cent.

Copper may be present up to 0·6 per cent as mutually agreed between Manufacturer and Purchaser. If required by the Purchaser the Manufacturer shall supply at the time of the inquiry a complete approximate analysis of the steel he proposes to supply.

Quality of Finished Steel.

2. All finished steel as sent from the mills shall, subject to the provisions of Clause 18, be well and cleanly rolled to the dimensions, sections and weights specified or required. It shall be sound and free from cracks, surface flaws, laminations, rough, jagged and imperfect edges and all other defects, shall be finished in a workmanlike manner and shall in all respects comply with