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BRITISH STANDARD 4449 : 1969

SPECIFICATION FOR

HOT ROLLED STEEL BARS FOR THE REINFORCEMENT OF CONCRETE

BRITISH STANDARDS INSTITUTION
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HOT ROLLED STEEL BARS FOR THE REINFORCEMENT OF CONCRETE

BS 4449 : 1969

BRITISH STANDARDS INSTITUTION

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THIS BRITISH STANDARD, having been approved by the Iron and Steel Industry Standards Committee, was published under the authority of the Executive Board on 25 April, 1969.

SBN: 580 05408 X

The Institution desires to call attention to the fact that this British Standard does not purport to include all the necessary provisions of a contract.

In order to keep abreast of progress in the industries concerned, British Standards are subject to periodical review. Suggestions for improvements will be recorded and in due course brought to the notice of the committees charged with the revision of the standards to which they refer.

A complete list of British Standards, numbering over 6000, fully indexed and with a note of the contents of each, will be found in the British Standards Yearbook. The B.S. Yearbook may be consulted in many public libraries and similar institutions.

This standard makes reference to the following British Standards:

BS 18. Methods for tensile testing of metals.

BS 1121. Methods for the analysis of iron and steel.
Part 1. Sulphur in iron and steel; Gravimetric.
Part 11. Carbon (total, graphitic and combined) in iron, steel and ferro-chromium; Gravimetric.
Part 45. Phosphorus in iron and steel; Photometric.

BS 1837. Methods for the sampling of iron, steel, permanent magnet alloys and ferro-alloys.

CP 114. Structural use of reinforced concrete in buildings.

British Standards are revised, when necessary, by the issue either of amendment slips or of revised editions. It is important that users of British Standards should ascertain that they are in possession of the latest amendments or editions.

The following BSI references relate to the work on this standard:
Committee reference ISE/9/-/1 Draft for comment 68/20164

CO-OPERATING ORGANIZATIONS

The Iron and Steel Industry Standards Committee under whose supervision this British Standard was prepared, consists of representatives from the following Government departments and scientific and industrial organizations:

Alloy Steels Association
Board of Trade
British Cast Iron Research Association
British Constructional Steelwork Association
British Electrical and Allied Manufacturers' Association
British Ironfounders Association
British Mechanical Engineering Federation
British Railways Board
British Steel Castings Research Association
*British Steel Industry
Council of Iron Producers
Council of Ironfoundry Associations
*Crown Agents for Oversea Governments and Administrations
Department of Employment and Productivity (H.M. Factory Inspectorate)
Engineering Equipment Users Associations
*Federation of Civil Engineering Contractors
Institute of British Foundrymen
*Institute of Iron and Steel Wire Manufacturers
Institute of Marine Engineers
*Institution of Civil Engineers
Institution of Mechanical Engineers (Automobile Division)
Institution of Production Engineers
*Institution of Structural Engineers
Iron and Steel Institute
Joint Iron Council
Lloyds Register of Shipping
Ministry of Defence—Army Department
Ministry of Defence—Navy Department
National Association of Drop Forgers and Stampers
National Physical Laboratory—Ministry of Technology
Oil Companies Materials Association
Royal Institute of British Architects
Shipbuilders and Repairers National Federation
Society of British Aerospace Companies Limited
Society of Motor Manufacturers and Traders Limited
Stainless Steel Development Association.

The Government department and scientific and industrial organizations 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 Standard:

Cement and Concrete Association
Federation of Associations of Specialists and Sub-Contractors
Institute of Iron and Steel Wire Manufacturers
Institution of Municipal Engineers
Greater London Council
Ministry of Transport
Ministry of Public Building and Works—Building Research Station
Ministry of Public Building and Works
National Federation of Building Trades Employers
Concrete Reinforcement Steel Association
Concrete Society Limited
Reinforcement Manufacturers Association
Welding Institute

BRITISH STANDARD SPECIFICATION FOR

HOT ROLLED STEEL BARS FOR THE REINFORCEMENT OF CONCRETE

FOREWORD

This British Standard, published under the authority of the Iron and Steel Industry Standards Committee, has been prepared in metric units in line with the national policy to adopt the metric system. It was considered preferable to prepare a separate standard with a new BS number rather than to revise BS 785: Part 1 : 1967* in metric terms.

It is recommended that the preferred metric sizes of bars to this standard are utilized; BS 785 Part 1 will remain in existence until the 1st January, 1970, when it is intended that it will be withdrawn. The yield strength of steel is now specified in terms of a quality control procedure embodied in the concept of characteristic strength.

SPECIFICATION

1. SCOPE

This British Standard specifies requirements for steel bars in the hot rolled condition only. It covers three types of rolled steel bars for the reinforcement of concrete, namely, plain and deformed mild steel bars and high yield deformed bars.

2. DEFINITIONS

For the purposes of this British Standard the following definitions apply:

(1) *Bar.* A steel product of any form of cross-section, as-rolled, including a rod of steel.

(2) *Hot rolled deformed bar.* A bar, the surface of which has been shaped during hot rolling such that its bond with concrete is increased by at least the percentage required by CP 114†, for bars having a high bond strength.

(3) *Nominal size.* The diameter of a nominally round bar or, for deformed bars, the diameter of a circle derived from the effective cross-sectional area in accordance with Clauses 9 and 10 of this standard.

* BS 785, 'Hot rolled bars and hard drawn wire for the reinforcement of concrete', Part 1, 'Hot rolled steel bars'.
† CP 114, 'Structural use of reinforced concrete in buildings'.

(4) *Nominal density.* The value 0·007 85 kg/mm² cross section per metre run, taken for the purposes of converting a length and cross-sectional area of a bar to its mass, as described in Clauses 9 and 11.

(5) *Coil.* One continuous as-rolled bar in the form of a coil.

(6) *Length.* A piece of straight bar, without joint or weld, cut to a specified length.

(7) *Bundle.* Two or more coils or a number of lengths properly bound together.

(8) *Batch.* Any quantity of bars of one size and material type whether in coils or bundles presented for examination and test at any one time.

(9) *Longitudinal rib.* A uniform continuous rib parallel to the axis of the bar.

(10) *Transverse rib.* Any rib on the surface of a bar other than a longitudinal rib.

3. PREFERRED SIZES

3.1 The nominal sizes of bars given in Table 1 are the preferred sizes.

TABLE 1. PREFERRED SIZES

Nominal size	mm	6	8	10	12	16	20	25	32	40

3.2 Where a bar larger than 40 mm must be used the recommended size is 50 mm.

4. CROSS-SECTIONAL AREA, MASS AND NOMINAL DENSITY

4.1 The exact values for the cross-sectional area and mass of individual bars, in mm² and kg units respectively shall be as given in Table 2.

4.2 The total cross-sectional area and total mass of two or more bars shall be calculated *pro rata* on the basis of the values for an individual bar.

All cross-sectional areas derived from the values in Table 2 shall be expressed to 3 significant figures.