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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

British Standards Limited
Registered in England no: 07864997
Registered address: 389 Chiswick High Road

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Specification for

Railway rails

Spécification des rails ferroviaires

Spezifikation für Eisenbahnschienen

British Standards Institution

Gr 8

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Foreword

This revision of BS 11 has been prepared under the direction of the Iron and Steel Standards Committee.

Previous editions of this standard specified flat-bottomed rails only, but it was decided to enlarge the scope of the revision to include a bull head rail profile, BS 95R, previously specified in BS 9, which was withdrawn on publication of this revision. All rail sections under 24.8 kg/m (50 lb/yd) have been excluded from this revision as these lighter rail sections are covered by other specifications. Certain older rail sections previously included in earlier editions have been re-introduced as they are still in regular use.

A major technical innovation introduced into this revision is sequence continuous casting practice. It is generally accepted that, with continuously cast material, the position within a strand is not significant, and hence test sampling procedures for such material will differ from the traditional ingot practice, and both practices are catered for in this revision. Wear-resistant grades have also been introduced.

Although preference has been given to metric sizes and tolerances, it has been recognized that a high proportion of rail requirements are for replacement purposes rather than for new track. The imperial dimensions have been retained since all the rail profiles are based on imperial design. However, in order not to preclude the development of metric designed rail profiles, tolerances based solely on metric units are also specified.

Cognizance has also been taken of parallel discussions in the International Organization for Standardization (ISO) and the Union Internationale des Chemins de Fer (UIC), where appropriate, and the use of a control gauge for checking the asymmetry of rail sections has now been included. In order to allow for flash butt welding of rails, an end straightness clause has been added.

The concepts of delegated inspection and quality assurance have been incorporated into this revision to align with modern practice.

British Standard Specification for

Railway rails

1. Scope

This British Standard specifies the requirements for the quality of steel, dimensions, tolerances and other technical conditions of delivery for railway rails.

2. References

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

3. Information to be supplied by the purchaser

The purchaser shall state in his enquiry and order:

(a) the number of this British Standard;

(b) the number of the BS rail section (see clause **22**) or full details of any other rail section required;

(c) the grade of steel (see clause **6**);

(d) any optional brand marks required (see **7.1**);

(e) the method and position of the rail identification (see **7.2**);

(f) the rail length to be supplied (see clause **20**);

(g) whether he or his nominated representative desires to witness any of the tests and the name of the inspection authority, if any;

(h) whether he desires to have a system of delegated inspection and, if so, the type of system to be applied (see clause **10**).

When the above requirements are not stated in the enquiry and order, the minimum conditions specified in this standard shall apply.

4. Definitions

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

4.1 purchaser. The purchasing administration or its nominated representative.

4.2 sequence continuous casting. The term used when a sequence of casts of the same grade of steel is poured through a continuous casting machine without interruption in flow of liquid steel into the moulds and strands. The pouring of the next cast begins before the flow of steel from the previous cast has finished, leading to an intermixing of some liquid steel from the two successive casts.

4.3 main cast. Blooms from each strand that are known to be entirely composed of steel from a single cast.

4.4 changeover overlap or intermediate material (or blooms). Blooms that may contain steel from more than one cast, i.e. material arising during the changeover from one cast to the next in the sequence and therefore intermediate between two successive casts.

5. Rail sections

The rail sections shall comply with the requirements of clause **22** unless otherwise specified. The provisions of this specification are not restricted to rails of British Standard section and may be applied to any rail section by prior agreement between the purchaser and the manufacturer.

6. Chemical composition

The source of the steel and the steelmaking process employed shall be the responsibility of the manufacturer. The purchaser may require a broad outline description of the steelmaking and steel supplies to be provided at the time of enquiry and tender; the manufacturer shall not alter these without informing the purchaser. The steelmaking process used shall be noted on inspection and test certificates.

The chemical composition of the steel shall conform to the limits given in table 1.

Table 1. Chemical composition

Steel grade	Carbon	Silicon	Manganese	Phosphorus	Sulphur
	%	%	%	%	%
Normal	0.45/0.60		0.95/1.25	0.050 max.	0.050 max.
Wear-resisting					
A	0.65/0.78		0.80/1.30	0.050 max	0.050 max.
B	0.50/0.70		1.30/1.70	0.050 max.	0.050 max.

NOTE. To allow for different rail sections ordered and steelmaking processes used, the manufacturer and the purchaser may agree variations in chemical composition limits at the time of enquiry and order to achieve the mechanical properties specified in this standard.