

INTERNATIONAL  
STANDARD

ISO  
5003

Second edition  
2016-03-01

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**Flat bottom (Vignole) railway rails  
43 kg/m and above**

*Rails Vignole de masse supérieure ou égale à 43 kg/m*



Reference number  
ISO 5003:2016(E)

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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT), see the following URL: [Foreword — Supplementary information](#).

The committee responsible for this document is ISO/TC 17, *Steel*, Subcommittee SC 15, *Railway rails, rail fasteners, wheels and wheelsets*.

This second edition cancels and replaces the first edition (ISO 5003:1980), which has been technically revised.



# Flat bottom (Vignole) railway rails 43kg/m and above

## 1 Scope

This International Standard specifies the terms and definitions, information to be supplied by the purchaser, tolerances for dimensions, length, technical requirements, inspection rules, identification, certification, and a quality assurance system for as-rolled and heat-treated steel rails for railways.

This International Standard specifies flat bottom (vignole) railway rails with linear mass of 43 kg/m and above, for conventional and high-speed railway track usage.

There are 19 pearlitic steel grades specified, covering a 200 HBW to 400 HBW hardness range and including “non-heat-treated” carbon manganese steels, “non-heat-treated” alloy steels, “heat-treated” carbon manganese, and “heat-treated” low alloy steels.

## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 1099, *Metallic materials — Fatigue testing — Axial force-controlled method*

ISO 3887, *Steels — Determination of depth of decarburization*

ISO 4967, *Steel — Determination of content of non-metallic inclusions — Micrographic method using standard diagrams*

ISO 4968:1979, *Steel — Macrographic examination by sulfur print (Baumann method)*

ISO 4969:2015, *Steel — Etching method for macroscopic examination*

ISO 6506-1, *Metallic materials — Brinell hardness test — Part 1: Test method*

ISO 6892-1, *Metallic materials — Tensile testing — Part 1: Method of test at room temperature*

ISO 12108, *Metallic materials — Fatigue testing — Fatigue crack growth method*

ASTM E45, *Standard test methods for determining the inclusion content of steel*

ASTM E399, *Standard Test Method for Linear-Elastic Plane-Strain Fracture Toughness  $K_{Ic}$  of Metallic Materials*

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

### 3.1

#### heat

liquid steel melt tapped out of a converter or electric arc furnace which includes, after continuous casting, a given number of blooms relating to the weight of the heat and the extension of the mixing zone

Note 1 to entry: In the case of sequence casting, the blooms belonging to the mixing zone should be clearly defined.