
**Railway infrastructure — Rail
fastening systems —**

**Part 1:
Vocabulary**

*Infrastructure ferroviaire — Systèmes de fixation du rail —
Partie 1: Vocabulaire*



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Foreword

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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).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 269, *Railway applications*, Subcommittee SC 1, *Infrastructure*.

A list of all parts in the ISO 22074 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Railway infrastructure — Rail fastening systems —

Part 1: Vocabulary

1 Scope

This document specifies the terms and definitions used in the ISO 22074 series of standards related to rail fastening systems.

NOTE In this document, there are some entries where more than one term is listed in the header (e.g. sleeper, tie, cross tie in 3.2.3). In such cases, the first term is the preferred term, generally used in the ISO 22074 series of standards. The other terms are also in common use in the railway industry and are considered to be synonymous (admitted terms).

2 Normative references

There are no normative references in this document.

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

3.1 Application of standards

3.1.1

rail fastening category

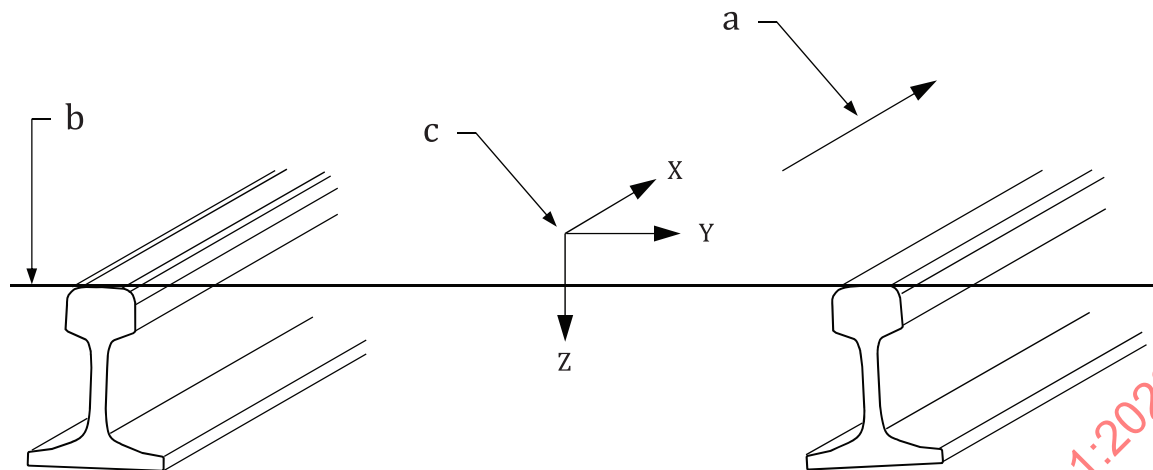
classification of rail fastening based on its ability to meet requirements for a particular combination of curve radius, axle load, rail profile, track gauge and support spacing

3.1.2

datum surface

surface used as a datum for determination of position and angles of loading applied in tests

Note 1 to entry: See footnote b in [Figure 1](#).



Key

- a direction of travel
- b datum surface defined by the intersection between the considered section and the running surface
- c co-ordinate system for the track, in which:
 - X is the longitudinal axis,
 - Y is the lateral axis,
 - Z is the vertical axis.

Figure 1 — Determination of datum surface

Note 2 to entry: For conventional concrete, wood and polymeric composite *sleepers* (3.2.3), this surface is parallel to the bottom surface of the sleeper. For practical purposes, in a test laboratory, the angle of loading may be measured relative to the bottom surface of such a sleeper.

3.2 Track system

3.2.1

ballasted track

railway track in which the *supporting structures* (3.2.5) are *sleepers* (3.2.3) embedded in ballast

3.2.2

ballastless track

DEPRECATED: slab track

railway track in which the *supporting structure* (3.2.5) has no ballast layer

Note 1 to entry: The term "slab track", used in earlier standards to describe concrete *ballastless track*, is ambiguous and is not used in this series of standards.

3.2.3

sleeper

tie
cross tie
beam, which can be composite in construction, and which supports *running rails* (3.2.6), and sometimes *guard rails* (3.2.8) and *check rails* (3.2.7), at right angles to its axis

Note 1 to entry: Normally, the beam supports two running rails to form one track.

3.2.4**bearer**

switch tie

beam, which can be composite in construction, supporting *running rails* (3.2.6), and sometimes *guard rails* (3.2.8) and *check rails* (3.2.7), not necessarily at right angles to its axis

Note 1 to entry: The beam can support up to six running rails and other components used in switches and crossings.

3.2.5**supporting structure**

structural element to which the rail is fastened by means of a *fastening system* (3.3.1)

Note 1 to entry: The supporting structure may be a *sleeper* (3.2.3), the uppermost concrete surface of *ballastless track* (3.2.2) or steel or concrete elements of an open deck bridge.

3.2.6**running rail**

rail which supports the wheels of vehicles moving along the track

3.2.7**check rail**

rail laid close to the gauge face of a *running rail* (3.2.6) which takes part in lateral guidance of the wheel and prevents derailment in small radius curved track and switches and crossings

3.2.8**guard rail**

rail, laid parallel to a *running rail* (3.2.6), which is intended to control the lateral movement of derailed wheels

3.3 Fastening system**3.3.1****fastening system**

rail fastening system

assembly of components which secures a rail to the *supporting structure* (3.2.5) and retains it in the required position whilst permitting any necessary vertical, lateral and longitudinal movement

Note 1 to entry: Such an assembly includes components to distribute the loads from the rail into the supporting structure, and where necessary to prevent wear of the contact surfaces on the supporting structure and to electrically insulate the rail from the supporting structure.

3.3.2**direct fastening system**

assembly in which a rail is directly secured to the *supporting structure* (3.2.5) with or without a *baseplate* (3.4.3)

3.3.3**indirect fastening system**

assembly in which a rail is secured to a *baseplate* (3.4.3) independently of the fastening of the baseplate to the *supporting structure* (3.2.5)

3.3.4**web support fastening system**

assembly in which the principal means of securing the rail to its support is by action on the web of the rail and under the head of the rail (may be direct [see 3.3.2] or indirect [see 3.3.3])

3.3.5

elastic fastening system

resilient fastening system

assembly which is designed to fasten the rail to the *sleeper* (3.2.3) or *supporting structure* (3.2.5) and which allows some movement of the rail under applied static or dynamic loads such that the rail returns to its original position once the load is removed

3.3.6

embedded rail

rail which is contained within a channel, filled with inert material

Note 1 to entry: When used with vignole rail, the flange way is maintained alongside the gauge face of the rail and the rail is secured by adhesion of the surrounding material or by mechanical fastenings.

3.3.7

rigid fastening system

assembly which is designed to clamp the rail tightly to the *sleeper* (3.2.3), not allowing any significant movement of the rail, and which does not incorporate a resilient component apart from any *rail pad* (3.4.5)

Note 1 to entry: A fully compressed spring washer is not a resilient component.

3.4 Fastening component

3.4.1

rail clip

clip

spring steel element which provides a downward force on the rail foot as a result of elastic deformation

3.4.2

rail clamp

clamp

rail clip (3.4.1) which provides a downward force on the rail foot as a result of tightening a screw

3.4.3

baseplate

tie plate

non-elastic component which supports the rail and is secured to the *supporting structure* (3.2.5)

3.4.4

baseplate pad

non-metallic pad placed between the *baseplate* (3.4.3) and the *supporting structure* (3.2.5) to provide resilience, electrical insulation and/or a conforming surface

3.4.5

rail pad

tie pad

non-metallic pad placed between rail and *baseplate* (3.4.3) or rail and *sleeper* (3.2.3), *bearer* (3.2.4) or slab to provide resilience, electrical insulation and/or a conforming surface

3.4.6

adjustment pad

adjustment shim

metallic or non-metallic pad placed under the rail, *rail pad* (3.4.5), *baseplate* (3.4.3) or *baseplate pad* (3.4.4) for the purpose of adjusting the overall distance between the rail and the *supporting structure* (3.2.5)

3.4.7

active area of rail pad

area of the pad which is directly under the rail