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Railway infrastructure — Rail fastening systems —

Part 1: Vocabulary

Infrastructure ferroviaire — Systèmes de fixation du rail —

Partie 1: Vocabulaire

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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

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Foreword

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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

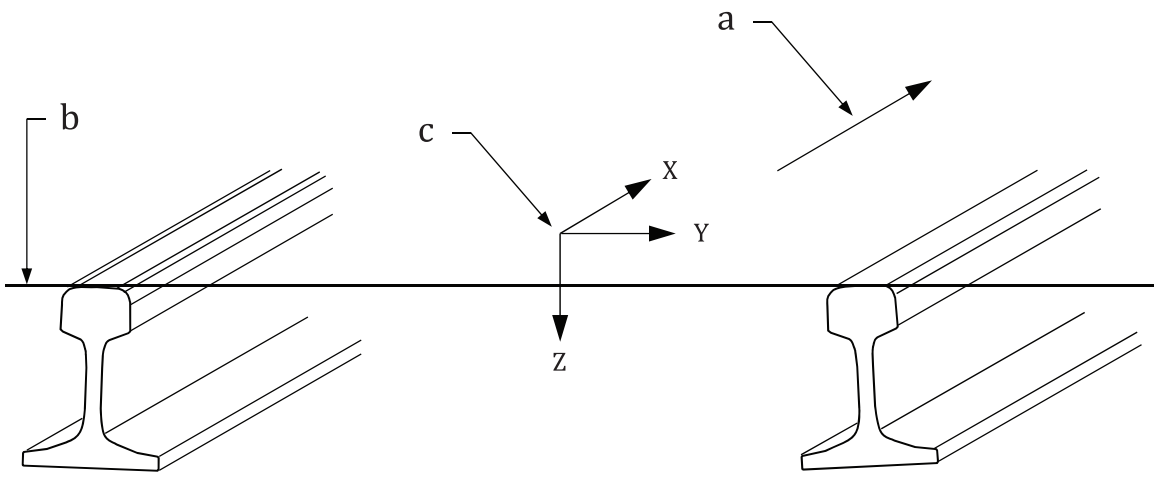
— IEC Electropedia: available at http://www.electropedia.org/

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

3.5 Characteristics of fastenings

3.5.1
clamping force
vertical force applied to the upper surface of one rail foot by the fastening assembly clips

3.5.2
static stiffness
force per unit of deflection measured under a uniaxial static force

3.5.3
vertical stiffness
force per unit of vertical deflection measured between the rail and the *supporting structure* (3.2.5), normal to the *datum surface* (3.1.2), between specified minimum and maximum applied loads

3.5.4
lateral stiffness
force per unit of lateral deflection measured between the rail foot and the *supporting structure* (3.2.5), parallel to the *datum surface* (3.1.2), between specified minimum and maximum applied loads

3.5.5
uplift stiffness
force per unit of vertical displacement measured between the rail foot and *supporting structure* (3.2.5) when the rail is lifted upwards from its normal position in the fastening assembly, but before it comes into contact with any mechanical feature intended to prevent excessive uplift

3.5.6
dynamic stiffness
force per unit deflection measured under a cyclic uniaxial force

3.5.7
low frequency dynamic stiffness
dynamic stiffness (3.5.6) at typical wheel passing frequency, measured with the load amplitude expected under traffic (typically at a frequency between 3 Hz and 30 Hz)

3.5.8
high frequency dynamic stiffness
dynamic stiffness (3.5.6) at frequencies above 30 Hz

3.5.9
vibration attenuation
reduction in vibration transmission from running and *check rails* (3.2.7) into the *supporting structure* (3.2.5)

3.5.10
noise attenuation
reduction in emission of audible noise into the surroundings