



**Railway Track Material – Part 13:
Spring Fastening Spikes for
Sleeper Plates**

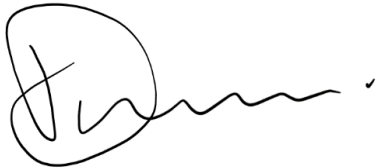
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RISSB wishes to acknowledge the positive contribution of subject matter experts in the development of this Standard. Their efforts ranged from membership of the Development Group through to individuals providing comments on a draft of the Standard during the open review.

I commend this Standard to the Australasian rail industry as it represents industry good practice and has been developed through a rigorous process.



Damien White
Chief Executive Officer
Rail Industry Safety and Standards Board

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2024	21 October 2024	This document has been reviewed to ensure it remains relevant and applicable. The latest review assessed the content, confirming that while updates were made to align with current industry practices, technologies, and regulatory requirements, the original authorship and copyright have been acknowledged as required.

Approval

Name	Date
Rail Industry Safety and Standards Board	2 October 2024

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Preface

The modifications in this edition acknowledge the authorship and copyright of the new updates as per the terms of the agreement

Objective

The objective of this Standard is to provide manufacturers and purchasers with requirements for spring fastening spikes for use in railway permanent way.

Changes to the previous edition are as follows:

- (a) Change of title of the AS 1085 series (previously Railway permanent way material).
- (b) The referenced documents list has been revised.
- (c) The most recent version of the informative Appendix 'Means of demonstrating compliance with this Standard' has been included.

Compliance

There are four types of provisions contained within Australian Standards developed by RiSSB:

- (a) Requirements.
- (b) Recommendations.
- (c) Permissions.
- (d) Constraints.

Requirements – it is mandatory to follow all requirements to claim full compliance with the Standard. Requirements are identified within the text by the term 'shall'.

Recommendations – do not mention or exclude other possibilities but do offer the one that is preferred. Recommendations are identified within the text by the term 'should'.

Recommendations recognize that there could be limitations to the universal application of the control, i.e. the identified control is not able to be applied or other controls are more appropriate or better.

Permissions – conveys consent by providing an allowable option. Permissions are identified within the text by the term 'may'.

Constraints – provided by an external source such as legislation. Constraints are identified within the text by the term 'must'.

For compliance purposes, where a recommended control is not applied as written in the standard it could be incumbent on the adopter of the standard to demonstrate their actual method of controlling the risk as part of their WHS or Rail Safety National Law obligations. Similarly, it could also be incumbent on an adopter of the standard to demonstrate their method of controlling the risk to contracting entities or interfacing organisations where the risk may be shared.

RiSSB Standards address known hazards within the railway industry. Hazards, and clauses within this Standard that address those hazards, are listed in Appendix A.

Appendices in RiSSB Standards may be designated either "normative" or "informative". A "normative" appendix is an integral part of a Standard and compliance with it is a requirement, whereas an "informative" appendix is only for information and guidance.

Commentary

Commentary *C Preface*

This Standard includes a commentary on some of the clauses. The commentary directly follows the relevant clause, is designated by 'C' preceding the clause number and is printed in italics in a box. The commentary is for information and guidance and does not form part of the Standard.

AS 1085.13 PREVIEW ONLY

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Section 1 Scope and general

1.1 Scope

This Standard specifies requirements for steel spring fastening spikes (hereinafter referred to as 'spikes') for use with sleeper plates manufactured in accordance with AS 1085.3 on timber sleepers.

NOTE:

Failure of these spikes in tracks can remain hidden for some time as the spike can break below the level of the sleeper plate.

1.2 Normative references

The following documents are referred to in the text in such a way that *some* or all of their content constitutes requirements of this document:

- AS 1085, *Railway Track Material*
- AS 1085.3, *Railway Track Material – Part 3: Sleeper Plates*
- AS 1171, *Non-destructive testing - Magnetic particle testing of ferromagnetic products, components and structures*
- AS 1199, *Sampling procedures and tables for inspection by attributes*
- AS 1399, *Guide to AS 1199 - Sampling procedures and tables for inspection by attributes*
- AS 1442, *Carbon steels and carbon-manganese steels - Hot-rolled bars and semi-finished products*
- AS 1815, *Metallic materials – Rockwell hardness test*
- AS 2003, *Carbon and low alloy steel – Measurement of decarburization*
- AS/NZS ISO 9001, *Quality management systems – Requirements*
- AS/NZS ISO 9004, *Quality management systems – Guidelines for performance improvements*
- HB 18, *Guidelines for third-party certification and accreditation*
- HB 18.28, *Guidelines for third-party certification and accreditation – Guide 28: General rules for a model third-party certification system for products*

NOTE:

Documents for informative purposes are listed in a Bibliography at the back of the Standard.

1.3 Defined terms and abbreviations

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

1.3.1

acceptable quality levels (AQLs)

defined quality thresholds used in quality assurance

1.3.2

anchor

device used to secure the rail to the sleeper, preventing movement

1.3.3**audit**

systematic examination of a quality management system

1.3.4**bearing area**

the area of the anchor that bears uniformly on the side of the sleeper

1.3.5**branding**

distinct marking on each spike indicating type and manufacturer

1.3.6**coating**

lead-free and chromate-free paint applied to spikes

1.3.7**compliance**

adherence to the requirements specified in the standard

1.3.8**crack detection test**

test to ensure spikes are free of cracks

1.3.9**decarburization**

reduction of carbon content on the spike surface

1.3.10**designation**

classification of spikes according to type and standard number

1.3.11**dimensional tolerance**

allowable deviation from specified dimensions of spikes

1.3.12**fatigue**

weakening of material due to repeated stress

1.3.13**finish**

surface condition of spikes free from defects

1.3.14**function**

purpose of spring fastening spikes in securing sleeper plates

1.3.15**hardness test**

test to measure the hardness of spikes

1.3.16**HRC**

the C-scale of the Rockwell scale for measuring the indentation hardness of a material

1.3.17**hazard register**

list of potential hazards related to the product

1.3.18**heat treatment**

process of quenching and tempering to strengthen spikes

1.3.19**inspection**

examination of spikes to ensure they meet specified requirements

1.3.20**marking**

labeling of each spike with type and manufacturer information

1.3.21**material**

steel composition used for manufacturing spikes

1.3.22**microstructure**

internal structure of the spike, with at least 75% tempered martensite

1.3.23**nominal rail size**

designated size of the rail for which the spike is intended

1.3.24**packing requirements**

specifications for packaging spikes

1.3.25**preload**

initial force applied to allow the anchor to take its initial set

1.3.26**production certification**

independent assurance that products comply with the standard

1.3.27**purchaser**

entity buying the spring fastening spikes

1.3.28**quality assurance system**

system ensuring products meet quality standards

1.3.29**quenching**

rapid cooling process used during heat treatment

1.3.30**rail anchor**

device used to secure rails to sleepers

1.3.31**roughness, burrs, notches, seams**

surface defects to be avoided on spikes

1.3.32**sampling plan**

strategy for selecting samples for testing

1.3.33**shear forces**

forces causing layers to slide against each other

1.3.34**skewed sleepers**

sleepers that are not perpendicular to the rails, causing torsional force

1.3.35**sleeper**

support for the rails in railway tracks, typically made of wood or concrete

1.3.36**spring fastening spikes**

spikes used to secure sleeper plates to timber sleepers

1.3.37**statistical sampling**

procedure for quality assessment based on sample testing

1.3.38**surface defects**

imperfections on the surface of spikes

1.3.39**tempered martensite**

strengthened structure of the spike after heat treatment

1.3.40**tolerances**

permissible limits of variation in dimensions

1.3.41**torsional force**

twisting force exerted by skewed sleepers

1.3.42**withdrawal forces**

forces attempting to pull the spike out from the sleeper

General rail industry terms and definitions are maintained in the RISSB Glossary. Refer to:
<https://www.rissb.com.au/products/glossary/>