AS 1085.14—2012

Australian Standard®

Railway track material

Part 14: Prestressed concrete sleepers

This Australian Standard® was prepared by Committee CE-002, Railway Track Material. It was approved on behalf of the Council of Standards Australia on 29 June 2012.
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The following are represented on Committee CE-002:

- Australasian Railway Association
- Australian Chamber of Commerce and Industry
- Australian Industry Group
- Bureau of Steel Manufacturers of Australia
- Department of Transport, Vic.
- Monash University
- Permanent Way Institute
- Queensland Railways
- Rail Track Association Australia
- Railway Technical Society of Australasia
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Additional Interests:

- Rocla

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Standards Australia wishes to acknowledge the participation of the expert individuals that contributed to the development of this Standard through their representation on the Committee and through the public comment period.

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Part 14: Prestressed concrete sleepers

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PREFACE

This Standard was prepared by the Standards Australia Committee CE-002, Railway Track Materials to supersede AS 1085.14—2003, *Railway track material*, Part 14: *Prestressed concrete sleepers*.

The objective of this Standard is to provide purchasers and suppliers including owners, operators, designers and manufacturers of railway sleepers with requirements for the specification, manufacture and testing of prestressed concrete sleepers for use in railway track.

This Standard does not cover the use of materials complying with superseded editions of the AS 1085 series or the use of existing or re-used materials. Users should satisfy themselves that such materials are satisfactory for the application intended.

This Standard is Part 14 of the AS 1085 series (Railway track material), which comprises the following parts:

Part 1: Steel rails

Part 2: Fishplates

Part 3: Sleeper plates

Part 4: Fishbolts and nuts

Part 7: Spring washers

Part 8: Dogspikes

Part 10: Rail anchors

Part 12: Insulated joint assemblies

Part 13: Spring fastening spikes for sleeper plates

Part 14: Prestressed concrete sleepers (this Standard)

Part 17: Steel sleepers

Part 18: Screw spikes and threaded inserts

Part 19: Resilient fastening systems

Part 20: Welding of steel rail

Of interest to users of this series are the following:

AS 3818.2, *Timber—Heavy structural products—Visually graded*, Part 2: *Railway track timbers* (used in conjunction with Part 1: *General requirements*).

AS 2758.7, *Aggregates and rock for engineering purposes*, Part 7: *Railway ballast*.

The Rail Industry Safety and Standards Board (RISSB) is responsible for the development and management of other rail industry standards, rules, codes of practice and guidelines, all of which have national application. This Standard is intended for use by persons experienced in track design and performance and who have a good knowledge of the duty and environment of the track in which the sleepers are to be used.

This revision includes the following changes to the previous edition:

(a) It specifies the sleeper performance required.

(b) The scope has been broadened to include high speeds and track other than main line track.

(c) New factors have been introduced to deal with impact and dynamic effects and system specific related decisions by purchasers.

(d) Tensile strength for calculation of test moments has been changed.

(f) The requirement to design for centre negative bending of 14 kNm has been deleted.

(g) Tolerances and allowable time to undertake tests have been amended.

(h) The track assembly test to be undertaken with the rails in the centre of the rail seat.

Statements expressed in mandatory terms in notes to tables and figures are deemed to be requirements of this Standard.

Notes to the text contain information and guidance and are not considered to be an integral part of the Standard.

The terms ‘normative’ and ‘informative’ have been used in this Standard to define the application of the appendix to which they apply. A ‘normative’ appendix is an integral part of a Standard, whereas an ‘informative’ appendix is only for information and guidance.

In the Standard where the word ‘shall’ is used a mandatory requirement is implied and where the word ‘should’ is used the statement is advisory.

This document includes commentary on some of the Clauses of the Standard. 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.

CONTENTS

Page

APPENDICES

STANDARDS AUSTRALIA

Australian Standard
Railway track material

Part 14: Prestressed concrete sleepers

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard specifies the performance requirements and gives design and testing methods for new prestressed concrete sleepers for use in railway track with continuously welded rail. It provides methods for determining loads on sleepers and refers to AS 1085.19 for requirements for resilient fastening systems.

This Standard does not cover the following:

(a) Design of post-tensioned concrete sleepers.

(b) Design of duo block concrete sleepers.

(c) Sleepers for use interspersed with other types of sleeper (e.g. timber or steel).

(d) Techniques and equipment for the manufacture of concrete sleepers.

This Standard is based on knowledge and experience of the following conditions of use:

(i) Train speeds less than 200 km/h.

(ii) Sleeper spacing in the range 500 mm to 750 mm.

(iii) Axle loads less than 50 tonnes.

Where parameters outside these limits are encountered, the general principles given in this Standard may be applied. However, the criteria in the Standard may not be sufficient and consideration should be taken of the intended conditions of use and the factors and methods used for design adjusted accordingly.

Additional requirements for the design and manufacture of special sleepers and fastenings are given in Appendix C.

NOTES:

1 Guidance to purchasers on information needing to be supplied at the time of calling for tenders or quotations and testing of new products is given in Appendix A.

2 Information on the means for determining compliance with this Standard is given in Appendix B.

3 Information on dynamic effects is given in Appendix D.

C1.1 *The scope of this Standard has been broadened to cover track situations other than main line track. The changes to the determination of loads by using alternative k_s values can include the use of the Eisenmann loading distribution method or other appropriate methods, which allows a wider range of speeds and track conditions to be taken into account.*

