Australian Standard™

Railway permanent way material

Part 1: Steel rails

Standards Australia

This Australian Standard was prepared by Committee CE/2, Railway Permanent Way Material. It was approved on behalf of the Council of Standards Australia on 21 January 2000 and published on 15 May 2000.

The following interests are represented on Committee CE/2:

Australasian Railway Association

Australian Chamber of Commerce and Industry

Australian Industry Group

Bureau of Steel Manufactures of Australia

Rail Track Association Australia

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PREFACE

This Standard was prepared by the Standards Australia Committee CE/2, Railway Permanent Way Materials, to amalgamate and supersede AS 1085.1—1995, *Railway permanent way material*, Part 1: *Steel rails* and AS 1085.11—1992, *Railway permanent way material*, Part 11: *Head-hardened rails*.

The objective of this Standard is to provide purchasers and suppliers, including owners, operators, designers and manufacturers of railway rail with requirements for as-rolled and hardened steel rails, made from continuously cast blooms for railway purposes.

Major alterations to the previous edition are as follows:

(a) *Editorial* Rearrangement to reflect performance-based format, which includes separation of production requirements from the remainder of the Standard; specifications for plain carbon and head-hardened rail combined; revision of document style.

(b) *New clauses* Requirement for a minimum reduction of cross-sectional area; sulphur print test on rails; microstructure requirements; check grinding for surface blemishes; addition of clause for surface defects.

(c) *Revision of existing clauses* Change in rail chemistry; increase in maximum allowable rail hardness; removal of maximum hardness depth restriction; revision of tensile test requirements (minimum elongation reduced); increase in ultrasonic test requirements; amendments to the rolled-in brands and stamped brands clauses for identification.

(d) *Clauses deleted* Reference to ingot steel making; method of hydrogen control.

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.

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

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1 SCOPE

This Standard specifies requirements for as-rolled and hardened steel rails made from continuously cast blooms and profiles for asymmetric switch rails and elevated guardrails for railway purposes.

NOTES:

1 Guidelines to purchasers are given in Appendix A.

2 Guidance on the means for demonstrating compliance with this Standard is given in Appendix B.

3 Information on residual stresses in rail is given in Appendix C.

2 PURPOSE AND CONTEXT OF USE

2.1 Function

Steel rail forms the direct longitudinal support member of the railway permanent way and provides the guiding and running surface for rolling stock. Rail may also be used to conduct current for signalling and traction purposes.

2.2 Action

Steel rail is subjected to—

(a) loads imposed by the passage of rolling stock and during maintenance;

(b) the effects of temperature, fastening systems, joints and welding; and

(c) fatigue, wear, damage and corrosion.

3 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS	
1003	Engineers' straightedges (metric units)
1050	Methods for the analysis of iron and steel (all Parts)
1100	Technical drawing
1100.201	Part 201: Mechanical engineering drawing
1199	Sampling procedures and tables for inspection by attributes
1391	Methods for tensile testing of metals
1399	Guide to AS 1199—Sampling procedures and tables for inspection by attributes
1816	Metallic materials—Brinell hardness test
1817	Metallic materials—Vickers hardness test
1929	Non-destructive testing—Glossary of terms