AS 1085.20—2006

Australian Standard™

Railway track material

Part 20: Welding of steel rail

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Australasian Railway Association
Australian Chamber of Commerce and Industry
Australian Industry Group
Bureau of Steel Manufacturers of Australia
Rail Track Association Australia

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Part 20: Welding of steel rail

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PREFACE

This Standard was prepared by the Standards Australia Committee CE-002, Railway Track Materials, to supersede AS 1085.15—1995, *Railway permanent way material*, Part 15: *Aluminothermic rail welding*.

The objective of this Standard is to provide welders and specifiers with specifications for and means of qualification of welding procedures for use with rail steel in railway track.

As this is a new Standard, it is expected that existing welding procedures will be accepted as qualified to this Standard (see Appendix A).

This Standard is not intended to cover welding of worn rails using flash butt or aluminothermic welds. However, the principles and procedures may be adapted for the welding of worn rails.

It is not intended to cover existing welds.

Changes to the 1995 edition include the following:

(a) Introduction of performance requirements for aluminothermic rail welding rather than control of consumables.

(b) Qualification procedure for the personnel.

(c) Flash butt welding included.

(d) Metal arc welding included.

(e) Describes the procedure for qualifying and requalifying a welding process.

(f) Includes test methods harmonized with proposed European test methods.

(g) Fatigue performance now assessed using a series of tests known as a staircase.

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.

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SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard specifies performance requirements for welds in steel rail in accordance with AS 1085.1 or rails that are shown to be metallurgically equivalent, for use in railway track. The following processes are covered:

(a) Joining of rails by flash butt welding.

(b) Joining of rails by aluminothermic fusion welding.

(c) Repair of the railhead by arc welding.

This Standard covers the joining of rails and the repair of the railhead by welding using the processes described. Other welding is outside the scope of this Standard and should be covered by documentation other than this Standard.

The Standard does not provide strength properties of welds for use in design nor cover the welding of austenitic manganese steels.

NOTES:

1 Commentary on the background to the Standard is given in Appendix A.

2 Guidance on information to be supplied when ordering or supplying is given in Appendix B.

3 Guidance on the means for demonstrating compliance with this Standard is given in Appendix C.

4 Rail steel is considered to be very difficult to weld for structural purposes. It is not recommended that welded rail be used in applications other than railway track.

5 Rail produced to specifications other than AS 1085.1 may require a separate qualification process. Appropriate testing may need to be determined.

1.2 PURPOSE AND CONTEXT OF USE

1.2.1 Function

Rail welds join lengths of rail or restore some part of the rail in railway track. They connect the rails together maintaining the qualities of the rail across the join. Rail welds may also be used to repair damage to the rail surface.

1.2.2 Action

Rail welds are subject to—

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

(b) loads generated by thermal effects on the rail and by ballast movement; and

(c) fatigue, wear, corrosion and other damage.