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# Australian Standard 1442–1979

# CARBON STEELS AND CARBON-MANGANESE STEELS —HOT-ROLLED BARS AND SEMI-FINISHED PRODUCTS

**[Title allocated by Defence Cataloguing Authority: METAL BARS, SHEETS, AND SHAPES (Steels: Carbon and Carbon-Manganese)]**

**STANDARDS ASSOCIATION OF AUSTRALIA**
*Incorporated by Royal Charter*



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THE FOLLOWING SCIENTIFIC, INDUSTRIAL AND GOVERNMENTAL organizations and departments were officially represented on the committee entrusted with the preparation of this standard:

Bureau of Steel Manufacturers of Australia

Confederation of Australian Industry

Department of Defence

Department of Productivity

Institute of Steel Service Centres of Australia

Metal Trades Industry Association of Australia

Railways of Australia Committee

Society of Automotive Engineers, Australasia

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This standard, prepared by Committee MT/1, Iron and Steel, was approved by the Metals Standards Board on behalf of the Council of the Standards Association of Australia on 22 November 1978, and was published on 1 February 1979.

To keep abreast of progress in industry, Australian standards are regularly reviewed. Suggestions for improvements to published standards, addressed to the head office of the Association, are welcomed.

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*This standard was issued in draft form for public review as DR 77140.*

AUSTRALIAN STANDARD SPECIFICATION

# CARBON STEELS AND CARBON-MANGANESE STEELS—HOT-ROLLED BARS AND SEMI-FINISHED PRODUCTS

**AS 1442 — 1979**


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# PREFACE

This revised standard was prepared under the direction of the Association's Committee on Iron and Steel by its subcommittee on carbon and alloy steels. It applies, in particular, to hot-rolled carbon and carbon-manganese steels for general engineering purposes, supplied in the form of rods, bars for machining, and bars, billets, blooms and slabs for forging, to specified chemical composition only, or to specified chemical composition and mechanical properties for the as-rolled or normalized condition.

In this revision, grades have been rationalized, and definitions of bars, billets, blooms and slabs have been based on those adopted by ISO/TC 17/SC 2, Terminology, Classification and Designation of Steel.

Appendix A presents purchasing guidelines, including contractual requirements previously included in the body of AS 1442—1973, and directs attention to matters requiring consideration at the time of enquiry and/or order. The intention is to avoid misinterpretation or other problems and to ensure a clear understanding of product requirements by both purchaser and supplier.

The attention of users of the standard is drawn to the fact that semi-killed steels may not be as homogeneous as fully-killed steels and, therefore, may not be as suitable for critical applications, particularly in the higher carbon grades.

Enquiries seeking information regarding the availability of hot-rolled carbon and carbon-manganese steels not listed in this standard should be directed to the steel suppliers. In addition, information regarding the mechanical properties which can be obtained from a number of grades specified on a composition basis only in this standard is contained in the following publication:

ASTM A400 Recommended Practice for Selection of Steel Bar Compositions According to Section.

Those requiring information on welding of steel are referred to the steel manufacturer or to the Australian Welding Research Association's Technical Note 1, The Weldability of Steels.

This standard requires reference to the following Australian standards:

AS 1027 Preferred Metric Sizes of Wrought Ferrous and Non-ferrous Round, Square and Hexagonal Bar and Rod for General Engineering Purposes
AS 1050 Methods for the Analysis of Iron and Steel (metric units)
AS 1213 Methods for the Sampling of Iron, Steel, Permanent Magnet Alloys and Ferro-alloys
AS 1256 Preferred Metric Sizes of Hot-rolled Flat Steel Bars and Wrought Non-ferrous Rectangular Bars
AS 1391 Methods for Tensile Testing of Metals
AS 1733 Methods for the Determination of Grain Size in Metals
AS K1 Methods for the Sampling and Analysis of Iron and Steel

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STANDARDS ASSOCIATION OF AUSTRALIA

# Australian Standard Specification for CARBON STEELS AND CARBON-MANGANESE STEELS —HOT-ROLLED BARS AND SEMI-FINISHED PRODUCTS

**1 SCOPE.** This specification applies to carbon steel and carbon-manganese steel bars, blooms, billets and slabs, for forging and for general engineering purposes. The specification provides for the supply of steel to specified chemical composition only (Tables 1 to 6) or to specified chemical composition and mechanical properties (Table 7).

NOTE: Guidelines to purchasers on requirements that must be specified by the purchaser and those that must or may be agreed at the time of enquiry and/or order are given in Appendix A.

## 2 DESIGNATION.

**2.1 Steels Supplied to Specified Composition Only** (Tables 1 to 6).

**2.1.1** *General.* The steel designation shall include—

(a) the number of this Australian standard, i.e. AS 1442;

(b) a prefix letter to indicate the degree of killing or deoxidation (see Clause 2.1.2);

(c) a series designation in accordance with Clause 2.1.3 (see also Paragraph A7 of Appendix A);

(d) modification symbols in accordance with Clause 2.1.4 where applicable; and

(e) suffix letters to indicate surface finish in accordance with Clause 2.1.5 where applicable.

**2.1.2** *Degree of deoxidation.* The prefix letters indicating the degree of killing or deoxidation shall be as follows:

R = rimmed steel

CS = semi-killed (balanced*) steel (0.10 percent carbon range)

S = semi-killed (balanced*) steel (restricted carbon range)

K = fully-killed steel.

**2.1.3** *Series designation.* The following series designation shall be used to identify each group, whereby the first two digits of the number indicate the type of steel and the last two digits indicate the approximate mean of the specified carbon range:

* The term 'balanced steel' is sometimes used in the steel industry as a synonym for semi-killed steel.