

Australian Standard<sup>®</sup>

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**Wrought alloy steels—Standard,  
hardenability (H) series and  
hardened and tempered to  
designated mechanical properties**

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This Australian Standard was prepared by Committee MT/1, Iron and Steel. It was approved on behalf of the Council of Standards Australia on 11 June 1996 and published on 5 September 1996.

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The following interests are represented on Committee MT/1:

Australian Chamber of Commerce and Industry  
Australian Chamber of Manufactures  
Australian Foundry Institute  
Australian Institute of Steel Construction  
Bureau of Steel Manufacturers of Australia  
Institute of Metals and Materials Australasia  
Metal Trades Industry Association of Australia  
Railways of Australia  
Society of Automotive Engineers, Australasia

Additional interests participating in preparation of Standard:

Rod and bar manufacturers

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*This Standard was issued in draft form for comment as DR 95247.*

<p>Originated as part of AS G18—1966, AS G19—1966 and AS G20—1966. Previous editions AS 1444—1986 and AS 2506—1990. AS 1444—1986 and AS 2506—1990 revised, amalgamated and designated AS 1444—1996.</p>
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## PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee MT/1, Iron and Steel to supersede AS 1444—1986, *Wrought alloy steels—Standard and hardenability (H) series* and AS 2506—1990, *Wrought alloy steels—Hardened and tempered to designated mechanical properties*.

The two Standards have been combined because of the similarity of technical content, a need to rationalize the standardization of alloy steels and a need for uniformity of dimensional tolerances of heat-treatable steels.

This Standard is the result of a consensus among Australian and New Zealand representatives on the Joint Committee to produce it as an Australian Standard.

The objective of this Standard is to specify requirements for wrought alloy steels for general engineering purposes supplied in the form of hot-rolled or cold-finished bars for machining, forgings, and bars, blooms, billets and slabs for forgings. Steels may be supplied to chemical composition only (standard series), to chemical composition and subject to end-quench hardenability requirements (H series) or, to chemical composition and mechanical properties.

In this revision a number of grades of both the standard steel types and the 'H' types specified in the 1986 edition of AS 1444 have been deleted and new grades have been added. The dimensional tolerances and the requirements for surface condition for hot-rolled bars align with those in AS 1442, *Carbon steels and carbon-manganese steels—Hot-rolled bars and semifinished products*, and AS 1443, *Carbon steels and carbon-manganese steels—Cold-finished bars*.

A table has been added to cover the mechanical properties of cold-finished bars that have been cold drawn or cold rolled after heat treatment.

During the preparation of this Standard, cognizance was taken of the international Standard ISO 683-1, *Heat-treatable steels, alloy steels and free-cutting steels, Part 1: Direct-hardening unalloyed and low-alloyed wrought steel in form of different black products*.

The alloy designations used in this Standard align with those used in American specifications which have found worldwide acceptance for many years. The alloy designations included in ISO 683-1 and BS 970-3, *Specification for wrought steels for mechanical and allied engineering purposes, Part 3: Bright bars for engineering purposes*, are rarely used in Australia and consequently were not acceptable to Committee MT/1 which favours the universally known four-digit system.

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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## CONTENTS

	<i>Page</i>
SECTION 1 SCOPE AND GENERAL	
1.1 SCOPE .....	4
1.2 REFERENCED DOCUMENTS .....	4
1.3 DEFINITIONS .....	5
1.4 DESIGNATION .....	6
1.5 CONDITION OF STEEL ON DELIVERY .....	8
1.6 MATERIALS .....	8
1.7 FREEDOM FROM DEFECTS .....	10
1.8 SURFACE DRESSING .....	10
1.9 ROUNDING OF TEST RESULT VALUES .....	11
1.10 MARKING .....	11
SECTION 2 STEELS SUPPLIED TO CHEMICAL COMPOSITION ONLY	
2.1 SCOPE .....	12
2.2 CHEMICAL COMPOSITION .....	12
SECTION 3 STEELS SUPPLIED TO CHEMICAL COMPOSITION AND HARDENABILITY REQUIREMENTS	
3.1 SCOPE .....	14
3.2 CHEMICAL COMPOSITION .....	14
3.3 HARDENABILITY TEST .....	14
3.4 HARDENABILITY REQUIREMENTS .....	15
SECTION 4 STEELS SUPPLIED TO CHEMICAL COMPOSITION AND MECHANICAL PROPERTY REQUIREMENTS	
4.1 SCOPE .....	28
4.2 CHEMICAL COMPOSITION .....	28
4.3 HEAT TREATMENT .....	28
4.4 MECHANICAL PROPERTIES .....	28
4.5 METHODS FOR MECHANICAL TESTING .....	28
SECTION 5 MANUFACTURING TOLERANCES	
5.1 SCOPE .....	34
5.2 DIMENSIONAL TOLERANCES FOR HOT-ROLLED BARS .....	34
5.3 DIMENSIONAL TOLERANCES FOR COLD-FINISHED BARS .....	34
APPENDICES	
A PURCHASING GUIDELINES .....	39
B MEANS FOR DEMONSTRATING COMPLIANCE WITH THIS STANDARD .....	41
C GUIDE TO THE SELECTION OF STEELS BASED ON HEAT TREATMENT, MECHANICAL PROPERTIES AND RULING SECTION .....	43
D REQUIREMENTS FOR MAXIMUM SURFACE IMPERFECTION DEPTH ..	45
E RECOMMENDED MINIMUM MACHINING ALLOWANCES .....	47

## STANDARDS AUSTRALIA

## Australian Standard

**Wrought alloy steels—Standard, hardenability (H) series  
and hardened and tempered to designated mechanical properties**

## SECTION 1 SCOPE AND GENERAL

**1.1 SCOPE** This Standard specifies requirements for wrought alloy steels intended for general engineering purposes and is applicable to hot-rolled or cold-finished bars for machining, blooms, billets and slabs for forgings, and forgings, as follows:

- (a) To specified chemical composition only (standard steel series).
- (b) To specified chemical composition and end-quench hardenability requirements (H series).
- (c) To specified chemical composition and mechanical properties achieved by hardening and tempering.

This Standard does not apply to stainless steels.

## NOTES:

- 1 Advice and recommendations on information to be supplied by the purchaser at the time of enquiry or order are contained in Appendix A.
- 2 Alternative means for determining compliance with this Standard are given in Appendix B.

**1.2 REFERENCED DOCUMENTS** The following documents are referred to in this Standard:

## AS

1199	Sampling procedures and tables for inspection by attributes
1213	Iron and steel—Methods of sampling
1391	Methods for tensile testing of metals
1399	Guide to AS 1199—Sampling procedures and tables for inspection by attributes
1443	Carbon steels and carbon-manganese steels—Cold-finished bars
1544	Methods for impact tests on metals
1544.1	Part 1: Izod
1544.2	Part 2: Charpy V-notch
1654	ISO system of limits and fits
1654.2	Part 2: Tables of standard tolerance grades and limit deviations for holes and shafts
1733	Methods for the determination of grain size in metals
1770	Method for the end-quench test for hardenability of steel (Jominy test)
1815	Metallic materials—Rockwell hardness test
1816	Metallic materials—Brinell hardness test
1817	Metallic materials—Vickers hardness test
2338	Preferred dimensions of wrought metal products
2706	Numerical values—Rounding and interpretation of limiting values