AS 2837—1986

Australian Standard®

WROUGHT ALLOY STEELS — STAINLESS STEEL BARS AND SEMI-FINISHED PRODUCTS

[Title allocated by Defence Cataloguing Authority:
METAL BARS, SHAPES AND WIRES (Wrought
Alloy Steels, Stainless) . . . . . NSC GP95]

This Australian standard was prepared by Committee MT/1, Iron and Steel. It was approved on behalf of the Council of the Standards Association of Australia on 11 February 1986 and published on 2 June 1986.

The following interests are represented on Committee MT/1:

Australasian Institute of Metals
Australian Foundry Institute
Bureau of Steel Manufacturers of Australia
Confederation of Australian Industry
Department of Defence
Federal Chamber of Automotive Industries
Institute of Steel Service Centres of Australia
Metal Trades Industry Association of Australia
Railways of Australia Committee
Society of Automotive Engineers, Australasia

This standard was issued in draft form for comment as DR 85072.

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AS G19 first published	1966
AS G20 first published	1966
AS 1444 first published	1974
Second edition	1981
Third edition (in part)	1986
AS 2837 first published	1986

PUBLISHED BY STANDARDS AUSTRALIA
(STANDARDS ASSOCIATION OF AUSTRALIA)
1 THE CRESCENT, HOMEBUSH, NSW 2140

ISBN 0 7262 4157 1

PREFACE

This edition of this standard was prepared under the direction of the Association's Committee on Iron and Steel by its subcommittee on stainless steels as the result of a request from industry to provide an Australian standard for stainless steels with specified mechanical properties. It applies to wrought stainless steels for general engineering purposes, supplied as hot-rolled and cold-finished (cold-sized or bright) bars for machining, bars, blooms, billets and slabs for forgings, and forgings.

Stainless steel grades included in this standard are those formerly included in Section 2 of AS 1444—1981, Wrought Alloy Steels — AISI-SAE Standard, Hardenability (H) and Stainless Series, and which were supplied to chemical composition only. In addition, provision has been made in this standard for a precipitation hardening grade of stainless steel. The new edition of AS 1444—1981 excludes the stainless series.

Attention is drawn to the designation system for stainless steels included as Clause 3. It should be noted that the three-digit designation is based on that used by the American Iron and Steel Institute and the Society of Automotive Engineers, but equivalent Australian grades vary slightly in chemistry to reflect Australian practice.

In preparing this standard, cognizance was taken of the following standards:

ISO 683/13 Heat-treated Steels, Alloy Steels and Free-cutting Steels — Part XIII: Wrought Stainless Steels

BS 970 Specification for Wrought Steels for Mechanical and Allied Engineering Purposes
Part 1 — General Inspection and Testing Procedures and Specific Requirements for Carbon, Carbon Manganese and Stainless Steels

ASTM A276 Stainless and Heat-resisting Steel Bars and Shapes

The standard relates to both ISO 683/13 and BS 970: Part 1.

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STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard
for
WROUGHT ALLOY STEELS — STAINLESS STEEL BARS AND SEMI-FINISHED PRODUCTS

1 SCOPE. This standard specifies requirements for wrought stainless steels for general engineering purposes, supplied as hot-rolled and cold-finished (cold-sized or bright) bars for machining, bars, blooms, billets and slabs for forgings, and forgings.

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

2 REFERENCED DOCUMENTS. The following standards are referred to in this standard:

AS 1050	Methods for the Analysis of Iron and Steel
AS 1065	Methods for Ultrasonic Testing of Ferritic Steel Forgings
AS 1171	Methods for Magnetic Particle Testing of Ferromagnetic Products and Components
AS 1213	Iron and Steel — Methods of Sampling
AS 1391	Methods for Tensile Testing of Metals
AS 1544	Methods for Impact Tests on Metals Part 1 — Izod
AS 1815	Method for Rockwell Hardness Test Part 1 — Testing of Metals
AS 1816	Method for Brinell Hardness Test Part 1 — Testing of Metals
AS 1817	Method for Vickers Hardness Test Part 1 — Testing of Metals
AS 2038	Method for Detecting the Susceptibility of Austenitic Stainless Steel to Intergranular Corrosion
AS 2062	Methods for Non-destructive Penetrant Testing of Products and Components
AS 2084	Methods for Eddy Current Testing of Metal Bar and Tubular Products
AS 2338	Preferred Dimensions of Wrought Metal Products
AS 2706	Numerical Values — Rounding and Interpretation of Limiting Values
AS B161	Charts for Approximate Comparison of Hardness Scales for Steels
AS K1	Methods for the Sampling and Analysis of Iron and Steel
ISO 2566/1	Steel — Conversion of Elongation Values — Part 1: Carbon and Low Alloy Steels

3 DESIGNATION.

3.1 General. The steel designation, as given in Tables 1 and 4 to 7 inclusive, shall consist of the following:

(a) The number of this Australian standard, i.e. AS 2837.

(b) A series designation in accordance with Clause 3.2.

(c) Modification symbols in accordance with Clause 3.3.

(d) A temper designation in accordance with Clause 3.4.

3.2 Series designation. The series designation, as given in Tables 1 and 4 to 7 inclusive, shall be a three-digit numbering system as follows, whereby the first digit of the number indicates the series or group, and the last two digits indicate type:

2XX...	Chromium-nickel-manganese steels; non-hardenable, austenitic and non-magnetic
3XX...	Chromium-nickel steels; non-hardenable, austenitic and non-magnetic (see Note)
4XX ...	Chromium steels; hardenable, martensitic and magnetic
4XX ...	Chromium steels; non-hardenable, ferritic and magnetic
6XX...	Chromium-nickel steels; hardenable (by solution annealing and ageing), and magnetic in the precipitation hardened condition.

NOTE: Some degree of magnetic attraction may occur with these grades, particularly when cold-worked.

3.3 Modification symbols. Modification of types shall be indicated by suffix letters as follows:

F — denotes a free-machining steel.
HQ — denotes a heading quality steel
L — denotes a lower specified maximum carbon content.

3.4 Heat treatment condition.

3.4.1 *Martensitic stainless steels.* For martensitic stainless steels, the heat treatment condition designation, as given in Table 7, shall consist of the letters P, R, S or T, as appropriate, to indicate the tensile strength range in accordance with the following:

Reference symbol	Tensile strength MPa
P	550 to 700
R	700 to 850
S	770 to 930
T	850 to 1000

3.4.2 *Precipitation hardening stainless steels.* For precipitation hardening stainless steels, the heat treatment condition designation, as given in Table 7, shall consist of the following, as appropriate:

(a) The letter ‘A’ to indicate the solution annealed condition.