

Specification for

Wrought aluminium and aluminium alloys for general engineering purposes —

Forging stock and forgings

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Co-operating organizations

The Non-ferrous Metals Industry Standards Committee, under whose supervision this British Standard was prepared, consists of representatives from the following Government departments and scientific and industrial organizations:

- Aluminium Federation*

Association of Bronze and Brass Founders

British Bronze and Brass Ingot Manufacturers' Association

British Electrical and Allied Manufacturers' Association

British Lead Manufacturers' Association

British Non-ferrous Metals Federation

British Non-ferrous Metals Federation High Conductivity Copper Group

British Non-ferrous Metals Research Association*

Copper Development Association

Department of Trade and Industry (Marine Division)

Electric Cable Makers' Confederation

Institute of British Foundrymen

Institute of Metals

Institution of Mechanical Engineers (Automobile Division)
- Institution of Mining and Metallurgy

Institution of Production Engineers

Institution of Structural Engineers*

Lead Development Association

Light Metal Founders' Association

London Metal Exchange

Magnesium Industry Council

Ministry of Defence, Army Department

Ministry of Defence, Navy Department*

National Brassfoundry Association

Non-ferrous metal stockists*

Post Office

Royal Institute of British Architects*

Society of Motor Manufacturers and Traders Ltd.*

Tin Research Institute

Zinc Development Association

Individual manufacturers

The Government department and scientific and industry organizations marked with an asterisk in the above list, together with the following, were directly represented on the committee entrusted with the preparation of this British Standard:

- ALARS (Association of Light Alloy Refiners and Smelters)

British Aluminium Hollowware Manufacturers' Association

Department of Trade and Industry

Gas Council

Institute of Sheet Metal Engineering
- Lloyd's Register of Shipping

London Transport Executive

National Association of Drop Forgers and Stampers

National Federation of Vehicle Trades

Small Rivet Association

Welding Institute

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Contents

	Page
Co-operating organizations	Inside front cover
Foreword	ii
1 Scope	1
2 General	1
3 Definitions	1
4 Freedom from defects	1
5 Chemical composition	1
6 Condition	1
7 Tolerances	1
8 Selection of test samples	2
9 Preparation of test samples	2
10 Mechanical tests	3
11 Retests	3
12 Certificate of compliance	3
13 Inspection	3
14 Independent test	3
15 Facilities for testing	3
16 The rounding of numbers rule	3
17 Identification marking	4
Appendix A Forms of material available	6
Appendix B The annealing and heat treatment of wrought aluminium and its alloys	6
Appendix C Mechanical properties of test specimens cut from forgings	7
Appendix D Margins of manufacture of forgings	7
Appendix E Details of the international alloy designations and chemical composition limits for wrought aluminium alloys system	7
Appendix F Designation cross-references	13
Figure 1 — Diagrams illustrating the application of fillet radius dimensions	11
Figure 2 — Diagrams illustrating the application of male edge dimensions	12
Table 1 — Forgings: grouping into batches	2
Table 2 — <i>Table deleted</i>	3
Table 3 — Chemical composition and mechanical properties of aluminium and aluminium alloy forging stock and forgings	4
Table AF1	8
Table AF2a	9
Table AF2b	9
Table AF2c	10
Table AF4a	11
Table AF4b — Recommended male edge radii	11
Table AF5	12

Foreword

A complete list of British Standards, numbering over 9,000, fully indexed and with a note of the contents of each, will be found in the BSI Catalogue which may be purchased from BSI Sales Department. The Catalogue may be consulted in many public libraries and similar institutions.

This standard makes reference to the following British Standards:

BS 18, *Methods for tensile testing of metals. Part 1: Non-ferrous metals.*

BS 1499, *Sampling non-ferrous metals.*

BS 1728, *Methods for the analysis of aluminium and aluminium alloys.*

BS 3660, *Glossary of terms used in the wrought aluminium industry.*

This British Standard is the second revision in metric terms of one of a series for aluminium and aluminium alloys in various wrought forms for general engineering purposes, the preparation of which was authorized by the Non-ferrous Metals Industry Standards Committee. In accordance with International agreement, this introduces N/mm^2 as the unit for expressing stress values but otherwise the standard reflects only minor changes from the 1969 edition.

Others in the series are:

BS 1470, *Wrought aluminium and aluminium alloys for general engineering purposes. Plate, sheet and strip.*

BS 1471, *Wrought aluminium and aluminium alloys for general engineering purposes. Drawn tube.*

BS 1473, *Wrought aluminium and aluminium alloys for general engineering purposes. Rivet, bolt and screw stock.*

BS 1474, *Wrought aluminium and aluminium alloys for general engineering purposes. Bars, extruded round tube and sections.*

BS 1475, *Wrought aluminium and aluminium alloys for general engineering purposes. Wire.*

In preparing the previous revision of this metric specification cognizance was taken of the recommendations of the International Organization for Standardization (ISO). Alloy compositions and properties were brought in line with ISO recommendations where this was practicable and the temper designations quoted are those proposed by ISO. Thus work-hardened tempers of the strain-hardened materials, formerly shown as $\frac{1}{4}\text{H}$, $\frac{1}{2}\text{H}$, $\frac{3}{4}\text{H}$, and H , are designated with the appropriate symbol selected from the range H1 to H8 , which represents a scale of increasing strength. The condition of heat-treated alloys is also indicated by the letter T followed by a B , D , E , F or H indicating the precise condition following the heat treatment.

Advantage was also taken of the opportunity to rationalize the number of materials offered, and certain alloys and purities whose usage did not justify retention, were deleted. This applied to aluminium 1A and 1C , non-heat-treatable alloys N3 , N6 and N7 , and heat-treatable alloys H11 and H18 . All tables of tolerances were reviewed and metric values in accordance with latest production practices are quoted.

In this edition the stress values have been converted into SI units (N/mm^2) from the original hbar values.

Appendix A gives information on the forms of material available, Appendix B gives information on annealing and heat treatment and in Appendix C details are included of the mechanical properties to be expected from test specimens cut from forgings.

As a major step towards alignment of aluminium and aluminium alloy compositions on an international basis, a substantial number of countries have agreed to adopt a 4-digit classification for alloy composition designation. This system is administered by the Aluminium Association Inc., who issue the “Registration Record of International Alloy Designations and Chemical Composition Limits for Wrought Aluminium Alloys”.

By amendment, it has been decided to introduce this system into the British Standards concerned with these types of material in place of the material designations formerly used. In some cases, minor compositional changes are also involved. The details of the system are given in Appendix E and a cross-reference table between the new, the old and the nearest equivalent ISO designations is included as Appendix F.

The temper designations and associated mechanical property requirements remain unaltered for the present and therefore may not necessarily align precisely with those in the standards of other countries.

NOTE Attention is drawn to certification facilities offered by BSI; see the back cover of this Standard.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i to iv, pages 1 to 13 and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

