

Specification for zinc-aluminium alloy ingots and castings

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Committees responsible for this Draft for Development

The preparation of this Draft for Development was entrusted by the Non-ferrous Metals Standards Committee (NFM/-) to Technical Committee NFM/8 upon which the following bodies were represented:

- British Steel Industry (Wire Section)
- Institute of British Foundrymen
- Institute of Sheet Metal Engineering
- London Metal Exchange
- Metal Roofing Contractors Association
- Zinc Alloy Die Casters Association
- Zinc Development Association
- Coopted members

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Foreword

This Draft for Development has been prepared under the direction of the Non-ferrous Metals Standards Committee. This Draft for Development specifies the requirements for ingots and castings in three zinc-aluminium alloys. Castings in these alloys have been produced by a wide variety of processes, including sand casting, gravity diecasting and high pressure diecasting. The chemical compositions specified for the alloys are based on the results of the latest research, and are set to attain the optimum balance of properties.

The impurity limits specified for ingots are based on those which have been used internationally for a number of years for zinc alloys in ingot form for foundry casting and are similar to those specified for ingots in ASTM B 240. As experience has revealed no deleterious effects on the properties of the alloys at these impurity levels, it was considered appropriate to set the same limits for impurities in castings as those specified for diecastings in ASTM B 86. (ASTM B 86 diecastings are normally produced from ASTM B 240 ingots.) Further experience which will be obtained from the use and application of this Draft for Development concerning the effects of the levels of both named and unnamed impurities could result in modifications to the chemical composition and mechanical property requirements, when this Draft for Development is converted to a British Standard.

The composition limits for the alloying elements for castings are the same as those which have been used internationally for some years for ingot materials. (Most of the research into the properties of the alloys has been concentrated on materials made to these composition limits.) The limits specified for the alloying elements in the ingots have been narrowed, to allow a reasonable latitude for any possible contamination which might occur during the subsequent foundry operations to produce the castings.

Zinc alloys are traditionally used for the production, in large quantities, of intricate castings by the hot chamber pressure diecasting process, using materials specified in BS 1004. However, for many engineering applications, the number of components required may not justify the high cost of a complex steel die, or the components may be too large to be accommodated by the process. Furthermore, for certain applications the alloys in BS 1004 may be unsuitable because of limitations in their mechanical properties, notably creep resistance.

The three new alloys in this Draft for Development have been evolved to complement the alloys in BS 1004. However, unlike the alloys specified in BS 1004, which only develop their optimum mechanical properties when pressure diecast, the alloys in this Draft for Development achieve a useful level of mechanical properties when produced via a wide range of casting processes. Batch sizes are not limited, since components in the new alloys may be produced by a range of casting processes.

Data on the mechanical properties of castings in these alloys, for various casting processes, are still being collected. Hence, no mechanical property requirements are specified in this Draft for Development. It is expected that sufficient information will be available to enable mechanical properties to be specified, by the time this Draft for Development is reviewed.

The alloys are finding increasing fields of application in the automotive, mining and general engineering industries, and for use as plain bearings.

This publication is not to be regarded as a British Standard.

It is issued in the Draft for Development series of publications and is of a provisional nature because further evidence is required before the specification can be incorporated into a British Standard. It is recommended that it should be applied on this provisional basis, so that information and experience of its practical application may be obtained.

A review of this Draft for Development will be carried out not later than two years after its publication. Notification of the start of the review period, with a request for the submission of comments from users of this Draft for Development will be made in an announcement in the appropriate issue of *BSI News*. Observations which it is felt should receive attention before the official call for comments will be welcomed.

According to the replies received, the responsible BSI committee will judge whether the Draft for Development can be converted into a British Standard, or what other action should be taken.

Because of the provisional nature of this Draft for Development, BSI requests manufacturers not to mark products with claims of compliance with this publication. Since such claims would not have the effect of indicating conformity with a definite national standard, they could be judged to be misleading trade descriptions.

Summary of pages

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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.