AS 1832—2002
ISO 5922:1981

Australian Standard™

Malleable cast iron

Standards Australia

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Australian Institute of Steel Construction

Australian Chamber of Commerce and Industry

Australian Industry Group

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Australian Foundry Institute

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Australian Standard™

Malleable cast iron

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PREFACE

This Standard was prepared by Standards Australia Committee MT-001, Iron and Steel to supersede AS 1832—1985, *Iron castings—Malleable cast iron.*

The Standard is identical with and has been reproduced from ISO 5922:1981, *Malleable cast iron*.

This Standard is one of a series of Standards covering the range of cast irons. The series comprises the following:

AS

1830 Grey cast iron

1831 Ductile cast iron

1832 Malleable cast iron

1833 Austenitic cast iron

2027 Wear resistant white cast iron

5049 Cast iron—Designation of microstructure of graphite

As this Standard is reproduced from an International Standard, the following applies:

(a) Its number does not appear on each page of text and its identity is shown only on the cover and title page.

(b) In the source text, 'this International Standard' should read 'this Australian Standard'.

(c) A full point should be substituted for a comma when referring to a decimal marker.

References to International Standards should be replaced by Australian Standards, as follows:

Reference to International Standard		*Australian Standard*	
ISO		AS	
R 79	Brinell hardness testing for steel and cast iron	1816	Metallic materials—Brinell hardness test
82	Steel—Tensile testing	1391	Methods for tensile testing of metals

AUSTRALIAN STANDARD

Malleable cast iron

1 Scope and field of application

This International Standard specifies requirements for malleable cast iron. It also gives a classification on the basis of mechanical properties.

It is applicable only to malleable cast iron cast into sand moulds or moulds of comparable thermal diffusivity.

2 References

ISO/R 79, *Brinell hardness test for steel and cast iron.*[1)]

ISO 82, *Steel — Tensile testing.*

3 Terms, definitions and characteristics of malleable cast iron

3.1 Malleable cast iron

Malleable cast iron is a heat-treated iron-carbon alloy, which solidifies in the as-cast condition with a graphite-free structure, i.e. the total carbon content is present in the combined form as cementite (Fe_3C).

3.2 Types

Two groups of malleable cast iron are specified, differentiated by chemical composition, temperature and time cycles of the annealing process, the annealing atmosphere and the properties and microstructure resulting therefrom.

3.2.1 Whiteheart malleable cast iron

The microstructure of whiteheart malleable cast iron is dependent on section size, as follows :

a) small section size = ferrite (+ pearlite + temper carbon);

b) large section size :

— surface zone = ferrite,

— intermediate zone = pearlite + ferrite + temper carbon,

— core zone = pearlite (+ ferrite) + temper carbon.

The microstructure shall not contain flake graphite.

3.2.2 Blackheart and pearlitic malleable cast iron

The microstructure of blackheart malleable cast iron has a matrix essentially of ferrite. The microstructure of pearlitic malleable cast iron has a matrix, according to the grade specified, of pearlite or other transformation products of austenite. Graphite is present in the form of temper carbon nodules.

The microstructure shall not contain flake graphite.

3.3 Designation

The types of malleable cast iron covered by this International Standard shall be designated as follows :

a) by a letter designating the type of malleable cast iron as follows :

W for whiteheart malleable cast iron,

B for blackheart malleable cast iron[2)],

P for pearlitic malleable cast iron.

This letter shall be followed by a space;

b) by two figures designating the minimum tensile strength, in newtons per square millimetre, of a 12 mm diameter test piece, divided by ten, for example if the minimum tensile strength were 350 N/mm^2, the designation would be 35.

These figures shall be followed by a hyphen (-);

1) A revised version of ISO/R 79 will be incorporated in ISO 6506.

2) It should be noted that in national standards in the French language, the symbol B has been used to designate whiteheart malleable cast iron ("fonte malléable à cœur blanc").