Australian Standard™

Wear-resistant white cast iron

Standards Australia

This Australian Standard was prepared by Committee MT-001, Iron and Steel. It was approved on behalf of the Council of Standards Australia on 29 November 2002 and published on 11 December 2002.

The following are represented on Committee MT-001:

Australasian Railway Association

Australian Building Codes Board

Australian Chamber of Commerce and Industry

Australian Foundry Institute

Australian Industry Group

Australian Steel Institute

Bureau of Steel Manufacturers of Australia

Institute of Materials Engineering Australasia

New Zealand Heavy Engineering Research Association

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This Standard was issued in draft form for comment as DR 02394.

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Wear-resistant white cast iron

Originated as AS 2020—1977.
Previous edition AS 2027—1985.
Third edition 2002.

Published by Standards Australia International Ltd
GPO Box 5420, Sydney, NSW 2001, Australia

ISBN 0 7337 4945 3

PREFACE

This Standard was prepared by the Australian members of the Joint Standards Australia/Standards New Zealand Committee MT-001, Iron and Steel to supersede AS 2027—1985, *Iron castings—Abrasion-resistant white iron*. After consultation with stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this Standard as an Australian, rather than an Australian/New Zealand Standard.

The objective of this Standard is to specify white cast iron that will not be susceptible to abrasive attack due to its wear resistant properties.

The revision of AS 2027—1977 was initiated by research work carried out by a joint panel of CSIRO and MTIA, which found that the morphology of complex eutectic carbides in the white cast irons was incorrectly described in that edition. The following editions AS 2027—1985 and this edition continue to reflect the results of that research.

The Committee decided to change this Standard to a materials Standard, with the casting aspects being placed in AS 4738.

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 (this Standard)
4738	Metal castings—Ferrous sand moulded
5049	Cast iron—Designation of microstructure of graphite

There are no International Standards (ISO) on wear-resistant white iron.

The term ‘informative’ has been used in this Standard to define the application of the appendix to which it applies. An ‘informative’ appendix is only for information and guidance.

CONTENTS

STANDARDS AUSTRALIA

Australian Standard
Wear-resistant white cast iron

1 SCOPE

This Standard specifies requirements for the following types of wear-resistant white cast iron:

(a) White cast iron specified by hardness.

(b) Nickel-chromium type.

(c) High chromium type.

NOTES:

1 For advice and recommendations on information to be supplied by the purchaser at the time of enquiry and order, see AS 4738.

2 For information and advice on casting practices, see AS 4738.

3 Information on heat treatment and microstructures of white cast irons is given in Appendix A.

4 Information on section size and chemical composition of nickel-chromium white cast irons is given in Appendix B.

5 No provision has been made in this Standard for wear testing as wear rates depend on load, velocity, rate of loading, abrasive material, presence of fluids and many other factors which are difficult to reproduce. It is usually found that the testing of wear-resistant materials in their final application is more satisfactory than any smaller scale test. Anything other than a field test must be accepted as a compromise.

2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS
1816 Metallic materials—Brinell hardness test
1816.1 Part 1: Test method (ISO 6506-1:1999, MOD)

2706 Numerical values—Rounding and interpretation of limiting values

4738 Metal castings—Ferrous sand moulded

AS/NZS
1050 Methods for the analysis of iron and steel
1050.1 Part 1: Sampling iron and steel for chemical analysis

3 DEFINITIONS

For the purpose of this Standard, the definitions below apply.

3.1 Cast irons

Ferrous alloys which contain over two percent carbon, may contain other elements and have a wide range of metallurgical and mechanical properties.

3.2 White iron

Cast iron that contains generally no graphite, although under certain circumstances a small amount of graphite may be accepted or unavoidable. The chemical composition and heat treatment of the alloy will determine the type of metallic carbides present in the microstructure.