AS 1831—2002
ISO 1083:1987

Australian Standard™

Ductile cast iron

[ISO title: Spheroidal graphite cast iron—Classification]

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 17 May 2002 and published on 4 June 2002.

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Australian Institute of Steel Construction

Australian Chamber of Commerce and Industry

Australian Industry Group

Australasian Railway Association

Australian Building Codes Board

Australian Foundry Institute

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Australian Standard™

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PREFACE

This Standard was prepared by Standards Australia Committee MT-001, Iron and Steel to supersede AS 1831—1985, *Iron castings—Spheroidal or modular graphite cast iron.*

The Standard is identical with and has been reproduced from ISO 1083:1987, *Spheroidal graphite cast iron—Classification*.

The Australian Committee MT-001 decided to change the ISO title of the Standard, *Spheroidal graphite cast iron—Classification* to *Ductile cast iron* so as to align this title with international trends and current terminology used in Australia.

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

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

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

Reference to International Standard		*Australian Standard*	
ISO		AS	
148	Steel—Charpy impact test (V-notch)	1544 1544.2	Methods for impact tests on metals Method 2: Charpy V-notch
945	Cast iron—Designation of microstructure of graphite	—	
6506	Metallic materials—Hardness test—Brinell test	1816	Metallic materials—Brinell hardness test
6892	Metallic materials—Tensile testing	1391	Methods for tensile testing of metals

AUSTRALIAN STANDARD

Ductile cast iron

0 Introduction

Spheroidal graphite, or nodular graphite, cast iron is a casting alloy, iron and carbon based, the latter element being present mainly in the form of spheroidal graphite particles, of form VI as shown in ISO 945.

The properties of spheroidal graphite cast iron depend in particular on the form of the graphite and the structure of the matrix.

This International Standard deals with the classification of spheroidal graphite cast irons in accordance with the mechanical properties of the material.

It includes two distinct classifications :

— mechanical properties measured on test pieces from separately cast test samples;

— mechanical properties measured on test pieces from cast-on test samples.

By agreement between the manufacturer and purchaser, the material properties may also be determined using test pieces taken from samples cut from the casting, the agreement specifying in particular the conditions of sampling and the values to be obtained.

If hardness is recognized by the purchaser and the manufacturer as being essential for the application, and is selected by agreement between them as being the basis for the inspection test, the castings are supplied in conformity with the requirements of the annex.

1 Scope and field of applications

This International Standard defines the grades of spheroidal graphite cast iron and their classification in two distinct categories.

1.1 Classification as a function of the mechanical properties measured on machined test pieces prepared from separately cast test samples

The nine grades of spheroidal graphite cast iron for this category are given in tables 1 and 2.

These grades apply to castings from sand moulds of comparable thermal diffusivity. Subject to amendments to be agreed on the order, they may apply to castings obtained by other methods such as casting in static moulds, or centrifugal casting. They do not apply to castings obtained by continuous casting.

Whatever the method used for obtaining the castings, the grades are based on the mechanical properties measured on samples cast separately in a sand mould or mould of comparable thermal diffusivity.

This International Standard does not apply to spheroidal graphite cast iron used for pipe-lines, which are the subject of ISO 2531 and ISO 7186.

1.2 Classification as a function of mechanical properties measured on machined test pieces prepared from cast-on test samples

The six grades of spheroidal graphite cast iron for this category are given in tables 3 and 4; they normally apply to castings of thickness between 30 and 200 mm, and with a unit mass greater than 2 000 kg.

2 References

ISO 148, *Steel — Charpy impact test (V-notch).*

ISO 945, *Cast iron — Designation of microstructure of graphite.*

ISO 6506, *Metallic materials — Hardness test — Brinell test.*

ISO 6892, *Metallic materials — Tensile testing.*

3 General requirements

3.1 Production

The method of producing spheroidal graphite cast iron, its composition and any heat treatment are left to the discretion of the manufacturer, who shall ensure that the property requirements specified in this International Standard are complied with for the grade of material specified in the order.