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**BSI Standards Publication**

## **Microstructure of cast irons**

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Part 4: Test method for evaluating nodularity in spheroidal graphite cast irons

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## National foreword

This British Standard is the UK implementation of ISO 945-4:2019.

The UK participation in its preparation was entrusted to Technical Committee ISE/111, Steel Castings and Forgings.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

© The British Standards Institution 2019  
Published by BSI Standards Limited 2019

ISBN 978 0 580 92087 5

ICS 77.080.10

**Compliance with a British Standard cannot confer immunity from legal obligations.**

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 July 2019.

### Amendments/corrigenda issued since publication

Date	Text affected
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First edition  
2019-05-28

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## Microstructure of cast irons —

Part 4:

### Test method for evaluating nodularity in spheroidal graphite cast irons

*Microstructure des fontes —*

*Partie 4: Méthode d'essai pour l'évaluation de la nodularité des fontes  
à graphite sphéroïdal*



Reference number  
ISO 945-4:2019(E)

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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 25, *Cast irons and pig irons*.

A list of all parts in the ISO 945 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

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## **Introduction**

The shape of the graphite particles is an important characteristic of spheroidal graphite cast irons. It has a critical effect on the mechanical and physical properties of these materials.

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# Microstructure of cast irons —

## Part 4: Test method for evaluating nodularity in spheroidal graphite cast irons

### 1 Scope

This document specifies a test method for evaluating nodularity in spheroidal graphite cast irons by comparative visual analysis and image analysis techniques.

This document provides figures for different levels of nodularity and graphite particle count of spheroidal graphite cast irons for visual analysis.

### 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 945-1, *Microstructure of cast irons — Part 1: Graphite classification by visual analysis*

### 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

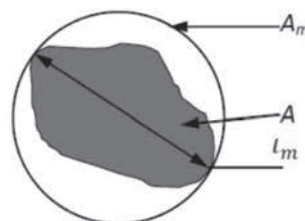
- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

#### 3.1

##### maximum Féret diameter

maximum length of an object whatever its orientation

Note 1 to entry: The maximum Féret diameter of a graphite particle is shown in [Figure 1](#).



#### Key

- $l_m$  maximum Féret diameter of the graphite particle
- $A_m$  area of the circle diameter  $l_m$
- $A$  area of the graphite particle

**Figure 1 — Illustration of maximum Féret diameter of a graphite particle**