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Third edition
2019-07

Grey cast irons — Classification

Fontes à graphite lamellaire — Classification



Reference number
ISO 185:2019(E)

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Published in Switzerland

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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).

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).

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.

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

This third edition cancels and replaces the second edition (ISO 185:2005), which has been technically revised. The main changes compared with the previous edition are as follows:

- terms and definitions have been added for “separately cast sample”, “side-by-side cast sample” and “cast-on sample”;
- [Table 1](#) has been revised to delete the column of anticipated minimum tensile strength values in castings; this information has been moved to [Annex C](#);
- [Table 1](#) has been revised to include side-by-side cast samples with the same tensile strength requirements as separately cast samples;
- [Table 1](#) has been revised to add a maximum tensile strength for each grade for separately cast samples and side-by-side cast samples;
- [Table 1](#) has been revised to revise minimum tensile strength values for some selected grades and relevant wall thicknesses of cast-on samples;
- [Annex C](#) has been revised to add [Table C.1](#), which shows anticipated values for tensile strength in grey iron castings based on relevant wall thickness; some values are slightly changed from those in [Table 1](#) of the previous edition;
- information in [Annex D](#) has been updated to include corresponding hardness grades from GB/T 9439;
- additional changes have been made for clarity of expression and improved consistency with ISO standards for other types of cast irons.

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.

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Introduction

This document deals with the classification of grey cast irons, subdivided into two groups:

- materials specified by their tensile strength;
- materials specified by their hardness.

It is also possible to specify grey cast irons by a combination of tensile strength and hardness.

NOTE This document does not cover technical delivery conditions for grey iron castings.

The properties of grey cast iron depend on the form and distribution of the graphite and on the structure of the matrix.

For many applications, tensile strength and hardness are not the only properties of interest to casting designers. Other mechanical or physical properties can be decisive for the use of grey iron. For example:

- the thermal capacity and the thermal diffusivity for disc brakes;
- the damping capacity for engine blocks or machine beds;
- the thermocycle fatigue for exhaust manifolds or ingot moulds.

Therefore, [Annex A](#) provides additional information of interest to casting designers.

Furthermore:

- [Annex B](#) contains additional information on the relationship between hardness and tensile strength;
- [Annex C](#) contains additional information on the relationship between tensile strength, hardness and wall thickness of grey iron castings;
- [Annex D](#) provides cross-references of ISO 185 grade designations to other standard grades of grey cast irons.