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JIS

JAPANESE INDUSTRIAL STANDARD

Austempered spheroidal graphite iron castings

JIS G 5503–1995

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JAPANESE INDUSTRIAL STANDARD J I S

Austempered spheroidal graphite iron castings G 5503-1995

1. Scope This Japanese Industrial Standard specifies the austempered spheroidal graphite iron castings (hereafter referred to as "iron castings").

Remarks: The standards cited in this Standard are given in Attached Table 1.

2. Definitions The principal terms used in this Standard are as defined in the following:

(1) material The iron castings before conducting heat treatment.

(2) austempering A type of heat treatment of which, in the typical case, the iron castings before conducting heat treatment are heated and held at a range of austenization temperature, transferred into a salt bath furnace, oil bath, furnace with a fluid membrance, or the like which is kept at the transition temperature range of bainite intending for rapid cooling, maintained consecutively for a specified period at the same temperature range mentioned beforehand, then cooled down to the room temperature by suitable means.

(3) separately cast test sample A specimen poured separately under the same conditions as the iron casting for each one batch using generally the comparable mould thereto.

3. Symbol of grade The symbol of grade of the iron castings shall be as given in Table 1.

Table 1. Symbol of grade

Symbol of grade
FCAD 900-4
FCAD 900-8
FCAD 1000-5
FCAD 1200-2
FCAD 1400-1

4. Chemical composition The iron castings, when especially required, shall be subjected to the test of 11.5 and the chemical composition shall be subjected to agreement between the purchaser and supplier.

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5. Mechanical properties The iron castings shall be subjected to the test of 11.6, and the tensile strength, yield strength, elongation and hardness shall conform to Table 2. However, the yield strength shall apply only in the case where it is required by the purchaser.

Table 2. Mechanical properties of separately cast test sample

Symbol of grade	Tensile strength N/mm^2	Yield strength N/mm^2	Elongation %	Hardness HB
FCAD 900-4	900 min.	600 min.	4	-
FCAD 900-8	900 min.	600 min.	8 min.	-
FCAD 1000-5	1000 min.	700 min.	5 min.	-
FCAD 1200-2	1200 min.	900 min.	2 min.	341 min.
FCAD 1400-1	1400 min.	1100 min.	1 min.	401 min.

6. Spheroidal graphite rate The iron castings shall be subjected to the test of 11.7, and the spheroidal graphite rate, unless otherwise especially specified by the purchaser, shall be 80 % or over.

7. Internal soundness The inner part of the iron castings shall be free from cavities and the like that are detrimental to practical use.

8. Shape, dimensions, dimensional tolerances and mass The shape and dimensions of the iron castings shall be designated on the drawing or model, and the dimensional tolerances on length and wall thickness, unless otherwise especially specified by the purchaser, shall conform to the grade of spheroidal graphite iron castings of JIS B 0403.

As to the mass, it shall be agreed between the purchaser and supplier.

9. Appearance In appearance, the iron castings shall be free from flaws, cavities and the like that are detrimental to practical use.

10. Method of manufacture The method of manufacture of the iron castings shall be as follows:

(1) The material before austempering shall be manufactured by melting in a cupola, electrical furnace, and other appropriate furnace, carried out a treatment for spheroidizing graphite, and cast into sand moulds or moulds of comparable thermal diffusivity.

(2) As to the iron castings, the materials that are in the as-cast state or after conducting mechanical work shall be subjected to austempering.

However, the iron castings may be subjected to mechanical work before conducting austempering as necessary.

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