ISO 1083:2018 (E)

Spheroidal graphite cast irons — Classification

Contents

Foreword

Introduction

1 Scope

2 Normative references

3 Terms and definitions

4 Designation

5 Order information

6 Manufacture

7 Requirements

- 7.1 General
- 7.2 Ferritic to pearlitic spheroidal graphite cast irons
- 7.2.1 Test pieces machined from cast samples
- 7.2.1.1 Tensile properties
- 7.2.1.2 Impact energy
- 7.2.2 Test pieces machined from samples cut from a casting
- 7.2.3 Classification by hardness
- 7.2.4 Graphite structure
- 7.2.5 Matrix structure
- 7.3 Solid solution strengthened ferritic spheroidal graphite cast irons
- 7.3.1 Test pieces machined from cast samples
- 7.3.2 Test pieces machined from samples cut from a casting
- 7.3.3 Classification by hardness
- 7.3.4 Graphite structure
- 7.3.5 Matrix structure

8 Sampling

- 8.1 General
- 8.2 Cast samples
- 8.2.1 Size of cast samples
- 8.2.2 Frequency and number of tests
- 8.2.3 Separately cast samples
- 8.2.4 Side-by-side cast samples
- 8.2.5 Cast-on samples
- 8.2.6 Test pieces machined from cast samples
- 8.3 Samples cut from a casting
- 8.4 Formation of test units and number of tests
- 8.4.1 Examples of test units
- 8.4.2 Number of tests per test unit

9 Test methods

- 9.1 Tensile test
- 9.2 Impact test
- 9.3 Hardness test
- 9.4 Graphite structure examination

10 Retests

10.1 Need for retests
10.2 Test validity
10.3 Non-conforming test results
10.4 Heat treatment of samples and castings

Annex A (informative) Additional information on solid solution strengthened ferritic spheroidal graphite cast irons

A.1 General
A.2 Material constitution
A.2.1 Chemical composition
A.2.2 Matrix structure
A.2.3 Graphite structure
A.3 Supplementary information
A.3.1 Application
A.3.2 Mechanical properties
A.3.2.1 0,2 % proof strength
A.3.2.2 Other mechanical and physical properties
A.3.3 Machinability

Annex B (normative) Relationship between the elongation values obtained when using test pieces with Lo = 5 × d and Lo = 4 × d

Annex C (informative) Fracture mechanical approach to spheroidal graphite cast irons

C.1 General
C.2 Fracture mechanics concept
C.3 Determination of fracture mechanical properties
C.4 Influences on fracture mechanical properties
C.5 Publications
C.5.1 Testing
C.5.2 Component assessment

Annex D (informative) Guidance values for mechanical properties measured on test pieces machined from samples cut from the castings

Annex E (informative) Classification as a function of hardness

E.1 General
E.2 Classification
E.3 Determination of a hardness range capable of meeting the tensile property requirements
E.4 Sampling
E.5 Test method
E.6 Number and frequency of hardness tests
E.7 Microstructure

Annex F (informative) Nodularity

Annex G (informative) Additional information on mechanical and physical properties

Annex H (informative) Sectioning procedure for cast samples

Annex I (informative) Cross-references of grade designations from this document to other standard grades of spheroidal graphite cast irons

Page count: 38