DIN EN 16079:2024-03 (E)

Founding - Compacted (vermicular) graphite cast irons

Contents

Page

European foreword 4

Introduction 5

1 Scope 7

2 Normative references 7

3 Terms and definitions 7

4 Designation 8

5 Order information 9

6 Manufacture 9

7 Requirements 9
7.1 General 9
7.2 Test pieces machined from separately cast samples 10
7.3 Test pieces machined from side-by-side cast and cast-on samples 10
7.4 Test pieces machined from samples cut from a casting 11
7.5 Hardness 11
7.6 Graphite structure 11

8 Sampling 12
8.1 General 12
8.2 Cast samples 12
8.3 Samples cut from a casting 14

9 Test methods 17
9.1 Tensile test 17
9.2 Hardness test 19
9.3 Graphite structure examination 20

10 Retests 20
10.1 Need for retests 20
10.2 Test validity 20
10.3 Nonconforming test results 20
10.4 Heat treatment of samples and castings 21

11 Inspection documentation 21

Annex A (informative) Additional information on properties and typical applications of compacted (vermicular) graphite cast irons 22

Annex B (informative) Compacted (vermicular) graphite cast iron nodularity evaluation.26 B.1 Nodularity definition 26

B.2 Factors influencing nodularity 26
B.3 Basic method for nodularity evaluation 26
B.4 Microscope settings for sound nodularity evaluation (see also ISO/TR 945-2) 26
B.5 Roundness of graphite nodules 26

B.6 Classification of rounded graphite particles by a shape factor 27
B.7 Intermediate graphite particles, understanding sterical effects 27
B.8 Calculation of percentage nodularity 28
B.9 Location of testing 28
B.10 Rating chart - Typical reference images for the determination of nodularity in compacted (vermicular) graphite cast irons 28
B.11 Rating chart - Typical reference images for the determination of the roundness of graphite particles, assigning shape factors 30

Annex C (informative) Guidance values for tensile properties determined from samples cut from a casting 31

Annex D (normative) Sectioning procedure for cast samples 32

Annex E (informative) Comparison of compacted (vermicular) graphite cast iron material designations according to EN 1560 [2] and ISO/TR 15931 [6] 33

Annex F (informative) Changes since the last version 34

Bibliography 35