DIN 50106:2023-02 (E)

Testing of metallic materials - Compression test at room temperature

Contents

Page

Foreword ... 4

1 Scope ... 5

2 Normative references ... 5

3 Terms and definitions ... 5

4 Symbols and designations ... 9

5 Test pieces ... 10

6 Test arrangement ... 11

7 Test procedure ... 12

8 Determination of specific properties ... 13
8.1 General ... 13
8.2 Determination of the upper compressive yield strength ... 13
8.3 Determination of the lower compressive yield strength ... 13
8.4 Determination of compressive proof strengths ... 13
8.5 Determination of compressive stress at a specified maximum strain ... 14
8.6 Determination of compressive strength ... 14
8.7 Determination of compressive strain at fracture ... 14
8.8 Bulging ... 14

9 Test report ... 14

Annex A (informative) Determining measurement uncertainty ... 18
A.1 General ... 18
A.2 Evaluation of the uncertainty of measurement ... 18
A.2.1 General ... 18
A.2.2 Type A —Repeated measurements ... 18
A.2.3 Type B — Use of other sources, e.g. calibration certificates or specified tolerances ... 19
A.3 Combined standard uncertainty of the parameters ... 19
A.4 Parameters depending on the material and/or the test procedure ... 22

Bibliography ... 23

Figures

Figure 1 — Example of a compression test device ... 15

Figure 2 — Example of a centreing device ... 16

Figure 3 — Example of a compressive stress/strain curve with upper and lower yield strength ... 16

Figure 4 — Example of the determination of compressive proof strength R_{dp} at a specified plastic strain e_{dp}, with consideration of a preload ... 17

Figure 5 — Example of the determination of compressive proof strength R_{dp} at a specified plastic strain e_{dp}, with consideration of a preload in the case of a short linear section of the compressive stress/strain curve ... 17

Tables

Table 1 — Symbols and designations **9**

Table A.1 — Measurands to be considered when calculating the combined standard uncertainty of measurement **20**

Table A.2 — Numerical example for standard uncertainty contributions of different measurands for calculating the combined standard uncertainty of properties **21**

Table A.3 — Examples for combined standard uncertainties of mechanical properties of compression tests (values based on Table A.2) **21**

Table A.4 — Examples of expanded uncertainty values (based on Table A.3) **22**