ISO 204:2023-07 (E)

Metallic materials - Uniaxial creep testing in tension - Method of test

Contents

Page

Foreword v

Introduction vi

1 Scope 1

2 Normative references 1

3 Termsanddefinitions 1

4 Symbols and designations 6

5 Principle 7

6 Apparatus 8
6.1 Testing machine 8
6.2 Extension and elongation measuring devices 8
6.2.1 Extension measuring device 8
6.2.2 Elongation measuring device 9
6.3 Heating device, temperature measuring equipment and calibration 9
6.3.1 Permissible temperature deviations 9
6.3.2 Temperature measurement 10
6.3.3 Thermocouples 11
6.3.4 Calibration of the thermocouples 11

7 Test pieces 12
7.1 Shape and dimensions 12
7.1.1 Shape and dimension of smooth test pieces 12
7.1.2 Shape and dimension of notched test pieces 13
7.2 Preparation 13
7.3 Determination of the original cross-sectional area 13
7.4 Marking of the original gauge length, Lo 14
7.5 Determination of the reference length, Lr 14

8 Test procedure 15
8.1 Heating of the test piece 15
8.2 Application of the test force 15
8.3 Test interruptions 16
8.3.1 Planned interruptions of the test 16
8.3.2 Multiple test piece machine with several test pieces in line 16
8.3.3 Combined test 16
8.3.4 Accidental interruption of the test 16
8.4 Recording of temperature and elongation or extension 16
8.4.1 Temperature 16
8.4.2 Elongation and extension 16
8.4.3 Elongation-time curve or extension-time curve 17

9 Determination of results 17

10 Test validity 17

11 Accuracy of the results 17

11.1 Expression of the results 17
11.2 Final uncertainty 18

12 Test report 18

Annex A (informative) Information concerning drift of thermocouples 23

Annex B (informative) Information concerning methods of calibration of thermocouples 26

Annex C (normative) Creep testing using test pieces with V or blunt circumferential notches 27

Annex D (informative) Method of estimating the uncertainty of the measurement in accordance with the Guide to the expression of uncertainty in measurement (GUM) 30

Annex E (informative) Representation of results and extrapolation 36

Bibliography 45