DIN EN ISO 18592:2019-12 (E)

Resistance welding - Destructive testing of welds - Method for the fatigue testing of multi-spot-welded specimens (ISO 18592:2019)

Contents

Page

European foreword ... **4**

Foreword ... **5**

Introduction ... **6**

1 Scope ... **7**

2 Normative references ... **8**

3 Terms and definitions ... **8**

4 Symbols and abbreviated terms ... **9**

5 Specimens ... **11**
5.1 General ... 11
5.2 Selection of suitable specimens ... 12
5.3 Specimen fabrication ... 13
5.3.1 Sheet material ... 13
5.3.2 Bending and forming ... 13
5.3.3 Tolerances ... 14
5.3.4 Welding ... 14
5.3.5 Storage ... 15
5.3.6 Inspection ... 15
5.4 Specimen geometry ... 15
5.4.1 General ... 15
5.4.2 Specimen geometry of tensile shear and peel specimens ... 15
5.4.3 Geometry of the hat and closed section specimens ... 21
5.4.4 Double disc and KS-2 specimen ... 23

6 Requirements for testing machine ... **25**

7 Specimen grips and alignment ... **26**
7.1 General ... 26
7.1.1 Alignment verification ... 26
7.1.2 Clamping device calibration ... 26
7.2 Shear and peel loading ... 27
7.2.1 General ... 27
7.2.2 Shear loading ... 27
7.2.3 Peel loading ... 27
7.2.4 Shear loading parallel to the joint line ... 27
7.2.5 Torsion loading ... 28

8 Test procedure ... **28**
8.1 General ... 28
8.2 Mounting the H-specimens ... 28
8.3 Clamping procedure for the H-specimens ... 28
8.4 Fatigue test ... 28
8.4.1 General ... 28
8.4.2 Test frequency ... 28
8.5 Test termination ... 29
8.5.1 General ... 29
8.5.2 Stiffness calculation ... 29
8.5.3 Data acquisition ... 29
8.5.4 Failure criterion and number of cycles to failure ... 30

9 Test report **31**
9.1 Basic information 31
9.1.1 General 31
9.1.2 Material prior to fatigue test specimen preparation 31
9.1.3 Mechanical properties 31
9.1.4 Specimen design and preparation 32
9.1.5 Test procedure 32
9.1.6 Fatigue testing machine 32
9.1.7 Ambient conditions during the fatigue test 32
9.1.8 Results of post-test examination 32
9.2 Presentation of fatigue test results 32
9.2.1 Tabular presentation 32
9.2.2 Graphical presentation 33
9.2.3 Numerical evaluation, statistics 33
Annex A (informative) **Calibration specimen for verifying the load distribution in H-specimens** **34**
Annex B (informative) **Hydraulic grips for the fatigue testing of H-specimens** **35**
Annex C (informative) **Grip for the fatigue testing of H-specimens** **36**
Annex D (informative) **Flow chart — Data acquisition** **37**
Bibliography **40**