

ISO/TR 12998:2019-04 (E)

Mechanical joining - Guidelines for fatigue testing of joints

Contents		Page
Foreword		v
Introduction		vi
1	Scope	1
2	Normative references	1
3	Terms and definitions	1
4	Symbols and abbreviated terms	5
5	Specimens	6
5.1	General	6
5.2	Test specimen materials	7
5.3	Types of test specimens	8
5.4	Selection of suitable specimens	8
5.5	Test specimen fabrication	10
5.5.1	Coupons for specimen fabrication	10
5.5.2	Bending and forming	10
5.5.3	Joining	11
5.5.4	Tolerances	11
5.5.5	Storage	11
5.5.6	Inspection	11
5.6	Test specimen geometry	12
5.6.1	General	12
5.6.2	Specimen geometry of tensile shear and peel specimens	12
5.6.3	Geometry of the hat and other closed section specimens	18
5.6.4	Double disc and KS-2 specimen	22
6	Specimen clamps and alignment	23
6.1	General	23
6.2	Verification and adjustment of specimen clamps and alignment	23
6.2.1	Alignment	23
6.2.2	Verification of the clamping	23
6.3	Clamping device design	24
6.3.1	General	24
6.3.2	Example of suitable clamping device design	25
7	Testing procedure	26
7.1	General	26
7.2	Testing machine	26
7.3	Mounting of clamping devices/clamps	26
7.4	Clamping procedure	26
7.5	Fatigue testing	27
7.5.1	General	27
7.5.2	Setting load conditions for the fatigue testing	28
7.5.3	Test frequency	30
7.6	Test termination	30
7.6.1	General	30
7.6.2	Failure criterion and number of cycles to failure	31
7.6.3	Stiffness	32

7.6.4	Data acquisition	32
7.7	Re-testing	33
8	Test report	33
8.1	Basic information	33
8.1.1	General	33
8.1.2	Material prior to fatigue test specimen preparation	33
8.1.3	Mechanical properties	33
8.1.4	Specimen design and preparation	33
8.1.5	Test procedure	33
8.1.6	Fatigue testing machine	33
8.1.7	Ambient conditions during the fatigue test	34
8.1.8	Results of post-test examination	34
8.2	Presentation of fatigue test results	34
8.2.1	Tabular presentation	34
8.2.2	Graphical presentation	34
8.2.3	Numerical evaluation, statistics	35
Annex A (informative) Calibration specimen for verifying the load distribution in H-specimens		36
Annex B (informative) Hydraulic clamps for the fatigue testing of H-specimens		37
Annex C (informative) Clamps for the fatigue testing of H-specimens		38
Annex D (informative) Flow chart -- Data acquisition		39
Bibliography		41