PD ISO/TR 12998:2019

BSI Standards Publication

Mechanical joining — Guidelines for fatigue testing of joints

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National foreword

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A list of organizations represented on this committee can be obtained on request to its secretary.

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TECHNICAL REPORT

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Mechanical joining — Guidelines for fatigue testing of joints

Assemblage mécanique — Lignes directrices pour les essais de fatigue des assemblages

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Foreword

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This document was prepared by Technical Committee ISO/TC 44, *Welding and allied processes*, Subcommittee SC 6, *Resistance welding and allied mechanical joining*.

Any feedback, question or request for official interpretation related to any aspect of this document should be directed to the Secretariat of ISO/TC 44/SC 6 via your national standards body. A complete listing of these bodies can be found at www.iso.org/members.html. Official interpretations, where they exist, are available from this page: https://committee.iso.org/sites/tc44/home/interpretation.html.

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Introduction

This document gives recommendations for fatigue testing of test specimens with dimensional information for single- and multi-joint specimens for riveted, clinched and screwed mechanical joints. H-shaped, hat-shaped, double-disc and KS-2 type specimens are specified. This document is based on ISO 18592, the standard on the fatigue testing of resistance spot welds.

The fatigue tests specified in this document are conducted at room temperature, at constant load amplitudes and specified load ratios. For most of the specimens, the primary loads experienced by the joints are shear and peel loads. Some test specimens can be subjected to torsion or bending loads; the joints themselves experience non-uniform shear and peel loads.

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TECHNICAL REPORT **ISO/TR 12998:2019**

Mechanical joining — Guidelines for fatigue testing of joints

1 Scope

This document gives recommendations for test specimens and procedures for performing constant load amplitude fatigue tests on single- and multi-joint sheet specimens in the thickness range from 0,5 mm to 6 mm at room temperature and a relative humidity of max. 80 %.

NOTE The thickness range for advanced high strength steels (AHSS) and ultra high strength steels (UHSS) is generally below 3,0 mm. Greater thicknesses apply for aluminium alloys, for example.

This document covers:

— testing of joints to evaluate materials;

— evaluation of the influence of joint type and joint size on the test results;

— evaluation of the influence of load type and load mode on the test results;

— testing of component-like specimens to evaluate their structural performance.

Depending on the specimen used, it is possible from the results to evaluate the fatigue behaviour of joints under shear-, peel-, normal-tension and combinations of loads and that of the tested specimen.

The results of fatigue testing obtained with component like specimens are suitable for deriving criteria for the selection of materials and thickness combinations for structures and components subjected to cyclic loading. This statement is especially relevant for results obtained with specimens with boundary conditions, i.e. a local stiffness, similar to that of the structure in question. The results of fatigue testing are suitable for direct application to a design only when the loading conditions in service and the stiffness of the design in the joint area are similar.

This document does not apply to civil engineering applications such as metal building and steel construction which are covered by other applicable standards.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1
load
repeated load
F
applied force varying simply and periodically between constant maximum and minimum values

Note 1 to entry: Adapted from ISO 14324:2003, 3.12.

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