Third edition
2017-06

Metallic materials — Fatigue testing — Axial force-controlled method

Matériaux métalliques — Essais de fatigue — Méthode par force axiale contrôlée

Reference number
ISO 1099:2017(E)

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Foreword

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This document was prepared by Technical Committee ISO/TC 164, *Mechanical testing of metals*, Subcommittee SC 5, *Fatigue testing*.

This third edition cancels and replaces the second edition (ISO 1099:2006), which has been technically revised.

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Introduction

This document is intended to provide guidance for conducting axial, constant-amplitude, force-controlled, cyclic fatigue tests on specimens of a metal for the sake of generating fatigue-life data (i.e. stress vs. cycles to failure) for material characterization.

Nominally identical specimens are mounted in an axial force-type fatigue-testing machine and subjected to the required cyclic force conditions that introduce any one of the types of cyclic stress as illustrated in Figure 1. The test waveform should be of constant amplitude and sinusoidal unless otherwise specified.

The force being applied to the specimen is along the longitudinal axis passing through the centroid of each cross-section. The test is continued until the specimen fails or until a predetermined number of stress cycles have been exceeded (See Clauses 4 and 13). Tests are typically conducted at ambient temperature (ideally between 10 °C to 35 °C).

NOTE The results of a fatigue test can be affected by atmospheric conditions and where controlled conditions are required, ISO 554:1976, 2.1 applies.