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## **Metallic materials — Fatigue testing — Axial-strain-controlled method**

*Matériaux métalliques — Essais de fatigue — Méthode par  
déformation axiale contrôlée*



Reference number  
ISO 12106:2017(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 second edition cancels and replaces the first edition (ISO 12106:2003), which has been technically revised.

## Introduction

Materials and their microstructure may change when subjected to cyclic deformations and their mechanical properties can be significantly altered when compared with that resultant from monotonic deformations, for example, uniaxial stress-strain response. The design of mechanical components subjected to fatigue loadings and cyclic deformations requires, in a number of industrial sectors (i.e. nuclear, aerospace, ground vehicles, medical devices, etc.), knowledge of the cyclic behaviour of the materials under reversed strain control conditions, referred to as low-cycle fatigue, when cyclic plasticity is present.

In order to ensure reliability and consistency of results from different laboratories, it is necessary to collect all data using test methodologies that comply with a number of key points.

This document concerns both the generation of such strain-controlled fatigue data at room or elevated temperatures at fixed  $R$ -ratios (strain) and the presentation of results for fatigue properties, strain-life behaviour and cyclic stress-strain responses of metallic materials determined at an  $R_e$ -ratio =  $-1$ . Since there is a close relationship with strain-controlled, high-temperature testing, there is also a section devoted to creep-fatigue testing methodology.

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