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Metallic materials — Sheet and strip — Biaxial tensile testing method using a cruciform test piece

Matériaux métalliques — Tôles et bandes — Méthode d'essai de traction biaxiale sur éprouvette cruciforme

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ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

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Foreword

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The committee responsible for this document is ISO/TC 164, *Mechanical testing of metals*, Subcommittee 2, *Ductility testing*.

Introduction

This International Standard specifies the testing method for measuring the biaxial stress-strain curves of sheet metals subject to biaxial tension at an arbitrary stress ratio using a cruciform test piece made of flat sheet metals. The International Standard applies to the shape and strain measurement position for the cruciform test piece. The biaxial tensile testing machine is described in Annex C, only in terms of the typical example of the machine and the requirements that the machine should comply with.

The cruciform test piece recommended in this International Standard has the following features:

a) the gauge area of the test piece ensures superior homogeneity of stress, enabling measurement of biaxial stress with satisfactory accuracy;

b) capability of measuring the elasto-plastic deformation behaviour of sheet metals at arbitrary stress or strain rate ratios;

c) free from the out-of-plane deformation as is encountered in the hydrostatic bulge testing method;

d) easy to fabricate from a flat metal sheet by laser cutting, water jet cutting, or other alternative manufacturing methods.