

# INTERNATIONAL STANDARD

# ISO 12737

Second edition  
2005-08-01

---

---

## **Metallic materials — Determination of plane-strain fracture toughness**

*Matériaux métalliques — Détermination du facteur d'intensité de  
contrainte critique*



Reference number  
ISO 12737:2005(E)

© ISO 2005

**PDF disclaimer**

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

© ISO 2005

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

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](mailto:copyright@iso.org)  
Web [www.iso.org](http://www.iso.org)

Published in Switzerland

# Contents

Page

Foreword.....	iv
<b>1 Scope .....</b>	<b>1</b>
<b>2 Normative references .....</b>	<b>1</b>
<b>3 Terms and definitions.....</b>	<b>1</b>
<b>4 Symbols and designations .....</b>	<b>2</b>
<b>5 Principle.....</b>	<b>2</b>
<b>6 Apparatus .....</b>	<b>4</b>
<b>6.1 Testing machine and force measurement.....</b>	<b>4</b>
<b>6.2 Fatigue cracking machine.....</b>	<b>4</b>
<b>6.3 Displacement gauge .....</b>	<b>4</b>
<b>6.4 Testing fixtures .....</b>	<b>4</b>
<b>7 Test specimen size, configuration and preparation.....</b>	<b>4</b>
<b>7.1 Specimen size .....</b>	<b>4</b>
<b>7.2 Recommended specimen proportions .....</b>	<b>5</b>
<b>7.2.1 Recommended specimens .....</b>	<b>5</b>
<b>7.2.2 Alternative proportions .....</b>	<b>5</b>
<b>7.2.3 Alternative specimen configurations (for information only) .....</b>	<b>5</b>
<b>7.2.4 Fatigue-crack starter notch .....</b>	<b>5</b>
<b>7.3 Specimen preparation and fatigue precracking .....</b>	<b>5</b>
<b>7.3.1 Material condition .....</b>	<b>5</b>
<b>7.3.2 Crack-plane orientation.....</b>	<b>7</b>
<b>7.3.3 Machining .....</b>	<b>7</b>
<b>7.3.4 Fatigue precracking.....</b>	<b>7</b>
<b>8 Procedure .....</b>	<b>8</b>
<b>8.1 Specimen measurement .....</b>	<b>8</b>
<b>8.2 Specimen test temperature.....</b>	<b>8</b>
<b>8.3 Fixture measurements for bend specimen .....</b>	<b>8</b>
<b>9 Test procedure .....</b>	<b>8</b>
<b>10 Calculation and interpretation of results.....</b>	<b>9</b>
<b>11 Test report .....</b>	<b>9</b>
<b>Annex A (normative) Fatigue precracking of <math>K_{Ic}</math> fracture toughness specimens.....</b>	<b>11</b>
<b>Annex B (normative) Bend specimen .....</b>	<b>12</b>
<b>Annex C (normative) Compact specimen .....</b>	<b>14</b>
<b>Annex D (informative) Test fixtures .....</b>	<b>16</b>
<b>Bibliography .....</b>	<b>18</b>