# DIN EN ISO 12737:2011-04 (E)

## Metallic materials - Determination of plane-strain fracture toughness (ISO 12737:2010)

## Contents

Page


Foreword ..... 3

1 Scope ..... 4

2 Normative references ..... 4

3 Terms and definitions ..... 4

4 Symbols and designations ..... 5

5 Principle ..... 5

6 Apparatus ..... 7
6.1 Testing machine and force measurement ..... 7
6.2 Fatigue cracking machine ..... 7
6.3 Displacement gauge ..... 7
6.4 Testing fixtures ..... 7

7 Test specimen size, configuration and preparation ..... 8
7.1 Specimen size ..... 8
7.2 Recommended specimen proportions ..... 8
7.2.1 Recommended specimens ..... 8
7.2.2 Alternative proportions ..... 8
7.2.3 Alternative specimen configurations ..... 8
7.2.4 Fatigue-crack starter notch ..... 8
7.3 Specimen preparation and fatigue precracking ..... 8
7.3.1 Material condition ..... 8
7.3.2 Crack-plane orientation ..... 10
7.3.3 Machining ..... 10
7.3.4 Fatigue precracking ..... 10

8 Procedure ..... 11
8.1 Specimen measurement ..... 11
8.2 Specimen test temperature ..... 11
8.3 Fixture measurements for bend specimen ..... 11

9 Test procedure ..... 11

10 Calculation and interpretation of results ..... 12
10.1 General ..... 12
10.2 Residual stresses ..... 12

11 Test report ..... 12

Annex A (normative) Fatigue precracking of KIc fracture toughness specimens ..... 14

Annex B (normative) Bend specimen ..... 15

Annex C (normative) Compact specimen ..... 17

Annex D (informative) Test fixtures ..... 19

Bibliography ..... 21