

# ISO 12108:2012-08 (E)

## Metallic materials - Fatigue testing - Fatigue crack growth method

---

<b>Contents</b>		<b>Page</b>
Foreword .....		v
Introduction .....		vi
1	Scope .....	1
2	Normative references .....	1
3	Terms and definitions .....	1
4	Symbols and abbreviated terms .....	3
4.1	Symbols .....	3
4.2	Abbreviated terms for specimen identification .....	4
5	Apparatus .....	5
5.1	Testing machine .....	5
5.2	Cycle-counter .....	5
5.3	Grips and fixtures for CT specimens .....	5
5.4	Grips and fixtures for CCT/SENT specimens .....	7
5.5	Grips and fixtures for the SENB specimens .....	11
5.6	Crack length measurement apparatus .....	11
6	Specimens .....	12
6.1	General .....	12
6.2	Crack plane orientation .....	16
6.3	Starter notch precracking details .....	18
6.4	Stress-intensity factor .....	20
6.5	Specimen size .....	21
6.6	Specimen thickness .....	22
6.7	Residual stresses .....	23
7	Procedure .....	23
7.1	Fatigue precracking .....	23
7.2	Crack length measurement .....	23
7.3	Constant-force-amplitude, -increasing, test procedure for $da/dN > 10^{-5}$ mm/cycle .....	24
7.4	K-decreasing procedure for $da/dN < 10^{-5}$ mm/cycle .....	25
8	Crack length measurement .....	27
8.1	Resolution .....	27
8.2	Interruption .....	27
8.3	Static force .....	27
8.4	Measurement interval .....	27
8.5	Symmetry .....	28
8.6	Out-of-plane cracking .....	28
8.7	Crack tip bifurcation .....	28
9	Calculations .....	28
9.1	Crack-front curvature .....	28
9.2	Determining the fatigue crack growth rate .....	28
9.3	Determination of the fatigue crack growth threshold .....	29
10	Test report .....	29

<b>10.1</b>	<b>General .....</b>	<b>29</b>
<b>10.2</b>	<b>Material .....</b>	<b>29</b>
<b>10.3</b>	<b>Test specimen .....</b>	<b>30</b>
<b>10.4</b>	<b>Precracking terminal values .....</b>	<b>30</b>
<b>10.5</b>	<b>Test conditions .....</b>	<b>30</b>
<b>10.6</b>	<b>Test analysis .....</b>	<b>31</b>
<b>10.7</b>	<b>Presentation of results .....</b>	<b>31</b>
<b>AnnexA(informative)</b>	<b>Non-visual crack length measurement methodology -- Electric potential difference [18] [24] [33] .....</b>	<b>38</b>
<b>Bibliography .....</b>		<b>41</b>