

Accepted Manuscript

FATIGUE STRENGTH AND FRACTURE MECHANICS – A GENERAL PERSPECTIVE

U. Zerbst, Mauro Madia, M. Vormwald, H.Th. Beier

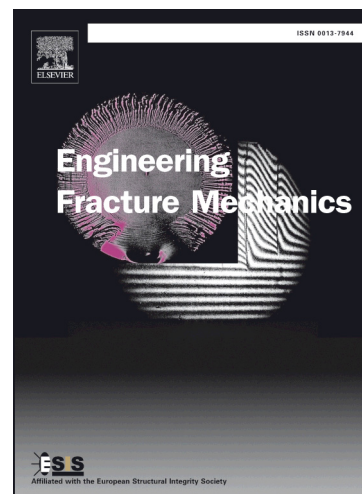
PII: S0013-7944(17)30304-1
DOI: <http://dx.doi.org/10.1016/j.engfracmech.2017.04.030>
Reference: EFM 5504

To appear in: *Engineering Fracture Mechanics*

Received Date: 22 March 2017
Revised Date: 13 April 2017
Accepted Date: 18 April 2017

Please cite this article as: Zerbst, U., Madia, M., Vormwald, M., Beier, H.Th., FATIGUE STRENGTH AND FRACTURE MECHANICS – A GENERAL PERSPECTIVE, *Engineering Fracture Mechanics* (2017), doi: <http://dx.doi.org/10.1016/j.engfracmech.2017.04.030>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



FATIGUE STRENGTH AND FRACTURE MECHANICS – A GENERAL PERSPECTIVE

Zerbst, U. ¹⁾, Mauro Madia ¹⁾, Vormwald, M. ²⁾ and Beier, H.Th. ²⁾

1) Bundesanstalt für Materialforschung und -prüfung (BAM), 9.1, D-12205 Berlin, Germany

2) Technische Universität Darmstadt, Materials Mechanics Group, D-64287 Darmstadt, Germany

Nomenclature

a	crack length (crack depth for surface cracks)
a^p	primary pit depth (Fig. 22)
a^s	secondary pit depth (Fig. 22)
a_i	initial crack depth (for fracture mechanics analysis), Fig. 14
a_{notch}	depth of a secondary notch, e.g., an undercut
a_0	El Haddad parameter in Eqn. (1) & Fig. 2
a^*	correction term for modified El Haddad's model, Eqs. (8) & (9)
b	Burges vector, Eqn. (3)
c	half crack length at surface (semi-elliptical crack)
$2c^p$	primary pit width (Fig. 22)
$2c^s$	secondary pit width (Fig. 22)
C, n	fit parameters of the $da/dN-\Delta K$ curve in the Paris regime, Fig. 4
d_1	crack depth defining crack arrest at fatigue limit, Figs. 2, 9 & 10
d_2	crack depth for the transition between <i>short</i> and <i>long cracks</i> , Figs. 2 & 9
da/dN	fatigue crack propagation rate
E	modulus of elasticity
K	stress intensity factor (K-factor)
K_{max}	maximum K-factor in a loading cycle (Fig. 5)

Download English Version:

<https://daneshyari.com/en/article/7168746>

Download Persian Version:

<https://daneshyari.com/article/7168746>

[Daneshyari.com](https://daneshyari.com)