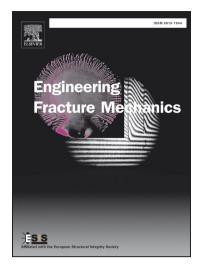
Accepted Manuscript

Estimating fracture toughness of various matrix structured ductile iron using circumferentially notched tensile bars

Gülcan Toktaş, Alaaddin Toktaş

PII:	S0013-7944(17)31168-2
DOI:	https://doi.org/10.1016/j.engfracmech.2018.02.032
Reference:	EFM 5890
To appear in:	Engineering Fracture Mechanics
Received Date:	3 November 2017
Revised Date:	28 February 2018
Accepted Date:	28 February 2018



Please cite this article as: Toktaş, G., Toktaş, A., Estimating fracture toughness of various matrix structured ductile iron using circumferentially notched tensile bars, *Engineering Fracture Mechanics* (2018), doi: https://doi.org/10.1016/j.engfracmech.2018.02.032

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.

ACCEPTED MANUSCRIPT

Estimating fracture toughness of various matrix structured ductile iron using circumferentially notched tensile bars

Gülcan TOKTAŞ^{*1}, Alaaddin TOKTAŞ²

^{1,2} Balıkesir University Department of Mechanical Engineering, 10145, Cagıs Campus, Balıkesir, TURKEY

Abstract

In this experimental study, circumferentially notched tensile (CNT) specimens with various notch root radii of 0.05, 0.1, 0.16, 0.25, 0.4, and 0.8 mm were employed to investigate the influence of matrix structure on the fracture toughness of 1.03% Cu, 1.25% Ni, and 0.18% Mo alloyed ductile iron. The assayed matrix structures in this study were ferritic, pearlitic/ferritic, pearlitic, tempered martensitic, lower and upper ausferritic. The microstructures were obtained by several heat treatment processes. The microstructures and morphology of broken surfaces of CNT specimens were also examined by the optical and scanning electron microscopes. It was observed that for the steady-phased (ferritic, pearlitic/ferritic, and pearlitic) matrixes, the increasing rates of fracture toughness under the applications of different notch tip radii were lower than that of the tempered martensitic, lower and upper ausferritic matrixes. It was also inferred that lower values of fracture toughness were obtained by the applied rapid method.

Keywords: Matrix structure; notch tip radius; circumferentially notched tensile; fracture toughness; ductile iron

Download English Version:

https://daneshyari.com/en/article/7168863

Download Persian Version:

https://daneshyari.com/article/7168863

Daneshyari.com