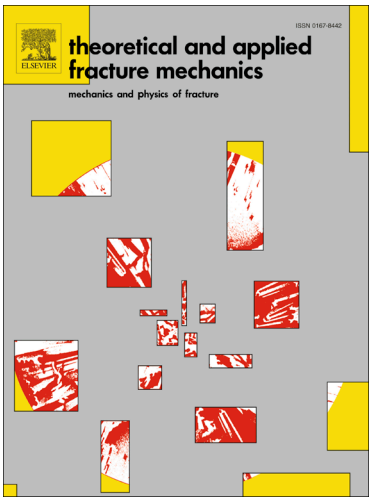

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PII: S0167-8442(17)30229-X
DOI: http://dx.doi.org/10.1016/j.tafmec.2017.06.001
Reference: TAFMEC 1883

To appear in: *Theoretical and Applied Fracture Mechanics*

Received Date: 5 May 2017
Revised Date: 1 June 2017
Accepted Date: 1 June 2017

Please cite this article as: D.A. Cendón, N. Jin, Y. Liu, F. Berto, M. Elices, Numerical Assessment of Gray Cast Iron Notched Specimens by Using a Triaxiality-Dependent Cohesive Zone Model, *Theoretical and Applied Fracture Mechanics* (2017), doi: http://dx.doi.org/10.1016/j.tafmec.2017.06.001

Numerical Assessment of Gray Cast Iron Notched Specimens by Using a Triaxiality-Dependent Cohesive Zone Model

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Abstract. A triaxiality-dependent *Cohesive Zone Model* for the numerical prediction of failure loads of notched specimens under different loading modes is presented. Since the cohesive crack is modelled by means of the *embedded crack approach*, one can express the cohesive parameters with variables from the continuum, such as pressure or triaxiality. The model is validated by its application to two experimental campaigns previously developed by the authors on notched specimens subjected to mode I and III loadings respectively, made of gray cast iron, a strongly pressure dependent material.

Keywords: Gray cast iron, notched components, Cohesive Zone Model, triaxiality.

Nomenclature

ρ	Notch tip radius.
F	Yield function.
$\boldsymbol{\sigma}$	Cauchi's stress tensor.
$\tilde{\sigma}$	Von Mises' equivalent stress.
σ_y	Yield stress.
I_1	First invariant of the stress tensor.
$\tilde{\varepsilon}_p$	Von Mises' equivalent plastic strain.
α	Pressure factor for Drucker-Prager's yield function.
G	Plastic potential.