



Journal of the Japan Society of
Naval Architects and Ocean Engineers
The Japan Society of Naval Architects and Ocean Engineers

[Available Volumes](#) | [Japanese](#) >> [Publisher Site](#)

Author: [ADVANCED](#) | Volume Page
Keyword:



[TOP](#) > [Available Volumes](#) > [Table of Contents](#) > Abstract

ONLINE ISSN : 1881-1760

PRINT ISSN : 1880-3717

Journal of the Japan Society of Naval Architects and Ocean Engineers

Vol. 6 (2007) pp.371-377

[\[PDF \(634K\)\]](#) [\[References\]](#)

Influence of Residual Stress and Fracture Toughness on Brittle Crack Propagation Behavior along Welded Joint **-Numerical Simulation of Brittle Crack Propagation along Welded Joint (1st Report)-**

[Hitoshi Yoshinari](#), [Shuji Aihara](#) and [Toshiaki Iwata](#)

(Accepted July 20, 2007)

Summary: Recently, plate thickness in mega container ships has reached the very heavy thickness range, exceeding 70mm, not common in shipbuilding. The most important requirement for ensuring structural reliability of such ships is the prevention of brittle fracture. Behavior of brittle crack propagation is, therefore, a matter of renewed concern today. Influence of applied stress, residual stress and toughness of welded joint on brittle crack propagation, is analyzed based on a fracture mechanics model developed by the authors. This model assumes that a crack propagates along the cleavage plane with the highest tensile normal stress among the cleavage planes in a grain. Results of numerical simulation are compared with the experimental results which were carried out in the SR 147 research committee of the Shipbuilding Research Association of Japan. Discussions about the influence of the above parameters on crack propagation behavior are done, and the model used in this study can explain the experimental results.

[\[PDF \(634K\)\]](#) [\[References\]](#)

Download Meta of Article [\[Help\]](#)

[RIS](#)

[BibTeX](#)

To cite this article:

Hitoshi Yoshinari, Shuji Aihara and Toshiaki Iwata: Influence of Residual Stress and Fracture Toughness on Brittle Crack Propagation Behavior along Welded Joint : -Numerical Simulation

