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Effect of Corrosion on Static Strength of Hull Structural Members (9th Report)

[Tatsuro Nakai](#), [Hisao Matsushita](#) and [Norio Yamamoto](#)

(Accepted October 12, 2005)

Summary: The aim of this research project is to establish a method of evaluating the effect of pitting corrosion with a circular cone shape on local strength of hold frames of bulk carriers. In the present study, an empirical formula for predicting ultimate strength of plates with pitting corrosion is proposed based on the results of FE analyses with pitted plates under uni-axial compression. In the formula, equivalent thickness for ultimate strength of pitted plates is expressed as a function of *DOP* (degree of pitting intensity), pit diameter and original thickness of pitted plates. Equivalent thickness predicted by the proposed formula has been compared with the results of FE analyses with pitted plates under various loading conditions and it has been revealed that the proposed formula could well predict the equivalent thickness for ultimate strength of pitted plates under uni-axial compression, shear, bi-axial compression, combined uni-axial compression and shear, combined bi-axial compression and shear, in-plane bend and combined in-plane bend and compression.

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