

ELASTIC-AND-PLASTIC PROBLEM FOR A THIN PLATE WITH A NON-YHROUGH CRACK CUT FOR THE CASE OF LOCALIZED STRAIN ACCORDING TO RIGID PLASTIC FLOW SCHEMES

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An elastic-and-plastic problem of the tension of a thin plate with a non-through (surface) cut is formulated. The process of plastic deformation of material both along the entire length of the cut and in plastic areas at its apices is modelled according to rigid plastic flow schemes, which makes it possible to take into consideration the changes in plate geometry along the thickness in the vicinity of the non-through cut and along its length. The solution of Fredholm's integral equation in quadratures is obtained and the procedure for defining numerical results is designed. The dependence of the cut side opening on plate thickness and depth is defined in an explicit form. Cut side opening is used as deformation rupture criterion.

Crack cut, plastic deformation, elastic-and-plastic problem, spatial density, dissipation energy, rupture criterion, integral equation

References

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