

Abstract

The carrying capacity of circular plates made of certain class of fibrous composite material is considered. It is supposed that the plate simply supported over the contour lies on incompressible fluid and is under the action of axially-symmetric lateral load applied in some central domain. It is accepted that components of composite material possess plastic properties. The problem on carrying capacity is mathematically reduced definition of limit (greatest) value of lateral load, at which the plate passes to plastic state. For the problem solution the known yield condition for the plates made of indicated class of composite, is used. It is shown that such problem is statically indeterminate and for its solution it is necessary the joint consideration of statically admissible stress (moments) field and kinematically allowable field the rate of deflections (curvature). Formula for limit load definition subject to stress-strain properties of composite components and some geometrics has been found.