

MIT Department of Mechanical Engineering
2.25 Advanced Fluid Mechanics

Kundu & Cohen 6.8

This problem is from “Fluid Mechanics” by P. K. Kundu and I. M. Cohen 4th Edition

A solid hemisphere of radius a is lying on a flat plate. A uniform stream U is flowing over it. Assuming irrotational flow, show that the density of the material must be

$$\rho_h \geq \rho \left(1 + \frac{33 U^2}{64 a g} \right)$$

to keep it on the plate.

MIT OpenCourseWare
<http://ocw.mit.edu>

2.25 Advanced Fluid Mechanics
Fall 2013

For information about citing these materials or our Terms of Use, visit: <http://ocw.mit.edu/terms>.