

Announcements

- Thanksgiving break next week
- CBTF Quiz 5 in 2 weeks: Thursday (11/29) – Saturday (12/1)

☐ Upcoming deadlines:

- Tuesday (11/13)
 - PL HW



Fluid Pressure

Mechanics is a branch of the physical sciences that is concerned with the **state of rest or motion of bodies that are subjected to the action of forces**

SOLIDS



TAM 210/211: Statics

Rigid Bodies

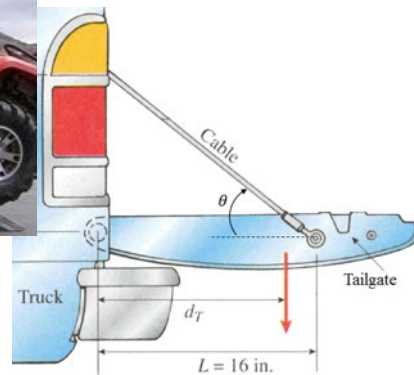


TAM212: Dynamics

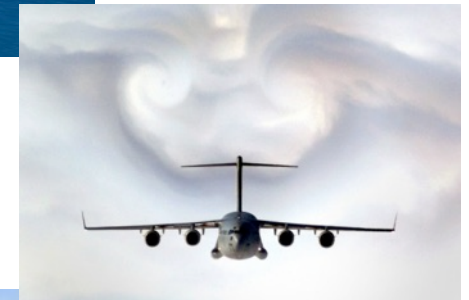
Deformable Bodies



TAM 251: Solid Mechanics



FLUIDS



What Makes a Fluid or Solid?



Honey

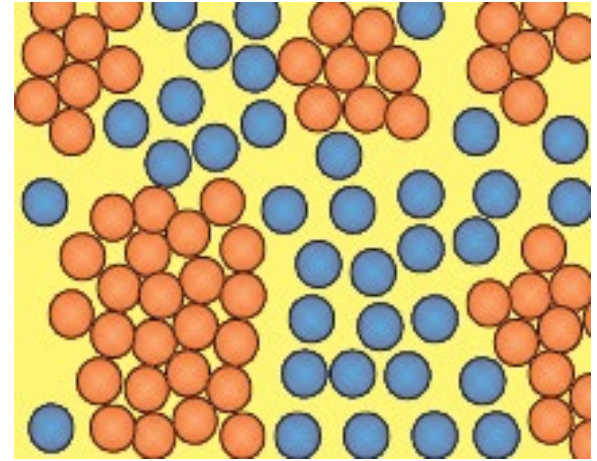


Rock

They look like a fluid...

Cornstarch + water =

(small, hard particles)



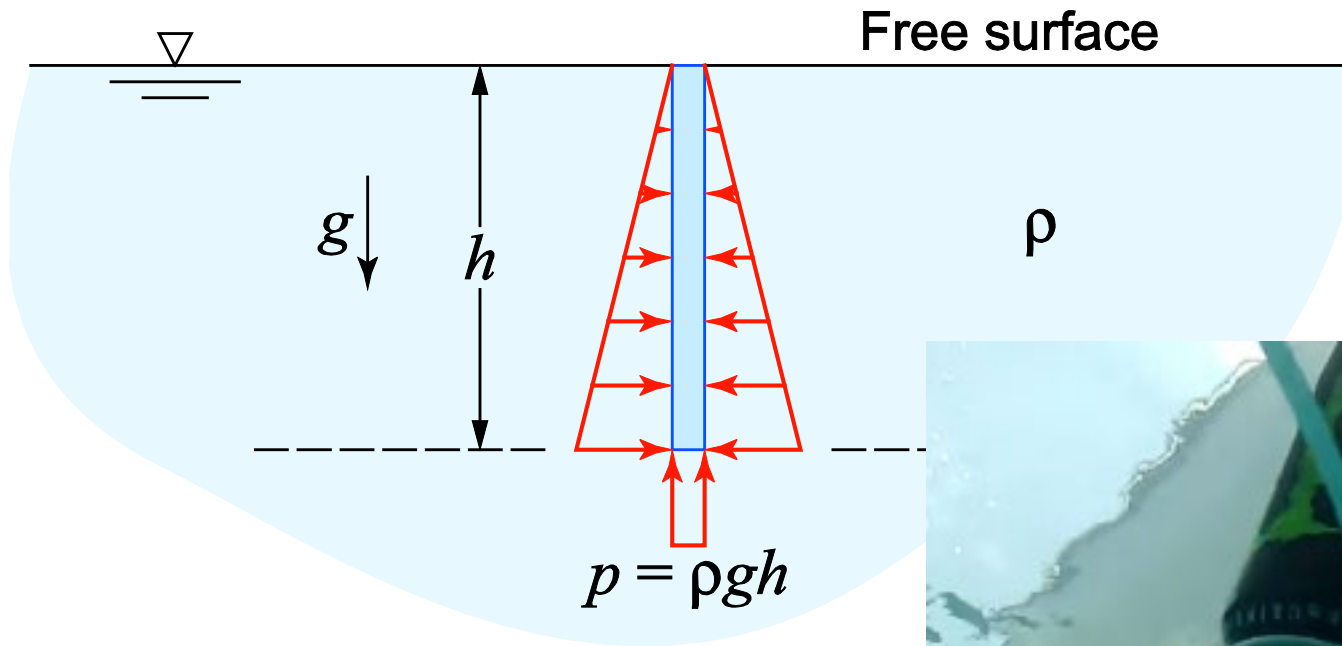
(Mythbusters)

Fluids

Pascal's law: A fluid at rest creates a pressure p at a point that is the *same* in *all* directions

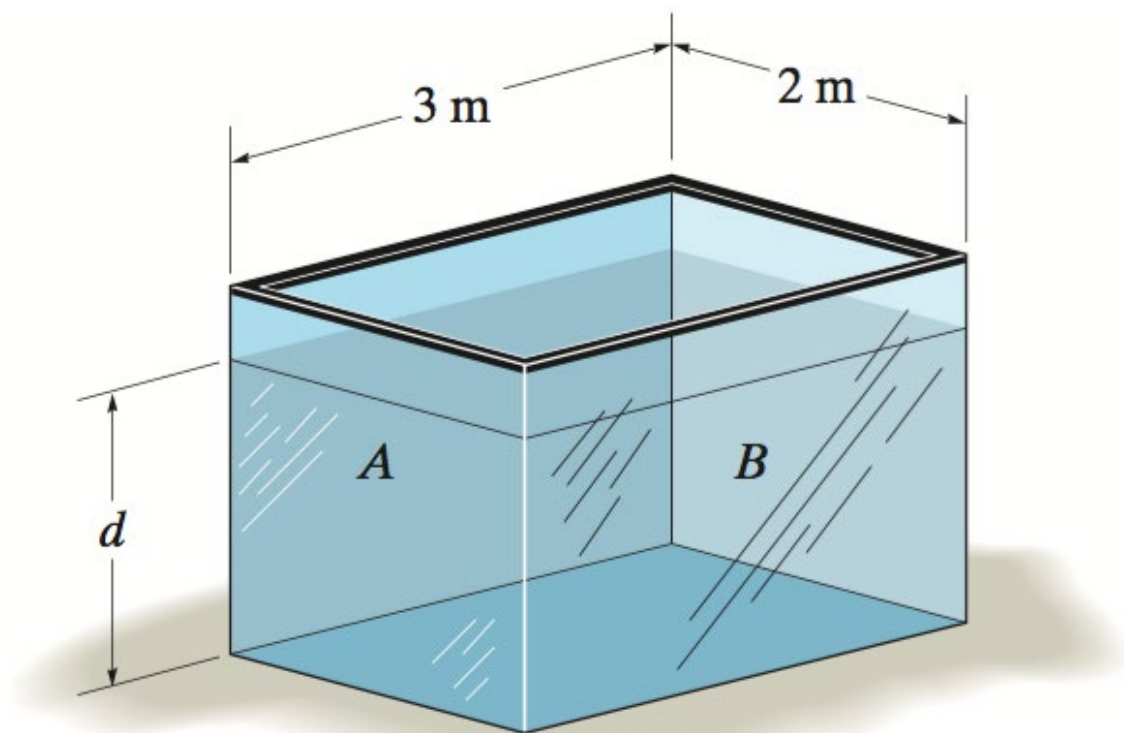
Incompressible: An incompressible fluid is one for which the mass density is independent of the pressure p . Liquids are generally considered incompressible. Gases are compressible, but may be approximated as incompressible if the pressure variations are relatively small.

Observe that the pressure varies *linearly* from the free surface, and is *constant* along any horizontal plane (since h is constant):



(Can crushing clip)

The tank is filled with water to a depth of $d = 4$ m. Determine the resultant force the water exerts on side A of the tank. ($\rho = 1000$ kg/m³)



Determine the magnitude and location of the resultant hydrostatic force acting on the submerged rectangular plate AB . The plate has width 1.5 m.

($\rho_{\text{water}} = 1000 \text{ kg/m}^3$)

