

Chapter 9 (9.5) – Fluid Pressure

Hydrostatics

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

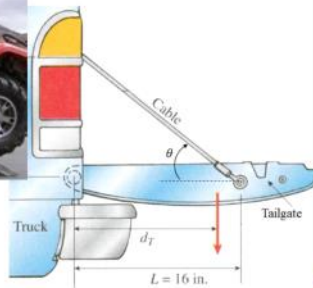


TAM212: Dynamics

Deformable Bodies



TAM 251: Solid Mechanics



FLUIDS



(TAM335
ME310)
AE311

What Makes a Fluid or Solid?

takes the shape of its container



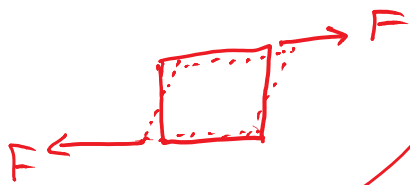
Honey



Rock

Fluid: flows under shear stress

solid:



deforms statically
under shear stress



fluid flows under shear stress

What is Sand?



- A solid
- B fluid
- C both**
- D neither

Granular material

- solid particles
- behave somewhat as a fluid under certain conditions in bulk

They act like a solid...



Yield stress fluids
- they behave as a solid until the shear stress surpasses a yield threshold

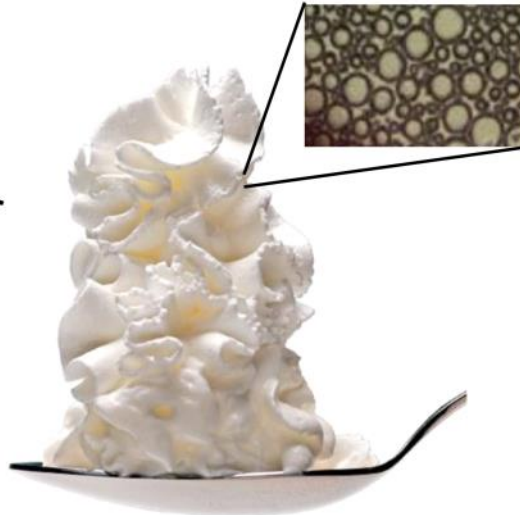


But they flow like a fluid once enough stress is applied.

Whipping cream (liquid) + air (gas) = Foam (solid)

~~Yield stress~~
fluid

with compressed air



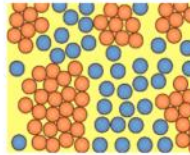
mechanical beating

They look like a fluid...

oobleck

cornstarch + water =

(small, hard particles)



[Video](#)



But they may bear static loads like solids