

Today, we will:

- Continue talking about classifications of fluid flow
- Discuss dimensions, units, unit conversions, and significant digits
- Begin Chapter 2 – Properties of Fluids

B. Classification of Fluid Flows (continued)

1. Viscous vs. inviscid regions of flow
2. Internal vs. external flow
3. Compressible vs. incompressible flow
4. Laminar vs. turbulent flow

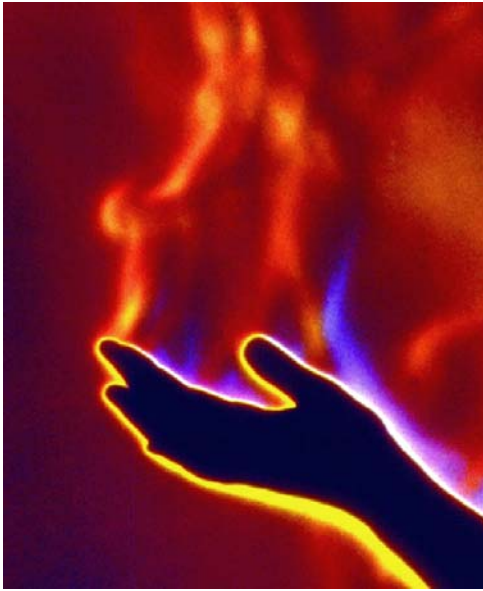


Laminar flow

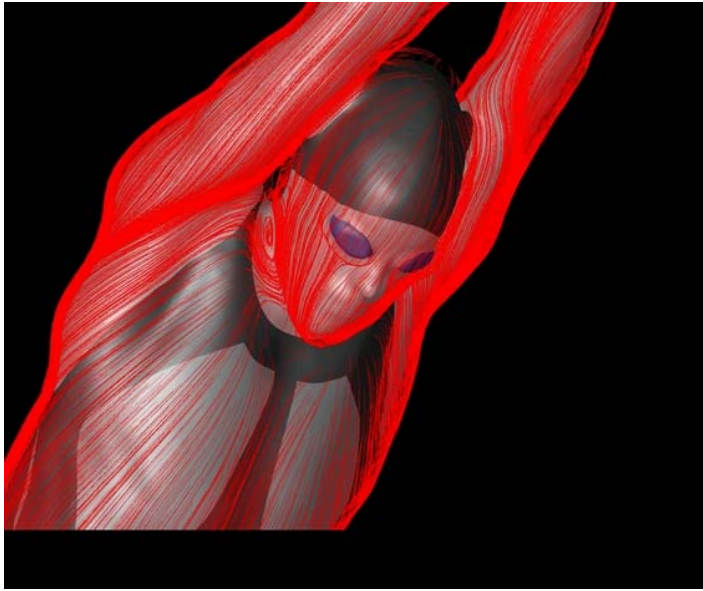


Turbulent flow

5. Natural vs. forced flow



Natural



Forced

6. Steady vs. unsteady

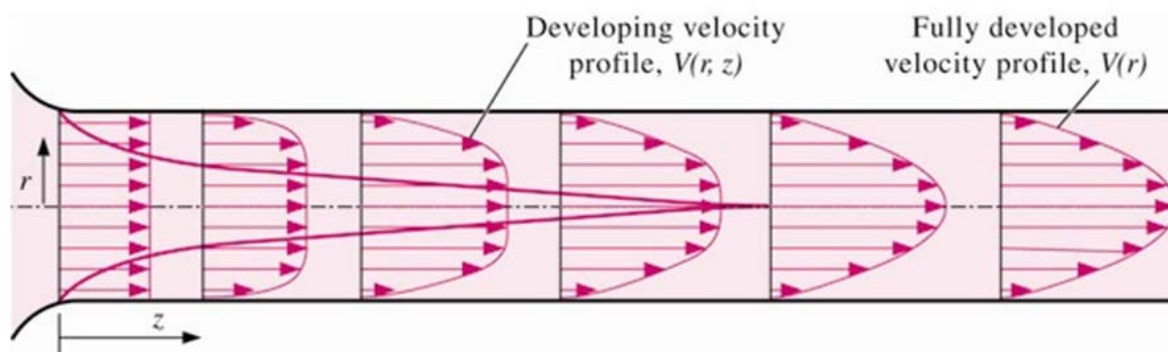
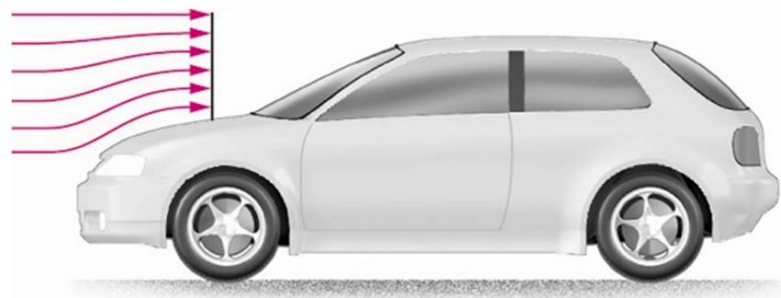


Steady in the mean



Unsteady

7. One-, two-, or three-dimensional



C. Dimensions, Units, and Significant Digits

1. Dimension =
2. Unit =
3. Unit conversions, unity conversion ratios

Example: Unit conversions

Given: The mass of an object is $m = 2.00$ kg.

To do: How much does this mass weigh on earth in units of lbf?

Solution:

4. Significant digits

D. Fluid Properties (Chapter 2)

1. Kinematic properties

2. Thermodynamic properties

3. Other (miscellaneous) properties
 - a. speed of sound

b. vapor pressure, P_v