

Friction & Drag

Physics

Static against kinetic friction, and why drag is different.

Friction

- $F \leq \mu N$, independent of contact area
- Static friction exceeds kinetic
- Independent of speed
- Acts opposite to relative motion
- Converts kinetic energy to heat

Drag

- Increases with speed — often as v^2
- Depends on shape and cross-section
- Depends on fluid density
- Produces terminal velocity
- Dominates at high speed

THE DIFFERENCE THAT MATTERS

Terminal velocity is reached when drag equals weight. The acceleration is then zero and speed stops increasing.

Static friction is greater than kinetic, which is why an object is harder to start moving than to keep moving.