



Friction and its ways to reduce

Definition of Friction

Friction is the force that acts between an object and a surface, which either slows down or stops the motion of the object.

It is also known as the frictional force and always acts in the direction opposite to the movement of the object.

Nature of Friction

Contact Force: Friction is a type of contact force, meaning it occurs when two surfaces come in direct contact.

It is present whenever objects interact physically with each other.

Importance of Friction in Daily Life

- **Walking:** Friction between the ground and our feet allows us to walk without slipping.
- **Braking in Vehicles:** The brakes work due to friction between the brake pads and the wheels, which slows down or stops the vehicle.
- **Gripping and Holding Objects:** Friction helps us hold objects securely in our hands.
- **Writing:** The friction between a pen/pencil and paper enables us to write properly.

Factors Affecting Friction

Surface Type:

Rough Surfaces: Have more friction because of greater irregularities between surfaces.

Smooth Surfaces: Have less friction as there are fewer irregularities.

Weight of the Object: Heavier objects experience more friction due to increased normal force.

Ways to Reduce Friction

- **Using Lubricants:** Oils, greases, or powders can reduce friction by creating a thin layer between surfaces.



- **Polishing Surfaces:** Smoother surfaces reduce friction by minimizing irregularities.
- **Using Ball Bearings:** Rolling friction is less than sliding friction; thus, ball bearings are used in machines.
- **Using Streamlined Shapes:** Reducing air and water resistance helps minimize friction (e.g., in airplanes and ships).