

S3 Energy and Work: Why Air Bags? TODAY'S DATE

E.Q.: How does an air bag protect you during an accident?

What is kinetic energy?

Kinetic energy → the energy possessed by a moving body

$$KE = \frac{1}{2} m v^2$$

where KE = kinetic energy
m = mass
v = velocity

What is work?

Work → the amount of force applied on an object over a certain distance

$$W = F \cdot d = \Delta KE$$

where W = work
F = force
d = distance
 ΔKE = change in kinetic energy

Work produces a change in KE. A large force over a short distance or a small force over a large distance are two ways work can produce the same change in KE. With an air bag, the stopping distance is larger and therefore, the force required to stop you is smaller.