Topic Page: momentum

Definition: **momentum** from *Dictionary of Energy*

Thermodynamics. a measure of the motion of an object, equal to the product of its mass and its velocity.

Summary Article: **momentum**
From *The Columbia Encyclopedia*

(mōmĕn'təm), in mechanics, the quantity of motion of a body, specifically the product of the mass of the body and its velocity. Momentum is a vector quantity; i.e., it has both a magnitude and a direction, the direction being the same as that of the velocity vector. When an external force acts upon a body or a system of bodies in motion, it causes a change in the momentum of the body. The impulse of a force acting on a body is the product of the force and the duration of time in which it acts and is equal to the change in momentum of the body. When no external force acts upon a body in motion or a system of bodies there is no change in the total momentum even though, as in the case of a system of bodies, there may be an internal disturbance of the system resulting in changes in the momenta of individual bodies. This conclusion is commonly known as the principle of the conservation of momentum (see conservation laws, in physics). The momentum of a body should not be confused with its kinetic energy. The distinction between them can be seen in the action of a pile driver. The distance to which the pile is driven depends upon its kinetic energy; the length of time required for the action to cease, upon its momentum. In addition to the momentum a body has because of its linear motion, the body may also have angular momentum because of rotation. The angular momentum of a particle rotating about a point is equal to the product of the mass of the particle, its angular velocity, and the square of its distance from the axis of rotation. More simply, the angular momentum is the product of the instantaneous linear momentum and the distance. Angular momentum is a vector quantity directed perpendicular to the plane of motion.

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