Specific energy wikipedia

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Specific energy or massic energy is energy per unit mass. It is also sometimes called gravimetric energy density, which is not to be confused with energy density, which is defined as energy per unit volume. It is used to quantify, for example, stored heat and other thermodynamic properties of substances such as specific internal energy, specific enthalpy, specific Gibbs free energy, and specific Helmholtz free energy. It may also be used for the kinetic energy or potential energy of a body. Specific energy is an intensive property, whereas energy and mass are extensive properties.

The SI unit for specific energy is the joule per kilogram (J/kg). Other units still in use worldwide in some contexts are the kilocalorie per gram (Cal/g or kcal/g), mostly in food-related topics, and watt hours per kilogram in the field of batteries. In some countries the Imperial unit BTU per pound (Btu/lb) is used in some engineering and applied technical fields.[1]

Specific energy has the same units as specific strength, which is related to the maximum specific energy of rotation an object can have without flying apart due to centrifugal force.The concept of specific energy is related to but distinct from the notion of molar energy in chemistry, that is energy per mole of a substance, which uses units such as joules per mole, or the older but still widely used calories per mole.[2]

Energy density is sometimes more useful than specific energy for comparing fuels. For example, liquid hydrogen fuel has a higher specific energy (energy per unit mass) than gasoline does, but a much lower volumetric energy density. [citation needed]

Specific mechanical energy, rather than simply energy, is often used in astrodynamics, because gravity changes the kinetic and potential specific energies of a vehicle in ways that are independent of the mass of the vehicle, consistent with the conservation of energy in a Newtonian gravitational system.

If the Hale-Bopp comet (50km in diameter) had hit Earth, it would have vaporized the oceans and sterilized the surface of Earth.[11]

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