

COP refers to a *Coefficient of Performance of a heat pump*, which differs for cooling and heating. When it relates to cooling, it means the ratio of the rate of heat removal to the rate of energy input, in consistent units, for a complete cooling system or factory-assembled piece equipment, as tested under a nationally recognized standard or designated operating conditions.

Heat Pump-Heating is the ratio of the rate of heat delivered to the rate of energy input, in consistent units, for a complete heat pump system under designated operating conditions. Supplemental heat shall not be considered when checking compliance with the heat pump equipment.

Cooling loads are defined in terms of two types that must be calculated to determine the design cooling: *sensible* and *latent*.

Sensible cooling load refers to the temperature of the building. Factors that influence the sensible cooling load include sunlight striking windows, skylights, or glass doors; the insulation value of exterior walls, roofs, ceilings under an attic, and floors over an open crawlspace; air infiltration through cracks in the building, doors, and windows; and heat output of lights, appliances, and other equipment operated in the summer.

Latent cooling load is the term used to define the energy attributable to humidity injection in a space. Removing 1 kg of humidity requires about 0.7 kwh of energy. This load comes into play only under cooling conditions when a heat pump, dehumidifier, or air conditioner must work to remove some of that humidity.

Plenum is an enclosure that is part of the air-handling system. Typically, a furnace or air handler has two plenums: a supply plenum and a return plenum.

SEER (Seasonal Energy Efficiency Ratio) is the rating for central air conditioners and heat pumps operating in the cooling mode. SEER is the seasonal cooling output in BTUs divided by the seasonal energy input in watt-hours for an average U.S. climate. The higher the number, the better. Typical tract homes use SEER-10 or -12 air-conditioning units. The national efficiency standard for central AC now requires a minimum SEER of 13; to qualify for an ENERGY STAR label, a split-system air conditioner must have a minimum SEER of 14 and an EER of 12.

EER refers to the energy efficiency ratio of net equipment cooling capacity in BTU/h to total rate of electric input in watts under designated operating conditions. When consistent units are used, this ratio becomes equal to the coefficient of performance.

Low-e refers to a coating for high-performance windows. The “e” stands for emissivity or reradiated heat flow. A low-e coating consists of a thin metallic oxide coating that reduces the U-value of the window by reflecting radiant heat transmitted by warm objects toward a colder glazing surface. Low-e coatings allow short-wavelength solar radiation through windows, but reflect back longer wavelengths of heat.

SHGC (Solar Heat Gain Coefficient) is the fraction of solar heat that enters the conditioned space through the window unit. This includes both directly transmitted and absorbed solar radiation. The lower the SHGC, the less solar heat that a window transmits through the glazing from the exterior to the interior, and the greater its shading ability. A low SHGC is the most important window property in warm climates.

Shading coefficient is the ratio of solar heat gain through fenestration, with or without integral shading devices, to