

HEAT, Q (J, kJ)

Heat - Energy that is *being transferred* due to a temperature difference

- Heat is a mode of energy transfer
- Heat is not a property
- Energy is related to states (property)
Heat is related to processes (not a property, depends on the path)

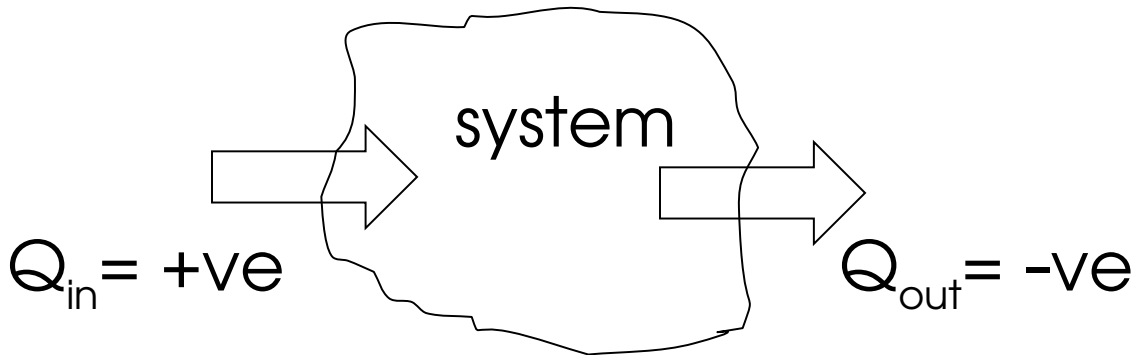
$$q = \frac{Q}{m}$$

$$\dot{Q} = \frac{Q}{t} \left[\frac{\text{kJ}}{\text{s}} = \text{kW} \right] = \text{rate of heat transfer}$$

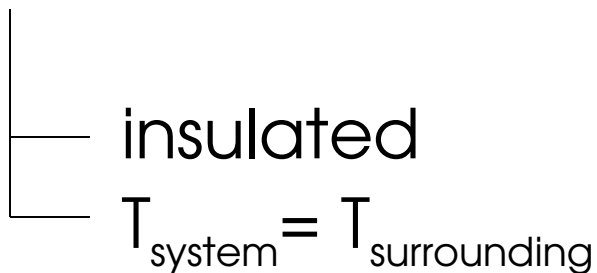
$$\int_1^2 \delta Q = Q_{12}$$

Amount of heat transferred during a process (depends on the path)

Heat (ctd.)



Adiabatic Process ($Q = 0$)



Adiabatic \neq isothermal!

(T can change by other methods; energy can enter system by work)