

Lecture notes

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REpition

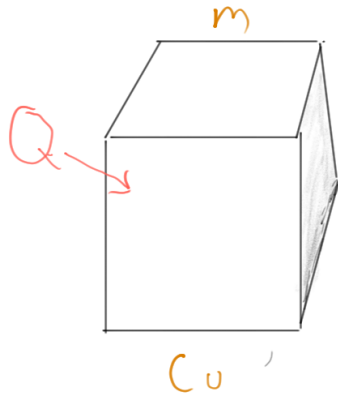
Inre energi: E^{int}

$$E^{int} = N \cdot E_{medel}, n \text{ är antalet atomer}$$

$$\text{en at : } n N_A \cdot \frac{3}{2} k_B T = n \frac{3}{2} R \cdot T$$

$$\text{tvåat : } m \frac{5}{2} R T \Delta E^{int} = n \frac{3}{2} R (T_2 - T_1)$$

Specifikt värme



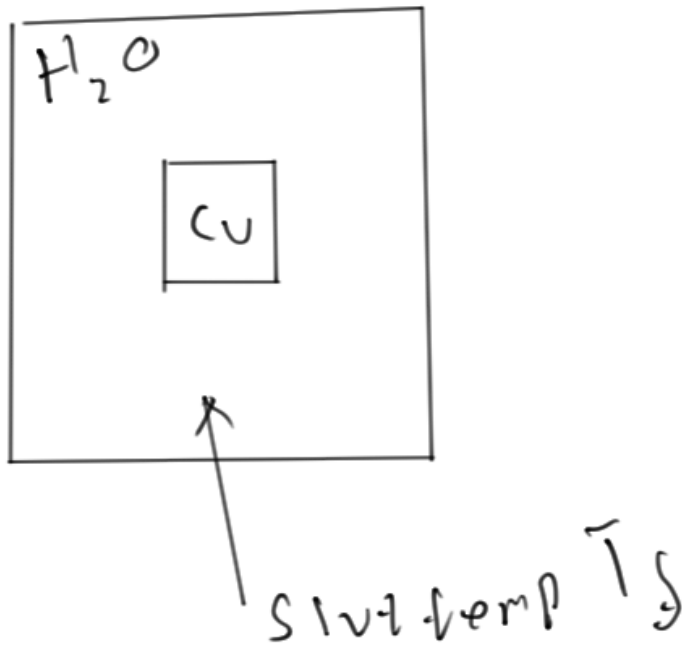
$$Q = c \cdot m \cdot \Delta T$$

$\Delta T?$

material konstant
Värme kapacitet
 $J / (kg \cdot grad)$

$$H_2O : 4,18 \cdot 10^3 J / kg \cdot grad$$

Exempel



temp: Cu = 60°C

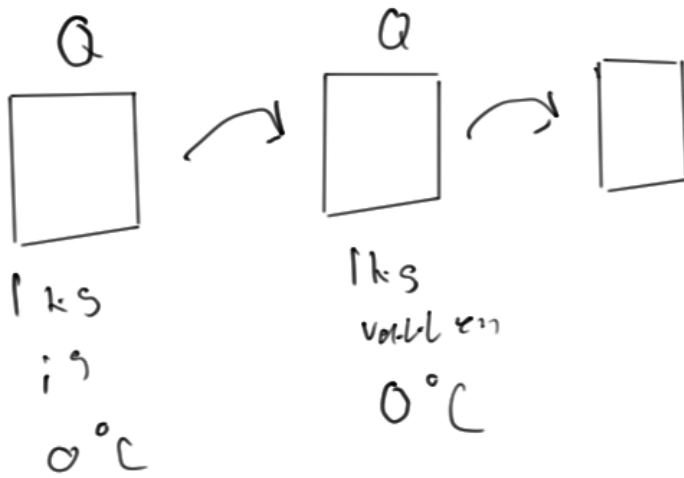
H₂O = 10°C

$$m_{cu}c_{cu}(T_{cu} - T_f) = m_{H_2O}c_{H_2O}(T_{cu} - T_{H_2O})$$

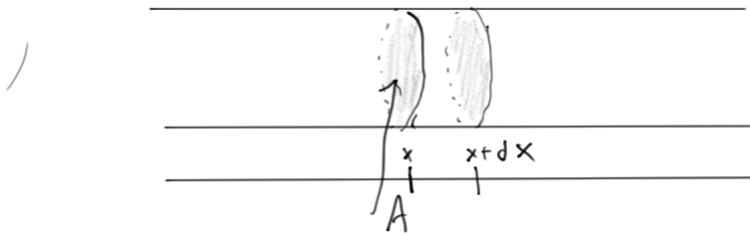
$m_{cu} = 100g$

$m_{h_2o} = 2000g$

Latent värme



$$Q = mL \text{ (fasövergångar)} \quad L = 331 \cdot 10^3 \text{ J/kg (För vatten)}$$

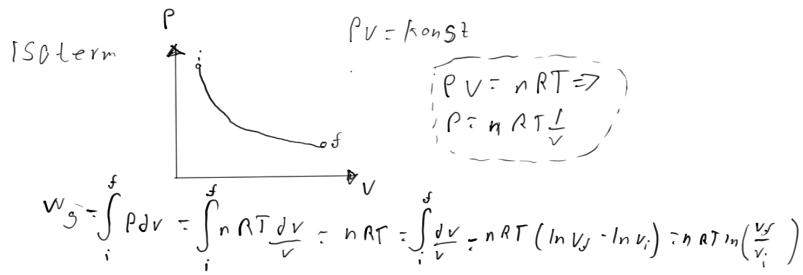
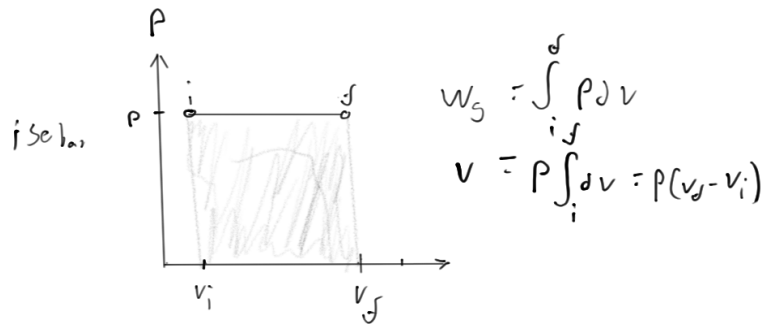
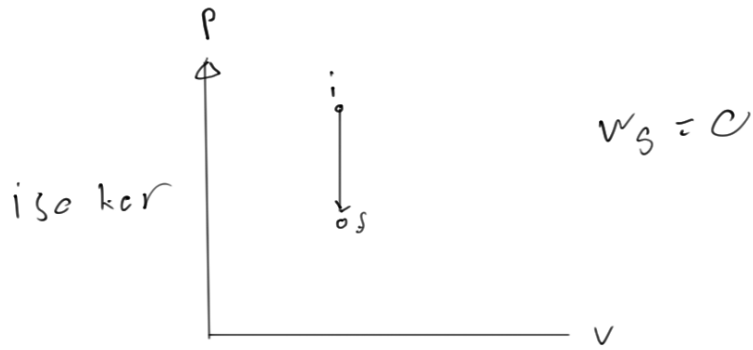


$$dW_{gas} = \vec{F} \cdot d\vec{x} = (PA)\hat{i}(dx\hat{i}) =$$

$$P(Adx) = PdV, dW_{gas} = PdV$$

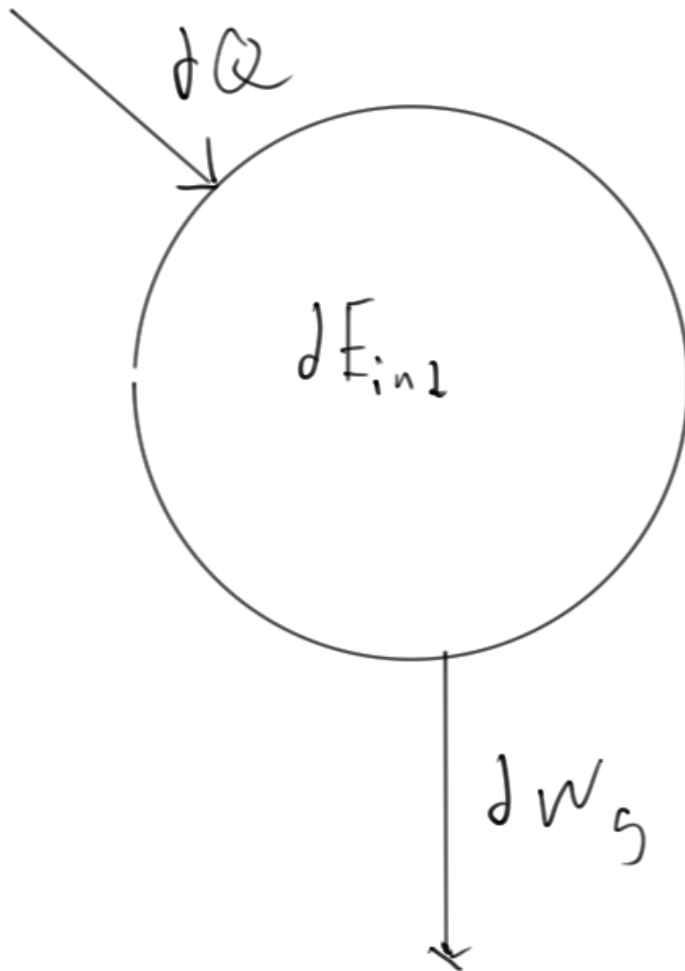
$$W_{i \rightarrow f} = \int_i^f PdV$$

1. isokor
2. isobar
3. isoterm



Termodynamikens 1:a huvudsats

Låter viktigt och är viktigt!



$$dQ = dE_{int} + dW_g$$

$$Q_{i \rightarrow f} = \Delta E_{int} + W_{i \rightarrow f}$$

