

Caloric Equation of State – Ideal Gas

For an ideal gas,

$$du = c_v dT$$

Since we are dealing with an ideal gas, $pv = RT$. Therefore,

$$h = u + pv \rightarrow h = u + RT \rightarrow h = h(T)$$

This leads to the following conclusion (section 3.9.2),

$$dh = c_p dT$$

It can also be shown that,

$$c_p - c_v = R$$