

对于理想气体可逆的绝热过程，即 $dS = 0$.

$$\Delta H = \int_1^2 V dp \quad (1)$$

$$= \int_1^2 \frac{p_1 V_1^\kappa}{p^{\frac{1}{\kappa}}} dp \quad (p_1 V_1^\kappa = p_2 V_2^\kappa = p V^\kappa) \quad (2)$$

$$= \frac{p_1 V_1^\kappa}{-\frac{1}{\kappa} + 1} \left(p_2^{-\frac{1}{\kappa} + 1} - p_1^{-\frac{1}{\kappa} + 1} \right) \quad (3)$$

$$= \frac{\kappa}{\kappa - 1} m R T_1 \left(V_1^{\kappa-1} p_2^{-\frac{1}{\kappa} + 1} - V_1^{\kappa-1} p_1^{-\frac{1}{\kappa} + 1} \right) \quad (p_1 V_1 = m R T_1, p_2 V_2 = m R T_2) \quad (4)$$

但是根据 c_p 的定义

$$\Delta H = c_p m (T_2 - T_1) \quad (5)$$

$$(6)$$

两个式子对比一下，就要求

$$\frac{T_2}{T_1} - 1 = V_1^{\kappa-1} p_2^{-\frac{1}{\kappa}} - V_1^{\kappa-1} p_1^{-\frac{1}{\kappa}} \quad (7)$$