

TERMIČNE LASTNOSTI SNOVI

PLINSKA ENAČBA

$$p \cdot V = n \cdot R \cdot T$$

$$n = \frac{m}{M}$$

$$R = 8310 \frac{J}{K}$$

$$p \cdot V = N \cdot k_B \cdot T$$

$$k_B = 1,38 \cdot 10^{-23} \frac{J}{K}$$

$$N = n \cdot N_A = \frac{m}{M \cdot \mu} = \frac{\rho \cdot V}{M \cdot \mu}$$

$$N_A = 6,02 \cdot 10^{26}$$

$$\mu = 1,66 \cdot 10^{-27} kg$$

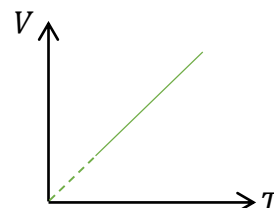
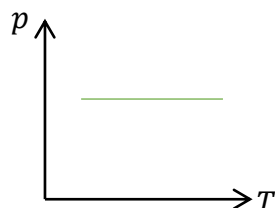
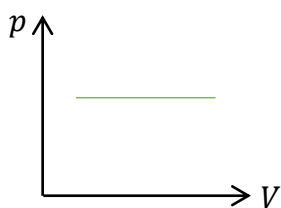
PLINSKI ZAKONI

$$\frac{p_1 \cdot V_1}{T_1} = \frac{p_2 \cdot V_2}{T_2}$$

1) Izobarna sprememba (Gay-Lussacov zakon)

$p = \text{konstanta}$

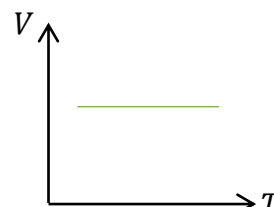
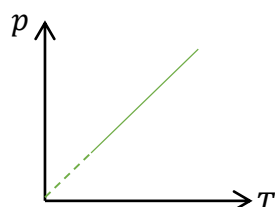
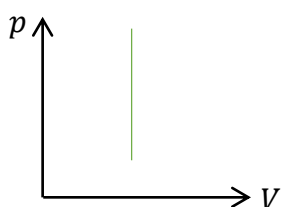
$$\frac{V_1}{T_1} = \frac{V_2}{T_2}$$



2) Izohorna sprememba (Amontsov zakon)

$V = \text{konstanta}$

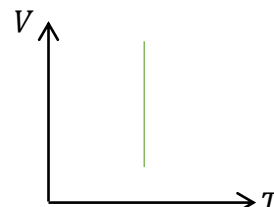
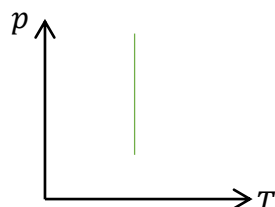
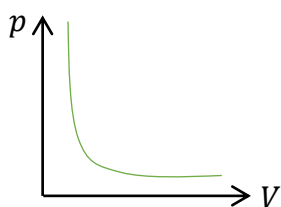
$$\frac{p_1}{T_1} = \frac{p_2}{T_2}$$



3) Izotermna sprememba (Boylov zakon)

$T = \text{konstanta}$

$$p_1 \cdot V_1 = p_2 \cdot V_2$$



TEMPERATURNO RAZTEZANJE

Linearni raztezek

$$\Delta l = \alpha \cdot l \cdot \Delta T$$

l je začetna dolžina

α je temperaturni koeficient linearnega raztezka $\left[\frac{1}{K}\right]$

Površinski raztezek

$$\Delta S = \gamma \cdot S \cdot \Delta T \quad \gamma = 2\alpha$$

S je začetna površina

γ je temperaturni koeficient površinskega raztezka $\left[\frac{1}{K}\right]$

Prostorninski raztezek

$$\Delta V = \beta \cdot V \cdot \Delta T \quad \beta = 3\alpha$$

V je začetni volumen

β je temperaturni koeficient prostorninskega raztezka $\left[\frac{1}{K}\right]$

FAZNE SPREMEMBE

1) LED PRI $T < 0^\circ C$

$$Q_1 = m \cdot c_{led} \cdot \Delta T$$

$$c_{led} = 2100 \frac{J}{kgK}$$

2) LED PRI $0^\circ C \rightarrow$ VODA PRI $0^\circ C$

$$Q_2 = m \cdot q_t$$

$$q_t = 336 \frac{kJ}{kg}$$

3) VODA PRI $0^\circ C < T < 100^\circ C$

$$Q_3 = m \cdot c_v \cdot \Delta T$$

$$c_v = 4200 \frac{J}{kgK}$$

4) VODA PRI $100^\circ C \rightarrow$ PARA PRI $100^\circ C$

$$Q_4 = m \cdot q_i$$

$$q_i = 2270 \frac{kJ}{kg}$$

5) PARA PRI $T > 100^\circ C$

$$Q_5 = m \cdot c_p \cdot \Delta T$$

$$c_p = 1100 \frac{J}{kgK}$$

