m. 5

$3C = K$ $\quad t_K = t_C + 273{,}15$

$3t_C = t_K$ $\quad 3t_C = t_C + 273{,}15$

$2t_C = 273{,}15$

$t_C = \frac{273{,}15}{2} = 136\,^\circ C$

$t_K = 136\,^\circ C + 273 = 410\ K$

n.° 7

a $0^\circ C$ = 4,0 cm $\Delta L = 20,0$ cm

a $100^\circ C$ = 24,0 cm $\Delta t = 100^\circ C$

$\Delta L : \Delta t = x+4 : 22^\circ C$

$20 : 100 = x+4 : 22$

$x = \frac{22 \cdot 20}{100} = 4,4$

$\Delta L = \lambda_{me} L_0 \Delta t$

20 cm

$\Delta L_{100} = L_{100} - L_0$ $\Delta t_{100} = 100 - 0 = 100$

$\Delta L_t = L_t - L_0$ $\Delta t_t = t - 0 = t$ 22°C

$\Delta L_{100} = \lambda_{me} L_0 \Delta t_{100}$

$\Delta L_t = \lambda_{me} L_0 \Delta t_t$

$\frac{\Delta L_{100}}{\Delta L_t} = \frac{\lambda_{me} L_0 \Delta t_{100}}{\lambda_{me} L_0 \Delta t_t}$

$\frac{0,02\ m}{L_t - 0,04\ m} = \frac{100}{22^\circ C}$ $L_t = 8,4$ cm

n.° 16

$S = 6{,}00 \cdot 10^{-3}\ mm^2$

$\alpha_{me} = 1{,}80 \cdot 10^{-4}\ K^{-1}$

$\Delta L = 3{,}00\ mm$ per ogni aumento di $1K$

$$\Delta V = \alpha_{me} V_0 \Delta t$$

$\Delta t = 1K \Rightarrow \Delta V = S\,\Delta L \Rightarrow \Delta V = 6{,}00 \cdot 10^{-3}\ mm^2 \cdot 3\ mm$

$\Delta V = 6 \cdot 10^{-9}\ m^2 \cdot 3 \cdot 10^{-3}\ m = 18 \cdot 10^{-12}\ m^3$

$$V_0 = \frac{\Delta V}{\alpha_{me} \Delta t} \Rightarrow V_0 = \frac{18 \cdot 10^{-12}\ m^3}{1{,}8 \cdot 10^{-4}\ \frac{1}{K}\ 1K} = 10 \cdot 10^{-8}\ m^3$$

$10^{-7}\ m^3 = 0{,}1\ cm^3$