Thermal Expansion

- When temperature rises
  - ➔ molecules have more kinetic energy
    - » they are moving faster, on the average
  - ➔ consequently, things tend to expand
- amount of expansion depends on…
  - ➔ change in temperature   Temp: T
  - ➔ original length   Temp: T+ΔT
  - ➔ coefficient of thermal expansion
    - » $L_0 + \Delta L = L_0 + \alpha L_0 \Delta T$
    - » $\Delta L = \alpha L_0 \Delta T$ (linear expansion)
    - » $\Delta A = 2\alpha A_0 \Delta T$ (area expansion)
    - » $\Delta V = \boxed{3\alpha} V_0 \Delta T$ (volume expansion)
      $= \beta$

L_0

ΔL