

MATTER

Phase	Density	Separation between atoms	Strength of forces between atoms
Solid	highest	shortest	Strongest
Liquid	lower	longer	Weaker
Gas	lowest	longest	weakest

- **Mass density:** $\rho = \text{mass/volume}$ $[\text{kg/m}^3]$
- **Number density:** $n = \# \text{ atoms/volume}$ $[\text{m}^{-3}]$
- **Separation between atoms:** $d \sim n^{-1/3}$

DENSITIES OF VARIOUS SUBSTANCES

SUBSTANCE	DENSITY $[\text{kg/m}^3]$
Aluminum	2700
Lead	11,300
Water	1000
Air	1.29
Helium	0.179