

51.3: Pressure

Pressure P is defined to be force divided by the area over which that force is applied:

$$P = \frac{F}{A} \quad (51.3.1)$$

For a fluid, imagine placing a small area A inside the fluid. Then the pressure at the location of A is the force due to the fluid on one side of A on the fluid on the other side of A , divided by the area A .

Pressure in SI units is measured in Pascals (Pa), named for the French mathematician and physicist Blaise Pascal. One pascal is equal to 1 N/m^2 . Other common units are:

- atmospheres ($1 \text{ atm} = 101,325 \text{ Pa}$)
- torr ($1 \text{ torr} = 1 \text{ mmHg} = 133.3223684210526315789 \text{ Pa}$)
- bar ($1 \text{ bar} = 100,000 \text{ Pa}$; $1 \text{ millibar} = 100 \text{ Pa}$)
- pounds per square inch (psi) ($1 \text{ psi} = 6894.757293168361336723 \text{ Pa}$)
- inches of mercury ($1 \text{ inHg} = 3386.388157894736842105 \text{ Pa}$)
- dynes per square centimeter (dyne /cm^2) ($1 \text{ dyne /cm}^2 = 0.1 \text{ Pa}$)

The pressure P is sometimes called the absolute pressure; this is to distinguish it from the gauge pressure P_g , which is the difference between absolute pressure and atmospheric pressure P_a : $P_g = P - P_a$.

51.3: Pressure is shared under a [CC BY-NC-SA 4.0](https://creativecommons.org/licenses/by-nc-sa/4.0/) license and was authored, remixed, and/or curated by LibreTexts.