Absolute Pressure

When any pressure is detected above the absolute zero of pressure, it is labeled as **absolute pressure**. It is measured using barometer, and it is equal to measuring pressure plus the atmospheric pressure.

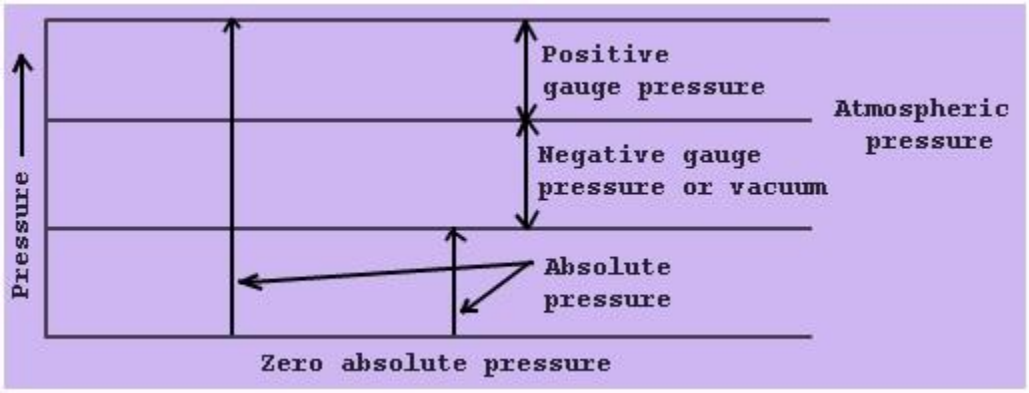

Diagram showing absolute pressure, vacuum and gauge

Absolute pressure formula (p_{abs}) is given by,

$$P_{abs}=P_{atm}+P_{gauge}$$

where p_{gauge} is gauge pressure and p_{atm} is atmospheric pressure.

The vacuum pressure is articulated as,

Vacuum Pressure=Atmospheric Pressure-Absolute Pressure

At sea level it is around **14.7 pounds per square inch**.

Solved Examples

Let's see some examples of absolute pressure:

Problem 1: A pressure gauge measures the p_{gauge} reading as 31 psi. If the atmosphere pressure is 14.2 psi. Compute the absolute pressure that corresponds to p_{gauge} reading.
Answer:

Given: p_{atm} (Atmospheric pressure) = 31 psi
p_{gauge} (Gauge pressure) = 14.2 psi
Absolute pressure (p_{abs}) = $p_{atm} + p_{gauge}$

= 31 psi + 14.2 psi
= 45.2 psi

Problem 2: The psia pressure instrument gives the reading as 35.8 psi. If the atmospheric pressure is 15 psi, calculate the corresponding guage pressure.

Answer:

Given: Atmospheric pressure p_{atm} = 15 psi
Absolute pressure p_{abs} = 35.8 psi

The Gauge pressure is
p_{gauge} = 35.8 psi – 15 psi
= 20.8 psi.