

Pressure (thermodynamic property)

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A property of [Thermodynamic system](#) measuring a change of [internal energy](#) U with respect to the change of its volume V :

(1)
$$p = -\left(\frac{\partial U}{\partial V}\right)_{S,N}$$

with [entropy](#) S and number of particles N being constant.

It is related to [mechanical pressure](#) and measures in the same units:

Symbol	Dimension	SI units	Oil metric units	Oil field units	Additional
p	$M\,L^{-1}\,T^{-2}$	Pa	kPa = 10 ³ Pa = 0.145038 psi MPa = 10 ³ Pa = 145.038 psi GPa = 10 ⁶ Pa = 145,038 psi	psi = 6894.76 Pa = 6.8 9476 kPa	bar = 10 ⁵ Pa = 100 kPa = 14.5038 psi atm = 101,325 Pa = 101.325 kPa = 14.6959 psi

See also

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[[Mechanical Pressure](#)]