

Gas compressibility = cg

	p = 100 kpa , T = 20 °C	p = 10,000 kpa , T = 100 °C
c_g	10,000 GPa ⁻¹	100 GPa ⁻¹

It is related to [gas compressibility factor](#) Z as:

$$(1) \quad c_g = \frac{1}{p} - \frac{1}{Z} \frac{dZ}{dp}$$

$$(2) \quad c_g = -\frac{1}{V} \frac{dV}{dp} = -\frac{d}{dp}(\ln V)$$

Substituting V from ([Compressibility factor:1](#)) into (2) one arrives to:

$$(3) \quad c_g = -\frac{d}{dp} \left(\ln \left(\frac{Z}{p} + \ln(vRT) \right) \right) = -\frac{p}{Z} \frac{d}{dp} \left(\frac{Z}{p} \right) = -\frac{p}{Z} \left(\frac{1}{p} \frac{dZ}{dp} - \frac{Z}{p^2} \right) = \frac{1}{p} - \frac{1}{Z} \frac{dZ}{dp}$$

See Also

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Reference

Chemical Engineering Calculations @ <https://checalc.com>