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

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

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

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

See Also

Natural Science / Physics / Mechanics / Continuum mechanics / Fluid Mechanics / Fluid Statics / Fluid compressibility

Natural Science / Physics / Chemistry / Chemical Substance / Natural Gas (chemical substance)

Petroleum Industry / Upstream / Subsurface E&P Disciplines / Fluid (PVT) Analysis / Fluid (PVT) modelling

Reference

Chemical Engineering Calculations @ https://checalc.com