$$\mathrm{DVol}_{\mathrm{ratio}} = \frac{\mathrm{DVol}_{\mathrm{air}}}{\mathrm{DVol}} = \left[1 - \left(\frac{\mathrm{DCO2}}{10^2}\right)\left(\frac{\alpha}{4}\right) - \frac{\mathrm{DCO}}{10^6}\left(\frac{\alpha}{4} + 0.5\right)\right]$$