DENSITY FORMULAS

Uranyl Nitrate, UN, Natural Uranium

$$\rho_{SOL}^{\text{at } 25^\circ C} \; g/cm^3 = 1.0012 + 0.3177\, M_{UN} + 0.03096\, M_{HNO_3} + 0.051\, M_{NaNO_3} \qquad (1)$$

$$\rho_{SOL}^{\text{at } t^\circ C} = 1.0125\, \rho^{25^\circ} + 0.000145t - 0.0005t\rho^{25^\circ} - 0.0036 \qquad (2)$$

where $t = {}^\circ C$

Uranium Hexafluoride, UF_6

$$\rho_{UF_6} \; g/cm^3 = 3.668 - 1.553 \times 10^{-2}\Delta t + 7.356 \times 10^{-4}\, \Delta t^2 - 1.576 \times 10^{-5}\, \Delta t^3$$

$\rho = g/cm^3$

$\Delta t = {}^\circ C - 64.052^\circ C$ (triple point)

good over range 65 to 90° C

$$\rho_{UF_6} \; g/cm^3 = 2.0843 - 0.0031t + 0.3710(230.2 - t)^{0.3045}$$

$t = {}^\circ C$

good over range 90 to 230° C

(1) H. W. Fox and W. A. Zisman, J. Coll. Science, 1950.

(2) F. H. Getman, Outlines of Physical Chem., John Wiley & Sons, 1946.