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where $v_{10} / v_o$ and $v_{20} / v_o$ are the fractional volumes originally (at 0 pressure) occupied by the two components, and $-\frac{1}{v_{10}} \frac{dv_1}{dp}$ the compressibility of the first component. Using the compressibility of Na near 12 kilobars which is $10 \times 10^{-12}$, one gets for the reflector (85% Be, 15% Na)

$$-\frac{1}{v_o} \frac{dv}{dp} = (0.85 \times 0.56 + 0.15 \times 10) \times 10^{-12} = 2.0 \times 10^{-12} \quad (b)$$

Similarly, the hot blanket consists of 30% Na and 70% U by volume, giving

$$-\frac{1}{v_o} \frac{dv}{dp} = (0.7 \times 1.08 + 0.3 \times 10) \times 10^{-12} = 3.7 \times 10^{-12} \quad (c)$$

The sound velocity is given by

$$c^2 = \frac{dp}{d\rho} = -v^2 \frac{dp}{dv} \quad (d)$$

where v is the specific volume.

The acoustic impedance is calculated from

$$(\rho c)^2 = \frac{c^2}{v^2} = -\frac{dp}{dv} = \frac{\rho_o}{-(1/v_o)\,(dv/dp)} \quad (e)$$

where $\rho_o$ is the uncompressed density of the mixture

$$\rho_o = \rho_{10} \frac{v_{10}}{v_0} + \rho_{20} \frac{v_{20}}{v_0} \quad (f)$$

with $\rho_{10}$ and $\rho_{20}$ the uncompressed densities of the two components. This gives for the reflector

$$\rho_{or} = 0.85 \times 1.8 + 0.15 \times 0.97 = 1.68$$

$$(\rho c)_r = 0.92 \times 10^6 \quad (g)$$

whereas for pure Be, the acoustic impedance is $1.80 \times 10^6$.

Similarly, for the blanket

$$\rho_{ob} = 0.7 \times 18.9 + 0.3 \times 0.97 = 13.5$$

$$(\rho c)_b = 1.91 \times 10^6$$



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