A spherical ball contracts in volume by 0.01 % when subjected to a normal uniform pressure of 100 atm. the bulk modulus of its material is

Solution

Bulk modulus of the material of the body is

$$B = \frac{P}{v/V},$$

where P - a pressure is applied to spherical ball, $\frac{v}{V}$ - volume strain of spherical ball.

The bulk modulus of its material is

$$B = \frac{100 \text{ atm}}{0.0001} = \frac{100 \text{ atm}}{0.0001} = 1 * 10^6 \text{ atm} = 10^6 * 1.0 \times 10^5 \frac{N}{m^2} = 10 * 10^{10} \frac{N}{m^2}.$$

Answer: $\mathbf{10 * 10^{10}} \frac{\boldsymbol{N}}{\boldsymbol{m^2}}$.