When pressure on a sphere is increased by 80 atmosphere than its volume decreases by 0.01% find the bulk modulus of elasticity of material

Solution

Let the inital volume of a body be V which changes

by v when a pressure p is applied. (When the

pressure increases the volume decreases and vice versa). Then

normal stress = p, volume strain = υ / V.

bulk modulus of the material of the body is

$$B = p\frac{\upsilon}{V} = 80 * 101\,325 * 0.01 * 0.01 = 810{,}6\frac{N}{m^2}$$