

### Answer on Question #53004-Physics-Mechanics-Kinematics-Dynamics

What pressure must be exerted on 20L of water at 20 0C to change its volume to 18.7L? The bulk modulus of elasticity of water at this temperature is  $2.2 \times 10^9 \text{ Pa}$

#### Solution

The bulk modulus of elasticity is

$$E = -\frac{\Delta p}{\frac{\Delta V}{V}}$$

Thus,

$$\Delta p = -E \frac{\Delta V}{V} = 2.2 \cdot 10^9 \text{ Pa} \cdot \frac{20L - 18.7L}{20L} = 143 \cdot 10^6 \text{ Pa} = 143 \text{ MPa.}$$

**Answer: 143 MPa.**