Bulk modulus = K = B

@wikipedia

A measure of relative change in density ρ or molar volume V_m under a unit pressure p variation:

(1) $$K = \rho \cdot \left(\frac{\partial p}{\partial \rho} \right) = -V_m \cdot \left(\frac{\partial p}{\partial V_m} \right)$$

Symbol	Dimension	SI units	Oil metric units	Oil field units
K or B	$M^1 L^{-1} T^{-2}$	Pa	GPa	psi

Bulk modulus measures resistance of Continuum body to deformation and is inverse to compressibility c:

(2) $$K = \frac{1}{c}$$

Bulk modulus depends on the thermodynamic conditions at which it is measured and as such is not a material property.

The two major deformation processes of the medium are isothermal and isentropic which result in different values of Bulk modulus:

Isothermal bulk modulus	Isentropic bulk modulus
$T = \text{const}$	$S = \text{const}$
(3) $K_T = \rho \cdot \left(\frac{\partial p}{\partial \rho} \right)_T$	(4) $K_S = \rho \cdot \left(\frac{\partial p}{\partial \rho} \right)_S$

Both K_T and K_S are not dependent on the amount of chemical substance and defined under specific conditions of thermodynamic process and as such are the material properties and properly tabulated for the vast majority of materials.

In engineering practise, when the term Bulk modulus is used as material property it normally means Isothermal Compressibility: $K = K_T$.

For isotropic materials it is related to Young modulus (E) and Poisson's ratio () as:

(5) $$K_T = \frac{E}{3\,(1 - 2\,\nu)}$$

See also

Physics / Mechanics / Continuum mechanics / Continuum Body / Deformation

[Solid Mechanics] [Fluid Mechanics]

[Compressibility] [Young modulus (E)][Poisson's ratio ()]

[Isothermal Compressibility][Isentropic Compressibility]

[Fluid compressibility] [Pore compressibility] [Total compressibility]