Incompressible fluid

The fluid which which density is not dependent on pressure p:

(1) $$\rho(T,p) = \rho_0(T) = \text{const}$$

which is equivalent to zero compressibility:

(2) $$c(T,p) \equiv 0 \Leftrightarrow \frac{d\rho}{dp} = 0$$

where

T	Temperature

It is opposite to Compressible Fluid which density depends on pressure.

Incompressible fluid does not exist but in many practical applications the pressure variation may stay within the sufficiently narrow range where a fluid can be considered as incompressible.

The concept of Incompressible fluid should not be confused with Incompressible flow. The latter can develop even for compressible fluid.

See also

Physics / Mechanics / Continuum mechanics / Fluid Mechanics / Fluid Dynamics / Fluid Compressibility

[Incompressible matter] [Incompressible flow]

[Compressible Fluid]