

## 2.2 MACROVARIABLES

In thermodynamics we study properties of macroscopic systems. A macroscopic system is characterized by macrovariables such as temperature and pressure that are defined for the entire system. Macrovariables take definite values when the system is in a thermodynamic equilibrium.

Macrovariables in thermodynamics are usually classified in two categories depending on how they scale with the mass of the system. If a variable does not depend on the mass of the system, the property is said to be **intensive**. Temperature and pressure are examples of intensive properties. If a variable doubles when mass is doubled while keeping other intensive variables fixed, then the property is called extensive. Volume and energy are examples of **extensive** properties.

By dividing an extensive property by mass, you can obtain a quantity that will be intensive. For instance, if you divide volume by mass, you obtain inverse of density which is an intensive property of the system. Similarly, energy per unit mass is an intensive property.