

The Four Laws of Thermodynamics

0th Law of Thermodynamics

The Zeroth Law of Thermodynamics states that if two systems are in thermodynamic equilibrium with a third system, the two original systems are in thermal equilibrium with each other. Basically, if system A is in thermal equilibrium with system C and system B is also in thermal equilibrium with system C, system A and system B are in thermal equilibrium with each other.

1st Law of Thermodynamics

The First Law of Thermodynamics states that energy can be converted from one form to another with the interaction of heat, work and internal energy, but it cannot be created nor destroyed, under any circumstances.

 [Conservation of Energy](#)

 [First Law of Thermodynamics](#)

2nd Law of Thermodynamics

The Second Law of Thermodynamics states that the state of entropy of the entire universe, as an isolated system, will always increase over time. The second law also states that the changes in the entropy in the universe can never be negative.

3rd Law of Thermodynamics

The 3rd law of thermodynamics will essentially allow us to quantify the absolute amplitude of entropies. It says that when we are considering a totally perfect (100% pure) crystalline structure, at absolute zero (0 Kelvin), it will have no entropy (S). Note that if the structure in question were not totally crystalline, then although it would only have an extremely small disorder (entropy) in space, we could not precisely say it had no entropy.