

Temperature of Inversion:

(9)

When a gas is allowed to escape adiabatically through a porous plug from the region of constant high pressure to the region at constant low pressure, it undergoes a change of temperature. This phenomenon is called Joule-Thomson effect and the process is called the Joule-Thomson or adiabatic throttling. The change in temperature depends upon the nature of the gas and the initial temperature.

On suffering Joule-Thomson expansion, all gases undergo a change in temperature.

There are some points ~~related~~ related to Joule-Thomson expansion:

1. At ordinary temperatures, most of the gases show a cooling effect while hydrogen and helium show heating effect. However at sufficiently low temperature all gases show a cooling effect on suffering Joule-Thomson expansion.
2. The fall in temperature is directly proportional to the difference of pressure on the two sides of the porous plug.
3. The fall in temperature per atmosphere difference of pressure decreases as the initial temperature of the gas increases.
4. The fall of temperature becomes zero at a particular temperature called the temperature of inversion. At this temperature, the gas