



# SNS College of Technology

(An Autonomous Institution)

19ASB202/ Aero Engineering Thermodynamics

Unit -4/ GAS MIXTURES

## Difference Between Ideal Gas and Real Gas

The three states of matter that are recognised by their characteristics are solids, liquids and gases. Solids have definite mass and shape due to the strong molecular attraction. In liquids the molecules are moving so they result in taking the shape of the container. In gases the molecules are free to move anywhere in the container. Two types of gases exist. Real gas and Ideal gas. As the particle size of ideal gas is extremely small and the mass is almost zero and no volume Ideal gas is also considered as point mass. The molecules of real gas occupy space though they are small particles and also has volume.

### Ideal gas:

Ideal gas is defined as a gas that obeys gas laws at all condition of pressure and temperature. Ideal gases have velocity and mass. They do not have volume. When compared to the total volume of the gas the volume occupied by the gas is negligible. It does not condense and does not have triple point.

### Real gas:

Real gas is defined as a gas that does not obey gas laws at all standard pressure and temperature conditions. When the gas becomes massive and voluminous it deviates from its ideal behaviour. Real gases have velocity, volume and mass. When they are cooled to their boiling point, they liquefy. When compared to the total volume of the gas the volume occupied by the gas is not negligible.

To make you understand how **ideal gas and real gas** are different from each other, here are the some of the major **differences between ideal gas and real gas**:

### Difference between Ideal gas and Real gas

**IDEAL GAS**

**REAL GAS**

No definite volume

Definite volume

Elastic collision of particles

Non elastic collision of particles

No intermolecular attraction force

Intermolecular attraction force

Does not really exists in environment and is a hypothetical gas

It really exists in the environment

High pressure

Pressure is less when compared to Ideal gas

Does not obey gas laws at all conditions of pressure and temperature

Obeys gas laws at high temperature and low pressure

Independent

Interacts with others

Obeys  $PV = nRT$

Obeys  $p + ((n^2 a)/V^2)(V - n b) = nRT$

These were some of the important difference between real gas and ideal gas .