

Physical Properties of Anhydrous Ammonia

At normal temperatures and pressures anhydrous ammonia is a pungent, colorless gas. When compressed and/or cooled sufficiently, it will condense to form a colorless liquid. The most commonly used physical constants are listed below:

Molecular Symbol NH₃

Molecular Weight 17.032

Boiling Point (@one atmosphere pressure) - 28o F
(- 33.4o C)

Freezing Point (@ one atmosphere pressure). - 107.9o F
(- 77.7o C)

Latent Heat of Vaporization (@ 70o F) 508.6 BTU/lb
(1183.0 J/kg)

Vapor Density
(@ 32o F and one atmosphere pressure - relative to air) 0.597

Liquid Density (@70o F) 5.08 lb/gal
(608.7 kg/cubic meter)

Gas Volume (@ 70o and one atmosphere pressure) 22.5 cubic ft/lb

When anhydrous ammonia is confined within a closed container and is present in both liquid and vapor phases, the pressure within that container is a function of the liquid temperature. This pressure relationship is shown at various temperatures in the chart on the reverse side of this bulletin. Also shown is the relationship between temperature and density for both liquid and vapor ammonia for various temperatures.