

SHAW Technical Notes

Basic definitions

Dewpoint temperature

The temperature to which the gas must be cooled in order that it should be saturated with water vapor (i.e. 100% relative humidity).

For practical reasons it is referred to water above 0 °C (+32 °F) and ice below 0 °C (+32 °F).

Dewpoint is expressed in degrees Celsius (°C) or degrees Fahrenheit (°F).

Water vapor pressure

The pressure exerted by the water vapor contained in any mixture of gases. The total pressure exerted by the gas mixture is the sum of the pressures exerted by its components – including the water vapor. Water vapor pressure varies in direct proportion to the total gas. Expressed in units of pressure such as pascals (Pa), millibar (mbar) or millimeters of mercury (mmHg).

Saturation water vapor pressure

The maximum pressure of water vapor that can exist in a gas at a given temperature. Expressed in units of pressure as partial water vapor pressure.

Parts per million by volume

The ratio of the water vapor pressure to the total gas pressure, expressed as ppm(v) or vpm.

Parts per million by weight

The figure is modified according to the ratio of the molecular weight of water vapor to the molecular weight of the carrier gas mixture, expressed as ppm(w).

Absolute humidity

The mass of water vapor in a unit volume of moist gas at a given temperature and pressure. Expressed as grams per cubic meter (g/m^3), milligrams per liter (mg/L),

milligrams per cubic meter (mg/m^3) or pounds of water per million cubic feet of gas (lb/MMSCF).

Relative humidity

The ratio of actual water vapor pressure in the gas to the saturation water vapor pressure at the same temperature.