

density altitude calculator

To use the calculator, just click the type of units that you will be entering, then enter the altitude, temperature, altimeter setting and dew point. Then click the calculate button.

Elevation	<input checked="" type="radio"/> feet	<input type="radio"/> meters	<input type="text" value="4964"/>
Air Temperature	<input type="radio"/> deg F	<input checked="" type="radio"/> deg C	<input type="text" value="31"/>
Altimeter Setting	<input checked="" type="radio"/> inches Hg	<input type="radio"/> mb	<input type="text" value="30.22"/>
Dew Point	<input type="radio"/> deg F	<input checked="" type="radio"/> deg C	<input type="text" value="11"/>

Density Altitude	<input type="text" value="7721"/> feet	<input type="text" value="2353"/> meters
Absolute Pressure	<input type="text" value="25.188"/> inches Hg	<input type="text" value="852.97"/> mb
Relative Density	<input type="text" value="79.29"/> %	<input type="text" value="79.29"/> %

Additional Information:

Example 1: at 5050 feet elevation, 95 deg F air temp, 29.45 inches-Hg barometric pressure and a dew point of 67 deg F, the Density Altitude is calculated as 9252 feet.

Example 2: at 1540 meters elevation, 35 deg C air temp, 997 hPa barometric pressure and a dew point of 19 deg C, the Density Altitude is calculated as 2821 meters.

Air density is affected by the air pressure, temperature and humidity. The density of the air is reduced by decreased air pressure, increased temperatures and increased moisture. A reduction in air density reduces the engine horsepower, reduces aerodynamic lift and reduces drag.

Input Values:

The elevation (or altitude) is the geometric elevation above mean sea level, and is the elevation at which the altimeter setting, temperature and dew point have been measured.

The altimeter setting is the value in the altimeter's Kollsman window when the altimeter is set to correctly read a known elevation. The altimeter setting is generally included in NWS reports. The altimeter setting is not the same as the sea level corrected barometric pressure.

This calculator uses dew-point rather than relative humidity because the dew point is fairly constant for a given air mass, while the relative humidity varies greatly as the temperature changes.

Output Values:

The density altitude is the altitude in the International Standard Atmosphere that has the same density as the air being evaluated.

The absolute air pressure is the actual air pressure, not corrected for altitude, and is also called the station pressure.

Relative density is the ratio of the actual air density to the standard sea level density, expressed as a percentage.

The ICAO International Standard Atmosphere standard conditions for zero density altitude are 0 meters (0 feet) altitude, 15 deg C (59 deg F) air temp, 1013.25 mb (29.921 in Hg) pressure and 0 % relative humidity (absolute zero dew point). The standard sea level air density is 1.225 kg/m³ (0.002378 slugs/ft³).