Here at **dehum**, all our designs, all our selections and all the work we carry out is based on an in-depth knowledge of psychrometrics. Understanding air, its moisture and how this can affect products allows us to understand how to influence this to develop your process.

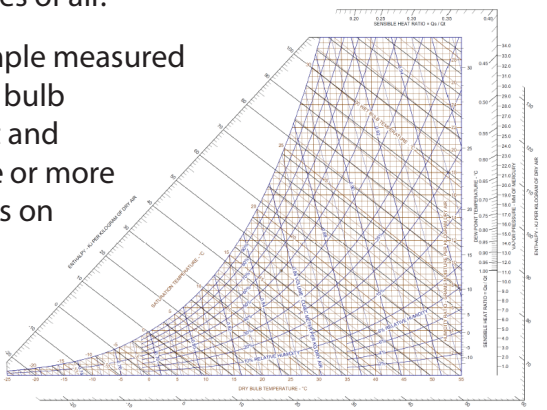
Whether it be humidity control or accelerating drying, understanding the air and its moisture allows us to achieve outstanding results. Let's keep it simple to start though…

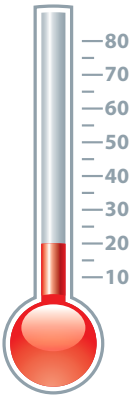
Psychrometrics Explained

Psychrometrics is the science behind the behaviour of air and the various conditions which can be measured; how they interact with each other, and how they can be modified to produce the conditions required by a multitude of production processes.

Psychrometric charts can look complicated but they basically illustrate a very simple 2-dimensional representation of the properties of air.

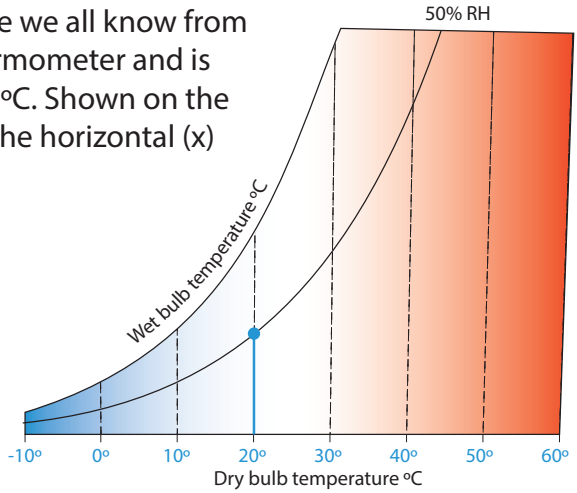
The following charts show simple measured parameters (dry bulb and wet bulb temperatures; %RH, dewpoint and absolute humidity). When one or more parameters change, the effects on other values can be seen.





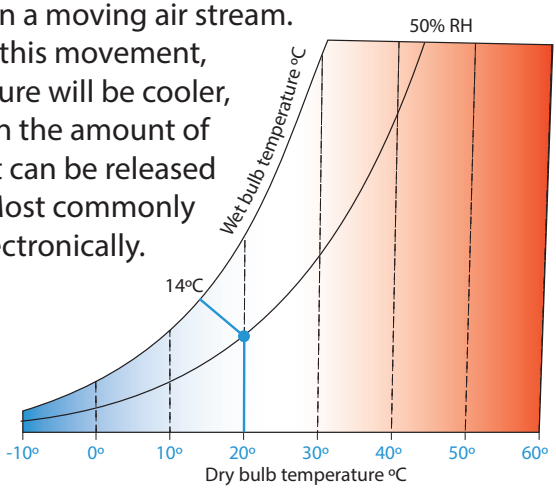
Dry Bulb Temperature (db)

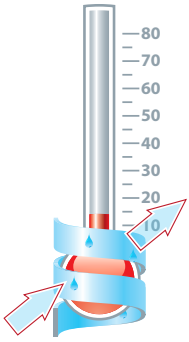
This the value we all know from a simple thermometer and is measured in ºC. Shown on the chart along the horizontal (x) axis.

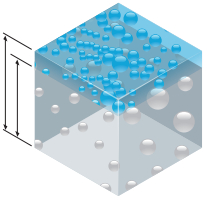


Wet Bulb Temperature (wb)

This is the temperature shown on a standard thermometer, which has been cooled by exposure to the air across a wetted wick in a moving air stream. As a result of this movement, the temperature will be cooler, depending on the amount of moisture that can be released into the air. Most commonly measured electronically.

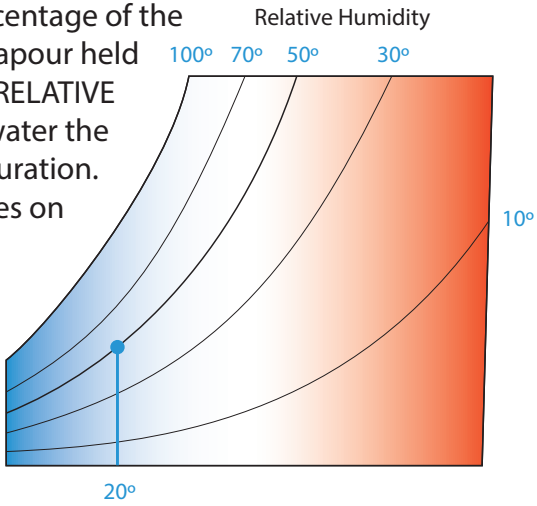






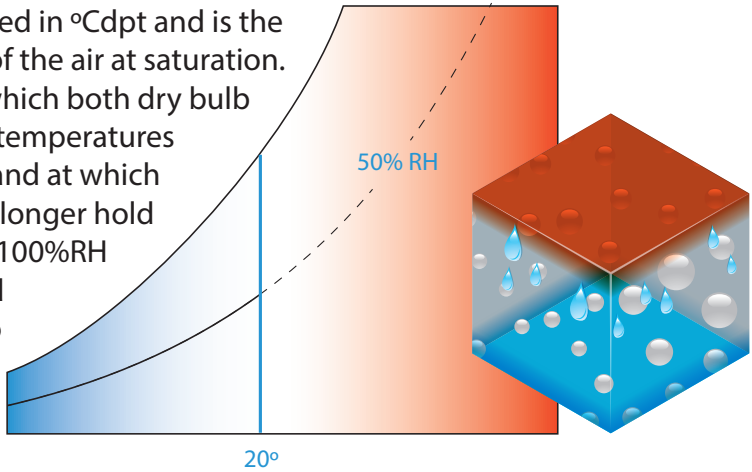
Relative Humidity (RH%)

Measured as a percentage of the amount of water vapour held in a given volume RELATIVE to the amount of water the air CAN hold at saturation. Shown as the curves on the chart.

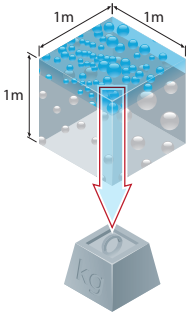


Dew Point (dpt)

This is measured in ºCdpt and is the temperature of the air at saturation. The point at which both dry bulb and wet bulb temperatures are the same and at which the air can no longer hold the moisture; 100%RH is reached and water starts to condense.

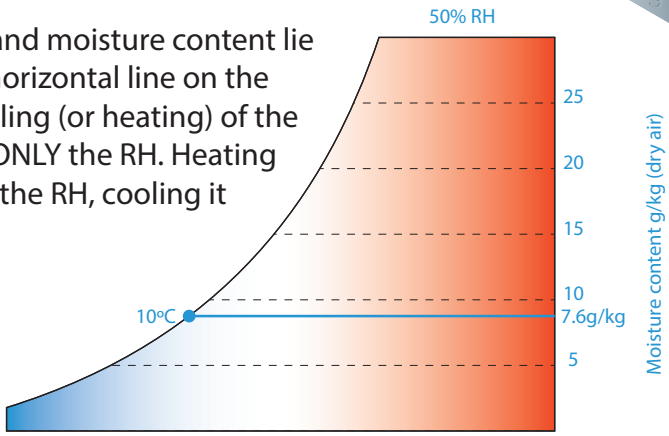


Absolute Moisture Content



This is the weight of the water present in a given volume of air and is measured in g/kg. A cubic metre of air nominally weighs 1kg. So, at 10ºC and 100%RH, there is always 7.6g/kg of moisture. At this saturated condition, the DEWPOINT is 10ºC and the MOISTURE CONTENT is 7.6g/kg.

As dewpoint and moisture content lie on the same horizontal line on the chart, any cooling (or heating) of the air will affect ONLY the RH. Heating the air lowers the RH, cooling it raises the RH.



If a dewpoint is measured, a g/kg figure can be determined directly from the chart. The line on the chart between dewpoint and g/kg is direct and does not change If, for example, the temperature rises and falls, neither the dewpoint nor the g/kg alters.

Additionally, for a given moisture content in a static volume of air at a constant temperature, there is a defined RELATIVE HUMIDITY. Assuming nothing else changes, simply heating this air will reduce the RH and cooling it will raise the RH.

To find out more about dehum, please visit www.dehum.com or call 01926 882624.