# Psychometric || Properties of Air || How to Read a Psychrometric Chart

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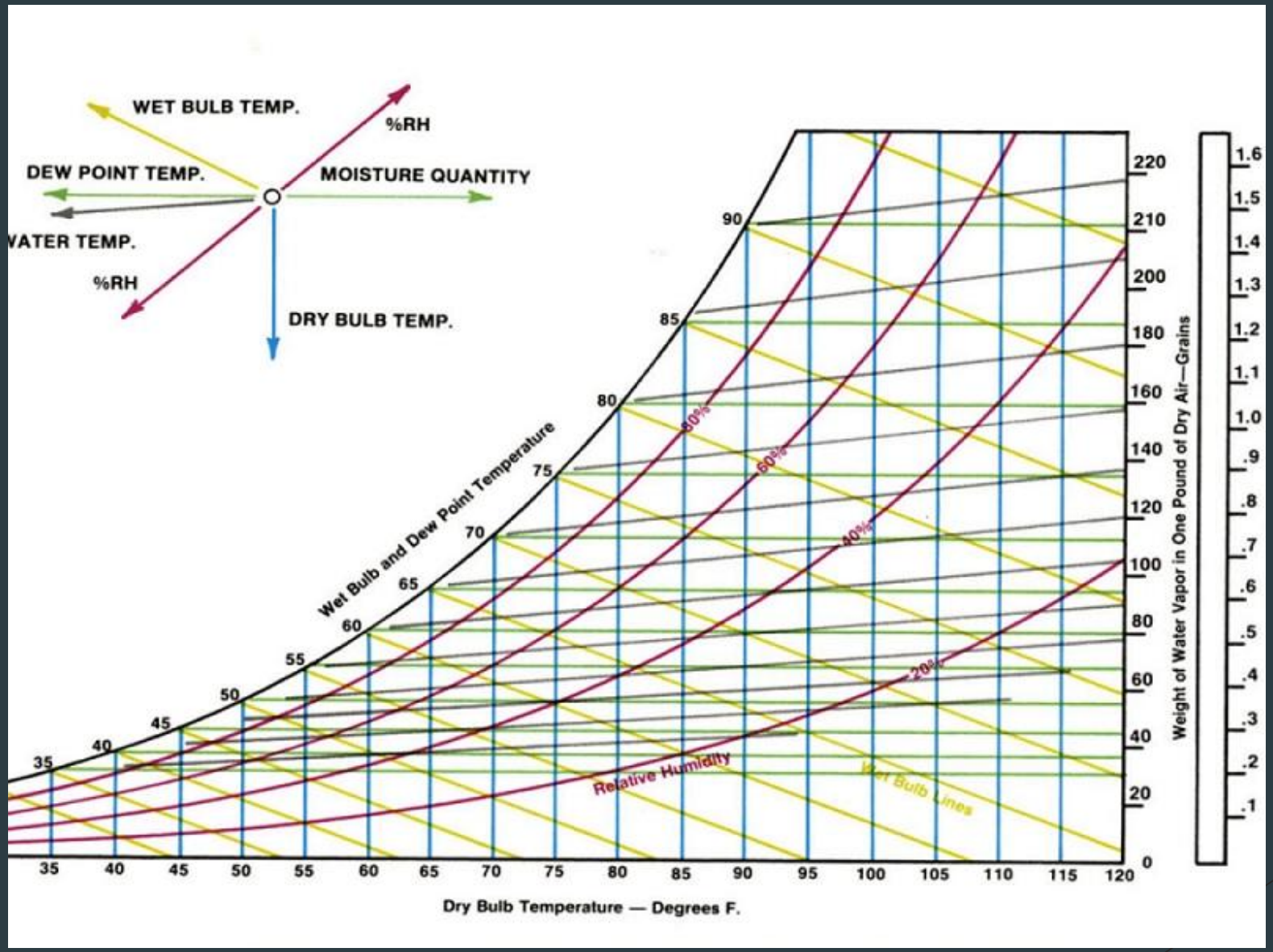
# Psychometric

- Air conditioning, by its name means treating air with a view to altering its temperature and moisture content with the use of refrigeration, it is necessary that we should know how exactly air would behave when it is subjected to cooling, heating, humidifying or dehumidifying processes.
- For this purpose, it is necessary to study the property of air at normal atmospheric pressure in so far as it concerns air conditioning. Such a  study is what is called psychometrics.

- For the study of psychometric, a chart has been devised, which is called Psychrometric Chart. We will see what are the various lines of the psychrometric chart are



# Properties of Air

- At first glance, the psychrometric chart appears to be an imposing network of lines. When properly used, however, it provides valuable information about the properties of air. During this session, the psychrometric chart and its use in solving many air conditioning problem will be explained.
- Properties of Air:-
- **1. Dry-Bulb Temperature**
- **2. Wet-Bulb Temperature**
- **3. Dew-Point Temperature**
- **4. Relative Humidity**
- **5. Humidity Ratio**

## Dry-Bulb Temperature:-

All the vertical line are of constant temperature. Condition of air represented by any point on his line will have the temperature corresponding to this vertical line. These lines are called Dry Bulb Lines. Dry bulb means is dry bulb temperature i.e., the temperature as recorded by a thermometer which is dry.

## Moisture Content:-

Each horizontal line in the chart is a line of constant moisture content. The condition of air represented by any point on this line will all have the same moisture content as applicable to this line. Through any point on the psychrometric chart always draw a horizontal line and a vertical line. Air represented by this point has, therefore, a dry bulb temperature corresponding to the vertical line and moisture content corresponding to the horizontal line. It is easy to see that air at any given temperature can have varying moisture content. Likewise, air containing any given moisture content can have varying temperature as well.

## Saturation Line:-

Curved line on the extreme left-hand side of the chart is what is called the saturation line. Condition of air represented by any point on this line is said to be saturated air, which means that the air is having the maximum possible moisture content in it. It cannot hold any further moisture.

- **Wet Bulb Lines:-**
- There are number of parallel slant lines which are called wet bulb lines. By wet bulb temperature what mean is the temperature of the air as recorded by a thermometer with a wet wick on its bulb. You will also understand for the moment that the air having a certain wet bulb temperature will have a definite heat content although its dry bulb temperature may be anything.
- **Relative Humidity Lines:-**
- When the air contains its maximum moisture content, we call it saturated air; when it contains anything less than this maximum limit then it is not saturated air because it has still capacity to have more moisture. Such air is, say 50% saturated or 60% saturated. Another term used to denote the percentage saturation is "relative humidity". Thus it is one and the same thing whether air is 50% saturated or air has got a relative humidity of 50%.
- Note:- that we have used the word "approximately" because the strict scientific definition of relative humidity is not nearly the comparison of moisture content. Relative humidity is defined as the ratio of the moisture present to maximum moisture it can hold in saturated condition.

# Identifying the Axes