

# HVAC FIELD GUIDE

## AIR/HUMIDITY

### Specific Humidity

Grains of moisture per dry air  
7000 GRAINS in 1 lb. of water

### Specific Density of Air

1 / 13.333  
.075 lbs./cu.ft.

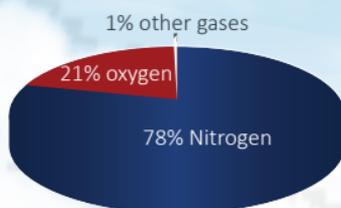
### Standard Air

24 Specific Heat  
(BTU's needed to raise 1 lb. 1 degree)

### Relative Humidity

Moisture present / Moisture air can hold

Dry Air + water vapor = Wet Air



**Specific Density**  
1 / Specific Volume

## HEAT

**Total Heat (BTU/hr)**  
500 x gpm x Δt (water)

### BTU/hr

3.413 x watts  
HP x 2546 = Kg Cal x 3.97

**GPM Cooler**  
(24 x TONS) / Δt (water)

### Therm

100,000 BTU  
MJ/105.5

## MEASUREMENT/VOLUME

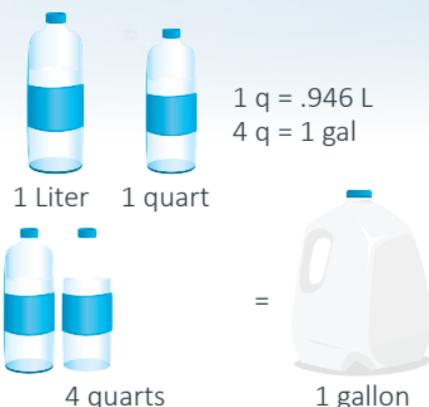
**ft.**  
3.281 X M

**ft<sup>2</sup>**  
10.76 X M<sup>2</sup>

**ft<sup>3</sup>**  
35.31 X M<sup>3</sup>

**ft/min**  
196.9 x M/S

**yd.**  
1.094 x M



## FORMULAS & CONVERSIONS

**HP (air)**  
cfm x Δp (in.H2O)/6350 x Eff.

**HP (water)**  
gpm x Δp (ft.)/3960 x Eff.

**Fluid Mixture Tm**  
(Xt1 + Yt2) / X + Y  
(this works for air or water)



**Watt/sq. ft**  
0.0926 x W/M<sup>2</sup>

**psi**  
ft. water/2.31, in. hg/2.03  
in. water/27.7, 0.145 x kPa

**Ton**  
12,000 BTU/hr  
0.2843 x KW

**TONS**  
24 x gpm x Δt (water)

**gpm**  
15.85 x L/S

**cfm**  
2.119 x L/S

### Ohm's Law

$$E = IR$$

$$I = \frac{E}{R}$$

$$R = \frac{E}{I}$$

