

Lesson 2

(the physics of moisture movement)

- Liquid (rain water, flood water, sewer back-up)
 - Wind driven
 - Gravity through porous materials
 - Gravity around nonporous materials
 - Gravity through holes, cracks
 - Capillary action – wicking upwards
- Solid (snow or ice)
- Gas – Vapor - Condensation
 - Air movement
 - Inside air going out
 - Outside air coming in



Relative Humidity

The amount of water vapor present in air expressed as a percentage of the amount needed for saturation at the same temperature

Dew Point

The temperature at a given relative humidity and temperature where water vapor in the air will condense on a surface.

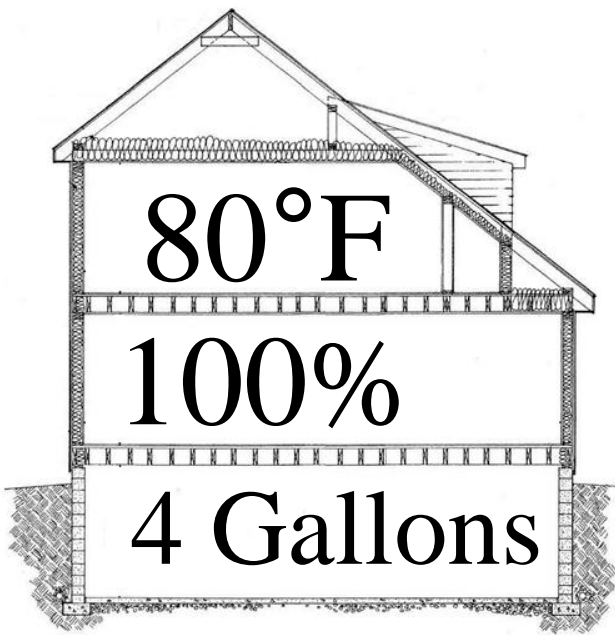
Condensation

The conversion of a vapor or gas to a liquid

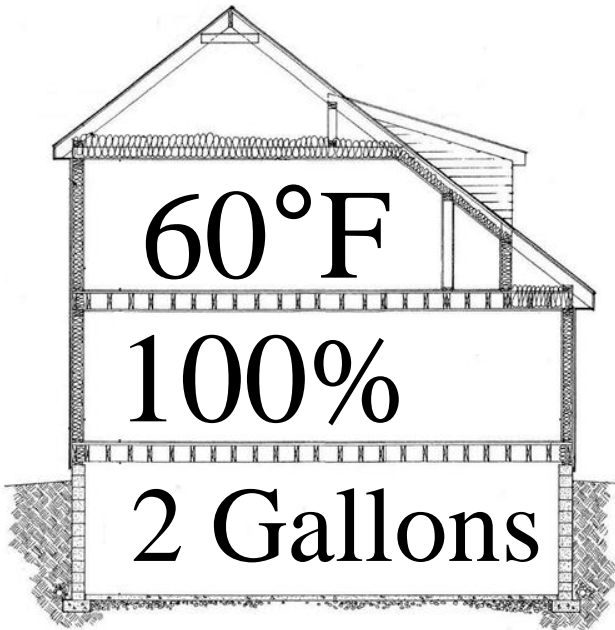
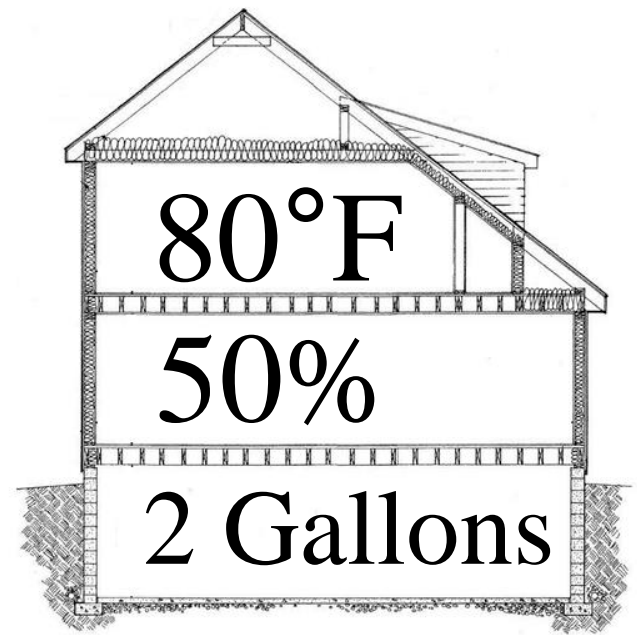


- Relative Humidity
 - The air contains water in the form of vapor.
 - Fog
 - Clouds
 - If the weather forecast calls for high humidity = we know we are going to be uncomfortable.
 - We can boil water on a stove.
- Dew Point
 - Cold water pipes in the basement that sweat.
 - Fogging of windows.
 - Dew on the ground in the morning.
 - Frost on the ground or windshield
 - Moisture on the outside of my beer bottle

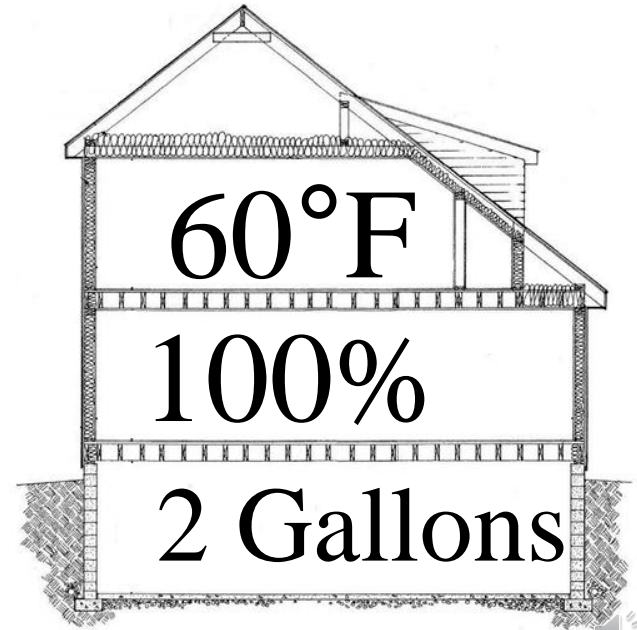




$$\frac{2 \text{ Gallons}}{4 \text{ Gallons}} =$$

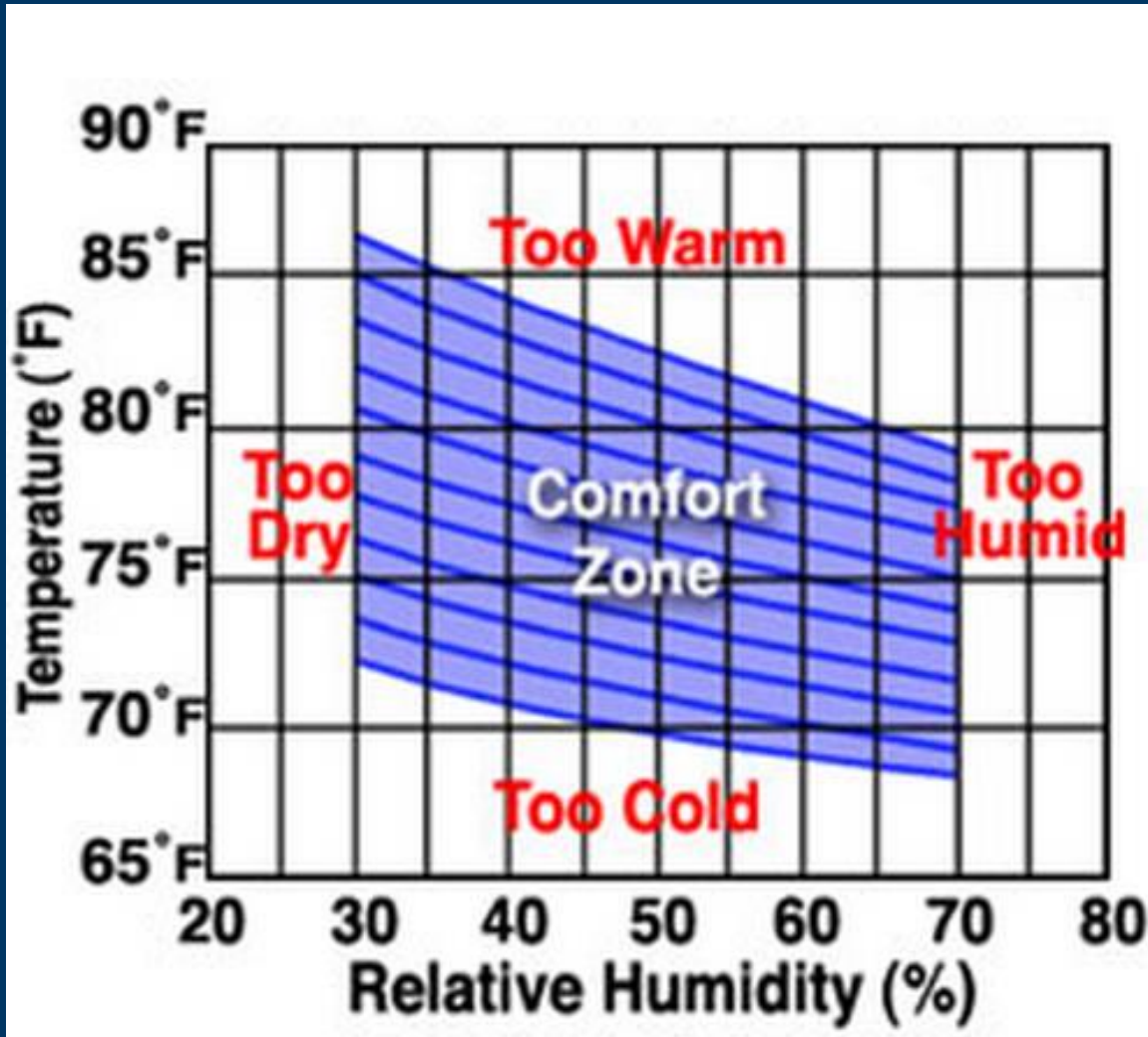


$$\frac{2 \text{ Gallons}}{2 \text{ Gallons}} =$$



Comfort Zones - Humans

Comfort Zone Chart for Humans



American
Society of
Heating,
Refrigeration,
and Air
Conditioning
Engineers
(ASHRAE)



Comfort Zones - Problems

There is a Comfort Zone for Problems

- Odors
- Frost and ice on cold surfaces
- Fogging windows
- Headaches, drowsiness
- Unexplainable illnesses
- Damp feeling
- Discoloration, staining
- Rot and decay
- Sweating pipes, dripping
- Peeling, blistering, cracking paint
- Crusty, powdery, chipping concrete and masonry
- Fungal growth (Mold)
 1. Water / Moisture
 2. Food
 3. Temperature
 4. Restrictive Air Flow

