

Relative Humidity Control

The issue with moisture trapped in an apartment unit can cause significant issues around cold objects. Condensation and/or ice on the windows is the first sign people usually see in the winter when moisture levels in a space are elevated. During the summer, these issues usually appear in the bathroom area above the shower. The sources of moisture in the building include more than just showers. All open sources of water will add to humidity, and often include indirect things like:

1. Showers/Bathing/Drying Hair
2. Occupancy by people and animals – we each give off vapor when breathing (fogging a mirror)
The more people and animals in a unit, the greater the issues created
3. Cooking – the more cooking we do, the more moisture we drive off the food due to the heat
4. Clothes drying, if you have wet towels and other clothing that was wet from outside, as they dry water is shed to the space where they are drying
5. Washing floors, painting rooms will cause higher levels of moisture.

Most of these sources are temporary events and are caused by specific situations, but once the moisture is released, it needs to escape from the living space via leakage of air from outside, or it needs to be removed with a dehumidifier. During the summer, this is accomplished with the air conditioning process. In an apartment, **the most common way to control moisture is to run the bath exhaust fan for prolonged periods of time.** This will (typically) pull dryer air from outside the building into the building and displace the moisture with dryer air.. This is the preferred way to handle moisture in the winter.

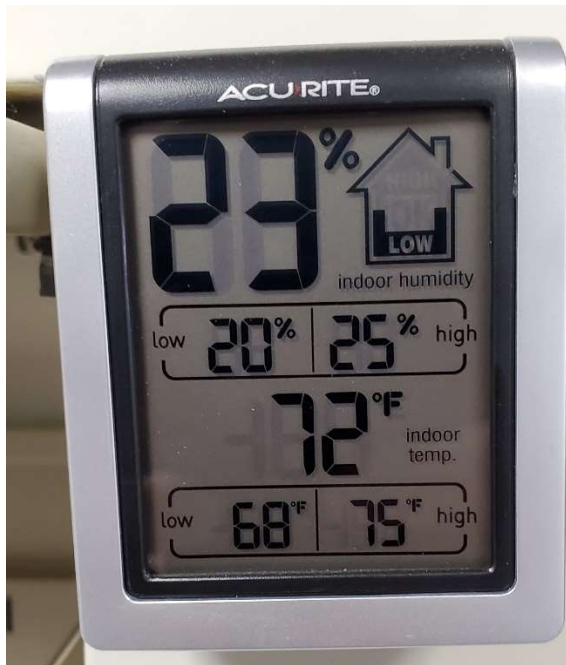
The video below will help illustrate the impact of temperature on the carrying capacity of water within an environment. I encourage you to watch the video once or twice to gain an understanding of the concept of relative humidity and dewpoint.

Video Link: https://www.youtube.com/watch?v=G7S_vkCiZ-k

During the summer months, dehumidification is the process that must be used to dry the air. Typically, we do not see condensation during the summer since the windows are not “cold” and as a result we do not see condensation of bulk water. The air is capable of holding significantly more water when warmer. It may feel muggy, but it will not typically condensate on objects. If we see condensation during the summer, it is typically in the early morning when we see the dew that settles on cars, grass and building exteriors as the dewpoint is crossed on those surfaces overnight. This phenomena is commonly noticed when you have a cold can of soda or a glass of ice water and the water beads up on the surface of the glass. If left long enough, it creates a puddle of water on the counter or table. This doesn't happen with a warm glass of coffee. During the winter months, the windows and exterior surfaces behave more like the cold glass or can of soda.

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Below is a sample device that can track the relative humidity in a space. This particular device (available at stores like Walmart) will also tell you the indoor temperature. As the video mentioned, controlling these conditions relative to the outdoor temperature is what will control condensation levels on the glass and other cold surfaces connected to the outdoor, exterior doors and door knobs.



| Outdoor Temperature Range | Indoor Humidity Should Not Exceed |
|---------------------------|-----------------------------------|
| 20-40°F | 40% |
| 10-20°F | 35% |
| 0-10°F | 30% |
| -10-0°F | 25% |
| -20--10°F | 20% |
| Below -20°F | 15% |

Hopefully these items will help you with further control of the moisture within your living space. Having control over the moisture will help prevent unwanted fungus and mold growth in the areas where condensation becomes present. Frequently and annoyingly this is in the ceiling areas of bathrooms by the water source and in the window cavity where the least insulation values are present due to the glass surface. Windows are especially problematic since the air is often trapped due to the blinds that are installed blocking visibility (as well as air movement).