

## What causes elevated moisture in the home?

Moisture in the home is created by showers/bathing, cooking, laundry, or lots of people. With closed curtains where air movement is restricted, the air closest to the window remains cool and can also condensate. Elevated moisture levels can also lead to mold and rot in unseen areas of the home. Reducing the humidity % inside the home when its cold outside usually takes care of the problem. A higher humidity may not cause an issue when outside air temperatures are in the 30's 40's and above, but when the outside temperatures drop below freezing to near zero while maintaining the same inside level of humidity, Condensation will be an issue. Differing air temperatures inside and outside, combined with different Humidity levels inside defines when condensation happens. If moisture is collecting on the inside glass, hinges, etc., identify and reduce the cause of the excess moisture in the air.



Fogged mirrors in a bathroom after taking a shower is an example of elevated humidity. The air is in an enclosed space and is saturated with moisture from the shower and then lays on adjacent surfaces that are cooler. Once the door is opened, the excess moisture will mix with dryer air outside and the condensation will go away.

This Humidity Selector Chart shows required humidity levels to eliminate condensation. Please note that these are estimates and that factors such as airflow, insulation value of the structure, etc. can change the point at which condensation begins to form.

		Inside Temperature			
		60	65	70	75
Outside Temperature	0	20%	17%	14%	12%
	5	25%	21%	18%	15%
	10	32%	27%	22%	19%
	15	39%	33%	28%	23%
	20	48%	40%	34%	28%
	25	58%	48%	41%	34%
	30	70%	58%	49%	41%
	35	84%	70%	59%	50%

# Condensation & Humidity

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## What is condensation?

Condensation generally occurs inside the home when it's extremely cold outside and the humidity level inside the home is at a higher level than recommended. When it gets extremely cold outside the Humidity level inside needs to be reduced accordingly to avoid Condensation.



Condensation will typically occur on colder surfaces inside the home, such as astragals, hinges, hardware, glass, etc. These surfaces are colder because they are closer to the outside than a wall or table, and excess moisture condensates on these colder surfaces. The moisture in the air is defined as Humidity.

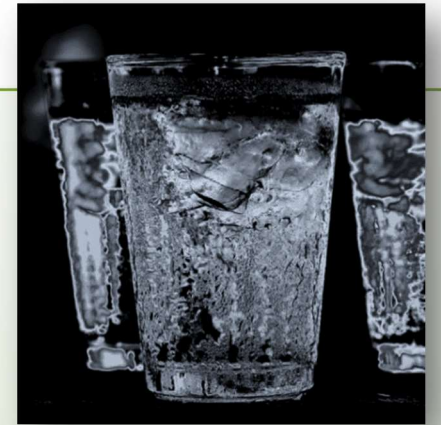
## Where is the water coming from?

An important fact to remember is that the surface where condensation has formed is not obtaining water from outside the home nor is it making its own moisture, so it comes from the environment inside the home. The higher the humidity percentage inside the home, the sooner a cooler surface will begin to condensate.

Air temperature combined with Humidity level defines a temperature at which condensation will form. This is called the **Dew Point Temperature**. If Condensation is forming, then the Humidity % must be reduced so the resulting Dew Point temperature is below the temperature of the cooler surfaces.

## Understanding Dew Point Temperature Impact

For instance, the air inside is **70 degrees** with **45% humidity**, then any surfaces cooler than **48 degrees** (calculated) will condensate. If it's **15 degrees outside** then inside surfaces such as hinges, hardware etc. would be approximately 30 degrees warmer, or around **45 degrees**. In this example the 45-degree part temperature is below the **48-degree** temperature where condensation will happen, and condensation will form. **If the Humidity % is lowered to 30%, then the part temperature would need to be around 37 degree (calculated dew point temperature) to condensate.**



An easy example is a glass of ice water. Why is there moisture on the outside of the cold glass, yet the glass is not leaking? This is because the air next to the cold glass has cooled to the Dew Point temperature and the air cannot hold any more moisture and will cause Condensation to form on the outside surface of the glass.

