

What is the proper level of humidity for a house in the winter?

Having problems with condensation and mold on thermal windows! Too much humidity on that thermal windows always get condensation. Dehumidifier can bring the humidity level down to 55%, but the situation continues.

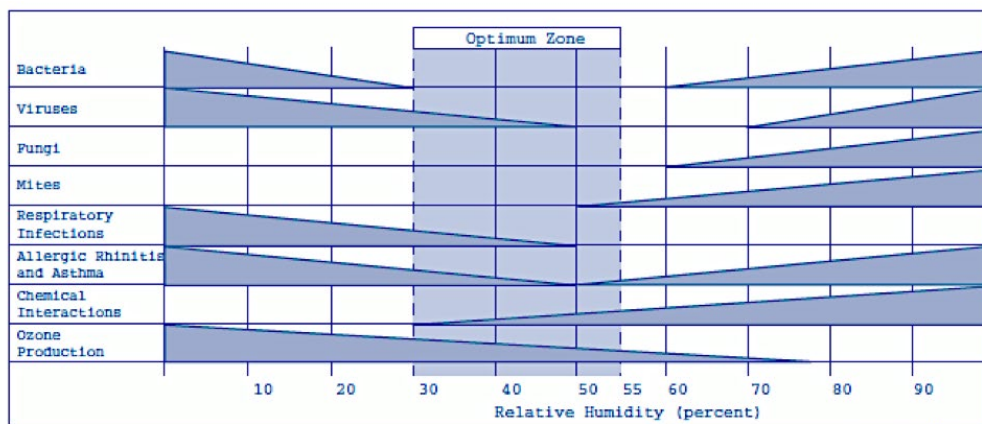
Understand Relative Humidity (%RH)

First you may want to look at a primer on [What is Relative Humidity?](#)

Outside Air Temp (°C)	Maximum Indoor Relative Humidity at 20 °C (68 °F)
-30 °C or below	15%
-30 °C to -24 °C	20%
-24 °C to -18 °C	25%
-18 °C to -12 °C	35%
-12 °C to 0 °C	40%

If you look at this chart produced by National Resources Canada, a simple double pane thermal pane window will form condensation on it when indoor humidity exceeds the listed minimum's for each outdoor temperature, condensation being a result of high humidity and low temperatures. If you can't raise the temperature, then you have to reduce the humidity. Even at zero, you need to drop your humidity to 40% to prevent that condensation. Dehumidifiers cannot drop that humidity below about 50 - 55%, as you found out, and you have to pay the electricity bill to operate these machines as well.

Relative Humidity and Health



Relative humidity and health effects
Decrease in bar width indicates decrease in effect.

Source: Health Canada

This chart shows the relationship between relative humidity and various health problems -- especially as it relates to air borne pathogens. The sweet spot for human health is 50% RH and the target for household humidity levels is between 40 & 50%. But we can't always do that without creating condensation, and potential mold, on cold surfaces like windows. The more energy efficient the house, the warmer are the

indoor surfaces when it is cold outdoors and hence the higher, we can raise the general relative humidity without causing too high relative humidity next to cold surfaces.

Winter ventilation reduces RH

Ventilation is only effective dehumidifier in the winter when we need to have significantly less humidity in the houses. With old drafty houses, the cold air drafts did the job. With modern well sealed, draft free and energy efficient houses, we have no choice but to install mechanical ventilation. If you go a step beyond the National Building Code requirements you can get ventilation systems that include heat recuperation devices to make that dehumidifying, healthy fresh air less expensive. For many more details on these devices check out the keyword listing for "HRV" as Heat Recovery Ventilator.

Turn off the furnace humidifier

In the old days we always had humidifiers added to forced air furnaces, to add humidity to a dry house. The primary reason for a house being too dry is there are too many cold air leaks running through the house drying it out. A dry house is almost always a drafty house. As we improve the energy efficiency of houses with good weather-stripping and caulking and other air sealing measures and in many cases eliminate chimneys by the change over to high efficiency furnaces, the humidity level in the house will rise and you may find that you no longer need a humidifier or that a humidifier could even be part of a condensation problem.

Air conditioning and furnace humidifiers - close the damper

One special note is that if you have air conditioning on your forced air heating system, you must absolutely close off the humidifier duct during the summer months or it will provide an air path that will re-circulate cold air back into the air conditioner in a circular fashion that will eventually freeze up the unit. Usually, you will find a little round damper that pivots down to close one end of the humidifier duct.