



## Why humidify?

For people...

Humidification and Evaporative Cooling

  
humidity.com

# Humidified air improves air quality for health and comfort

People spend over 60% of their lives indoors, making indoor air quality, including correct temperature and humidity levels, critical to personal health and comfort.

## Health

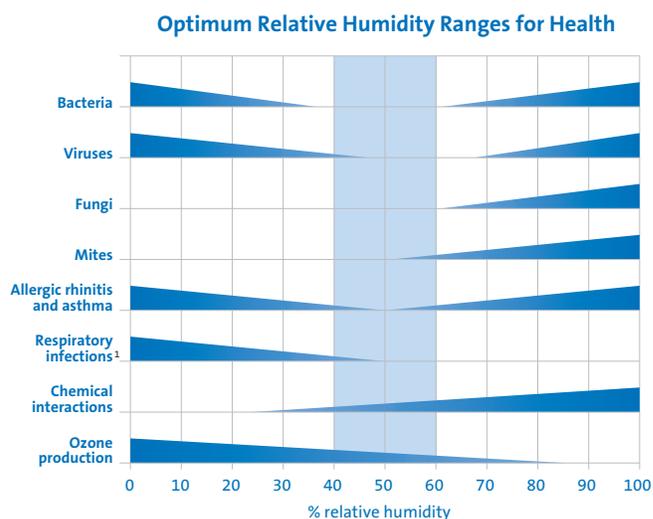
Correct humidity levels are essential to health. Deviations from the mid-range of relative humidity (RH) of 40-60% can reduce air quality by causing an increased growth of bacteria, viruses, fungi and mites. Bacteria and viruses, in particular, thrive in an environment where the air is too dry. Studies have shown that when the indoor RH drops below 40 percent, absenteeism due to illness increases. Conversely, if the air is too moist (above 60%), allergies and asthma increase due to the growth of fungi and mites.

## Comfort

Correctly humidified rooms feel warmer and more comfortable, especially in colder climates where heating systems are required.

## The Sterling Chart – optimum RH for health

The Sterling Chart below illustrates how RH affects health and well being. Colds, flu, sore throat, dry eyes, itchy and cracked skin are all symptoms that are usually prevalent in the cold dry months of the winter when the indoor RH is at its lowest. The increase in bacteria, viruses and ozone production (caused by static electricity) in low RH levels all have an adverse affect on health.



<sup>1</sup>Insufficient data above 50% RH.

E.M. Sterling, Criteria for Human Exposure to Humidity in Occupied Buildings, 1985 ASHRAE.



Indoor air humidification is essential to maintaining an optimal RH in cold climates

**How does the outdoor temperature affect the indoor humidity level?**

Admitting cold outdoor air into a space will lower the indoor RH. When the lower temperature outdoor air is brought indoors and heated, it loses moisture and reduces the overall RH.

For example: if the outdoor temperature is 0°F and 50% RH and the air comes indoors and is heated to 70°F, the residual moisture after heating the outdoor air will only be about 3% RH. Even on a nice, sunny 35°F and 50% RH day, the residual indoor RH will only be about 14%.

		Indoor RH% after heating ventilation air to 70°F										
		2	4	5	6	7	9	12	17	19	23	29
Outdoor RH%	100	2	4	5	6	7	9	12	17	19	23	29
	60	1	2	3	3	4	5	7	9	11	14	17
	50	1	1	3	3	4	4	6	8	9	12	14
	45	1	1	2	3	3	4	6	7	8	11	13
	40	1	1	2	3	3	4	5	7	7	10	12
	30	0	1	2	1	2	3	4	5	5	7	9
	20	0	1	1	1	2	2	3	3	3	5	5
		-20	-10	-5	0	5	10	15	20	25	30	35
		Outdoor Temperature (°F)										

# Save money with humidified air

People inside of any building will benefit from proper humidification, and the cost to humidify a building is easily offset by having occupants that are healthy, comfortable and productive.

## Cost per sick day

Assume that the average salary plus benefits ranges between \$45k to \$70k per year. The average lost salary per sick day is between \$172 and \$267, plus the loss in productivity.

## Cost for humidification

### Humidification load per person:

15 CFM/person ventilation  
0°F - 50% RH conditioned to 72°F - 35% RH  
0.45 lbs/hr x 2000 hrs = **900 lbs/year**

### Humidification cost per person:

Average capacity: 3 lbs/kWh  
Average cost of electrical: \$0.10 / kWh  
 $900 \div 3 \text{ lbs/kw} \times \$0.10 = \mathbf{\$30.00/person \text{ per year } (\$0.08 \text{ per day})}$

*Based on 120 – 150 sq. ft. of humidification per person*



As a leading manufacturer of commercial/industrial humidification systems for more than 40 years, Nortec has the technology and application expertise to meet the needs of any application.

**Contact us today and ensure you have the best humidification solution for your people.**

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