What Is Dew Point?
Why is Measuring It Important?

by Todd DeMonte

General Manager, Overture Indoor Air Quality

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Definition

> Dew point is a measurement of the absolute amount of water molecules in a specific volume of air and is described as the corresponding surface temperature in which those water molecules will start to condense from a gas to a liquid (forming "dew") assuming constant pressure.

Why Is Measuring Dew Point Important?

Reason 1) Mold Prevention and Structural Integrity

Interior dew points are a critical factor in building health. When the dew point of indoor air approaches the surface temperature of walls, windows, or HVAC components, condensation can form. Over time, this moisture buildup can lead to mold growth as well as the structural decay of wood framing and building finishes.

According to the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), maintaining indoor dew points at 60°F and below is crucial for preventing mold growth. Mold not only damages buildings but also poses significant health risks to occupants, exposing building owners to lawsuits. Proactive dew point management can help prevent these costly and hazardous outcomes.

Here is ASHRAE's 2022 summary of their 2019 guidance on managing dew points in buildings. *(Scan QR code for source.)*

> *In 2019, the ASHRAE Board of Directors approved a major change to ASHRAE Standard 62.1 to reduce the risks of mold and moisture accumulation in mechanically cooled buildings.*
>
> *ASHRAE Standard 62.1-2022, Section 5.12, now instructs designers of ventilation systems to provide equipment and controls that limit the indoor air dew point to a maximum of 60°F (15°C) during both occupied- and unoccupied-mode operation.*

In 2024, ASHRAE further "clarified" their guidance on managing dew points in buildings. *(Scan QR code for source.)*

> *An exception has been added to exclude buildings in zones where the local climate does not regularly exceed dew point temperatures above 68°F (20°C) and thus are unlikely to cause mold growth within building materials as a result of condensation due to cycling or intermittent cooling system operation.*
>
> *The 68°F (20°C) criteria excludes much of ASHRAE Climate Zone B (dry) and all of Climate Zone C (marine) from the humidity limit requirement…Because mold growth occurs when the average surface relative humidity is high for a period of time, the humidity limit exception that includes time components has been revised.*
>
> *The 60-hour time component allows the cooling/dehumidification system to be disabled for a weekend. The 30-day average time component helps ensure the zones will spend more time at or below the humidity limit than above it.*

From 2019 to 2024, ASHRAE added exceptions to their guidance to exclude the contingencies of short-term high climactic dew points in usually dry areas and a 60-hour exception to cover buildings unoccupied over weekends. The 60-hour exception seems (to me) like it was a concession given to complaining facilities managers and had little to do with preventing mold growth.

If you live in a climate where green grass grows outdoors, the ASHRAE guidance is simple, elegant, and mold-preventing. Here is their language:

> ***5.12.1 Humidity Limit – The indoor humidity shall not exceed a dew point temperature of 60°F (15°C) during both occupied and unoccupied hours in any zone.***

(Scan QR code for source.)

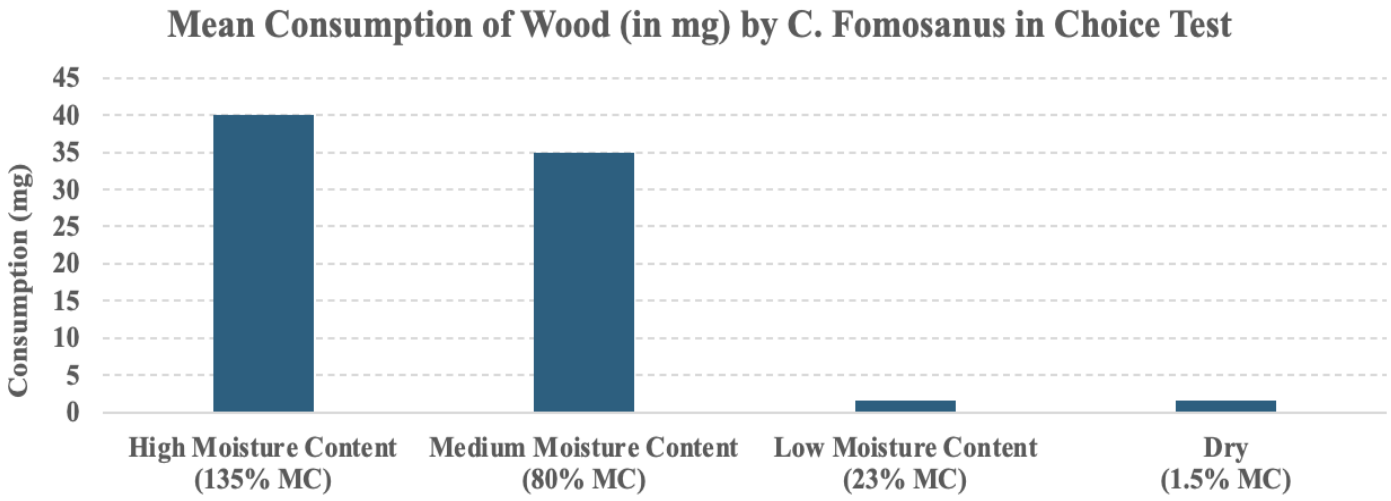
Reason 2) Pest Control

High moisture levels indoors can create an ideal environment for a range of pests. Formosan termites, for example, thrive by ingesting damp wood, and their presence can cause significant structural damage over time. Dust mites, roaches, and other common household pests flourish in high humidity conditions where dew points are elevated, leading to allergic reactions and respiratory problems in sensitive individuals. Additionally, high indoor moisture levels can encourage the growth of bacteria and other microorganisms, which can compromise indoor air quality and pose health risks. Regular dew point monitoring helps maintain a dry indoor environment, reducing the likelihood of pest infestations and their associated problems.

In addition to causing health problems, moisture can damage building materials and components. The EPA states the following. *(Scan QR code for source.)*

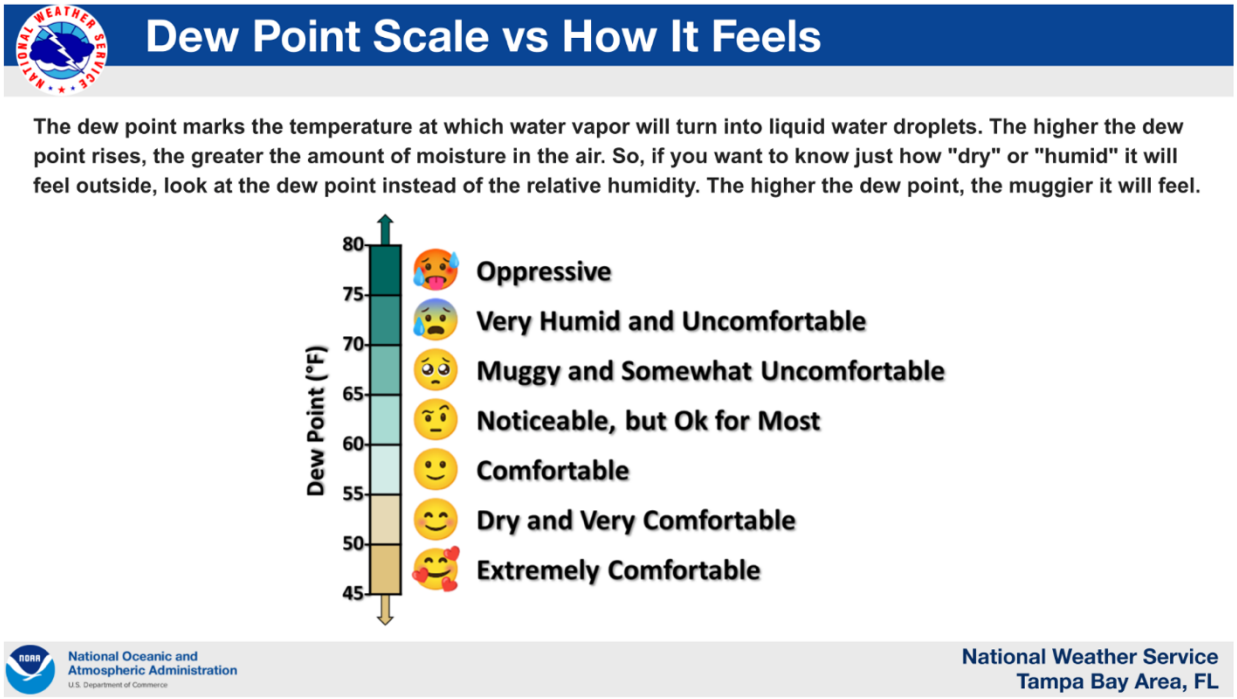
> ***Prolonged damp conditions can lead to the colonization of building materials and HVAC systems by molds, bacteria, wood-decaying molds and insect pests (e.g., termites and carpenter ants).***

In lab tests, Formosan termites were shown to not feed on wood with a moisture content of less than 24%. In conditioned spaces at 66°F equilibrium, dew points kept below 60°F would keep wood at a safe equilibrium moisture content level of below 17%. *(Scan QR code for source.)*



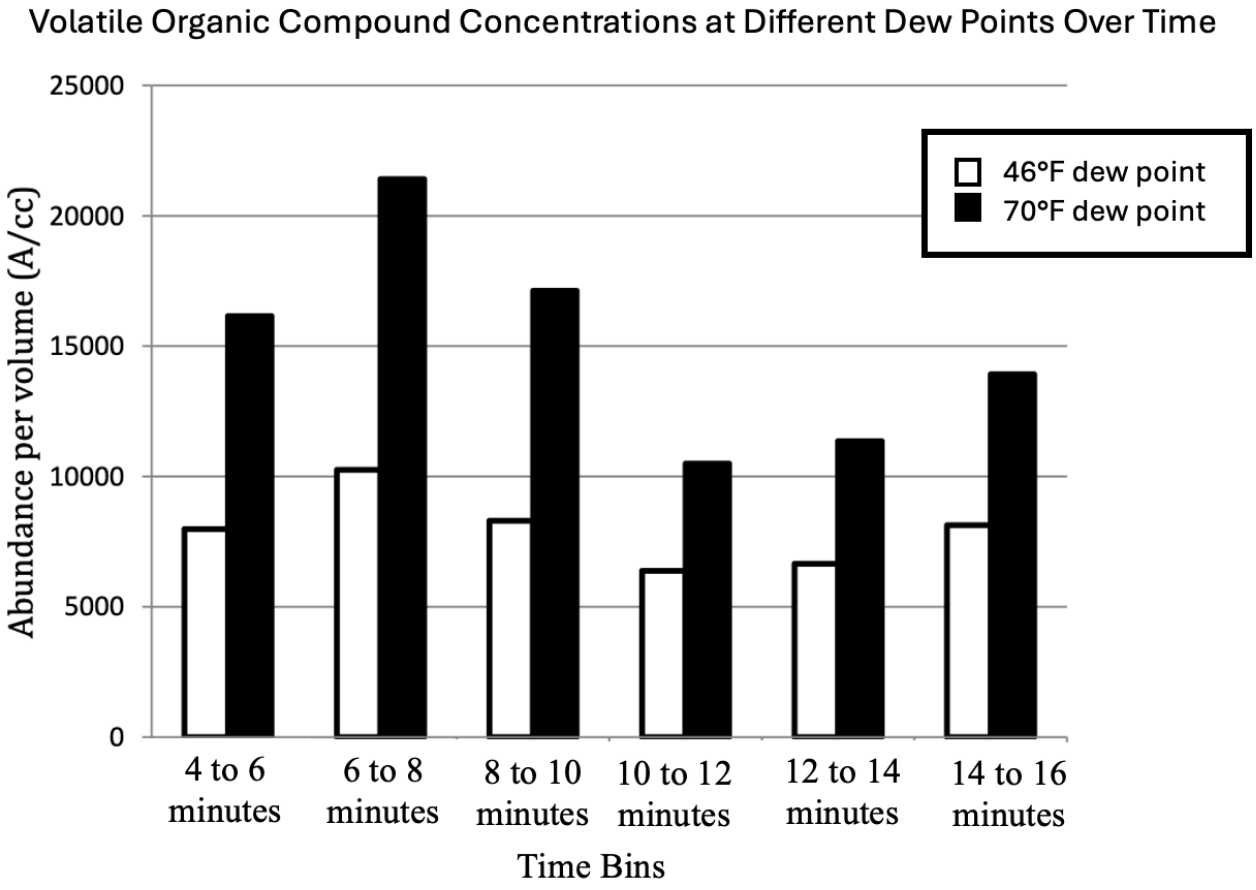
Reason 3) Comfort, Health, and Indoor Air Quality

What people perceive as “humidity” is not the “relative humidity” percentage shown on forecasts or weather stations but is actually the absolute moisture in the air (known variably as the dew point, partial pressure, grains, humidity ratio, or absolute humidity). For example, the air is actually quite dry outside when snowing at 30°F even though the relative humidity may be 95%. High dew points (above 70°F) feel oppressive and uncomfortable. See the NOAA comfort chart below. *(Scan QR code for source.)*



The absolute humidity level directly impacts human comfort, with high dew points (above 60°F) making the air feel sticky and uncomfortable, reducing the body’s ability to cool itself through the evaporation of perspiration. Dew points between 55°F and 30°F feel comfortable. Low indoor dew points (below 20°F) can dry out mucous membranes, increasing the risk of respiratory irritation, dehydration, and increased susceptibility to colds and infections.

High dew points can increase the concentration of airborne pollutants like volatile organic compounds (VOCs), which can be released via off-gassing from building materials, furniture, and household products. VOCs may cause odors and headaches, and some are carcinogenic. According to the Environmental Protection Agency (EPA), controlling indoor humidity and dew point is a key strategy for reducing VOC levels and improving indoor air quality, ultimately supporting better health and well-being for occupants. In other words, lowering the interior dew point reduces the rate of VOC off-gassing from building materials. *(Scan QR code for source.)*



Summary

In sum, measuring indoor dew points is essential for maintaining a healthy, comfortable, and structurally sound indoor environment. It provides a direct, actionable metric for moisture control, protecting both the building and its occupants from the numerous risks associated with excess humidity.