

## HUMIDITY, DEW POINT AND TWEHA® APPLICATION CONDITIONS

High temperature and relative humidity can influence adhesive application, but two different effects must be considered separately:

1. **Condensation risk at the bonding surface**
2. **The influence of humidity and temperature on skin formation and curing**

Although both are related to moisture, they affect the bonding process in different ways.

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### Dew point: a surface condition

The dew point itself does **not** determine the curing speed of the adhesive. It is important because it determines whether condensation may form on the bonding surface.

When the substrate temperature approaches the dew point, moisture from the surrounding air can condense on the surface. This may initially form an extremely thin and almost invisible moisture film.

Such a film can act as a **separation layer between adhesive and substrate**, interfering with proper wetting and adhesion.

For TWEHA® applications, the basic requirement is therefore: **Substrate temperature  $\geq$  dew point + 3°C (5°F)** If this safety margin is not available, bonding should not take place. For example, at an ambient temperature of 25°C (77°F) and 95% relative humidity, the dew point is approximately 24°C (74°F). A substrate temperature of 25°C (77°F) therefore provides insufficient safety margin.

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### Dew point control in practice

Controlling dew point conditions on site is relatively straightforward.

Reliable instruments are widely available for measuring:

- ambient temperature,
- relative humidity,
- and substrate surface temperature.

Combined with the **TWEHA® Dew Point Calculator**, available through the TWEHA® website and app, installers can quickly determine whether the bonding conditions are acceptable. The principle is simple:



**Measure → Calculate dew points → Measure surface temperature → Confirm minimum 3°C (5°F) margin**

Critical dew point conditions often occur **late at night or early in the morning**, when façade materials and substructures may have cooled overnight. As surface temperatures rise during the day, the risk of condensation will often decrease.

Actual site conditions should, however, always be measured rather than assumed.

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### Humidity and adhesive curing

TWEHA® adhesives are **moisture-curing systems**. Relative humidity therefore influences the curing reaction.

Higher humidity and higher temperatures will generally result in faster curing and may also shorten the skin formation time.

A stated skin formation time of, for example, approximately **13 minutes at 23°C (73°F) and 50% RH** should therefore be regarded as a laboratory reference value.

It is important, however, not to assume that processing time decreases proportionally as relative humidity increases. The relationship between temperature, humidity and skin formation is not linear.

Practical working time can also be influenced by factors such as substrate temperature, adhesive temperature, air movement and exposure time before assembly.

Where climatic conditions differ significantly from standard laboratory conditions, representative testing can therefore be useful.

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### Two parameters, two checks

For reliable application, two separate checks are required:

- **Condensation risk**  
Ensure that the substrate remains at least 3°C (5°F) above the dew point.
- **Processing time**  
Ensure that the adhesive remains within its practical skin formation and installation window under the actual temperature and humidity conditions.

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### Conclusion

High relative humidity is not in itself a problem for TWEHA® adhesive systems.

The critical distinction is between **moisture in the air** and **moisture condensed on the bonding surface**.

Dew point control protects the quality of the adhesive interface, while temperature and relative humidity determine the curing behavior and available processing time.

By monitoring both independently, reliable adhesive application can be maintained even under demanding warm and humid conditions.