

CURING BY REACTION WITH AIR HUMIDITY

Modern façade bonding systems must perform reliably under a wide range of climate conditions.

One of the most important characteristics of advanced TWEHA® adhesive systems is that they cure through reaction with: **moisture in the air**.

This process is known as: **humidity curing**.

Understanding how relative humidity influences adhesive curing helps installers and façade professionals to work more efficiently and confidently under changing environmental conditions.

How Humidity Curing Works

TWEHA® adhesive systems react with:

- water vapor,
- naturally present in the surrounding air.

As soon as the adhesive is exposed to the atmosphere, a chemical curing process begins automatically.

This technology offers major advantages:

- simple one-component application,
- no mixing required,
- reliable curing,
- and durable long-term elasticity.

What Is Relative Humidity?

Relative humidity is the percentage of water vapor present in the air compared to the maximum amount the air can hold at a specific temperature.

For example:

- At 50% relative humidity, the air contains half of its maximum moisture capacity.

Warm air can hold significantly more moisture than cold air.

When the relative humidity reaches: 100% the air becomes saturated and excess moisture turns into:

- condensation,
- fog,
- dew,
- or frost.

Condensation Around Aluminum Structures

In façade applications, condensation can sometimes occur around aluminum support structures, especially during:

- winter,
- spring,
- or cold weather conditions.

Because aluminum cools rapidly, the air directly surrounding the aluminum profile can reach: 100% relative humidity.

At that point, excess water vapor condenses into tiny droplets on the aluminum surface.

This is a natural phenomenon caused by temperature differences between the surrounding air and the metal surface.

Humidity Levels Around the World

Relative humidity varies naturally depending on:

- climate,
- weather conditions,
- temperature,
- and geographic location.

For example:

- desert regions may experience humidity levels below 20%,
- while tropical regions often range between 60% and 90% relative humidity.

In most outdoor environments, average daily humidity typically fluctuates between 40% and 60%. These are perfectly normal conditions for humidity-curing adhesive systems.

Does Low Humidity Affect Curing?

Yes — but less than many people expect.

When relative humidity decreases:

- The curing process slows down somewhat,
- but curing continues normally.

Extensive testing has shown that, in practice, moderate variations in relative humidity have only limited influence on the overall curing performance of TWEHA® adhesive systems.

This means the systems remain reliable across a broad range of real-world climate conditions.

Nature vs Artificial Conditions

It is important to understand that extremely dry environments are rare in natural outdoor conditions.

Sometimes comparisons are made with:

- refrigerators,
- climate chambers,
- or artificially controlled dry environments.

However, these situations are not representative of real exterior façade conditions.

Outdoor environments almost always contain sufficient atmospheric moisture to support proper curing of humidity-reactive adhesive systems.

Reliable Curing in Real-World Conditions

TWEHA® adhesive technologies are specifically engineered to perform under realistic environmental conditions encountered in:

- façade construction,
- ventilated cladding systems,
- prefab manufacturing,
- and architectural bonding applications.

The systems provide:

- reliable curing behavior,
- durable elasticity,
- strong adhesion,
- and long-term performance

across a wide range of climates and temperatures.

TWEHA®: Engineered for Practical Performance

At TWEHA®, adhesive technology is developed not only in laboratories — but also for real-world construction environments.

Through:

- extensive testing,
- decades of practical experience,
- and continuous product development,

TWEHA® delivers bonding systems designed for:

- reliability,
- ease of application,
- environmental durability,
- and professional façade performance worldwide.

Because successful bonding depends not only on the adhesive itself — but also on understanding how it behaves under real environmental conditions.

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