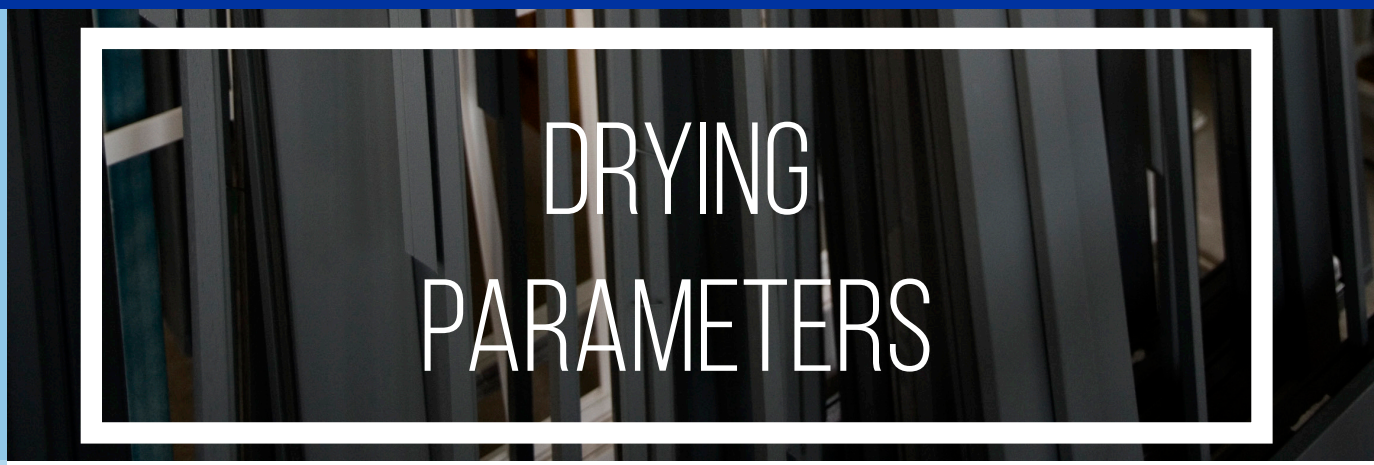
Drying & Storage Guide

Version 2: June 2024



DRYING PARAMETERS

ACHIEVING OPTIMUM PERFORMANCE

Teknos waterbased joinery coatings are engineered to provide simple systems to deliver the fast turnaround modern factory processes require.

To achieve optimum system performance, its important good drying conditions are achieved, particularly in cold and wet wintery weather or in humid regions.

If a waterbased coating system is not fully cured before supply/installation, it may exhibit milking (translucent) or microblistering (opaque) in the first few weeks of service. Particularly when wet/damp climatic conditions provail.

Generally this problem will disappear as the weather improves and the through drying process is completed, and no further action is required.

However, additional care is required when using stain blocking primers as further tannin leaching can occur before these products are fully cured through.

Before use, stored paint should be kept in a warm, dry and draft free area with a minimum ambient temperature of 10°C. Never store paint on a cold factory floor or above 35°C. NB: Freezing paint must be avoided to prevent irreversible damage to the coating.

Paint storage temperature prior to application is also important in achieving adequate curing. If the paint storage area is cooler than the application booth we suggest moving the paint to be used into the warmer area approximately 2 days prior to use. Example: AQUATOP TDS details an optimum application temperature of 18°C- 22°C.

The following information gives some typical drying guidelines for Teknos primers and topcoats per region, and some guidance on optimising drying conditions.

With waterbased coatings, drying time is determined by a combination of; air temperature, air flow, humidity and air changes. Temperature and air flow over the painted surface are most significant and usually the easiest to control in a typical joinery workshop.

The ideal working climate is an ambient temperature of 20°C ± 2°C but the minimum air temperature is 15°C throughout the "working" and storage period. Ideally the application and flash off area should be humidity controlled.

The design of the drying zone and any tracking, stillages or racking should allow free air circulation around each individual component. It is also important that sufficient air movement is generated - overhead rotary fans are an inexpensive and effective way of achieving this.

With good air circulation, elevated temperatures will shorten drying times, but it is important to allow a 'flash off' period, before the joinery enters the elevated heating zone. Ideal flash off time is 15 minutes prior to the drying process. This will prevent surface skinning of the coating which will inhibit through drying as well as allow air incorporated during application to be released.

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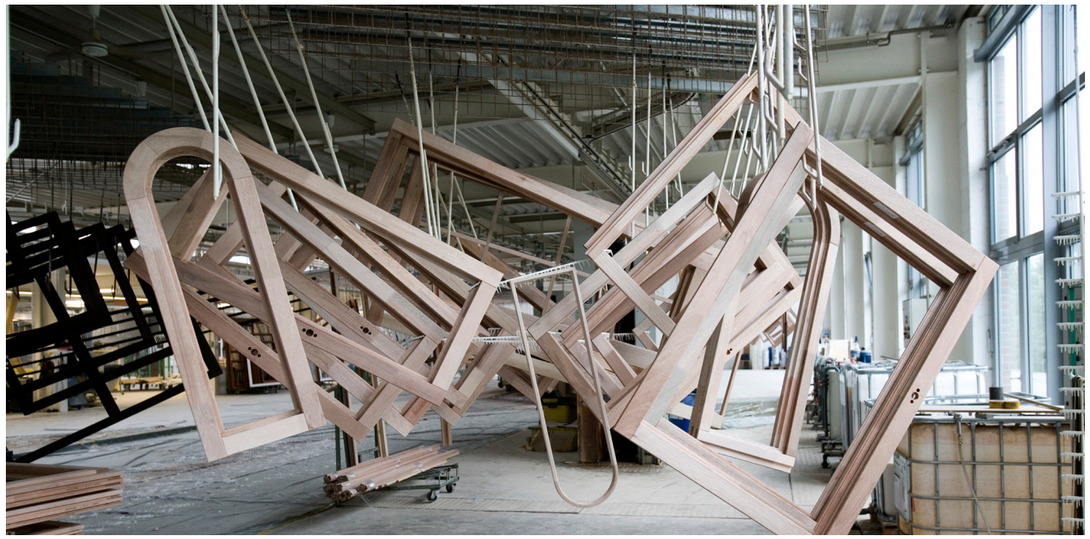
Leave heat and air circulation fans on after the application process, in-line with drying parameter recommendations. In cool, still air, very little druing / curing will take place.

Ideally the drying area should be humidity logged. When kept within a band of 45% - 70% relative humidity, the coatings will dry satisfactorily. If the relative humidity is above 85% the airflow has less capacity to absorb moisture, and drying will be retarded. Conversely, if the air is too dry (30% relative humidity) the coated surface can dry too quickly and may skin over, inhibiting through drying.



Increasing the airflow will often have a higher impact on the drying than increasing the temperature.

For drying tunnels, blocked filters may inhibit air flow, so, regular maintenance is essential.

Having focus on air speed over temperature will support keeping the energy cost on a lower level than trying to increase drying efficacy by increasing the temperature.

Drying at temperatures over 40°C can be used for timber where a waterbased product is applied.

Care needs to be taken when drying some timber species at elevated temperatures as this can mobilise resins within the timber.

Flash off zones should have low air movement with relative humidity controlled at around 80%.

When painting, surface temperatures must be at least 3°C above the dew point to prevent moisture condensation during the drying process.

Drying ovens should be zoned to ensure equal drying of the coating system.

Before application, ensure the paint is fully stirred and the liquid temperature is above 15°C.

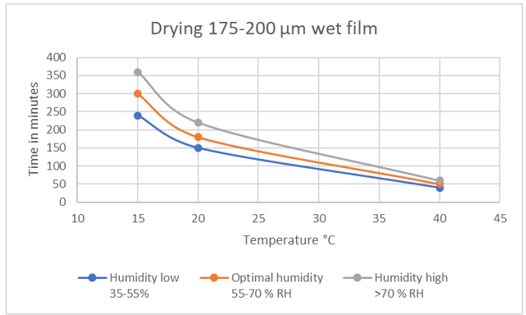
Above: Example of a drying tunnel

For advice on advanced, modern drying systems which can help reduce production cycle times, please contact Teknos to arrange a visit to the Bicester application centre.

Teknos Technical Library

Practical drying times

The graph below shows how drying times vary with temperature under typical conditions and their sensitivity to higher or lower humidity. The lower line shows the drying curve under dry conditions, the upper lines show how the drying curve is modified as humidity increases. The variation in levels of air flow will affect the drying equally.



Some important points to note:

In winter and lower temperatures, particularly in unheated storage and drying areas, through drying times can be significantly extrended.

Ducting filtered warm air from the workshop can often help to raise temperatures in drying and storage areas. Workshop air is usually 'dry', and provides an economic low humidity drying medium.

Ceiling rotary fans, such as those used in domestic conservatories, will improve airflow and speed drying even at low temperatures.

The curve is based on application of a standard coating at one wet film thickness. At higher thicknesses the curves move up (increasing drying time) and conversely at lower thicknesses. Most importantly, the shape of the curves remains the same, regardless of film thickness.

Automated process - higher capacity systems

Finally, as drying proceeds and the circulating air absorbs more moisture, it is important to remove this wetter air and replace it with dryer air from an external source. Around one to two air changes per hour are typical, although in higher capacity systems, or where the ambient relative humidity is high, up to 10 air changes per hour can be required.
Typical parameters are shown below:

Air flow: > 0,5 m/sec across the surface of the joinery

Humidity: 35 - 50% Rh

Temperature: 25-35°C

Air changes: 1- 2 per hour

Please note that the airflow refers to the movement within the drying area and air changes to the flow of air into and out of the drying zone.

Always refer to the Technical Datasheet for full instructions on how to use Teknos products.

For further support, contact your local Teknos coating expert or visit **teknos.com**

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