Processing of water-based lacquers and stains

The benefits of water-based lacquer coating systems compared to solvent-based materials are far greater in the area around the paint shop than in the painting process itself.

Water-based coating materials offer great advantages in terms of requirements imposed by the industrial inspectorate, emission levels in residential areas, the design of filter systems and electrical facilities, explosion, fire, and fire protection systems, the overhead for fire insurance premiums and health risks to employees.

External economies in painting, such as avoiding room ventilation, limiting room temperature control and radical shortening of painting cycle times are often suggested, but cannot be realized in production without impacting the painting results.

To avoid coating defects, we would therefore like to point out some points with general validity for all water-based coating materials, regardless of the manufacturer:

1. Moisture extraction and temperature control

The drying times of water-based coats are determined by the ventilation and temperature of the drying rooms. The view that water-based do not have organic solvents, which means that there is no need for ventilation, is incorrect. As long as there is water in the coat, it cannot cure. It is thus therefore very important to ensure good ventilation of drying rooms. Within the first hour after application of the coating, there should be around 15 air changes per hour (e.g., keep the extraction system running in the spray booth). Then continue to provide good ventilation.

A general rule: If the windows fog up in a drying room, the ventilation is insufficient.

For water-based lacquers to build a film, the room temperature is also decisive. Below 15 ° C film formation will not typically be satisfactory. It must therefore be ensure that the minimum temperature exist throughout the entire drying period. Higher temperatures accelerate the film formation process.

2. Wet coat thickness

The rheology of many coating materials allows the application of wet-layer thickness in the magnitude of 300-400 µm. Many painters are thus tempted to apply thicker layers, because this results in an especially rich paint surface. However, these lacquer coatings cannot sufficiently harden within the normal drying time of 12-18 hours; this leads to problems in transporting, working on and de-stacking windows.

If you want the lacquer coating to dry well overnight, then water-based lacquers should not be applied at thicknesses of more than 150 µm per coating layer. This is especially true in coating of non dimensionally accurate components, or components with low dimensional accuracy. For this reason, regular self-monitoring is recommended by checking the wet film thickness using a measuring comb (upper limit: 300 µm).

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3. Apparent dryness

After water has evaporated from water-based coating layers, the surfaces appear dry when touched. Water-based paints do not have the post-painting tackiness known from synthetic lacquers. Nevertheless, the paint coat has not cured deeper down. If you apply a second coating layer due to apparent dryness after just a few hours, then the first coat of paint can start to swell due to the water in the second coat. You cannot expect both layers of paint to have hardened by the next day to an extent that no transport or blocking damage can occur.

Rule of thumb: As long as the surface still feels cool, there is still water in it, which is evaporating.

4. Adhesive tapes

Only suitable adhesive tapes may be used for masking coated surfaces, e.g., for 2-colored coating. They must be free of plasticizers and solvents.

Suitable adhesive tapes include:	3M:	Scotch 244 paper adhesive tape
	kip:	308 FineLine tape
	Storch:	Brand Tape 4931 "Das Goldene" ("golden")
	Tesa:	tesa precision crepe 4334

5. Sealing profiles

The plasticizers in PVC profiles often have a strong affinity to the binding agents in water-based lacquers and stains. This often leads to swelling, discoloration, and bonding with the lacquer coat. PVC sealing profiles should not be used with water-based coating systems for this reason. More suitable profiles are based on acrylic, rubber, EPDM and PU foam with PE film.

Thermoplastic sealing profiles should have a heat resistance of more than 50 ° C.

Please seek guidance from your supplier on appropriate types of profiles, but also on suitable sealants.

6. Fittings

Fittings and fastenings must be corrosion-resistant.
The contact pressure between the frame and sash must not be too high.

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