
Applying Polyurethane Coatings in Cold Weather

Differences Between Classes of Polyurethanes

There are two main classes of polyurethanes:

- **Aliphatic** (yow yellowing)
- **Aromatic** (yellow with time)

In general, the non-yellowing formulations are more sensitive to ambient conditions of temperature and humidity than the yellowing types, with the much slower curing of the non-yellowing in colder weather.

Problems that can occur in cold weather (below 15°C)

1. Viscosity of the coating increasing as the temperature decreases can result in:

- **Reduced flow** with potential for 'orange peel', 'track marks', etc.
- **De-aeration reduced** due to air bubbles finding it harder to rise to the surface in a viscous medium.
- **'Quilting'** effect (non-levelling over adjoining timber pieces) increases, especially with parquetry.

2. Curing is slower

Particularly with True NON –yellowing solvent based coatings. Slow curing symptoms due to cold weather can include **'balling'** when sanding or foot imprints can be seen the following day

3. Solvent evaporation is slower with the following being possible;

- **'Pimples'** or 'nibs' from dust due to wet surface being 'open' for a longer time
- **Extraction** of soluble species (e.g. waxes) from some timbers e.g. Brushbox, coupled with **condensing of heavier solvent fractions** in cool, moist air, can create a **'haze' or 'oil film'** on the surface.

Trouble Shooting Guide for Cold Weather

PROBLEM	REASON	CAUSE	REMEDY
Poor Flow	<ul style="list-style-type: none"> • Cold Floor and / or cold air temperature and / or cold material • Viscosity in can has increased with time 	<ul style="list-style-type: none"> • Viscosity higher with lower temperature • Past shelf life or hot storage - never use products that have expired past their use by date! 	<ul style="list-style-type: none"> • Add up to 30 ml per litre (3%) Wet Edge Extender 3320 • Try Wet Edge Extender but may not work if material has reacted too much in the can
Orange Peel	<ul style="list-style-type: none"> • Cold floor, air or material • Film too thick 	<ul style="list-style-type: none"> • Viscosity high 	<ul style="list-style-type: none"> • Add Wet Edge Extender 3320 • Minimise film thickness
Low Gloss	<ul style="list-style-type: none"> • Low temperatures / 'Dew Point' reached • Possible if Dew is on grass outside 	<ul style="list-style-type: none"> • 'Dew Point' if reached can deposit microscopic moisture particles on surface causing dulling effect 	<ul style="list-style-type: none"> • Apply finish in warmer part of day
Slow Drying	<ul style="list-style-type: none"> • Cold (and maybe dry) conditions 	<ul style="list-style-type: none"> • Aliphatic have slow cure in cold conditions 	<ul style="list-style-type: none"> • Add DURAPOL 5995 Accelerator. • if compatible

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