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	• Cold Floor and / or cold air temperature and / or cold material • Viscosity in can has increased with time	• Viscosity higher with lower temperature • Past shelf life or hot storage - never use products that have expired past their use by date!	• 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	• Cold floor, air or material • Film too thick	• Viscosity high	• Add Wet Edge Extender 3320 • Minimise film thickness
Low Gloss	• Low temperatures / 'Dew Point' reached • Possible if Dew is on grass outside	• 'Dew Point' if reached can deposit microscopic moisture particles on surface causing dulling effect	• Apply finish in warmer part of day
Slow Drying	• Cold (and maybe dry) conditions	• Aliphatic have slow cure in cold conditions	• Add DURAPOL 5995 Accelerator. • if compatible

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