
Pre Catalyzed Lacquer – Technical Material Specification for Industrial Wood Finishing

1.0 Material Overview & Common Uses

Pre-catalyzed lacquer is a single-component, acid-cured wood finish that contains a pre-added catalyst (typically an organic sulfonic acid) to initiate crosslinking upon exposure to air or heat. It offers enhanced durability, chemical resistance, and hardness compared to conventional nitrocellulose lacquers, while maintaining a fast drying time and a clear, high-build finish.

- Commonly used in industrial wood finishing for kitchen cabinets, furniture, millwork, and architectural woodwork where a durable, clear topcoat is required.
- Suitable for spray application in production line environments, offering a balance between ease of use and performance.
- Available in gloss, semi-gloss, satin, and matte sheens, and can be tinted with compatible colorants.

2.0 Core Technical Properties & Sizing

- Viscosity: 25–35 seconds (Zahn #2 cup at 25°C) for spray application; adjust with manufacturer-recommended thinner.
- Non-volatile solids content: 30–40% by weight (typical for pre-catalyzed formulations).
- Density: 0.95–1.05 g/mL at 25°C.
- Flash point: Typically 5–15°C (closed cup) – highly flammable.
- Pot life: 8–24 hours after catalyst addition (if not pre-catalyzed); pre-catalyzed formulations have a shelf life of 6–12 months in sealed containers.
- Dry film thickness per coat: 1–3 mils (25–75 microns) recommended; maximum build 5 mils (125 microns) to avoid cracking.
- Hardness: Pencil hardness typically H–2H after full cure (7–14 days).
- Standard packaging: 1 US gallon (3.78 L) and 5 US gallon (18.9 L) metal pails.

3.0 Processing, Machinability & Application

Pre-catalyzed lacquer is applied by conventional or HVLP spray equipment. Proper surface preparation (sanding to 180–220 grit, clean and dust-free) is critical for adhesion. The material cures by solvent evaporation and acid-catalyzed crosslinking, requiring adequate ventilation and controlled temperature/humidity.

- Spray viscosity: Adjust with manufacturer-recommended thinner to 25–30 seconds (Zahn #2 cup).
- Fluid tip size: 1.3–1.8 mm for conventional spray; 1.0–1.4 mm for HVLP.
- Atomization air pressure: 30–50 psi (conventional); 10–15 psi at the cap (HVLP).
- Flash time between coats: 10–20 minutes at 20°C and 50% relative humidity.
- Force drying: 10–15 minutes at 50–60°C in a convection oven; allow 24 hours for full cure at room temperature.
- Do not sand between coats if recoating within 2 hours; after 2 hours, sand with 320–400 grit to ensure intercoat adhesion.
- Clean equipment immediately after use with lacquer thinner or manufacturer-recommended cleaner.

4.0 Common Defects & Quality Control

- Reject if visible orange peel exceeds 10% of the surface area (measured by visual comparison to a standard panel).
- Reject if blushing (milky white haze) appears, indicating moisture contamination or excessive humidity during application.
- Reject if cratering or fisheyes are present, caused by silicone contamination or inadequate surface cleaning.
- Reject if dry film thickness exceeds 5 mils (125 microns) in any area, as this may lead to cracking or delamination.
- Reject if adhesion failure occurs (crosshatch tape test per ASTM D3359 shows less than 95% adhesion).
- Reject if the material has gelled, thickened beyond usable viscosity, or shows signs of skinning in the container.
- Acceptable gloss variation: ± 5 units from specified value (measured at 60° gloss meter).

5.0 Storage, Handling & WHMIS Guidelines

- Store in a cool, dry, well-ventilated area away from heat, sparks, and open flames. Temperature range: 5–30°C.
- Keep containers tightly sealed when not in use to prevent solvent evaporation and skinning.
- Shelf life: 12 months from date of manufacture in unopened containers; use FIFO (first-in, first-out) inventory rotation.
- WHMIS hazard class: Flammable Liquids (Category 2 or 3), Specific Target Organ Toxicity (single exposure) – may cause drowsiness or dizziness.
- Mandatory PPE: Splash-proof safety goggles, nitrile or neoprene gloves, and a NIOSH-approved organic vapor respirator (e.g., cartridge type OV) during application.
- Do not eat, drink, or smoke in the work area. Wash hands thoroughly after handling.
- Dispose of waste material and empty containers in accordance with local, provincial, and federal regulations (e.g., Ontario Regulation 347).

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