TABLE 1

Performance Characteristics→ **Basic Coating type ↓**	**Chemical/ Moisture Resistance**	**Scratch/Mar resistance**	**Solids Content /Build**	**Color Fastness /Tendency to yellow over time**	**Adhesion/Elasticity /Creep**	**Gloss Level/ Polish**	**Depth of Clarity**	**VOC/HAPS/PM content**
Pre-catalyzed Lacquers (Nitrocellulose)	Usually satisfies KCMA requirements but definitely on the lower end spectrum the more coats the better it gets	Usually satisfies KCMA requirements but definitely on the soft side of the spectrum	Medium solids to get more build more than 2 coats are usually required	Will flip and yellow over time	Great elasticity and creep properties for normal builds, may shrink and crack over time	Easily polished for high gloss apps	2-3 mils DFT with two coats Usually medium solids May have amber tint to clear	Medium to high
Post catalyzed lacquers	Usually satisfies KCMA requirements but definitely on the lower end spectrum the more coats the better it gets	Usually satisfies KCMA requirements but definitely on the soft side of the spectrum	Medium solids to get more build more than 2 coats are usually required	Will flip and yellow over time	Modest elasticity and creep properties for normal builds will may shrink and crack over time	Easily polished for high gloss apps	2-3 mils DFT with two coats Usually medium solids May have amber tint to clear	Medium to high
Acrylic Lacquers	Usually satisfies KCMA requirements better than the nitrocellulose	Usually satisfies KCMA requirements but definitely on the soft side of the spectrum	Medium solids to get more build more than 2 coats are usually required	Less likely to flip and yellow over time	Less brittle and more flexible, shrinks less than Nitrocellulose	Polishes for high gloss but slightly more difficult than the nitrocellulose	Closer to water white clarity	Medium to high
Post-catalyzed varnishes (CV)	Good moisture/ Chemical Resistance	Better than most lacquers usually surpass KCMA	Higher medium solids mid 30% can achieve 2-3 mil DFT builds in coats Total dry film builds usually limited to 5-6 mils	Due to acid catalyst the color especially in pigmented versions can flip UV absorbers help	Has least elasticity than most lacquers and other standard coatings in this chart	One of the most difficult coatings to buff and polish	Easier water white clarity than most lacquer Less likely to blush than lacquer	Medium to high
Polyurethane 1K	Creates more moisture and chemical resistance than CV or lacquers when applied correctly good enough for high humidity/moisture environment	Better than most lacquers and CV easily passes KCMA when applied correctly	Higher builds of 10 mils+ can be achieved with higher solids and body	Provides better color fastness to the previous acid cure coatings	Will fill in cracks/wood grain and hold elasticity better in high humidity and moisture environments	Usually easier than a conversion varnish to polish in high gloss situations	Easier water white clarity than most lacquer Less likely to blush than lacquer deeper clarity than CV	Low to medium
Polyurethane 2-3K	Similar to the 1K PUR but higher moisture and	Similar to the 1K PUR but higher scratch resistance	Similar to the 1K PUR but slightly higher solids and build	Similar to 1K PUR	Similar to 1K PUR	Similar to 1K PUR but more difficult to polish in high	Similar to 1K PUR	Low to medium

	chemical resistance					gloss applications		
Polyesters	Higher moisture and chemical resistance per coat than 1-2K PUR	Higher scratch resistance than Lacquers, CV, or PUR	Polyester is +/- 96% solid content polyurethane is between 50% to 65% solid content. One of the highest builds per coat in a sprayable application	Similar to 1K PUR	Similar to 1K PUR	Similar to 1K PUR but more difficult to polish in high gloss applications	Maintains good clarity even in fewer coats	Low
Solvent based UV medium/high solids 30-60% Sprayable	Higher moisture and chemical resistance than CV and lacquers but less than PUR and Polyesters with same coats and build	Higher scratch resistance. Hybrid flooring formulations have some of the highest mar and scratch resistance along with polyester/PUR 2-3K	Sealers are 30-60% and topcoat/self-seal are 30-40%	Dyes and pigments must be color fast to UV lamps. After UV curing there will be very little yellowing or flip in color.	Adhesion is good especially when using self-sealing or inner coat chemistry. Can be used with other coatings such as polyurethane and water based as tie coat. Elasticity is good. Creep is good as well after it cools down.	Can achieve high gloss but polishing is sometimes difficult without tie coats or multiple coats	Maintains good clarity even in fewer coats	Low to medium/high
100% solids Sprayable UV	Has the highest moisture and chemical resistance per coat along with the polyester	Has similar scratch resistance to Polyesters and Polyurethane	100% has the highest film build in one coat of most wood coatings	Dyes and pigments must be color fast to UV lamps. After UV curing there will be very little yellowing or flip in color.	Adhesion can be marginal due to low solvent and binder content elasticity is also marginal.	Can achieve high gloss but typically not easy to polish	Clarity is good as film is in coat is the highest but the whitewood/stain and pigment must not bleed into the clear.	Low
Water based UV Medium/medium high solids	Similar to slightly better than CV	Similar to slightly better than CV	29-41% solids good film builds and inner coat adhesion especially with self-sealing	Very little yellowing or flipping of colors	Due to resin emulsion and cross linking the elasticity is good and the creep in the joints is good.	Can achieve high gloss and polishing for softness and gloss.	Clarity can be an issue depending on wet film build and DFT and other process factors such as agitation and spray method But can be applied water white	Low to medium
Water based 2 K	Similar to a conversion varnish	Similar to a conversion varnish	Similar to a conversion varnish	Does not yellow or flip like a CV or lacquer	Due to resin emulsion and cross linking the elasticity is good and the creep in the joints is good.	Can achieve high gloss and polishing for softness and gloss.	Clarity can be an issue depending on wet film build and DFT and other process factors such as agitation and spray method But can be applied water white	Low
Water based 1K (Polyacrylic)	Similar to lacquers	Similar to lacquers	Similar to lacquers	Typically, there is no flip in the color and little yellowing	Elasticity is good but creep in the joints may break the coating.	One of the easier coatings to buff and polish for high gloss scenarios	Clarity can be an issue depending on wet film build and DFT and other process factors such as agitation and spray method But can be applied water white	Low

TABLE 2

Basic Coating type ↓	Appearance/Performance Characteristics→	VOC/HAPS/PM content
Bleaching Whitewood Color Blending agents/processes	Tones whitewood colors by removing natural pigments from the surface of the wood	Medium to high
Toner	Tones whitewood color usually with dyes and a clear	Medium to high
NGR	Dyes in solution used to create color and penetrate the wood grain	Medium to high
Wash Coat	Tinted initial coat to provided background to subsequent stains and clears tones whitewood color and grain This is clear mixed with pigment or dye to reduce the blotchy effect in wood color	Medium to high
Wiping stain	Usually sprayed on then wiped off after drying briefly usually pigmented with some dyes and binder and solids	Medium to high
Water based Wiping Stain	Usually sprayed on then wiped off after drying briefly usually pigmented with some dyes and binder and solids	Low to medium
Spray no wipe stain	Dyes with some pigments this creates color usually in one application sometimes two for darker colors Usually lower solids and binder contents than wiping stains dyes may flip under UV curing light	Low to high
Spray no wipe stain	Dyes with some pigments this creates color usually in one application sometimes two for darker colors Usually lower solids and binder contents than wiping stains dyes may flip under UV curing light	Low to medium