

Q&A on Coatings.



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This Q & A section continues as a new addition to the magazine and intended to answer those questions that ATFA members may have on coatings.

Please send in any questions you would like addressed to ATFA.

What are UV Lacquers and UV Oils?

These terms are often used generically but there is a distinct difference between the two. What is common is that the manufacturing coating process of each utilises in-line multiple coating stations and Ultra Violet (UV) or Electron Beam (EB) radiation-initiated curing. The curing process is one of photopolymerisation - photoinitiator chemicals trigger an almost instant polymer cross linking / curing action.

Why UV cure manufacture?

UV (or EB) cure is now the predominant process of manufacture of prefinished flooring. Although a high capital cost for plant set-up, the high curing speed is a key feature. An average flooring panel line running at 12M/min can produce about 72,000 square metres per month per shift.

Finished product is fully cured in a fraction of a second and product can be packed ready for shipment at the end of the production line.

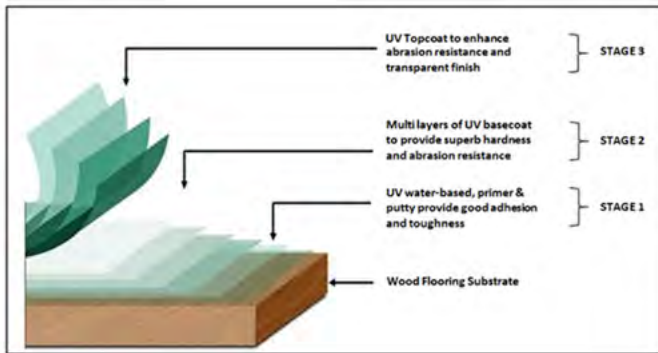
Chemical make-up

UV Lacquers - comprise a hard-wearing layer on top of the wood surface. Chemically it may be an aliphatic urethane acrylate, epoxy acrylate, copolymer or hybrid blend.

UV Oils - penetrate the wood and exhibit a lower film build on the surface. They have less wear resistance than UV lacquers and require periodic maintenance coats. Surface damage is easier to repair. Chemically they may be 100% oils (vegetable source), hybrid urethane oils or blends of oil with various resins. The need for high maintenance will increase with an increase in oil percentage. Wear resistance will decrease with an increase in oil percentage.

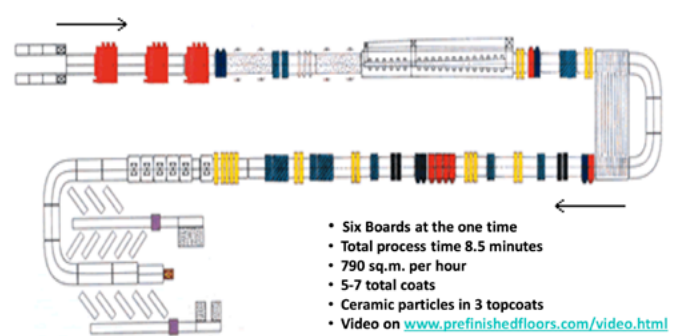
Both lacquer and oil types can be 100% solids or high build, high solids waterborne. If waterborne, then a drying facility (high air flow, IR lamp) is needed prior to the UV coatings application.

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Prefinished (Factory Coated) - Surface Coatings for Engineered, Solid Plank and Parquetry Flooring

Process for Multi Stage UV-curing coatings
(Courtesy Premier Finishing and Coating USA)



Manufacturing sequence

A UV 'lacquer' coated product may have multiple coats. One popular high quality prefinished Engineered Timber Flooring (ETF) product imported from Asia and utilising a German UV coating system, consists of the following 7 coats after a wire brush process to create a surface texture:

- Primer – one layer (ensures good bonding of the coating system to the timber veneer)
- Filler – two layers (fills the grain structure to provide a smoother base for subsequent coatings)
- Sealer – two layers (provide excellent adhesion and colouring effects if required)
- UV topcoat – two layers (high wear and scratch resistance with desired sheen level)

A UV Oil process will generally have less total coats. A typical process using German Treffert coatings is advised as:

- Primer – one layer (maybe only necessary on dark / oily wood species)
- Sealer – two coats (grain filling with colour for smooth surface)
- UV top oil – two coats (performance coats for wear and scratch resistance)

Any questions relating to this article or coatings in general can be addressed to Phil Holgate on tamsaconsult@hotmail.com.

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For further information on this technical article or on coatings related issues in general the ATFA Coatings Hotline on 0414 793 237 can be consulted. Alternatively email your enquiry to tamsaconsult@hotmail.com. This is a complimentary service for ATFA members.



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Solid Overlay T&G 80x13mm
Solid Overlay T&G 130x14mm

Block Parquetry 260x65x19mm
Block Parquetry 340x65x19mm
Block Parquetry 400x80x19mm
Block Parquetry 600x120x19mm

Mosaic Parquetry 5 Finger
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