



Exterior Wood Varnish Failure

Here are the most common problems:

Peeling or flaking of the coating

The main cause of peeling or flaking coatings is lack of sufficient preparation before applying products. Silvery-grey timber fibres are a sign of timber that has been 'denatured' by weathering. These fibres are absorbent but loosely attached to the main body of the timber, so if they are not removed before coating, the stresses of external exposure will cause them to become detached from the surface, taking any coating with them. Therefore these grey fibres, as well as any old, flaking coating, must be fully removed before treating the wood again, and in some cases it will need to be sanded too.

Exposed timber - denatured/weathered and grey

As mentioned above, silver-grey fibres indicate that wood has been exposed to UV light over time and has weathered. If timber has been exposed to direct sunlight for more than four weeks it will require mechanical sanding of the surface in preparation for a coating.

Algae/mould

Wood is absorbent so naturally absorbs water, making it an ideal environment for mould or mildew to grow. If the wood you're dealing with has been painted or stained, the mould should not have penetrated through to the wood beneath the coating.

General cleaning and a fungicidal application before varnishing should be sufficient to remove mould or algae.

Knots bleeding/exuding resin

Resin exudation from timber is natural and highly unpredictable, and varies depending on both timber species and timber grade/quality. The traditional answer to apply shellac knotting to 'seal' in the resin, has been shown to be ineffective outside. While 'microporous' finishes such as woodstains allow the resin to filter through the finish without blistering or peeling, in severe cases this can still occur. Affected timber should be degreased before being coated using a sharp solvent such as methylated spirits. Any resin which exudes through the coating can be gently scraped off and wiped with meths, avoiding the need to redecorate any sooner than would be expected.

N.B. Degreasing with meths will also remove surface oils and gums from hardwoods, and greasy finger marks from handling, so well worth doing even if you don't know the timber type you're dealing with.



Open joints and exposed end grain

End grain is many times more absorbent than the other timber faces, and it is important to protect joints by applying sufficient coating. In severe cases, it may be necessary to repair the joint using a suitable two-part filler, to prevent ingress to exposed end grains.

Water leaking in from joints and glazing beads will cause decomposition of the timber surface which will release the coating bond and result in film failure.

Holes (where filler is detached or missing)

Holes, voids or areas of damage in timber should be filled prior to coating, to help avoid moisture ingress and excessive timber movement. All-purpose fillers are not flexible enough for use with wood. Only external wood fillers should be used.

Surface dirt/contamination (often overlooked)

In virtually every maintenance job, dirt will have accumulated on the surfaces. Thorough cleaning of the surfaces is required to remove most of the contaminants which can impair the absorption, adhesion and subsequent performance of coating systems. A solution of household detergent in warm water and a stiff, non-metallic bristle brush is ideal for removing oil, dust, dirt or grease. Thoroughly rinse off any residues and allow the surface to dry fully.

Film Thickness

Dry film thickness determines life. That's the first thing to learn. There are many reasons why varnish fails, and there are many ways it fails. A thicker film does not stop them all, but too thin a film guarantees prompt and certain failure. The wood will bleach and grey, the varnish will crack and peel; we need some minimum film thickness when we apply varnish if we want it to last.

Varnishes also fail by loss of gloss. When you notice this, it means it is time to apply another one to three coats. The ultraviolet absorbers in varnish protect the wood, but the chemical ultraviolet absorbers wear out. The new maintenance coats add more fresh ultraviolet absorbers, and restore the gloss of the finish.

For any varnish, a good rule of thumb is to budget a litre for every 3 square metres (3 coats). 150 microns wet film thickness. The most common reason for premature varnish failure is putting on too thin a total film thickness, by simply not knowing how much of a film thickness one has or one needs. Budgeting a total usage gives a good indicator that there will be an adequate minimum film thickness.

Exterior coatings require a minimum drip angle of 15-degrees to offer suitable resistance, an uncovered horizontal surface allows rain to remain on the wood surface for potentially long periods of time. This significantly reduces the UV resistance of clear varnish and so the wood will naturally grey much quicker, increasing your ongoing maintenance and upkeep.

by Peter Wells, Polyvine Technical Director.