Teknos Technical Library

Application Guide

Version 1: March 2024

OPAQUE FINISHES
FACTORY METHOD STATEMENT

The following information provides an overview of the application of factory applied opaque finishes to manufactured joinery items such as windows, doors and conservatories.

It has been designed to help manufacturers adopt good working practices in their manufacturing and coating process, ensuring service life is maximised.

This information must be used in conjunction with the relevant coating specification and product technical data sheets.

BASIC CONSIDERATIONS

Design

- Cills and non vertical surfaces must give efficient water shedding, with a slope angle of not less than 9°
- Surface tension causes wet paint to flow away from sharp edges leaving them relatively unprotected. A minimum external radius no less than 3mm is required to avoid thinning of the coating system in accordance with British Standard 644
- Interior edges should be rounded to at least 1.5mm radius
- The design must preclude obvious water traps. Any gaps or recesses in the joinery should be sufficiently wide to prevent capillary draw of water into holding areas, we typically recommend a 3mm gap
- Fixing pins, particularly on horizontal glazing beads, must not allow the ingress of water. If pins are punched below the surface, filling must be carried out to ensure that a water collecting hollow is not produced. Secondary filling may be necessary to account for shrinkage
- Fixing pin type should be selected to meet best practice principles and timber species (stainless steel)
- As a minimum, the construction guidelines set out in BS 644 should be followed at all times

TEKNOS (UK) LTD
UNIT 7 LONGLANDS ROAD
BICESTER, OXFORDSHIRE
TEL. 01869 208 005
SALES@TEKNOS.CO.UK

54 BALLYMOUGHAN ROAD
MAGHERAFELT
BT45 6HN
TEL. 02879 301472
SALES.NI@TEKNOS.CO.UK

Preservation treatment

Where the natural durability of the timber does not meet the class requirements as determined by BS EN 335-2 it must be treated with a preservative in conformance with BS EN 599-1.

- If the timber is preservative treated using double vacuum impregnation, particularly with solvent based material, the manufacturer's recommended drying times must be followed before coating. Typically, under good ventillation conditions, these can vary from 2 to 14 days.
- When using TEKNOL AQUA 1410 or AQUAPRIMER 2907 wood preservative as part of the coating finishing process, joinery must be factory coated to a minimum dry film thickness of 80µ before site exposure in compliance with BS EN 599-1

Timber quality

Timber grade used in manufacture must be selected to take into account its natural durability and use classification for the proposed exposure conditions. See: BS EN 350; BS EN 335

There are a number of chemically and heat modified woods now being offered into the exterior joinery and cladding markets. Outdoor testing has shown modification processes alone do not improve the timber's resistance to surface mould growth. To attain optimal product performance, a surface applied preservative is recommended.

Sanding

- Sanding is commonly used for small scale, purpose made, joinery. Finishing results can be greatly improved by minimising sanding and denibbing and selecting the appropriate grade of abrasive paper.

- This is very important if automatic drum sanders are used. The grit of the belt on the first drum should be as fine as possible to prevent the substrate being ripped open, ideally 120, with subsequent belt grades coordinated to close the surface e.g. 150, and the finishing belt 180 grit.

Teknos fine surface filler

Surface defects, checks and cracks around knots can be visually unattractive and disrupt subsequently applied coating systems, leading to localised breakdown.

TEKNOFILL 5001 is a single component, water based, white acrylic filler which, when applied by palette knife, fills and levels surface defects. It has excellent sanding properties and dries in around three hours to a smooth fine surface ready for opaque topcoat application.
It is particularly recommended for use around knots, where it enhances resistance to tannin migration.
Anything in excess of 1mm deep should be filled with a two pack wood filler.

Not recommended for filling fixing pin holes. Please contact your Teknos coatings expert for a suitable solution.

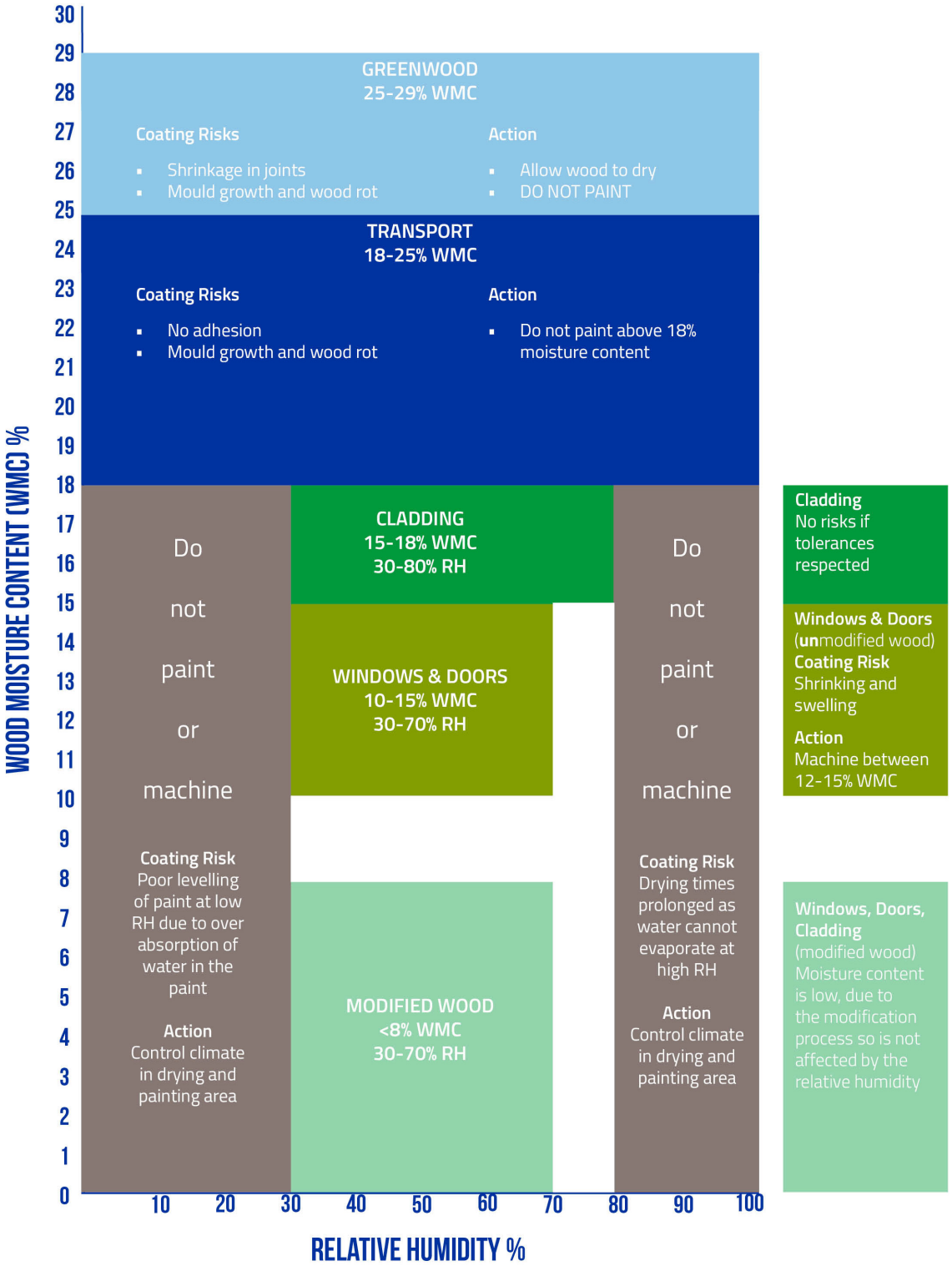
Degreasing

- All surfaces should be clean, dry, an d free of dust, salt, grease, and other contaminants. See ISO 12944, part 4.

- Timbers that contain natural oils and chemicals, such as teak, iroko, oak and cedar should be thoroughly degreased with TEKNOSOLV 7012 immediately prior to coating. Failure to degrease will impede drying and coating adhesion.

Moisture content

Moisture content of standard species at the time of coating should be in the range of 12-16%. For details on moisture content requirements for modified wood, please consult your local Teknos coatings expert.



Environmental and storage conditions

All coating products must be kept away from frost, cold draughts, and ideally be stored at a constant temperature above 10°C. Containers should never be stored on the workshop floor, which can become very cold in winter, instead they should be stored on pallets.

Coatings may be applied to surfaces between 15°C and 30°C and at humidity levels below 80%, but it is desirable to avoid the extremes.

Factory conditions in the spray area should ideally be between 15°C - 22°C with humidity levels between 45% - 70%. Temperatures and humidity levels outside these parameters will impact on the coatings ability to dry and cure and may detract from the appearance and long term performance.

Drying areas must be kept dust free, and kept at a steady temperature of 15°C - 22°C. Avoid switching off heating overnight, particularly in winter. With waterborne coatings drying is greatly improved if a steady air flow (1-1.5m³/ min) is maintained over the face of the coated joinery. This can be achieved with overhead rotary fans. It is also important to replace the damp air with fresh dry air - we recommend one to two air changes per hour.

When painting, surface temperatures must be at least 3°C above the dew point to prevent moisture condensation during the drying process.

Pre painting treatment

Before applying the primer, any exposed end grain on the bare timber components must be sealed using TEKNOSEAL 4000 and any knots sealed with a knotting solution. (NB: TEKNOSEAL 4000 can also be applied after the first primer coat)

Both products are applied ready to use and should not be thinned. Re-seal containers after decanting to prevent evaporation and skinning.

TEKNOSEAL 4000

TEKNOSEAL 4000 applied by brush to exposed end grain, after preservative treament

Application:

For optimum performance, two generous brush coats must be applied to all areas of exposed end grain, including machined apertures.
Vulnerable areas, such as door stiles, projecting cills and cut glazing beads require special attention.
For areas of severe exposure (e.g. coastal locations) application of an additional coat is recommended.

Drying time at 23°C / 50% RH:

Touch dry after 30 minutes.
Recoatable after one to two hours.

Knotting solution

Application:

Apply by brush, fully covering the knot. Avoid excessive overlap onto the surrounding timber. As a guide an overlap of 3-5mm is sufficient. For optimum protection, apply two treatments leaving a 30 minute interval between applications.

Drying time at 23°C / 50% RH:

Touch dry after 30 minutes
Recoatable after 30 - 60 minutes

Paint products

This section gives a general description of a typical Teknos opaque coating system. It should be read together with the detailed specification and technical data sheets for your particular application.

PRESERVATIVES	
TEKNOL AQUA 1410*	Preservative for dip and flow coat application

PRIMERS	
ANTISTAIN AQUA 2901 primer	Tannin inhibiting primer/ mid coat for hardwoods & modified woods. Spray, flow or dip application.
ANTISTAIN AQUA 5200 knot primer	Resin inhibiting spray primer/mid coat for softwoods (not western red cedar).
AQUA PRIMER 3130 - SPRAY PRIMER	General purpose spray primer for a variety of substrates

TOP COATS	
AQUATOP 2600	Microporous topcoat

ANCILLARY PRODUCTS	
TEKNOS V JOINT SEALER	V joint sealer
TEKNOSEAL 4000	End grain sealer
TEKNOFILL 5001	Fine surface filler

***Important safety note: Teknos strongly recommend NOT to atomise spray TEKNOL AQUA 1410 or AQUA PRIMER 2907 preservatives in an open manufacturing environment.**

Application set up

In UK joinery shops, top coats are most commonly applied by air assisted airless spray, preservatives by dip or flow coater, and primers by all methods. Typical set up parameters are shown below.

Air assisted airless spray

- Tip size: 11 or 13 thou
- Spray fan angle: 20° or 40° dependant on item coated
- Application pressure: 1500 psi
- Control air pressure: 25 - 30 psi
- Typical wet film thickness: 150 - 175µ (per coat)

Dip or flow coat

- Application by flow coat will result in a lower applied dry film thickness and this has to be compensated for in the mid and topcoats. (See supporting system specification sheets)
- Viscosity should be adjusted and maintained between 12½ and 14 seconds DIN 4.
- The hanging angle should be more than 20° to ensure clean run off of the product. Monitor the run off to ensure any product traps are removed.
- Keep the product away from direct air movement for 15 minutes to allow for flow out and an even film build to be achieved

Equipment cleaning

Application equipment can normally be cleaned using cold water. Under certain circumstances it may be advantageous to use warm soapy water. Please refer to our 'Spray equipment cleaning & maintenance' technical sheet.

Paint application

This section describes a typical coating sequence and should be read in conjunction with your coating application specification which is tailored to your own application conditions. Additional information sheets are available covering issues such as drying parameters, treatment of knots and end grain, moisture content and machining tolerances, winter painting, site care and storage, dip and flow coat management, surface preparation, pH adjustment and joinery design and installation. These can all be found on the Teknos website in the 'Technical library'.

Step 1: Preservation

PRODUCTS	TEKNOL AQUA 1410
PRODUCT PREPARATION	The product is supplied ready for use; stir thoroughly before application. For flow coater and dip application, the viscosity of the product should be adjusted and maintained in line with individual product technical data sheets.
APPLICATION	**Teknos strongly recommend NOT to atomise spray TEKNOL AQUA 1410 preservative in an open manufacturing environment.** Brush or Dip/flow coat in line with Teknos data sheet guidelines.
DRYING TIME AT 23°C AND 50% RH	Touch dry after 1-2 hours. Recoatable after 2-4 hours

TEKNOS (UK) LTD
UNIT 7 LONGLANDS ROAD
BICESTER, OXFORDSHIRE
TEL. 01869 208 005
SALES@TEKNOS.CO.UK

54 BALLYMOUGHAN ROAD
MAGHERAFELT
BT45 6HN
TEL. 02879 301472
SALES.NI@TEKNOS.CO.UK

	Apply TEKNOSEAL 4000 to exposed end grains and machined apertures *NB: When suited to production, apply TEKNOSEAL 4000 after step 2.*

Step 2: Priming

PRODUCTS	ANTISTAIN AQUA 2901, ANTISTAIN AQUA 5200, AQUA PRIMER 3130
PRODUCT PREPARATION	All spray products are supplied ready for use; stir thoroughly before application. For flow coater and dip application, the viscosity of the product should be adjusted and maintained in line with individual product technical data sheets. (See pH adjustment sheet)
APPLICATION	Using air assisted airless spray equipment apply an even coat of primer, mid coat or top coat in the correct colour shade to all surfaces. The wet film thickness should be between 150 and 175µm with no over coating on corners or joints with adjacent components.
DRYING TIME AT 23°C AND 50% RH	Touch dry after 2-3 hours. Recoatable after 3-4 hours
	Apply TEKNOSEAL 4000 to exposed end grains and machined apertures (if not applied to bare timber)
SURFACE CHECK	Check all surfaces for any defects and action as required. Ensure all residual dust is removed from the surface of the joinery items.
SEAL CONSTRUCTION JOINTS	Apply a continuous bead of Teknos V JOINT SEALER to the width of the joint and smooth with a damp sponge, cloth or squeegee, to ensure good penetration and levelling in the joint. Alternatively, apply an adhesive generously to all surfaces to be bonded, using light pressure to form the joints and excess adhesive to seal any exposed end grain and construction joint. This can also be used to cap all lower internal joints in mid and bottom rail rebates. Both products can be topcoated after 1-2 hours with an AQUATOP 2600 finish.

Step 3: Mid coat

PRODUCTS	AQUATOP 2600 topcoat
PRODUCT PREPARATION	All spray products are supplied ready for use; stir thoroughly before application.
APPLICATION	Using air assisted airless spray equipment apply an even coat of primer, mid coat or top coat in the correct colour shade to all surfaces. The wet film thickness should be between 150 and 175µm with no over coating on corners or joints with adjacent components.
DRYING TIME AT 23°C AND 50% RH	Touch dry after 2-3 hours. Recoatable after 3-4 hours
DENIBBING	Denib all surfaces to remove any raised fibres using a fine grade abrasive between 180 and 220 grit. Nylon and foam filled denibbing pads are very useful for denibbing, particularly on mouldings, and profiled sections. The fine grit efficiently removes protruding fibres while discouraging over sanding and the removal of coating from edges
SURFACE CHECK	Check all surfaces for any defects and action as required. Ensure all residual dust is removed from the surface of the joinery items.

Step 4: Topcoat

PRODUCTS	AQUATOP 2600 topcoat
PRODUCT PREPARATION	All spray products are supplied ready for use; stir thoroughly before application.
APPLICATION	Using air assisted airless spray equipment to apply an even coat of topcoat in the correct colour shade to all surfaces. The standard wet film thickness should be between 150 and 175µm with no over coating on corners or joints with adjacent components.
DRYING TIME AT 23°C AND 50% RH	Touch dry after 2-3 hours. Dry after 3-4 hours

Always refer to the Technical Datasheet for full instructions on how to use Teknos products.

For further support, contact your local Teknos coating expert or visit **teknos.com**

TEKNOS (UK) LTD
UNIT 7 LONGLANDS ROAD
BICESTER, OXFORDSHIRE
TEL. 01869 208 005
SALES@TEKNOS.CO.UK

54 BALLYMOUGHAN ROAD
MAGHERAFELT
BT45 6HN
TEL. 02879 301472
SALES.NI@TEKNOS.CO.UK