

Good Practice Guidance - Factory Finished Cladding



Introduction

Long term performance of the timber cladding and the factory applied coating system, can be very much influenced by a number of design details and manufacturing practices.

The guidance notes that follow may be useful in terms of enhancing the performance and thereby extending the life of the timber cladding.

This guidance can also be used in conjunction with the location, setting of the cladding and design of the building to assess the suitability and expected durability of the chosen coating system.

The standard BS EN 644:2009 should be followed as a minimum requirement when considering the design, build, glazing, coating and installation of fully factory finished timber joinery. In addition some of the principles contained within this standard may be applied to the factory finishing of timber cladding.

1. Timber Selection

- Consideration should be given to selected modified, laminated or finger jointed sections. This would enable the control of natural defects
- Where client requirements do not allow the use of selected modified, laminated or finger jointed sections, timber is to be selected in accordance with the standards detailed in BS EN 942: 1996.
With regards to the use of European Redwood, the preferred grading would be J2 which ensures the minimum presence of knots and natural defects.
The recommended minimum acceptable grade being, J30. Full details can be found in BS 644: 2009.

- The presence of knots, splits and shakes in timber prior to coating will lead to an adverse effect on the performance of the applied coating system.
A coating system can reduce the likelihood of further similar timber defects developing but should it not be expected to provide a guarantee against this.
- A coating system should not be expected to protect from the effects of resin exudation or discolouration from water soluble extractives.
- The use of fast grown sapwood should be avoided at all times
- The moisture content of the timber must at all time during the application and drying of the coating system conforms to the requirements of BS EN 942: 1996 Timber in joinery – General classification of timber quality.

Further details to be found in BS 1186: part 1: 1991. As a general rule, the moisture content of the cladding during coating should be similar to the moisture content it can be expected to achieve when installed.

2. Building Design

The level of exposure that a cladding 'wall' receives can be greatly reduced by incorporating some natural protection into the design of the surrounding building.

The following design features will maximise the durability of the coated cladding sections

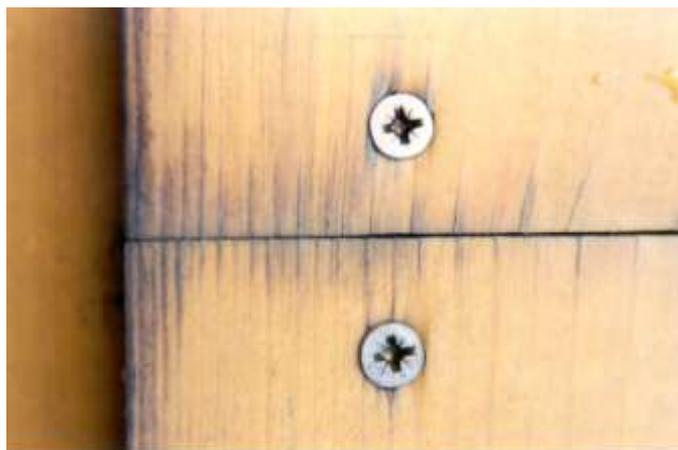
- Designing a large roof overhang
- Recessing cladded sections into the brickwork
- Limiting cladding to a minimum on elevations and locations exposed to severe direct weathering



3. Cladding Design

Within the timber coatings industry it is generally recognised that sharp edges and areas where water can 'pool' can create serious limitations to the long term performance of the coating system and to the timber used for the cladding itself.

- All external edges should be machined to a minimum 3mm radius rounding to all exposed surfaces. Unexposed exterior or interior surfaces should achieve a minimum rounding of 1.5mm radius.
- All joints should be fully sealed and protected from moisture ingress, particularly through end grains.
- A minimum slope of 15 degrees is recommended to ensure good water run off from horizontal surfaces.
- The profile should be designed to shed water over and away from the underlying boards. Suitably profiled capping and/or cover strips may aid this process.
- All fixings should be concealed, protected and sealed by the use of clips, caps, fillers or the coating system itself.
- Intersections and junctions between boards which allow the passage of moisture through a capillary action, should be avoided.



4. Preservative and Pretreatment systems

- The preservative / pre-treatment (where applicable) and factory finished coating system must be applied to achieve an approximate minimum **dry** film thickness (DFT) of 60 - 90 micrometres on all exposed and concealed surfaces including all end grains.
Please note the film build should not exceed 120 micrometres total DFT on any surface.
- Where cladding is fixed in a 'semi finished' condition. The hidden, rearside, 'uncoatable' areas should be coated with a minimum DFT of 30 micrometres.
- Ensure all tongues and grooves are fully coated with the full coating system at appropriate stages of installation (i.e before, during or after where appropriate) .
- Sikkens Kodrin WV 456 End Grain Sealer should be applied with all coating systems following base stain/primer application.
- It is strongly recommended that at least the first coat of base stain or primer be applied by saturation to ensure flow into all areas and achieve good 'wetting' of the timber surface.
- The practice of heavily denibbing a low build base stain/primer should be avoided.

- All coats should be thoroughly dried before overcoating is attempted.

5. Factory Controlled Application Conditions

- A minimum application temperature of 15 degrees (coating, substrate and air temperature) should be maintained at all times
- The use of vacuum coaters, allows for fast and effective coating to all surfaces
- Work pieces should be angled to ensure all surfaces are covered evenly.
- Spray application may limit even coating application to all surfaces, particularly 'tight' or awkwardly shaped areas/profiles. In this case, dipping may be a better alternative method of application.

6. Factory controlled Drying Conditions

Exterior quality Joinery and Cladding Coatings differ greatly from products manufactured for internal surfaces such as doors, frames and skirting, staircases, furniture etc. Products that have to withstand the elements require a film build capable of flexibility, extensibility and UV resistance, whereas scratch and abrasion resistance is the main property required of internal coatings.

Most exterior quality joinery paints and stains manufactured for application in the factory are now water-borne although solvent borne finishes are still commonly on site. Water-borne acrylic coatings dry quicker than solvent-borne alkyd equivalents but recommended drying times must still be allowed under the specified conditions. For all water-borne primers and base stains, mid and finishing coats, we specify a four to six hour drying cycle under the following conditions.



7. Primers and Base Stains

Vacuum Coat, Dip, flow coat or saturate spray all joinery items either assembled or in component form.

Allow to stand for ten minutes in 'flash off' area; i.e.

- Ambient temperature
- Little air movement
- Medium/high humidity

After ten minutes the coated timber should be moved to a dedicated area e.g.

- Minimum temperature 20 degrees Centigrade or a little higher
- Maximum Relative Humidity 65%
- Minimum movement of air 0.5 metres per second
- Minimum air exchange of 15 times per hour

8 Mid and Top Coats

Vacuum coat or spray both mid coat and topcoats, allowing for full drying between coats.

Apply to manufacturers recommended wet film thicknesses (WFT) per coat.

Allow to stand for ten minutes in 'flash off' area; i.e.

- Ambient temperature
- Little air movement
- Medium/high humidity

After ten minutes the coated timber should be moved to a dedicated area e.g.

- Minimum temperature 20 degrees Centigrade or a little higher
- Maximum Relative Humidity 65%
- Minimum movement of air 0.5 metres per second
- Minimum air exchange of 15 times per hour

8. Installation

- All cladding is to be installed and soundly fixed in accordance with the suppliers instructions, avoiding any damage to the cladding and its coating system.
- It is recommended that good airflow and ventilation be achieved at the rear of the boards by allowing a minimum of 40mm gap from the supporting wall.
- A ventilation gap should be designed at the top and the base of the cladding 'wall'.
- It is recommended that an appropriate damp proof membrane is used where applicable.
- It is recommended that cladding sections are placed a minimum of 200mm from the 'damp course' of the building
- All cut ends, including hidden joints, should be resealed with the full system including end grain sealer.
- Consideration should be given to the environment and conditions that the recently coated cladding boards are subjected to. Adverse weather conditions, especially heavy rainfall and frost, may have a detrimental effect on the freshly applied coating system and the cladding boards themselves, particularly during storage and installation prior to fixing



GENERAL ADVICE

Handling

- Care must be taken to avoid any handling/transit/storage damage, we strongly advise the use of protective wrapping on all cladding items, cover strips and trims; this is to remain undamaged until fixing begins.
- Boards should be stacked in a way to minimise the weight placed upon them and to maximise the airflow between stacked boards. The use of carefully placed 'spacers' is strongly recommended.
- Coated faces should not be placed together.
- Freshly coated cladding should be given at least 48 hours additional drying time in good drying conditions (see drying conditions above) before wrapping for despatch.

Site Storage

- All components must be stored under cover, preferably inside a ventilated building with full airflow accessible to all parts of boards. Any protective coverings should be removed when/where conditions permit and replaced when necessary.
- In the event of outside storage, they must be kept clear of the ground on level bearers and protected against dampness and direct sunlight by a tarpaulin or suitable protective cover. There must be space for air circulation around and between components and any protective coverings should be removed when/where weather conditions permit and replaced when necessary.
- Consideration should be given to the environment and conditions that the recently coated joinery is subjected to. Adverse weather conditions, especially heavy rainfall and frost, may have a detrimental effect on the freshly applied coating system and the joinery items themselves, particularly during storage.
- The storing of boards in the high moisture conditions arising during the construction and drying out phases of new build projects may place severe stresses on the cladding boards and coating system.

Care and Maintenance of Cladding after Installation

- Ensure all damage during transit or installation is repaired
- Ensure all surfaces are cleaned and free from installation or building debris
- The application of Sikkens 'maintenance milk' product is strongly recommended as an annual cleaning and maintenance treatment.
- Expected durability periods of factory applied cladding coatings will vary and are dependent on the level of weathering the cladding is exposed to, the type of coating used, building location and the design of the cladding and surrounding building.



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