
External cladding

Industrially painted cladding

Ordering
Transportation and storage
Installation
Maintenance

GUIDELINE

1. Ordering	2
1.1. What should be paid attention to when selecting and ordering external cladding?	2
1.2. Industrially painted external cladding Why to order – pros and cons. Which colours and colour shades to choose. What to pay attention when during ordering.	3
2. Transportation and storage	4
2.1. Transport	4
2.2. Storage	4
3. Installation	4
3.1. Aeration gap, base batten, base batten pitch and thickness	4
3.2. Fastening fixtures and fastening	5
3.3. End and corner connections and joints, cutting, painting	5
4. Maintenance of industrially painted cladding	6
4.1. Maintenance paint finishing	6
4.2. Resin exudation	6
4.3. Mechanical damage	6

For quality specifications, see the Puidukoda quality specification 'External cladding AB'

1. Ordering

1.1. What should be paid attention to when selecting and ordering external cladding?

• Type of wood

External cladding is mostly made of spruce, since the density of spruce is more uniform and durable than that of pine and thus volume fluctuations caused by moisture occur less frequently in spruce. Thanks to this, the service life of external cladding and finishing is longer.

As spruce cells close during the drying process and this increases the biological durability of wood, spruce does not need pre-impregnation with wood preservative. For instance, during industrial painting, cladding is covered with priming paint as the first layer.

• Planed or fine-sawn cladding?

Take your time to consider whether you want to use planed or fine-sawn external cladding, since both have their pros and cons.

Fine-sawn cladding is more practical, as when painting, the more porous fine-sawn surface is able to absorb up to 60% more paint. Paint sticks better to the surface and it penetrates the pores of the wood more deeply, prolonging the service life of the paint layer of fine-sawn cladding up to two times (no need for such frequent maintenance painting).

Besides paint, dust and dirt sticks well to the surface of fine-sawn cladding, and cleaning a façade is not an easy job. Thus, if the façade to be finished with cladding is located in a place where it gets quickly dirty and needs frequent cleaning, you should consider planed cladding, which can be easily cleaned with special agents meant for cleaning cladding (do not use pressure washing). Although the paint coating will need more frequent refreshing, maintenance of the façade is simpler.

• Profiles and widths

The shape or profile of the external cladding should be selected based on the location and architecture of the building. In general, narrower cladding with an emphasised profile gives more etherealness to the more complex and/or smaller façade surfaces, whereas a wider and calmer profile is ideal for covering larger façade areas. For renovating older buildings, we recommend using profiles characteristic of the era.

• Recommended thicknesses

The thicker the external timber cladding, the more uniform its moisture regime (volume fluctuations caused by moisture are smaller). Thus, a façade made of thicker cladding is more stable and has an extended service life.

Pursuant to the Nordic standards, the minimum recommended thickness of external timber cladding is 21 mm. A thinner external cladding may

be used, but in this case you should consider the shorter service time of the façade and the increased risk due to problems caused by more frequent and bigger volume fluctuations (cracks, paint coating damages, bending of cladding, etc.).

• Socle and eaves

Regardless of the quality of surface finishing, a wooden façade is especially sensitive to moisture, the extreme expressions of which are rain falling at an angle and water splashing up from the ground. To prolong the service life of the wooden façade, the height of the socle should be over 300-500 mm and the width of the eaves over 600 mm.

The service life of a façade whose eaves are shorter and/or whose socle is lower is certainly significantly shorter and will require more frequent maintenance (maintenance painting of the paint coating). This type of façade is considered a façade in extreme conditions and the cladding manufacturer (and the manufacturer of industrially painted cladding) cannot be held responsible for the service time of this type of façade.

• How to calculate material consumption

Depending on the architectural characteristics of the building, material consumption can be calculated in two ways. The simplest way is to calculate the gross area of the façade without any deductions from the openings and to order the cladding accordingly.

If the building has many windows or doors, calculate the net area of the façade (windows and doors deducted) and upon ordering add spare space to the net area of at least 5%, preferably 10%.

Cutting and fitting the cladding results in considerable loss, which should be taken into consideration when ordering because the later acquisition of the additional quantity is troublesome to both the buyer and the seller (especially for the manufacturer of industrially painted external cladding).

1.2. Industrially painted external cladding Why to order – pros and cons. Which colours and colour shades to choose. What to pay attention to during ordering.

• Why to order – pros and cons.

Manufacturing of industrially painted cladding takes place indoors, where a necessary dust-free environment with a constant temperature and humidity has been created. The finishes are applied to the surface according to the manufacturer's instructions and with the required layer thicknesses, using the surface finishing systems approved by the paint manufacturers. This guarantees a high-quality, durable and long-lasting end result.

One disadvantage to point out is the optimal quantity to be industrially painted. In the case of indus-

trial painting, the economically reasonable quantity is to finish approx. 50 to 100 m² with one colour shade. Below this quantity, industrial painting for the manufacturer is irrational and troublesome and therefore the price is higher.

As delivery times for industrial painting mostly can be as long as 14 days, this is not a major drawback compared with doing it yourself. Doing it yourself means that you need to acquire the material, paints and tools, set up a workplace and let the material dry between the surface layers and, ultimately, doing it yourself means that the cladding may not be completed any faster.

Besides price (when you sum up all the costs, including your time), another big negative factor to doing it yourself and painting cladding on site is that you cannot ensure the uniform drying of the paint coating and there is a risk that rain might damage the paint coating or direct sunlight may generate a dry film layer on the painted cladding, which slows down drying of the paint underneath, rendering the final result uneven and likely to age quickly.

The long service life of cladding you have painted yourself indoors is not guaranteed either, since in addition to a suitable work environment, the paint coating must be applied with uniform thickness, which is difficult to achieve when painting manually with a brush or paint roller. When the drying time between applying different paint coatings is too short, there is also a risk that the lower layer is not sufficiently dry and thus the top layer does not stick sufficiently to the surface and will sooner or later just flake off.

• **Which colours and colour shades to choose.**

We use waterborne professional external finishing paints made by the Finnish manufacturer Teknos OY, which has 70 years of experience in manufacturing external finishing paints.

For covering topcoat, we use Teknos Nordica EKO external semi-matte paint with acrylate binder and as a priming layer Teknos Teknol alkyd primer containing agents against mould and bluing. In addition to the colour shades on the Teknos colour chart, we can tint colours according to other covering paint colour charts (RAL, NCS, Tikkurila, Caparoli, etc.).

As glaze paint or oil stain or translucent (grinning) tinted wood preservative, we use Teknos Aqua Primer - alkyd-acryl-based oil stain, which contains agents against mould and bluing. The glaze paint does not require prior priming and is applied directly to the board according to the customer's request, either in one or two layers (the colour with the highest resemblance to the colour chart is achieved by applying in two layers). In addition to the colour shades on the Teknos colour chart, we can tint the colours according to the customer's wish on the basis of other stain or glaze paint colour charts (Tikkurila, Vivacolor, etc.).

We offer fire-resistant impregnation pursuant to fire resistance classes B-s1, d0.

• **What else (besides the points in 1.1) should be borne in mind when ordering?**

Take your time to carefully consider the colour shade. You must consider that the colour shade shown on the colour chart will always differ more or less from the final result, since the colour chart is still simply ink printed on paper, whose glossing and refraction properties differ from the same parameters of real paint applied on timber. Thus, if you hesitate regarding the chosen colour shade or want to get a 100% exact colour shade, consider a longer delivery time and order sample pieces with real paint on real timber. The risk of getting a different colour shade than that on the colour chart is higher when the colour shade is not chosen from the colour catalogue of the paint manufacturer (Teknose). One and the same colour shade may look different on planed and fine-sawn cladding. The difference between colour shades is especially noticeable in the case of boards finished with oil stain or glaze paint, since fine-sawn cladding absorbs more paint and the colour shade will be darker than in the case of planed boards.

When in doubt about the selected colour or between two colour shades, you can order a finish with one topcoat layer. If necessary, you can improve the colour shade with another layer after installation on the wall (easier to darken, complicated to lighten).

As in addition to moisture, external timber cladding is exposed to UV rays, the intensity of the selected colour shade is also important. UV-protection tinting paste is added to the paint, but in addition to this, durability depends on the intensity of the colour of the tinting paste to be added. The brighter or darker the colour shade, the better the façade absorbs the sun light, the more frequently it heats and cools and the more damage big temperature fluctuations cause to the façade. Therefore, paint manufacturers (also Teknos) have a recommended colour chart of colours to be used as external colour shades, which are normally more pastel and neutral and whose UV resistance has been tested and approved. To ensure the longer service life of the façade, we recommend that you choose a colour shade from the colour chart of recommended colours for external use.

Painted external cladding can be ordered in different treatment levels. If you want to have a product with final finishing and you are not eager to paint the façade once again after cladding has been installed, you have to order cladding that has been treated with primer and twice with the topcoat. After installation you only have to finish the heads of fastening fixtures and the cut ends with repair paint. But if you want to repaint the façade after installation, choose cladding that has been treated with primer and once with the topcoat. Boards treated once with oil stain or glaze paint need to be repainted after installation; boards treated twice with oil stain or glaze paint are finally finished. If the boards have been treated with glaze paint, repainting must be done immediately after installation and, if the boards have been treated with topcoat, within at least two years of installation.

2. Transportation and storage

2.1. Transport

The production of Puidukoda is packed in packaging meant to be side-loaded with a forklift. When loading from the rear there is a big risk of damage to the package and the goods. When transporting the goods in Puidukoda original packaging, use a forklift to avoid damage. If you load goods with a crane with slings, a special set-up meant for lifting timber packages must be used. When lifting with slings, a rigid metal channel iron or wooden strip must be placed between the slings and the package. This is to avoid slings grooving in the corners of the package and damaging the timber package and cladding, especially breaking the tongues and grooves due to pressure applied by the slings. Although the original packaging is covered with weatherproof film, transport vehicles with closed cargo areas should still be used. The more frequently goods are lifted and transported before final installation, the higher the risk of transport damage.

As painted external timber cladding is not packed in packages covered with thermo-shrinking film, avoid opening the original package of painted external timber cladding during transport. When unloading painted external timber cladding at the construction site, use either a forklift or crane since with manual loading onto and off transport, there is a very high risk of damaging the painted surface.

The final adhesion and hardening of the paint layer takes 2-4 weeks from production depending on the colour shade. Products coming to the building site immediately after production should be handled with extra care to prevent any damage to the still elastic paint layer.

2.2. Storage

Before storing material on the construction site, inspect the film layer covering the timber package and ensure that there are no holes or other damage, which may have occurred during the storage, loading or transport of timber packages. If the package film is broken, it must be repaired or replaced with a new one. When storing timber in external conditions, the top of the package and all four sides should be covered to avoid moisture penetration from the top and sides and the material should be protected against UV rays.

Use strips and leave a sufficient aeration gap under the timber package. The material should not be in direct contact with the ground. The recommended air gap is approx. 150 mm.

The heat-shrinking film used by Puidukoda is micro-perforated to ensure optimum moisture regime in small packages. Thus the heat-shrinking film is not water-resistant and the small packages packed in heat-shrinking film must always be covered with package film. If you notice that moisture or water has somehow penetrated the small package packed in heat-shrinking film, the film packages must be opened immediately to ensure sufficient aeration and to avoid bluing and mould.

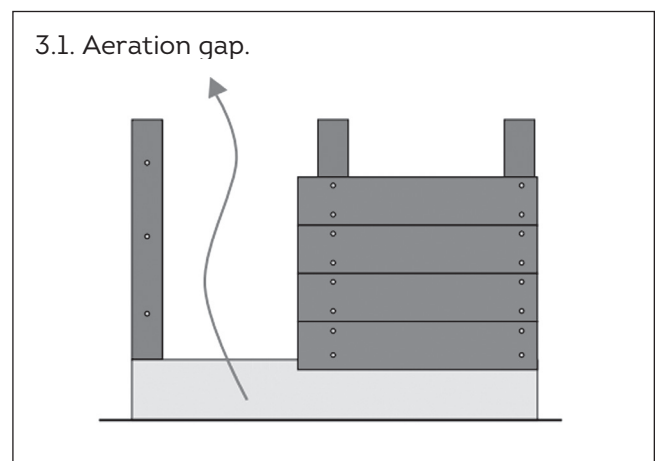
When stacking painted cladding, the material should never be stacked without the same protective plastic layer between every layer of boards that the manufacturer used in the original package. This prevents the painted surfaces from sticking to one another, scratches or any other damage.

3. Installation

3.1. Aeration gap, base batten, base batten pitch and thickness

An aeration gap is left under the timber façade to ensure sufficient aeration and drying of external timber cladding wetted due to weather conditions and to let out moisture evaporated through the walls of interior rooms. The width of the aeration gap should be at least 22 mm, the recommended width is even 25 mm. To provide ventilation, the aeration gap should be open from above and below and air should move freely within the entire area.

In the case of horizontal cladding, the aeration gap can be created with the base battens meant for fixing the cladding. To ensure sufficient fixing of the



cladding, the maximum pitch of the base battens should be 600 mm. In the case of vertical cladding, crosswise or double battens should be built to ensure sufficient aeration (first install the lower layer vertically to ensure aeration and the other layer horizontally to create fixing places for vertical cladding).

3.2. Fastening fixtures and fastening

Regarding suitable fastening fixtures, use hot galvanized nails or stainless steel screws. If you want to reduce the bending risk of cladding, we recommend using nails with better hooking properties (for instance rectangular or riffled). You must definitely not use normal construction nails for installing external timber cladding, since nailing areas will quickly start to corrode. The length of a fastening fixture should be such that it extends into the base batten by at least 1.5 times the board thickness.

During fastening, be careful not to damage the paint coating. When using a nail gun, set the impact strength so that the nails do not get too deep in the board, since water may start accumulating in the created hollow (however, the nail head must not be left out).

In order to avoid cleaves, do not fasten boards too close to the end – a safe distance is 7-10 cm. If you need to fasten close to the end, the holes must be pre-drilled. Profile boards should not be fastened from closing, but from each nailing spot

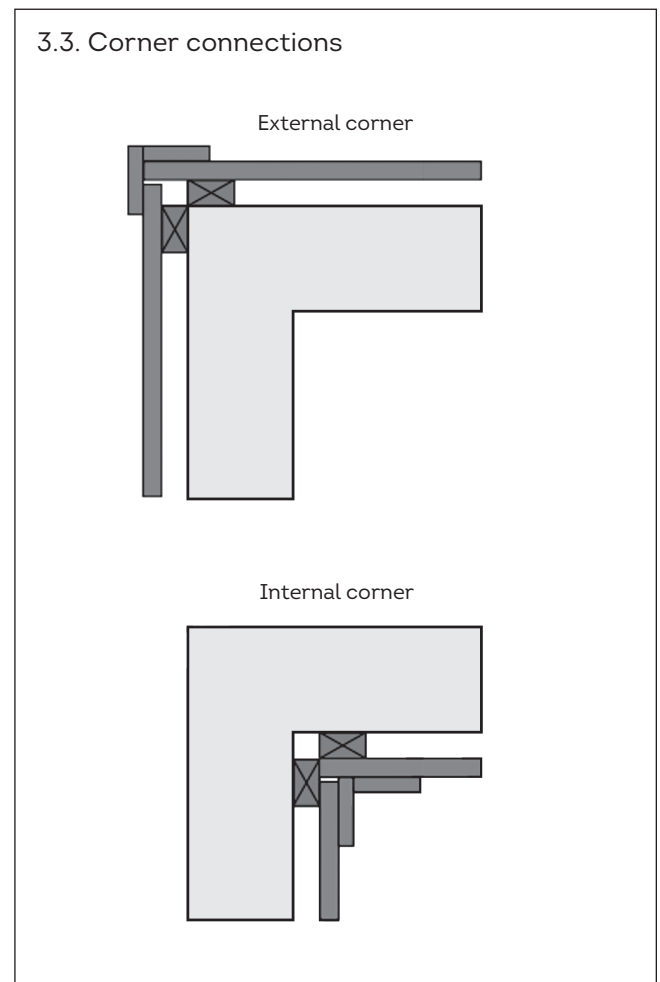
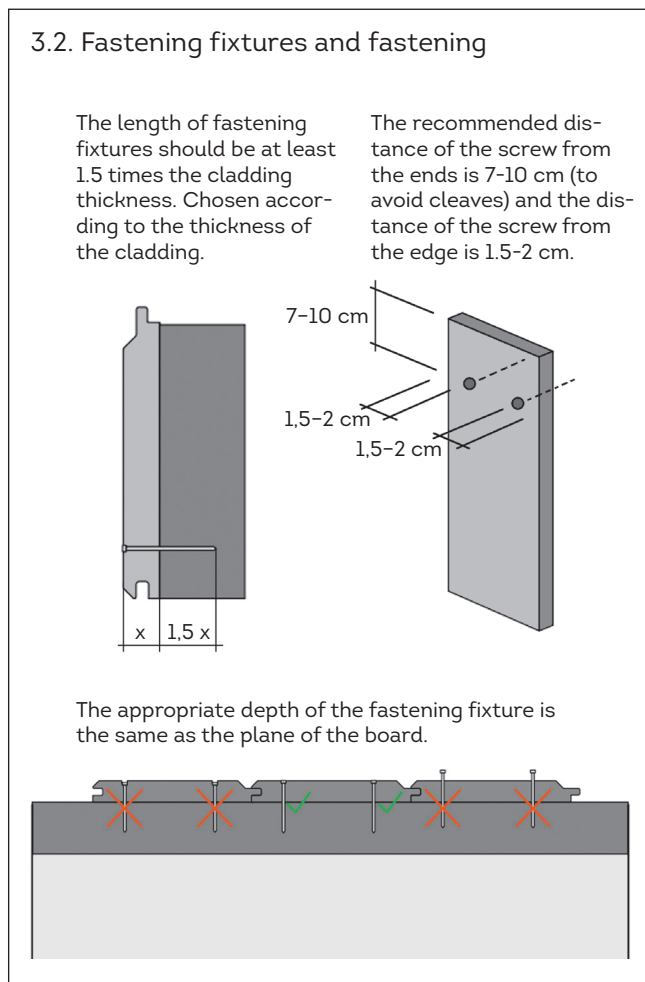
with two nails from the top side of the board (from the top of the profile to avoid breaking the tongue and groove). This is done to prevent the cladding from bending. Cant timber should also be be fixed with two nails from top of the board on both sides, depending on the board width, from a distance of 1.5-2.5 cm.

3.3 End and corner connections and joints, cutting, painting

For corner connection, we recommend using a corner connection with covering boards (leave a ventilation gap between the ends). Do not make dense cut corner connections. When water penetrates between a dense corner connection, moisture cannot be ventilated freely and may cause damages. Joints must always be done on the base batten.

The sawn ends of the boards must be painted as moisture is emitted and absorbed most intensively from the ends (lengthwise). After installation, cover nailing areas with paint. Well-installed gutter channels, discharge pipes, window off-sets and steel sheets (to prevent water flowing from the reveal between the boards, a water steel sheet must be installed under the reveal and not on it) ensure the long service life of a wooden façade.

Painted external cladding should be handled with extra care to prevent any mechanical damage, as the paint layer is still not fully hardened and is prone to scratches and damage.



4. Maintenance of industrially painted cladding

4.1. Maintenance paint finishing

Depending on the paint type used, the first maintenance painting of industrially painted cladding should be performed after 3-7 years in the case of glaze paints and after 7-15 years in the case of topcoat. The frequency of maintenance painting depends on several circumstances. In addition to the paint type used, other important factors are whether the cladding is planed or fine-sawn, whether the colour shade is bright or pastel, whether the building is located on a coast with a harsh climate and salty sea air, etc.

In the case of glaze paints, obvious signs are fading colour shade and/or uneven patching, cracking and flaking. If you use topcoat, the paint coating usually wears off evenly and becomes thin and knots become visible from under the paint coating. Before maintenance painting, clean the façade carefully, removing all loose dirt and dust. Mould spots must be pretreated with mould remover, then rinsed and allowed to dry.

The moisture level of timber when painting must be below 20%, temperature at least +5 °C and relative air humidity below 80%. Avoid painting in direct sunlight, otherwise drying is too intensive and as a result the paint coating is less durable.

Before painting, stir paint carefully. We advise you to estimate the paint quantity so that one container will be enough for one work area. This is to avoid shade differences between different containers (if you want to paint larger areas, we recommend mixing paint from several containers before you start working).

Use either a brush or a paint gun for painting; apply paint on the board lengthwise. Surfaces treated with Teknos Nordica EKO covering paint can be repainted with waterborne dispersion paints. Surfaces treated with glaze paint may be repainted with transparent waterborne wood preservative. Pay extra attention to treating sawn ends!

4.2. Resin exudation

The temperature of the façade exposed to sun light increases and resin in the timber is exuded on the board surface. As the paint coating is waterborne and lets moisture through, resin mostly exudes through a paint coating without damaging it. Resin exuded on the surface should be left until it has hardened and when the resin flow has stopped and the resin has hardened, it can be removed with a nylon or natural brush. For final removal of all resin stains, use methyl spirits and cloth but be careful not to damage the paint layer. If the paint layer gets dirty or damaged during cleaning, improve the paint coating immediately.

Exudation of resin during use is a natural phenomenon of a wooden façade and is not considered a defect.

4.3. Mechanical damage

Mechanical damage to the material and/or paint layer, for instance, cracks and bends caused by major fluctuation in the moisture regime occurring during use, is a natural phenomenon of a timber façade and is not a production fault. When such damage is detected, it should be improved as quickly as possible in order to prevent the damage from spreading further.

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