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\*(quality descriptions, see Puidukoda quality description "External timber cladding AB")



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## 1. How to order.

### 1.1. What should be paid attention to when choosing and ordering external timber cladding.

- **Wood species.**

External timber 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 the above the service life of external timber cladding and finishing coating is also 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 protection agents. For instance during industrial painting planks are covered with priming paint as the first layer. The priming paint contains active substances against bluing and mould.

- **Planed or fine-sawn cladding?**

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

Fine-sawn cladding is more practical, since when painting the **more porous fine-sawn surface is able to absorb up to 60% more paint**. Paint sticks better on the surface and it penetrates the pores of the wood more deeply, prolonging the service time of fine-sawn cladding up to 2 times (no need for so frequent maintenance painting).

**But besides paint, also dust and dirt sticks well on the surface of fine-sawn cladding** and cleaning of 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 cladding cleaning agents (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 timber cladding should be selected based on the location and architecture of the building. In general a narrower cladding with emphasised profile gives more etherealness to complex and/or smaller façade surfaces. Wider and calmer profile is ideal to cover larger façade areas. For renovating older buildings we recommend using profiles characteristic for the era.

- **Recommended thicknesses.**

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

Pursuant to the Nordic standards the minimum recommended thickness of external timber cladding is 21 mm. Also a thinner, popular and cheaper **external timber cladding with a thickness of 18 mm may be used but in this case you should count with a shorter service time of the façade and an 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 expression of which is rain falling in inclined direction and water splashing up from the ground. To prolong the service time of the wooden façade the height of the socle should be over 300 mm and the width of the eaves over 600 mm.

The service time of a façade **the eaves of which is shorter and/or the socle of which is lower** is certainly significantly shorter and it will require more frequent maintenance (maintenance painting of the paint coating). **It has to be considered that this kind of façade is considered to be a façade in extreme conditions and the cladding manufacturer (also the manufacturer**

of industrially painted cladding) cannot be held responsible for the service time of this kind of façade.

- **How to calculate material consumption.**

Depending on the architectural features of the building there are two different ways to calculate material consumption. The simplest method is to estimate the net area of the façade without deleting the area of openings and to order cladding according to the net area.

If the building has many windows-doors you can also estimate the net area of the façade (windows-doors not excluded) and when ordering cladding add at least 5% or better 10% to the result.

When cutting cladding in size and matching the planks considerable losses are inevitable. This should already be considered during ordering, since ordering additional quantities later is inconvenient for the buyer and seller (especially for the manufacturer of industrially painted external timber cladding).

### ***1.2. Industrially painted external timber cladding. Why to order it, pros and cons. What is the choice of colours and colour shades. What to pay attention to during ordering.***

- **Why order it, pros and cons.**

Industrially painted cladding is manufactured inside, in a dust-free environment with uniform temperature and air humidity. Finishing agents are applied on the surface according to the instructions prescribed by the manufacturer and in recommended layer thickness. To do this surface finishing systems approved by the paint manufactures are used. **This ensures a high quality and durable final result that lasts long.**

**Also pricewise the industrially painted external cladding is cheaper than self-painted,** since due to large purchase quantities the prices of professional paints applied to manufactures are significantly lower than retail prices and the labour cost per unit is much less thanks to efficient and mechanised manufacturing processes (paint chambers).

**A negative factor is for sure the optimum quantity required to be industrially painted.** Regarding paint tinting and adjusting of machines the optimum quantity for industrial painting with one colour shade is approx. 50–100 m<sup>2</sup>. To paint a quantity less than this is uneconomical and complicated for the manufacturer and thus the price is also higher. As the delivery time of industrially painted cladding is generally not over 14 days, it is not such a big negative factor compared to self-painting. When you do it yourself, you have to get the material, paints and tools, to prepare a work area and let the material dry between applying different coatings and **in general painting cladding yourself might not be quicker.**

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

Long service life of cladding you have self-painted insides is not guaranteed either, since in addition to suitable work environment, **the paint coating has to be applied in uniform thickness, which is difficult to achieve when you paint manually with a brush or paint roll.** 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 well on the surface and sooner or later it will just flake off.

- **What is the choice of colours and colour shades.**

We use water-borne professional external finishing paints made by the Finnish manufacturer Teknos OY, which has 50 years of experience in manufacturing paints. For top coating we use **Teknos Nordica EKO external semi-matte paint with acrylate binder** and under it as a priming coating **Teknos Teknol alkyd primer containing agents against mould and bluing.** In addition to the colour shades on the Teknos colour chart **we can also tint colours according to other top coat colour charts (RAL, NCS, Tikkurila, Caparoli, etc.).**

For 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. Glaze paint does not require pre-priming** and is applied directly on the plank either in one or two layers per the customer's requirement (the closest colour shade to the one indicated on the colour chart is achieved with two layers). In addition to the colour shades on Teknos colour chart we can also tint colours according to other oil stain or glaze paint colour charts (Tikkurila, Vivacolor, etc.).

*In addition to ordinary colours we can also use linseed paints, oil paints and earth paint – "Swedish red".*

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

- **What to pay attention to during ordering (in addition to factors listed in article 1.1.).**

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 an ink printed on paper, the glossing and refraction properties of which differ from the same parameters of real paint applied on timber. Thus, if you hesitate regarding the chosen colour shade or want to get 100% exact colour shade, consider with a longer delivery time and order sample pieces with real paint on real timber. The risk to get a different colour shade than on the colour chart is bigger when the chosen colour shade is not chosen from the colour catalogue of the paint manufacturer (Teknos). Also one and the same colour shade looks different on planed and fine-sawn cladding. The difference between colour shades is especially noticeable in case of planks covered with oil stain or glaze paint, since fine-sawn cladding absorbs **more paint in timber and the colour shade will be darker than in case of planed planks.**

**If you hesitate regarding the colour shades or you cannot choose between two colour shades, order finished material treated with one layer of the top coating.** If required, you can improve the colour shade by applying a second layer on the planks after installation (it is easier to make it darker and more complicated to get it lighter). As in addition to moisture, the external timber cladding is also exposed to UV-rays, the intensity of the selected colour shade is also important. For UV-protection tinting paste is added to the paint but in addition to this the durability also depends on the intensity of the colour of the tinting paste to be added. The brighter or darker is the colour shade, the better the façade absorbs the sun light, it heats and cools more frequently and big temperature fluctuations cause more damages to the façade. Thus the paint manufacturers (also Teknos) have a recommended colour chart of colours recommended to be used as external colour shades, which are normally more pastel and neutral and the UV-resistance of which has been tested and approved. **To ensure longer service time of the façade we recommend that you choose the colour shade from the colour chart of recommended colours for external use.**

**Painted external timber 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 top coating. If you use this type of planks the only thing remaining to do after installation is to cover the heads of fastening fixtures and the cut ends with repair paint (repair paint is included in the order). But if you want to re-paint the façade once again after installation, choose painted cladding that has been treated with a primer and one layer of top coating. Planks treated once with oil stain or glaze paint need to be re-painted after installation, planks treated twice with oil stain or glaze paint are finally finished. **If the planks have been treated with glaze paint, re-painting has to be done immediately after installation and if the planks have been treated with top coat, at least in 2 years after installation.**

## 2. Transport and storage.

### 2.1. Transport.

The production of Puidukoda is packed in packages meant to be side-loaded with a lift truck. **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 package use a lift truck to avoid damages. If you load goods **with a crane with slings, special setup 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 of the timber package and cladding, especially breaking of the tongues and grooves due to pressure applied by slings.** Although the original package 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 bigger the risk of transport damages is.

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 on the construction site use either a lift truck or crane, **since with manual loading on transport means and from transport means there is a very big risk to damage the painted surface.**

The final adhesion and stiffening of the paint layer takes 2-4 weeks after production depending on the color tone. Products coming to the building site immediately after production should be handled with extra care to prevent any damages on the still elastic and fragile 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 damages in this,** which may occur during storage, loading or transport of timer packages. In case the package film is broken, **it has to be repaired or replaced with a new one.** When storing timber in external conditions, the top of the package and all 4 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 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 the 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 immediately opened to ensure sufficient aeration and to avoid bluing and mould.

When stacking painted material, the material should be never stacked without a protective plastic layer between every layer of boards. This prevents the painted surfaces to stick with each-other, scratching or any other damages. The same plastic film can be used, which is used as a protective layer in the original Puidukoda factory packages for painted materials.

### 3. Installation.

#### **3.1. Aeration gap. Base batten. Base batten pitch, thickness.**

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 below and above and air should move freely within the entire area.

In case of horizontal cladding the aeration gap can be created with 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 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 make fixing places for vertical cladding).

#### **3.2. Fastenings fixtures and fastening.**

Regarding suitable fastening fixtures, use hot galvanised 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). Certainly you must not use normal construction nails for installing external timber cladding, since nailing areas will quickly start corroding. The length of fastening fixtures should be such that it gets in the base batten at least 1.5 times the plank thickness.

During fastening be careful not to damage the paint coating. When you use a nail gun set the impact strength so that nails do not get too deep in the plank, since water may start accumulating in the created hollow (but at the same time nail heads should not remain out as well).

In order to avoid cleaves do not fasten planks too close in the end – a safe distance is 7-10 cm. If you need to fix close to the end, the holes must be pre-drilled. Profile planks should not be fastened from closing but from each nailing spot with two nails from the top side of the plank (from top of the profile, to avoid breaking of the tongue and groove). This is to avoid bending of the cladding. Cant timber should also be fixed with two nails from top of the plank on both sides, depending on the plank width from the 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 planks** (leave a ventilation gap between the ends). Do not make dense cut corner connections. **When water penetrates a dense corner connection, moisture cannot be ventilated freely out** and it may cause damages. **Joints must always be done on the base batten.**

**The sawn ends of the planks must be painted** as moisture emits and absorbs most intensively from 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 reveal between the planks water steel sheet must be installed under the reveal and not on it) **ensure long service-life of a wooden façade.**

**Painted material should be handled with extra care to prevent any mechanical damages on the semi-dry and still not fully hardened paint layer.**

## 4. Maintenance of industrially painted cladding.

### 4.1. Maintenance painting.

Depending on the paint type used, the first maintenance painting of industrially painted cladding should be performed **after 3-7 years in case of glaze paints and after 7-15 years in case of top coat. 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 harsh climate and salty sea air or not, etc.

In case of glaze paints, obvious signs are fading colour shade and/or uneven patching, cracking and flaking. If you use top coat, the paint coating usually wears off evenly and becomes thin and knots will become visible from under the paint coating.

**Before maintenance painting clean the façade carefully**, removing all loose dirt and dust. Moulded spots must be pre-treated with mould remover, then rinse and let 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**, since 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 brush or a paint gun for painting, apply paint on the plank lengthwise.

Surfaces treated with Teknos Nordica EKO top coat can be re-painted with water-borne dispersion paints. Surfaces treated with glaze paint **may be re-painted with transparent water-borne wood protection agent.**

**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 plank surface. As the paint coating is water-borne 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 **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 remove the paint coating. If the paint coating gets dirty or damaged during cleaning, **improve the paint coating immediately.**

**Exudation of resin during operation is a natural phenomenon of a wooden façade** and is not considered to be a defect.

### 4.3. Mechanical damages.

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