

Technical Specifications for Esco engineered parquet and solid wood flooring.

Please read through these specifications carefully. In the case of complaints or claims these specifications alongside with General Business Conditions are the basis for handling such.

These technical specifications are being accepted when ordering ESCO Products.

1. Wood type

ESCO CZ Production s.r.o. produces high-quality solid wood floors and parquet that are made of European oak. Esco and all ESCO suppliers are PEFC and/or FSC, European CE-certified, German DiBT. Our product emotions are delivered with a wood moisture content of 9% +/- 2% in solid, engineered is then 8% +/- 2%. Oak is a product from "Mother" Nature. By applying special treatments in combination with wood-style and colour Esco creates an atmosphere you are interested in. The origin of the oak will influence the colour variations of the products and cannot be avoided.

2. Quality control

All products undergo strict quality controls at several steps during production.

The European oak has colour variation given by nature and is accepted within all grades.

All products are 100% certificated and our factory production buildings are 100% acclimatized to obtain the highest quality.

3. Wood-Style

From the 9 product emotions are 4 available in adjustable wood-style. The wood-styles are special Esco gradings that create the Esco identity. The "cosmetics" of the product emotion is superior to the wood-style and therefore the description is not always leading.

The adjustable product emotions are: Chateau, Kolonial, Pelgrim and Harfa.

Elegance:

- Dot-sized knots (practically knot-free)
- No Sapwood
- No pinholes, insects or planing mistakes
- Natural colour variations allowed
- Combed grain and different grain flow occasionally permitted

Superb:

- Small open filled knots with an approx. diameter of +/- 15 mm till 20 mm (+/- 0.59" till 0.79") allowed
- Closed healthy knots till +/- 25mm till 50 mm (+/- 0.98" till 1.97")
- No Sapwood
- No pinholes, insects or planing mistakes
- Natural colour variations allowed
- Combed grain and different grain flow occasionally permitted

Classic:

- Like A Style plus circular open filled knots with an approx. diameter up to +/- 40 mm (+/- 1.57")
- Cross-shaped filled knots up to approx. +/-90 mm (+/- 3.54") allowed
- Closed healthy knots
- In principal no sapwood allowed
- Combed grain and different grain flow occasionally permitted

Original:

- Mixture of Classic, Superb and Rustic and very alive wood styles

Our wood-styles are graded by hand after planing/machining. Despite constant quality controls one wood-style might contain 5 % of another wood-style. Furthermore we are not having any influence on the growth or annual rings which are having effects on swelling or shrinking of the wood. As there is no uniform EU-regulation for producing solid wood flooring our products differ in length, width and tolerances to standard products such as parquet.

Product emotions Bohemia, Moravia, Harfa Vintage, Karel IV and Soft-Tone have special cosmetics and design.

The wood-style is not adjustable.

4. Product Emotions

The Esco program has 9 Product emotions and each of them has its unique design, cosmetics and treatment given by the wood-style, colour, and treatment and by the natural characteristics of oak. All product emotions have their specific logo which stands for the emotion.

Product emotions are: Bohemia, Chateau, Moravia, Kolonial, Harfa Vintage, Harfa, Pelgrim, Karel IV and Soft-Tone.

Bohemia

Bohemia offers the liveliest look in our program of rustic oak floors. The big knots and cracks are filled with harmless ecological filler and sanded afterwards. The combination of our special rustic style and its classy smooth surface is available in many colour options. Or, choose a colour and surface treatments out of our other product emotions and create your own floor finished with Polyx Hardwax oil.

Bohemia is a mixture of wood styles in rustic way; the floor can have bigger knots and cracks as well as sapwood.

As Esco produces emotions with special surface identities to accept in the sanded products are colour variations, surface lines and irregular surface smoothness – these features make Bohemia and Chateau special.

We do not advice sanded products without bevel, if customer chose for it Esco give no guarantee for the tolerance in thickness and differences can occur after installation.

Chateau

The knots are filled with harmless ecological filler and sanded afterwards to achieve a smooth finish. The original Polyx Hardwax oil adds the finishing touch. Chateau is available in many colours, widths and high-quality styles. In combination with our Creative Program and the ready-to-install Hardwax oil finish this is a floor for every room.

Because Esco copies the emotion of solid on engineered this means that they are 100% in surface treatment the same. Therefore the sanded engineered products have the same features as the solid ones.

As Esco produces original emotions with special surface identities to accept in the sanded products are colour variations, surface lines and irregular surface smoothness - these features make Bohemia and Chateau special.

We do not advice sanded products without bevel, if customer chose for it Esco give no guarantee for the tolerance in thickness and differences can occur after installation.

Moravia

Distinctive, lively and very popular! Moravia gives a new dimension to rustic oak floors. The knots are filled with harmless ecological filler and the surface is wire-brushed. Thus the floor receives a 3-dimensional effect. Play with colours and surfaces structures to create your own floor or go for one of our 8 standard colours.

Kolonial

Kolonial series comes with a wire-brushed structure and therefore offers a harder surface. Feel free to combine modern design with our Superb or Elegance style. Of course the floors receive the original Polyx Hardwax oil surface to ensure a high-quality product which is ready to install. 8 colours or several widths are not enough? Create your floor by using different colours or surfaces structures for a floor with your own signature. The brushing in Moravia and Kolonial has a standard tolerance. Because of this treatment in combination with the Polyx Hardwax oil and Top-coating the glossiness in Moravia and Kolonial is more intensive compared to sanded products.

The knots are after brushing deeper in the board which gives the brushed products a special optic.

Pelgrim

Pelgrim with its aged look has been one of ESCO's specialities and popular throughout Europe for over 15 years. With our special process steps the knots are filled and oiled to achieve a 100 years old look. Damages and aging features complete the old appearance. It is also available as

herringbone or pattern floor. Explore many other possibilities with our Creative Program to achieve your personal floor finished with Polyx Hardwax oil.

Pelgrim is an old made distressed floor which is special filled with ecological filler. The filler will sink after oxidative drying process which will take 2-3 weeks. After this the filled knot will look like it was 100 years old.

Colour changing of the filler is not possible. Because of the special treatment the floor has an old style colour variation in "spots" and the surface is irregular, rough and smooth.

Harfa

Design manufactured boards in rough cross-sawn emotion; the cross-wide cuts are grooved in to the surface with great care. In combination with ESCO wood styles and colours Harfa offers many emotions. Like most ESCO products even Harfa is finished with the Polyx Hardwax oil so that the quality you expect and wish is guaranteed. Harfa – amazing cross-sawn flooring like you never experienced!

Harfa Vintage

Harfa Vintage is the so called used old version of the Harfa collection. The boards have a special optic in square saw lines in trendy unique colour variations. The surface can be rough as well as smooth; the lines of the blade of the saw are irregular and give Harfa a vintage look. In style Harfa Vintage can be compared with Original as by the special chosen colours not always to notice. (for repair colours please ask sales team).

Karel IV

Karel IV really is something unique within our product range. European rustic oak with a highly distressed surface structure is mainly being produced by the hand of skilled joiners and carpenters. Every single board receives a high-quality Hardwax oil finish and therefore an exclusive and individual look. Karel IV looks 300 years old and is extreme in style and dimension.

In solid construction Karel IV is an extreme product without DIN EN norms or tolerances, therefore Escos advice to sell the solid version only with a bigger sample and point out the special optic features to the customers.

The surface is 3 times hand oiled and therefore an end maintaining after installation is to advice but not compulsory. As the floor is hand oiled the cleaning and maintenance in the first 3 weeks not to intense because the oil has to harden out.

Soft Tone

Something totally different... that is the Soft Tone emotion! Soft as a feather, produced specially for you to get into a relaxed mode. Soft Tone has its own identity in style. The colours are a combination of hand-craft staining and colouring, finished with the Polyx Hardwax oil and ready-to-install and easy to maintain.

5. Lengths

ESCO Solid wooden Flooring is being produced in random lengths.

Thickness 14mm and 20mm (0.55" and 0.79"):

60 % longer than 1700 mm (66.9") and 40 % between 400 mm and 1650 mm (15.7" and 65").

The longest lengths are max. 2800 mm (110.24").

Fixed lengths are only available upon request; please contact the sales team for more info.

ESCO Engineered flooring is being produced in random length.

Thickness 12mm, 15mm and 20mm (0.47", 0.59" and 0.79"):

3 layer products come in different Fix length max. 3. All lengths are separately packed. 1800 mm till 2400 mm (70.87" till 94.5").

2 layer products 80% longer than 1200mm till 2400mm (47.24" till 94.5").

Fix lengths are available upon request, please contact the sales team for more info.

6. Widths

Due to our raw-material purchasing system it might occur that widths can differ from the original order. The information about the exact width will be stated in the customer's order confirmation.

It is essential to sell 3-layer floor and 2-layer floor, thickness 15 mm (0.59") as 175-190 mm (6.89" – 7.48") when one of the widths shall be supplied. It is possible to ask for preferred width and ESCO shall do their best to

supply, however it cannot be guaranteed. The supplied width shall be stated in the order confirmation.

7. Bevel

Our products have in standard bevel along two long sides. This will minimize the danger of damage. However, we are also able to offer 4-side bevelled products upon request.

If a product without bevel is requested this means wood style Original ONLY. At uniformed wood style we can only fulfil 170 mm (6.69") widths without bevel in solid, in engineered it is on request.

Size of the bevel depends on product range and dimensions.

SOLID

Unfinished – Pelgrim	+/- 2,0 mm (+/- 0.078")
Bohemia – Chateau	+/- 1,7 mm (+/- 0.067")
Moravia – Kolonial	+/- 1,8 mm (+/- 0.071")
Soft Tone – Harfa – Harfa Vintage	+/- 1,6 mm (+/- 0.063")
Karel IV	+/- 1,8 mm (+/- 0.071")

ENGINEERED

Unfinished – Pelgrim	
+/- 1,5 mm (width 155-190 mm)	+/- 2,3 mm (width 225-245 mm)
+/- 0.059" (width 6.1"-7.48")	+/-0.091" (width 8.86"-9.64")

Bohemia – Chateau	
+/- 1,2 mm (width 155-190 mm)	+/- 1,5 mm (width 225-245 mm)
+/- 0.047" (width 6.1"-7.48")	+/-0.059" (width 8.86"-9.64")

Moravia – Kolonial	
+/- 1,3 mm (width 155-190 mm)	+/- 1,6 mm (width 225-245 mm)
+/- 0.055" (width 6.1"-7.48")	+/-0.063" (width 8.86"-9.64")

Soft Tone – Harfa – Harfa Vintage	
+/- 1,1 mm (width 155-190 mm)	+/- 1,4 mm (width 225-245 mm)
+/- 0.043" (width 6.1"-7.48")	+/-0.055" (width 8.86"-9.64")

Karel IV	
+/- 1,3 mm (width 190 mm)	+/- 0.055" (width 7.48")

8. Tolerances

The tolerances for solid T&G in the area of the head edges are approx. 1 mm to ensure an easy installation of solid wood flooring. The Top-layer engineered of the oak have a tolerance in thickness based on the special treatment. Average thickness is detailed below:

12/2,5mm (0.47"/0.098")

Chateau	+/-2,3mm - 2,5mm average	+/-0.091" – 0.098" average
Kolonial	+/-2,3mm - 2,5mm average	+/-0.091" – 0.098" average

14/3 mm (0.55"/0.118")

Chateau	+/-2,7mm – 3,0mm average	+/-0.106" – 0.118" average
Kolonial	+/-2,7mm – 3,0mm average	+/-0.106" – 0.118" average

15/4mm (0.6"/0.157")

Unfinished	+/- 4,1mm – 3,8mm average	+/-0.161"–0.15" average
------------	---------------------------	-------------------------

Bohemia – Chateau	
+/- 4,1mm – 3,6mm average	+/-0.161" – 0.142" average
Moravia- Kolonial-Sumava	
+/- 4,1mm – 3,6mm average	+/-0.161" – 0.142" average
Harfa- Harfa Vintage- Soft Tone	
+/- 4,1mm – 3,6mm average	+/-0.161" – 0.142" average
Pelgrim	
+/- 4,1mm – 3,8mm average	+/-0.161" – 0.15" average
Karel IV	
+/- 4,2mm – 3,8mm average	+/-0.165" – 0.15" average

20/5mm (0.79"/0.197")

Bohemia – Chateau	
+/- 5,1mm – 4,6mm average	+/-0.201" – 0.181" average
Moravia- Kolonial-Sumava	
+/- 5,1mm – 4,6mm average	+/-0.201" – 0.181" average
Pelgrim	
+/- 5,1mm – 4,8mm average	+/-0.201" – 0.189" average

Soft Tone

+/- 5,1mm – 4,6mm average +/-0.201" – 0.181" average

Total thickness is guaranteed based on CE concept tolerances.

9. Filler

For our products Bohemia, Moravia, Chateau, Kolonial, Harfa, Harfa Vintage, Soft Tone and Karel IV we use ecological filler which fully cures within 2 days. A special oil-mixture is being used for our product Pelgrim to achieve its special look. This filler takes approx. 14 days to fully cure and sinks into the filled knots.

10. Sanding (Bohemia- Chateau)

Esco always plane the product before further treatment, in the case of sanding Esco wants to create a certain optic which is not to compare with other brands. The optic and surface treatment for sanded products is therefore typical and original. Esco sand till 150 grit. Features after planing can be visual as this makes the sanded product an Esco Emotion. Combination of oak structure, sanding and colour can influence the end result optical and is to accept as Esco work only with ecological products in a hand-crafted style.

11. Brushing (Kolonial – Moravia – Harfa – Soft Tone – Harfa Vintage – Karel IV)

Depth of brushing depends on the structure and hardness of the wood. This will influence the overall look of the supplied flooring. Moreover, some colour variations might occur and cannot be overcome.

Combination of oak structure, sanding and colour can influence the end result optical and is to accept as Esco work only with ecological products in a hand-crafted style.

12. Smoking

When smoking oak floors a certain amount of ammonia is put into the smoking chamber. The tannic-acid of our European oak reacts with the ammonia and creates the floors dark colour and appearance. As not every piece of oak contains the same amount of tannic the colour and appearance of smoked oak can vary. A customer's floor therefore can contain oak boards with lighter or darker colours. ESCO products are not fumigated to the core but +/- 2mm (+/- 0.078") into the surface. With double-smoked products the surface appears in a black-reddish colour shade. Smoked oak will contain natural colour differences and are therefore no reasons for complaints.

13. Hardwax oil surface

All colour shades inclusive of the final topcoat are being cured ready for packing through UV-rays. The surface is dual-curing and therefore cures further with oxygen and optimizes its features (natural air drying).

The Hardwax Oil surface protects the wood against wear & tear and allows the ESCO products to be „ready to install“ without any maintenance or use of soaps after installation.

Karel IV is the only product oiled and finished with 3 layers of Esco Hardwax oil. After installation a protected end finishing is not needed but is possible. Maintenance first 3 weeks to be careful with water as the oil must dry out and get strong.

14. Side products – Joinery

All of our joinery such as stair nosing, stairs etc. are hand-made. ESCO does its best to deliver such products in the most matching emotion as supplied floor. However, due to hand-made process such as surface treatment, hand oiling and due to special wood used for these side products some differences in overall look when compared to supplied flooring might occur. This has to be considered.

15. Swelling and Shrinking of Wood

Solid wood is "working" within certain tolerances of +/- 3%. This means that if the humidity in e.g. a room is changing the width and thickness of a solid floor plank (depending of direction of annual rings) can change. Our products are being delivered with a wood moisture content of +/- 9%. This equals approx. the climate (humidity) in European households.

Possible problems which might occur by having incorrect conditions are:

- Swelling and shrinking
- Deformation (up to 1 mm on 50 mm) (up to 0.04" on 1.97")
- Drying cracks
- Long side deformation (twisting) (up to 4 mm on 1000 mm length) (up to 0.157" on 39.37" length)

16. Acclimatisation

The goods should be stored within the room it will be installed in for 2-3 days to adapt to its climate/environment.

17. Installation

ESCO multi-layer products are suitable for floating installation. Solid wood floors are suitable for „glue-down“ or drilling method on sub-construction.

Installation on sub-construction:

The distance between the sub-construction beams MUST NOT exceed 45 cm (17.72") to avoid bending of the floor planks. Our solid wood planks are easy to install due to the higher tolerances at tongue and groove.

Before installation the goods have to be checked thoroughly.

Possible damages have to be claimed immediately. By installing the floor it is being accepted!

To achieve an even and nice look we recommend pre-sorting the wood planks (wood-style, annual rings, and lengths). Due to insignificant tolerances it might occur that the planks show a rectangular difference of +/- 3 mm on 50 mm (+/- 0.118" on 1.97"). This has to be considered.

ESCO CZ Production s.r.o. does assume no liability for the condition of the subfloor (moisture content of subfloor, installation conditions e.g.). Subfloors in new buildings should undergo a moisture measurement according to national regulations.

18. Samples

Floor samples are ONLY representation of the requested finish and due to their size cannot always show all characteristics of later supplied flooring. It is not possible to show examples of wood-styles and eventually upcoming natural wood colours in just one small floor sample. We therefore recommend to get informed in our showrooms or in showrooms of our business partners.

19. Dutch Desing – European made

ESCO CZ Production is processing Dutch Design, European made. All materials used come from Europe.

All our products are produced in our factory in the Czech Republic.

Ourselves produced solid wood floors AND our multilayer products emotions are identical in cosmetics and colour as the same raw-material (European oak) is used for production as also the total production treatment.

20. Under-floor heating

ESCO multilayer parquet is suitable for wet construction under-floor heating. But the following subjects **MUST** be respected:

- Thermal conductivity E 12523;2000 3 layer 0,134 W/m. K
- Thermal conductivity CSN EN 12664 2 layer 0,104 W/m. K
- The humidity in the room is between 45-65 %
- The solid wood moisture content is 9 +/- 2% , the engineered wood moisture content 8 +/- 2%
- No carpets as it will block the heat flow.
- Dry construction under floor heating no warranty
- The floor surface temperature shall not exceed 28 °C
- With a water-heating system the temperature shall not exceed 40 °C
- The floor must be heated slowly
Concrete floor must be dry (up to 2,5 % CM – gravimetric method) and a test trial of floor heating for 21 days before installation must be undertaken and must be according the guide line and instructions of manufacturer of the floor heating system (ČSN 492120).
Water temperature: Every day max 5° degrees up and max up to 35° degrees.
28 days after concrete floor was finished floor heating off and Esco products can be installed and only when moisture of concrete is max 2,0% (0,85 CM%) for cement screeds , 0,3% (0,3 CM%) for anhydrite screeds or less.
(In winter time the floor heating can be reduced and not switched off till surface temperature is 15-18° degree, when Esco product is installed 3 days 15-18° degree and then can be heated more)
- Suitable glue for installation must be used.
- If the under-floor heating is the main heating system the floor MUST not be installed floating and must be installed by gluing to substrate.

- If the floor is overheated in dry air condition, the wood moisture content can go below 5% - ESCO then can assume no liability for the floor
- Humidity below 30% or above 70 % is considered to be extreme conditions. In such conditions the floor can react extreme (cracking, cupping, e.g.)

If the above stated subjects are in doubt or not adhered to the floor can deform due to extreme swelling and shrinking, crack e.g..

Solid wood floors for under-floor heating are suitable only at a thickness of 14 mm. It has to be accepted that bigger gaps between the boards will/might occur.

Esco respects the general warranty based on the law of the country where the floor has been imported and sold in combination with the tolerances of CE and the TA Esco.

21. Advices for construction sites

Esco advises not to install the floor too early in the time frame of total construction as the floor can be damaged or polluted by construction work activities. Dust, intensive construction activities and dirt can damage or pollute the floor in an extreme way as the floor is produced for regular normal usage. Therefore take notice of following:

- Install the floor when all other activities are finished and the rooms are clean without extreme construction activities to avoid extreme dirt on the floor.
- When the floor is installed and there are still activities cover the floor so it is protected.
- While the floor is being covered no floor heating can be used.
- After finishing the construction activities the cover can be removed and it is recommended to clean and maintain the floor with Osmo products before using.

Esco only advises Osmo products to be used for maintaining and cleaning. All other products are not to be used and therefore only for the risk of the customer. Warranty will not be valid anymore.

22. Installation guideline for project floors

Esco offers at projects with certain volume a personal advice and guide service for fitters, building supervisors and cleaning staff in terms of maintenance and cleaning while building and installing.

Also Esco offers technical trainings at the factory for all professionals dealing with the installation and maintenance. Please ask the sales team for more information.

23. Creative Program

ESCO Creative Program allows our customers to design their own desired floor by applying extras such as hand-scraped bevel, distressing, 4-side bevel, smoking treatment, silver shine look, fix length or a colour tone from a different range to be applied to another one. There are many more options, please, contact our sales team for more info. Subject to availability.

24. Certificates

All Esco Products have:

Allgemeine Deutsche Bauaufsichtliche Zulassung DiBT
 TÜV chain of Custody PEFC CSN EN 45011:1998 CFCS 1004:2006 Revision 3
 European CE Declaration of Performance CSN EN 13226
 Thermal conductivity EN 12523:2000
 Slipperiness test DIN 51130 angle till 35
 Slipperiness test CSN EN 1339
 Firerating Cfl.S1
 On request for solid: Firerating Bfl.S1

Technical specifications for ESCO engineered parquet and solid wood flooring in Czech language as well as General business conditions in Czech language are primary and leading, because ESCO CZ Production s.r.o. does not have direct influence and availability to check back accuracy and precision of provided translations into different languages by third parties.

