

Installation Requirements for Dutch-Haus® MRP® Wide Plank Hardwood Flooring

Dutch-Haus® Hardwood Flooring is exclusively made in the Netherlands. Produced from genuine Vintage French Oak® hardwood, built on a multi-layer Moisture-Resistant-Platform (MRP®), the solid hardwood top layer is adhered to the highest grade, water and moisture-resistant, multi-ply Baltic birch plywood for a dimensionally stable product that is both beautiful and extremely durable.

Before You Begin – Important Information! It is EXTREMELY IMPORTANT that you read and understand this information completely prior to starting, since improper installation can void the warranties.

Installer/Owner Responsibility

- Materials should be brought inside the building and Inspected for completeness of order before installation.
- Dutch-Haus® floor requires 7-10 days acclimation time in stable house living conditions prior to installation.
- Dutch-Haus® flooring installation shall be the last step of any construction or renovation project.
- Warranties do not cover materials damaged during transport and or with visible defects once they are installed, whereby natural characteristics of wood cause variations in wood grain, figure, character marks, texture or color and are not covered under warranties.
- Transport damages should be reported on the delivery document directly during signing for delivery when possible and when not accepted as is, returned to the transporter.
- Provisions must be made to prevent the product from sliding or falling.
- The installer assumes all responsibility for the final inspection of product quality.
- This inspection of all flooring should be done prior to installation. Depending on availability, deliveries may contain non-standard lengths and non-standard packaging size.
- Carefully examine flooring for quality, finish and color before installing it.
- The installer must use reasonable selectivity and hold out or cut off pieces with deficiencies, whatever the cause.
- If material is doubtful as to grade, manufacture or factory finish, do not install it and contact your supplier immediately.
- The use of stain, filler or putty stick for the correction of minor defects during installation should be accepted as normal procedure.
- Even though our products are inspected many times, some grading deficiencies may occur (in up to 5% of the floor area).
- When flooring is ordered, at least 8%-10% must be added to the actual quantity needed for cutting and grading allowance.

Necessary Tools and Accessories

All installations of Dutch-Haus® unfinished flooring will require these items: dust mask, broom or vacuum, chalk line and chalk, (electric power) saw, eye protection, hammer, hand saw or jamb saw, moisture meter (wood, concrete or both), square, tape measure, utility knife, pry bar. When installing site finished products sanding and buffing equipment may be applicable as well as finishing components, such as dyes, stains and sealants.

Pre-installation and Jobsite Conditions

- The installer/owner is responsible for determining if the job site subfloor and job site conditions are structurally and environmentally acceptable for installation. The manufacturer declines any responsibility for floor failure resulting from or connected with subfloor, subsurface, job site damage, jobsite environmental deficiencies or deficiencies after hardwood flooring has been installed. All substrates must be dry, clean, structurally sound and flat.
- Use of appropriate products and methods for correcting subfloor voids should be accepted as a normal industry practice.
- Exterior grading should be complete with surface drainage offering a minimum drop of 150 mm (6") in 3000 mm (10 ft.) to direct flow of water away from the structure. All gutters and downspouts should be in place.
- All outside doors and windows must be in place. All concrete, masonry, plastering and other "wet" work must be thoroughly dry. The wall coverings should be in place and the painting completed except for the final coat on the base molding. When possible, delay installation of base molding until flooring installation is complete. Basements and crawl spaces must be dry and well ventilated.
- Dutch-Haus® flooring products may be installed below, on or above grade level.
- Crawl spaces must be a minimum of 450 mm (18") from the ground to underside of joists. A ground cover

of 6-8 mm polyethylene film is essential as a vapor barrier with joints lapped 200 mm (8") and taped. The crawl space should have perimeter venting equal to a minimum of 1.5% of the crawl space square footage. These vents should be properly located to foster cross ventilation (see figure 1). Local regulations may prevail.

- The installation site should have a consistent room temperature of 15-24°C (59-75°F) and humidity of 40-60% at 14 days prior to installation to allow for proper acclimation and thereafter, to allow for proper acclimation. Room humidity should never exceed 60%. Keep in mind that if the relative humidity drops below 30% for extended periods, the flooring could shrink and expand causing surface crack, split, bow, crook or delaminating.
- The subfloor must be checked for moisture content by an appropriate testing method. Test results must be recorded.
- To warrant Dutch-Haus® unfinished Rustique French Oak material, flooring areas larger than 80 m² (860 ft²) and/or containing subfloor heating, refer to document: *Dutch-Haus® Subfloor Heating and Cooling*.

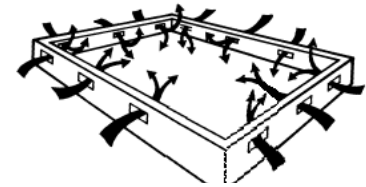


Figure 1

Note: Keep a record in your flooring passport of all your readings for later reference and warranty enquiries. We strongly recommend you keep a record of your moisture and humidity readings prior to and after installation. These measurements will be required by the supplier and manufacturer if there are any future problems.

Storage and Handling

Handle and unload with care. Dutch-Haus® flooring should be stored in a dry place, ensuring an air space under bundles of at least 100 mm (4"). If bundles are placed on concrete floors, the concrete must be flat, stable and located "on-grade." The flooring should not be delivered until the building has been closed in with windows and doors creating a controlled interior environment and until cement work, plastering and all other "wet" work is completed and dry. Concrete should be at least 90 days old. Dutch-Haus® floor must be stored, in its packaging, in the environment in which it is expected to perform (stable house living conditions) for at least 7-10 days prior to installation. Provisions must be made to prevent the product from sliding or falling.

Subfloor Preparation and Recommendations for All Installations

Concrete Subfloors

Remove all transitions and wall-base then undercut all door casings with a hand or power jam saw using a scrap piece of flooring as a height guide. New concrete slabs require a minimum of 90 days drying time before covering them with Dutch-Haus® flooring. They must be fully cured. Concrete subfloors must be dry, smooth (flat within 5 mm (3/16") in a 3000 mm (10 ft.) radius or 3 mm (1/8") in 1800 mm (6 ft.) radius) and free of structural defects. To remove loose, flaky concrete, hand scrape or sand with a 20-grit # 3-1/2 open coat paper. Grinding high spots in concrete is recommended over using filling compounds. However, if a filling/leveling compound is used, it must be of a Portland base compound with a high compressive strength (min. 2000 N/cm² (3000 psi)).

Concrete must be free of paint, oil, existing adhesives, wax, grease, dirt, sealers, and curing compounds. These may be removed chemically or mechanically, but do not use solvent based strippers under any circumstances. Residual solvents can prohibit the satisfactory bonding of flooring adhesives. It is important to ensure a proper bond between the adhesive and the concrete and the flooring planks. Dutch-Haus® unfinished flooring may be installed on grade, above grade, as well as below grade where moisture conditions do not exist. To ensure a long lasting bond, make sure that the perimeter of the foundation has adequate drainage and a vapor barrier.

Required Wood Subfloor Primer/Sealer/Moisture Barrier:

UZIN® PE-414 Turbo or Pallmann® P-104

Required Wood Floor-to-Concrete Subfloor Adhesive:

UZIN® MK-92S (2-component)

Lightweight Concrete that has a dry density of 1500 kg or less per m³ (under 3000 psi) is not suitable for Dutch-Haus® flooring. Many products have been developed as self-leveling toppings or floor underlayment. These include cellular concrete, resin-reinforced cement underlayment and gypsum-based materials. Although some of these products may have the necessary qualifications of underlayment for wood flooring installations, others do not. To test for lightweight concrete, scrape a coin or key across the surface of the subfloor. If the surface powders easily or has a dry density of 1500 kg or less per m³ (under 3000 psi), do not install Dutch-Haus® flooring products.

Wood Subfloors

Wood subfloors need to be well nailed or secured with screws. Nails and screws need to be counter sunk. The wood subfloor needs to be structurally sound (meaning subfloors without loose boards, vinyl, tiles, or loose OSB board or plywood), flat 5 mm (3/16") in a 3000 mm (10 ft.) radius and dry. It should not exceed 12% moisture prior to installation. If the subfloor is a single layer, less than 15 mm (5/8") thick, add a single cross layer for strength and stability (minimum 10 mm (3/8") thick for a total 25 mm (1") thickness). For glue down installations, wood subfloors must be free of paint, oil, existing adhesives, wax, grease, dirt and urethane, varnish etc. Underlayment grade OSB is also a suitable subfloor. Particleboard is not an acceptable subfloor structure. When installing over existing wood flooring, install at right angles to the existing floor.

Required Wood Subfloor Primer/Sealer/Moisture Barrier: UZIN® PE-414 Turbo or Pallmann® P-104
 Required Wood Floor-to-Wood Subfloor Adhesive: UZIN® MK-200 or Pallmann® P-5 (1-component)

Subfloor Moisture Check

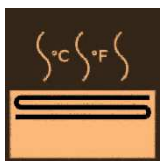
The recommended wood flooring adhesive may be used for above, on, and below grade applications. All grade level applications are susceptible to moisture and should be tested for moisture prior to installation in several locations within the installation area. Acceptable conditions for above, on, and below grade installations are:

- Less than 1.25 kg (3.0 lbs.)/ 90 m² (1000 ft²)/24 hrs. in accordance with ASTM F - 1869 (calcium chloride testing for concrete).
- Less than or equal to 75% relative humidity in accordance with ASTM F - 2170 (relative humidity testing for concrete).
- No greater than a reading of 4.5 on a Concrete Moisture Encounter (moisture meter) - Concrete Moisture Encounter meters should only be used as a method of searching out areas that may contain excessive moisture and should not be used to determine concrete readiness.
- Wood Substrates must have a moisture reading of less than 12% when using a Tramex, Delmhorst or equivalent moisture meter.

To correct any subfloor problems concerning moisture, either wait until the subfloor dries to meet specifications or use an appropriate moisture barrier.

Subfloors other than Wood or Concrete

NOTE: Perimeter glued resilient vinyl and rubber tiles are unacceptable underlayments and must be removed. Terrazzo, tile and any other hard surfaces that are dry, structurally sound and flat, as described above, are suitable as a subfloor for installation of Dutch-Haus® products. As above, the surface must be sound, tight and free of paint, oil, existing adhesives, wax, grease and dirt. Terrazzo and ceramic tile must be sanded to assure adhesion. **WARNING!** Do not sand existing resilient tile, sheet flooring, backing, or felt linings. These products may contain asbestos fibers that are not readily identifiable. Inhalation of asbestos dust can cause Asbestosis or other serious bodily harm. Check with local, state and federal laws for handling hazardous material before attempting the removal of these floors.



Radiant Heated Subfloors and Subfloor Cooling

Use of an in floor temperature sensor as well as a separate thermostat for the individual room is required. For more detailed information and instructions refer to *Dutch-Haus® Subfloor Heating & Cooling*.

Preparation Remove all transitions and wall-base and undercut all door casings with a hand or power jam saw using a scrap piece of Dutch-Haus® flooring as a height guide.

Racking the Floor

Whether you choose to install the floor by the glue down method, nail down method or both, start by cutting four to five planks in random lengths, differing by at least 600 mm (24"). As you continue working across the floor, be sure to maintain the 600 mm (24") minimum between end joints on all adjacent rows to ensure a random lay with no detectable pattern. (See Figures 2 and 3) Never waste material; use the left over pieces from the fill cuts to start the next row or to complete a row.

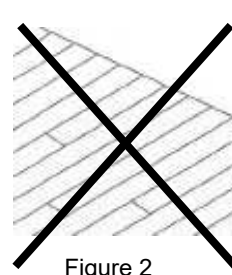


Figure 2

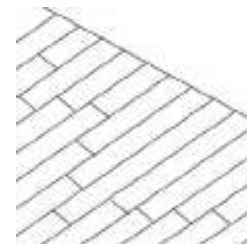


Figure 3

NOTE: When installing, be sure to blend the wood from several bundles to ensure a good grain and shading mixture throughout the installation. Allow for a 15 mm (5/8") expansion gap all around the room. Never strike the surface with a hammer or such, as this can damage the finish.

Recommended Subfloor Surfaces

Glue-down

- 18 mm (11/16") plywood or OSB
- Acoustic concrete - minimum 3000 psi
- Suitable sound-reduction underlayment
- Ceramic, terrazzo, slate and marble
- Concrete slabs
- Existing solid wood flooring
- Preferred: 18 mm (11/16") CDX grade plywood or 18 mm (11/16") OSB PS2 rated underlayment, Minimum: 15 mm (5/8") CDX grade plywood

Nail-down | Glue & Nail-down

- 18 mm (11/16") plywood or OSB
- Preferred: 18 mm (11/16") CDX grade plywood or 18 mm (11/16") OSB PS2 rated underlayment, Minimum: 15 mm (5/8") CDX grade plywood
- Existing solid wood flooring

Glue Down Installation Guidelines Applicable for Dutch-Haus® 20 mm (3/4") Flooring

Additional Tools and Material Needed:

UZIN® Adhesive-required Trowel (1/4" V-notch); UZIN® or Pallmann® Subfloor Primer/Sealer/Moisture Barrier for Below and Above Grade Applications; Clean White Rags; OPTIONAL FOR PRE-FINISHED FLOOR: Polywater® Grime-Away Multi-Purpose Cleaning Wipes/ Adhesive Remover.

Below Grade Installation Guidelines

NOTE: A concrete slab is considered below grade when any part of the slab is below ground level, for example, walk-out basements are below grade! Treat with an approved moisture retarder compatible with the adhesive manufacturer's installation instructions.

Step 1 – Layout the Job

Select a starter wall. It is recommended to start on the longer wall in the room, but check for squareness and make adjustments as necessary. Where possible, lay the flooring at 90° angle to the floor joists. Measure out from the wall the width of two planks plus 9.5 mm (3/8") (this leaves a 15 mm (5/8") expansion space when the last board is installed) and mark at each end of the room and snap your chalk line. Secure a straight edge to the subfloor on the chalk line. The straight edge provides a stationary point to push against so flooring doesn't move during installation. This is a critical part of the installation. Please refer to the section titled *Large Surface Areas* for more information about installing Dutch-Haus® Vintage French Oak flooring in large, open areas.

Step 2 – Spreading the Adhesive

Use the required trowel (V-notch 1/4") at a 45° angle (See Figure 4) to get the correct adhesive spread rate. This will ensure a proper and permanent bond. Improper bonding can cause loose or hollow spots. Spread adhesive from the straight edge out about 750 mm (3 ft.). Working in small sections is helpful as it will allow you to reach across the adhesive to install the flooring without putting any weight on it and will ensure proper transfer of the adhesive to the Dutch-Haus® flooring.

NOTE: Change the trowel every 45 m² (500 ft²) due to wear down of the notches. This assures you always get the proper adhesive spread rate.



Figure 4

Step 3 – Install Your Starter Row

Install the first row of starter planks with the tongue side of the plank facing the straight edge and secure into position. Once the starter row is secure, continue with the installation. Never spread more adhesive than can be covered using the open time recommendation of the adhesive manufacturer.

Never lay Dutch-Haus® flooring further than you can comfortably reach. Place tongue into groove and press firmly into adhesive. Put heavy weight on the glued surface for 24 hours after being glued into place using at least a 20 kg (44 lbs.) weight per m² (10 sf.). Never slide a Dutch-Haus® flooring plank through adhesive. Test for proper bond by occasionally lifting a board and looking for good adhesive transfer (90%), and then replace it into the adhesive. Clean any adhesive off the flooring surface immediately, before it cures.

NOTE: Use caution when utilizing a rubber mallet to butt material together, as it can burnish the finish and cause marring. Avoid working on top of the Dutch-Haus® flooring when installing with the glue-down method.

Step 4 – Job Completion, Final Touches

Once the last row is installed, allow the adhesive to dry overnight or per adhesive manufacturer's instructions. Remove the straight edge and install the two rows to the starting wall. The row closest to the wall will need to have the tongue removed and may need to be cut/adjusted to maintain the 15 mm (5/8") expansion space. Install the proper trim molding at the doorways for transition and along the walls to cover the expansion space. Vacuum to remove any dust or debris, and finish the floor with compatible products. Refer to the *Dutch-Haus® Care and Maintenance Instructions* for further instructions.

Carrying Installation Guideline, Applicable for 20 mm (3/4")

Dutch-Haus® 20 mm Installation directly over joists, by gluing and or nailing, maximum distance by maximum load;

Span 400 mm, 640 kg (15.75", 1,410 lbs.)

Span 600 mm, 558 kg (23.50", 1,230 lbs.)

Large Surface Areas

Expansion Joints in Building Structure

For glue down installation in projects with large surface areas it is always advised to accommodate the expansion joints in the building structure by allowing the same expansion space in the flooring. This space may be covered with a T-molding or filled with a flexible sealant.

Layout and Expansion Space

When the Dutch-Haus® flooring area exceeds 10 meters (33 ft.) in width and/or 30 meters (100 ft.) in length, additional expansion space must be incorporated into the field, as well as at the perimeter and all vertical obstructions. For glue down installations it is recommended to use a center layout and add expansion in the field by inserting washers or plastic string between every 4 to 6 rows. Be sure to remove the washers or string when installation is complete.

Prevention Guidelines

In order to protect and keep your floor in good condition:

- Finish the floor using compatible products and professional equipment.
- Maintain indoor relative humidity between 40% and 60%. If this preventive measure is not kept, the Dutch-Haus® flooring material can crack, split, discolour, crook, bow and delaminate.
- Use felt leg protector pads under all furniture legs.
- Replace narrow, hard furniture rollers with wide rubber ones.
- Always clean the floor in accordance with *the Dutch-Haus® Care and Maintenance Instructions*
- Wipe up spills immediately.
- Use a dolly, rolled over plywood when moving heavy objects.
- Apply (slip resistant) runners or area rugs on high traffic areas.
- Use (slip resistant) door mats, to keep abrasives as dirt, grit and sand off the floor.
- Protect the floor from direct sunlight.
- Move area rugs occasionally as they block sunlight and may give the appearance of discolouring under the rug.
- Don't allow water to stand on the floor.
- Don't walk on the floor with any hard and/or sharp object protruding from the sole.
- Don't use cleaning products that are abrasive or contain alkaline, ammonia, bleach, soap or citrus.
- Don't let furniture stand on the floor on small hard legs.
- Don't use a steam mop or any machine as you risk damaging the finish of the Dutch-Haus® hardwood floor.

CE Dutch-Haus® flooring is produced in the Netherlands in accordance to the European conformity mark. All Dutch-Haus® products fulfill the CE requirements according EN 14342.
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EN 14342 Multilayer parquet, Engineered flooring	Dutch-Haus® MRP® French Oak unfinished flooring 20 mm (3/4")
Density (kg) /(lb)	650kg / 1433lb
Reaction to Fire	Cfl-s1
Emission of Formaldehyde	E1
Content of Pentachlorophenol	Not Detectable
Breaking Strength	5.4 kN (60 cm) 6.2 kN (40 cm)
Thermal Conductivity	0,17 W/m K
Biological Durability	Class 1



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