

# Installation information for Hakwood engineered flooring

## Installation information for Hakwood flooring products

(series Duoplank / Duoplank-Light)

### Attention

Inspect all materials carefully before installation. Warranties do not cover materials with visible defects once they are installed. The natural characteristics of wood cause variations in color, grain etc. Even though our products are inspected many times, some grading deficiencies may occur (in up to 5% of the boards).

### Owner/installer responsibility

- The installer assumes all responsibility for the final inspection of product quality. This inspection of all flooring should be done prior to installation. 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 retailer immediately.
- 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 level.
- When flooring is ordered, at least 5% must be added to the actual square footage needed for cutting and grading allowance.
- Use of appropriate products for correcting subfloor voids should be accepted as a normal industry practice.

### Tools & accessories needed

#### All installations

3M 2090 blue mask tape, Breathing protection, Broom or vacuum, Chalk line & chalk, Electric power saw, Eye protection, Hammer, Hand saw or jamb saw, Moisture meter (wood, concrete or both), Bona Swedish Formula® hardwood floor cleaner, Square, Tape measure, Utility knife, Wood or plastic wedges (15mm (5/8") spacers)

#### Add for glue-down

Sikabond® T55 adhesive, Sika® P5 trowel, Sika Primer MB for below grade applications

#### Add for staple-down

25mm (1") Staples (minimum), Compressor, In-line regulator, Nylon/plastic tapping block, Stanley-Bostitch 3297 or Senco SLS 20  
Caution: Improper use of a power nailer can mark the surface of the flooring

#### Add for floating installation

DAP® Weldwood® Carpenter's Wood Glue, Moisture barrier (8mm (5/16") polyethylene foil), Resilient subfloor covering (option)

### Job site inspection

- Exterior grading should be complete with surface drainage offering a minimum drop of 75mm (3") in 100mm (4") 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.
- Hakwood flooring products may be installed below, on or above grade level.
- Crawl spaces must be a minimum of 600mm (24") from the ground to underside of joists. A ground cover of 8mm (5/16") polyethylene film is essential as a vapor barrier with joints lapped 200mm (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.

- Do not install Hakwood boards in full bathrooms.
- The installation site should have a consistent room temperature of 15-24°C (59-75°F) and humidity of 40-60% 14 days prior installation to allow for proper acclimation. and for ever after installation, to allow for proper acclimation. Room humidity should never exceed 40-60%. Due to possible shrinking or expanding it could crack, split, bow, crook or even delaminate.
- The sub-floor must be checked for moisture content by an appropriate testing method. Test results must be recorded.

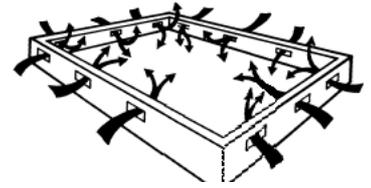


Figure 1

### Storage and handling

Handle and unload with care. Store in a dry place being sure to provide at least a 100mm (4") air space under bundles, which are stored upon "on-grade" concrete floors. Flooring should not be delivered until the building has been closed in with windows and doors in place and until cement work, plastering and all other "wet" work is completed and dry. Concrete should be at least 60 days old. Hakwood flooring products must be stored in the environment in which it is expected to perform for at least 72 hours prior to installation.

### Subfloor preparation and recommendations for all installations

#### Concrete subfloors

New concrete slabs require a minimum of 60 days drying time before covering them with a wood floor. (They must be fully cured) Concrete subfloors must be dry, smooth (level within 5mm (1/5") in a 3000mm (10") radius 3mm (1/8") in 1800mm (6")) and free of structural defects. Hand scrape or sand with a 20-grit # 3-1/2 open face paper to remove loose, flaky concrete. 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 (min. 2000 N / cm2.(310 N / in2)) with a high compressive strength. 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 planks. Hakwood flooring products 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 vapor barrier.

#### Lightweight concrete

Lightweight concrete that has a dry density of 1500kg (94 lbs) or less per m<sup>3</sup> (ft<sup>3</sup>) is not suitable for Hakwood flooring products. Many products have been developed as self-leveling toppings or floor underlayments. These include cellular concrete, resin-reinforced cement underlayments, 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 1500kg (94 lbs) or less per m<sup>3</sup> (ft<sup>3</sup>), do not install Hakwood flooring products.

#### Wood subfloors

Wood subfloors need to be well nailed or secured with screws. Nails should be ring shanks and screws need to be counter sunk. The wood subfloor needs to be structurally sound (meaning subfloors without loose boards, vinyl, tiles, or OSB board or plywood) and dry. They should not exceed 12% moisture prior to installation. If the sub-floor is single layer, less than 18mm (11/16") thick, add a single cross layer for strength and stability (minimum 8 mm (3/16") thick for a total 25mm (1") thickness). This is to reduce the possibility of squeaking. Wood sub-floors must be

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free of paint, oil, existing adhesives, wax, grease, dirt and urethane, varnish etc. Underlayment grade OSB (not the wax side) is also a suitable subfloor. Particleboard is not an acceptable subfloor for staple or nail down installation, but can be used as a subfloor in glue down installations. When installing over existing wood flooring, install at right angles to the existing floor.

### Subfloor moisture check

The recommended wood flooring adhesive may be used for above, on, and below grade applications and on all common substrates. On and below grade 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 applications are:

- Less than 1.25kg (2.75 lbs) / 90m<sup>2</sup> (950 sqft) /24 hrs. on a calcium chloride test.
- No greater than a reading of 4.5 on a Tramex Concrete Moisture Encounter (moisture meter).
- 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 level, as described above, are suitable as a sub floor for installation of Hakwood flooring 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 scuffed 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

Before installing over a radiant heated floor turn off heat and wait until the floor has reached room temperature. After installing the floor, gradually return the heat to the previous setting.

Note: When radiant heat is installed in concrete, mortar beds, or gypsum cement, it is very important to wait until these are completely dry before you install your Hakwood flooring on top. (This can take several weeks. Be patient.) Wait until the humidity in the structure stabilizes to the average level expected for the area in which the Hakwood flooring will be installed. Then allow the flooring to acclimate to this humidity level before installation. This will minimize dimensional changes due to moisture.

Caution: The subfloor surface must never exceed 27°C (80°F) in temperature. Hakwood Maple and tropical species are not suitable for use over subfloor heating. Note: because Hakwood cannot control the subfloor heating system it will not give any warranty on subfloor heated applications.

### Preparation

Remove all moldings and wall-base and undercut all door casings with a hand or power jam saw using a scrap piece of flooring as a guide.

#### "Racking the Floor"

Whether you choose to install the floor by the glue down method, nail or staple down or floating, start by cutting four to five planks in random lengths, differing by at least 600mm (24"). As you continue working across the floor be sure to maintain the 600mm (24") minimum between end joints on all adjacent rows. (See Figures 2 & 3). Never waste material; use the left over pieces from the fill cuts to start the next row or to complete a row.

Note: When installing be sure to blend the wood

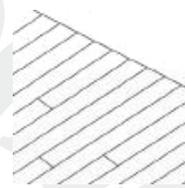


Figure 2

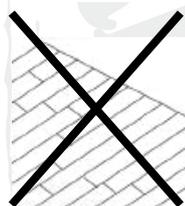


Figure 3

from several cartons to ensure a good grain and shading mixture throughout the installation. Allow for a 15mm expansion gap all around the room.

### Recommended subfloor surfaces

#### Glue-down

- 18mm (11/16") chip, wafer board and particleboard
- Acoustic concrete
- Acoustic cork underlayment
- Ceramic, terrazzo, slate and marble
- Concrete slabs
- Existing solid wood flooring
- Metal
- Preferred: 18mm (11/16") CDX grade plywood or 18mm (11/16") OSB PS2 rated underlayment, Minimum: 15mm (5/8") CDX grade plywood
- Vinyl, resilient tile, cork flooring

#### Staple or nail-down

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

#### Floating

- Concrete slabs
- Existing solid wood flooring

### Glue down installation guidelines, applicable for both 15mm (5/8") & 20mm (3/4").

#### Radiant heat sub-floors

Glue down installation only.

- A. The maximum temperature of sub floor under normal use should not exceed 27°C (80°F) . (check with heat system manufacturer).
- B. For correct water temperature inside heating pipes, check with manufacturer's suggested guidelines.
- C. Heating pipes must be covered with 30mm (1 1/4") of concrete or minimum 3mm (1/8") below bottom side of plywood sub floor. In addition, for plywood sub floor, heat transfer plates or insulation boards must be under pipes.
- D. Before installation of Hakwood flooring, heat system must be operated at normal living temperature for a minimum of 14 days. One or two days before flooring is laid, switch off heating unit. (At the time of installation sub floor must be 18-20°C (65-68°F)) Bring heat up over 3 to 4 days.
- E. Room temperature should not vary more than 10°C (50°F) season to season. 40 to 60% humidity in home for radiant heated rooms.
- F. Must be a Hakwood approved radiant heat system (86 watts per m2 or 8 watts per sq.ft. heating capacity).
- G. If you have questions please contact Hakwood

#### Below grade?

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 Sika Primer MB first.

#### Step 1 – Getting started

Select a starter wall. It is recommended to start the installation along an exterior wall; it's more likely to be straight and square with the room. Measure out from the wall the width of two planks plus a 15 mm (5/8") expansion gap and mark each end of the room and snap your chalk line. Secure a straight edge on the chalk line before you spread your adhesive to ensure alignment, which is a critical part of the installation. This prevents movement of the planks that can cause misalignment.

#### Step 2 – Spreading the adhesive

Using the recommended trowel at a 45° angle (See Figure 4) to get the proper spread of adhesive applied to the sub floor is important, doing so will produce a proper and permanent bond. Improper bonding can cause loose or



Figure 4

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hollow spots. Spread adhesive from the straight edge out about 750mm (3'). Working in small sections is helpful for this method as it will allow you to reach across the adhesive to install the wood flooring without putting any weight on it and will ensure proper transfer of the adhesive to the wood flooring.

Note: Change the trowel every 185 (2000 ft<sup>2</sup>) to 275m<sup>2</sup> (3000 ft<sup>2</sup>) due to wear down of the notches. This assures you always get the proper spread of adhesive.

### Step 3 – Install your starter rows

Install the first row of starter planks with the tongue side of the plank facing the straight edge and secure into position. Pull in tight together at seams and tape with 3M blue mask tape to prevent movement and continue with installation.

### Step 4 – Job completion

Once the starter rows are secure spread 750mm (3') of adhesive along the length of the room (See Figure 5). Never spread more adhesive than can be covered using the open time recommendation listed in the instructions on the adhesive label. Never lay planks further than you can comfortably reach. Place tongue into groove of planks and press firmly into adhesive. Never slide planks through adhesive. Test for proper bond by occasionally lifting a board and looking for good coverage (90%), then replace it into the adhesive. Clean any adhesive off the surface before it cures. Use 3M blue mask tape (See Figure 6) to hold planks securely in place as you are installing and continue the process throughout the installation. Use caution when using a rubber mallet to butt material together, as it can burnish the finish and cause marring. Note: Never work on top of the flooring when installing with the glue down method



Figure 5

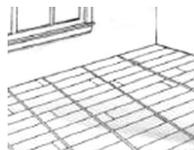


Figure 6

### Staple or nail down installations, applicable for both 15mm (5/8") & 20mm (3/4").

Hakwood flooring products may be installed over wood subfloors using staples or nailing cleats. When installing Hakwood flooring products by nailing or stapling, it is necessary to use the proper type of flooring stapler or nailer.

#### Step 1

You must staple or nail 25-50mm (1"-2") from the ends and every 100-150mm (4"-6") along the edges. This will help insure a satisfactory installation. It is best to set the compressor PSI at 35-40 kg.(77-88 lbs) to keep the staples from going through or breaking the tongues. Improper stapling techniques can cause squeaks in the floor. Adjustments may be necessary to provide adequate penetration of the nail or staple into the nail bed. You want it flush in the nail pocket. Use a scrap piece of flooring material to set tools properly before installation. Before installation of the engineered flooring begins, install a 8mm (3/16") polyethylene layer over the sub floor. This will retard moisture from below and may help prevent squeaks. Keep in mind there is no complete moisture barrier system for staple or nail down installations.

Note: 7kg (15 lbs) roofing felt or resin paper may be substituted for the polyethylene and installed as below.

#### Installing 8mm (3/16") polyethylene

Install the polyethylene parallel to the direction of the flooring and allow a 75mm (3") over run at the perimeter. Make sure each run of polyethylene overlaps the previous run by 150mm (6") or more.

#### Layout the job

Measure out from the ends of your starting wall, 250mm (10") when installing 240mm (9½"), 190mm (7½") when installing 180mm (7") flooring or 170mm (6¾") when installing 160mm (6¼") planks and mark both ends. Where possible, lay the flooring at 90° angles to the floor joists. Make a chalk line along the starting wall using the marks you

made.

#### Beginning installation

Place the planks with the tongue facing away from the wall and along your chalk line. Use brads or small finishing nails to secure the first starter row along the wall edge 25-50mm (1"-2") from the ends and every 100-150mm (4"-6") along the side. Counter sink the nails and fill with a filler that blends with the flooring installed. Place the nails in a dark grain spot in the board. The base or shoe molding will cover the nails when installed, after completion of the installation.

Blind nail at a 45° angle through the tongue (See Figure 7). It will be easier if you pre-drill the holes in the tongue.

Nail 25-50mm (1"-2") from the ends and every 100-150mm (4"-6") along the sides. It will be necessary to blind nail the next 2 rows. A Stanley BT35 brad nailer with 25-35mm (1"-1 3/8") brads can also be used to blind nail and no predrilling is needed. Continue the installation using the recommended engineered wood flooring stapler or nailer, using staples or nailer cleats recommended. Nail or staple the flooring 25-50mm (1"-2") from the end and every 100-150mm (4"-6") along the edge tongue.

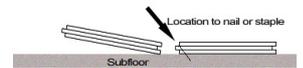


Figure 7

#### Final touches

Install the proper trim molding at the doorways to achieve the transition and along the walls to cover the edges of any gaps along the wall due to irregularity. Complete the job by using filler that blends with the installed flooring to fill any gapping along the joints and clean the finished floor with Bona Swedish formula® hardwood floor cleaner.

#### Nailed/stapled Installation directly over joists (only applies for flooring with 20mm (3/4") thickness)

Hakwood flooring products can be nailed directly over joists, provided that the joists are not further apart than 600mm (24") center to center.

#### Floating installation (only applicable for areas smaller than 150m<sup>2</sup> (1600 ft<sup>2</sup>), applicable for both 15mm (5/8") & 20mm (3/4").

##### Sub floor preparation:

As part of your sub floor preparation, remove any existing base, shoe mold, or doorway thresholds. These items can be replaced after installation, but should be replaced in such a way to allow at least 15mm (5/8") "room for expansion" around the perimeter of the room. All door casings should be notched out or undercut to allow 15mm (5/8") room for expansion and to avoid difficult scribe cuts. This is easily done by placing a piece of board on the sub floor as a height guide for your hand saw. Note: In large areas measuring more than 7,25m<sup>1</sup> (24') use 6,5mm (1/4") expansion for each 3,50m<sup>1</sup> (11') width and length (i.e. – 14 x 14 m<sup>1</sup> (46'x 46') leaves 25mm (1") expansion on all sides).

##### Installing the floor:

Once the 8mm (5/16") poly and the resilient sub floor covering (if used) have been installed over the sub floor, the jobsite is ready for the Hakwood boards. Never open the bundles until ready to start the installation process. When the decision is made on the direction the boards will run, start at one side wall with the first row of boards allowing a 15mm (5/8") expansion along side and end walls (Fig. 8) with the use of wood wedges (equivalent spacers). If the starting wall is out of square, it is recommended the first row of boards be scribed to allow for 15mm (5/8") of expansion (Fig. 9) and a straight working line.



Figure 8



Figure 9

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### Side and end gluing:

The Hakwood boards must be side and end glued using DAP®

Weldwood® Carpenter's Wood Glue.

Apply in 200mm (8") long sections with 300mm (12") between each 200mm (8") section. Each 200mm (8") glue line is flush to the top of the groove. (See Fig. 10). Fully glue every end joint. If any excess glue squeezes up to the finished surface, wipe off using a paper towel or cloth. Install



Figure 10

the first row using the appropriate expansion space with the groove side facing the wall (Fig. 8). The subsequent rows are installed, side and end glued, tap together with a hammer and tapping block to prevent damage to the protruding tongue (Fig. 11). Tapping block should be against



Figure 11

tapping block against tongue only. Use only flat side of tapping block against tongue. Do not tap on groove side of Hakwood boards as this will cause damage! Check for tight fit on sides and ends. Stagger 450mm (18") between end joints of adjacent board rows (see Fig. 2 & 3). End joints should not repeat visually across installed floor. Never install without some end joints in the floor.

### Installing the last row:

Most often the last row does not fit in width. When this occurs, follow this simple procedure: lay a row of boards, unglued, tongue toward wall, directly on top of last installed row (Fig. 12).



Figure 12

Take a short piece of board with the face down and the tongue side against the wall. Draw a line with a pencil along the row moving down the wall. The resulting line gives the proper width for the last row which, when cut, can then be wedged into place using a crow bar or TarkTool. Make sure when the installation is complete that wedges and spacers are removed and the expansion space is covered with an appropriate molding. Always attach the trim to the wall or vertical object and never to the Hakwood boards. Note: - For additional information of installation over radiant heated floors please contact Hakwood.

### **Large surface areas**

For application in projects with large surface areas it is generally advised to fix the floor with adhesive. For that it is recommended to contact your local supplier.

In any case Hakwood recommends to contact the constructional architect for specific advise regarding the application of wooden flooring across existing constructional expansions.