TED TODD

JOB-SITE CONDITIONS & SUB-FLOOR PREPARATION

INSTALLATION GUIDE

NOTES ON TIMBER FLOORS

Wood flooring is a hygroscopic material subject to dimensional change as a result of variations in moisture, temperature and humidity in the surrounding environment. This has led to increasing awareness of the need to maintain an environment that is acceptable for wood floors. Wood flooring simply needs to be in equilibrium with the surrounding environment in which it will be installed, at or near normal living conditions. Always account for time of year and geographic location.

Our floors are kiln dried to within 8% and 12% which is the moisture content range that the floor would naturally achieve when installed in an environment which is controlled to stay within a relative humidity range of 40% to 60 % and a temperature range of 15°C to 26°. When the floor is neither gaining nor losing moisture this is known as the equilibrium moisture content (EMC).

Ted Todd recommends that the environment be controlled to stay within these parameters even when the property is unoccupied. If, due to the geographical location, seasonal variation is outside of these parameters the extra expansion or contraction must be allowed for in the fitting. This is also true when using an installation with underfloor heating which may dry the wood floor to typically 6% to 8%. This must be considered during the installation.

NOTE: Not properly controlling your environment may cause excessive expansion, shrinkage, splitting, dimensional distortion or structural damage

The point of acclimatising wood flooring before installation is to allow the temperature of the wood to adjust to the installation site's normal living conditions, having controlled the humidity conditions and moisture content that will typically be experienced once the premise is occupied.

For site-finished wood flooring, allow the flooring to stabilize for a further period of time after installation, before finishing.

It will cause problems if wood flooring is stored at the jobsite in an uncontrolled environment, especially one that is subject to excessive moisture and humidity. It is likely to be harmful to store wood flooring at the jobsite under conditions that don't reflect those normal environmental conditions. Garages, basements and exterior patios, for example, are not acceptable areas to store wood flooring.

INSTALLER'S RESPONSIBILITY

IMPORTANT!

It is the installer's responsibility to carry out the final inspection of the floor prior to installation to ensure the colour, grade, quality, manufacture and factory finish of the product is acceptable.

Before final installation, the product must be checked with the end user to ensure the correct product has been supplied, and that the end user is happy with the product.

Additionally, the inspection of all pieces of the floor must be done before those pieces are installed. Carefully examine the flooring for colour, finish and quality before installing it. The installer must open several packs of the floor at a time to enable a good colour and grade mix across the installation, use reasonable selectivity when choosing the layout of the boards and hold out or cut off pieces with deficiencies, whatever the cause. If the product is deemed not acceptable for any reason, do not install it and contact Ted Todd immediately.

Once a product has been laid and later discovered to be incorrect, or for any boards with defects or visual irregularities that should have been spotted at the time of installation, no financial assistance can be given, nor can the product be returned.

CHAPTER 1 - JOBSITE CONDITIONS

1.0. Refer also to BS8201-2011, Section 5- Care on site, Section 6-Exchange of information and Section 7, Time Schedules.

In order for the wood flooring to be correctly installed under appropriate conditions, all parties should have a clear understanding of the requirements of the project (See BS8201 section 6 for a comprehensive listing) and of the implications for all concerned. To ensure that this is achieved, there should be wide consultation between all parties involved in the project, including sub-contractors and materials suppliers. This consultation should start early in the design stage but is necessary throughout the contract, especially if requirements or the time scale change and as new contract work is initiated.

1.1 Minimum Jobsite Requirements

- Wood flooring should be one of the last jobs completed on the construction project. Limit foot traffic on finished wood flooring.
- Evaluate the jobsite for potential problems before installation begins, and before the wood flooring is delivered to the jobsite.
- Ensure any water pipes, if present in the sub floor, are at an adequate level or insulated so as not to compromise the installation and/or cause any effect on the timber after installation. Failure to insulate can cause localized shrinkage of the floor boards.
- Ensure electrical wires, if present in the sub floor, are at an adequate level to not interfere with the installation.
- Subfloors (wood or concrete) should be checked by an appropriate method for establishing moisture content. Average subfloor moisture content should be within the range as specified in Chapter 2 - Moisture Testing.
- For a comprehensive listing of sub-floor types and construction layouts, please refer to BS8201, Section 3, Figures 1 to 3. Sub floors should comply with these standards.
- Unless a waiver or letter of protest listing exceptions exists, installation constitutes acceptance of subfloor/substrate, the jobsite itself - including the ambient temperature and relative humidity at the time of installation, and all impacting variables that may affect a wood floor.
- Wood shavings and other debris should be prevented from accumulating under a floor as this can lead to a fire hazard or to infestation by vermin.
- Surface drainage should direct water away from the building.
- Do not deliver wood flooring to the jobsite or install wood flooring until the building is enclosed.
- If heating and/or air-conditioning is in operating condition, it needs to be operating. If it is not possible for the permanent heating and/or air-conditioning system to be operating before, during and after installation, a temporary heating and/or dehumidification system that mimics normal temperature and humidity conditions can enable the installation to proceed until the permanent heating and/or air-conditioning system is operating.
- Do not deliver wood flooring to the jobsite, or install wood flooring until appropriate temperature and humidity conditions have been achieved. Appropriate temperature and humidity conditions are defined as those conditions to be experienced in the building after occupancy.

- Do not deliver wood flooring to the jobsite or install wood flooring until all concrete, masonry, plastering, drywall, texturing and painting primer coats are completed, the humidity has been checked and within guidelines.
- Barrier Matting Zone. At the design stage, consideration must be given to the use of barrier matting especially in any entrances open to the outside.
- Basements and crawl spaces must be dry. If power washing is required in the basement, do so before wood flooring is installed and allow subfloor and basement to dry before installing wood flooring.
- Crawl space should be a minimum of 457mm from ground to underside of joists.
- Crawl space earth (or thin concrete slab) should be covered 100% by a vapour barrier of polyethylene (minimum 1000 gauge) or other recommended puncture-resistant membrane. Vapour retarder joints should be well-overlapped and taped and be extended and sealed at least 150mm up the stem wall.
- When venting is required a gap of at least 1500mm2 per linear metre run should be allowed on each side.
- Note the ground level at the exterior of the building and if the soil or any exterior feature is more than 75mm above the floor then the floor must be treated as below ground level and engineered flooring only should be used.

- Where the minimum jobsite conditions are present, the flooring can be delivered and stored in the rooms in which it will be installed. See Chapter 3, Acclimatisation.

1.2 Access to underfloor services

Access to underfloor services
Adequate provision should be made for subsequent access to services. Sockets or service ducts set in the base should be positioned and fixed before laying commences. Access covers should be adjusted to the final floor level and, where applicable, depth left to suit the overall thickness of the floor finish for infilling of recessed access covers. The design should take into account the required movement/expansion of the wood flooring.

NOTE At access points, it might be necessary to remove the tongue from tongued and grooved boards.

Treatment of pipes

Where hot water or steam pipes (other than those for underfloor heating purposes) pass under the flooring, they should be lagged or otherwise insulated to reduce localized shrinkage of the flooring in that area and they should be fixed at a sufficient depth to avoid possible damage from fixings for the new flooring. Compliant insulation materials should be used to accommodate thermal movement of pipes.

1.3 Additional Jobsite Conditions for Pre-finished Flooring

- All finished wall coverings and painting should be completed. Note: Skirting or scotia may be installed and finished after the flooring installation.
- After installation, if you choose to protectively cover the floor, cover the floor completely with a floor protection product since some species are light-sensitive and uncovered areas may change colour. However, covering a glue-down application may not allow some adhesives to properly cure. Follow the flooring and adhesive manufacturer's recommendations. Use a covering material that is vapour permeable to avoid trapping moisture/vapour on or within the floor. A common reinforced builder's paper is a good choice. Any covering should be taped, using a low-adhesion tape, to base or skirting.

  Avoid taping to the finished flooring. When taping paper or sheets together ensure they are taped to each other and not to the floor.

1.4 Inspection of the floor

During installation of the floor and before final handover, the installation should be checked and inspected according to BS8201-2011.

If the floor is regularly inspected during the installation, then any potential issues may be identified and rectified rather than waiting until the installation is complete.

Floors should be inspected from a normal viewing position either standing or seated. When viewing the floor, only those features which are immediately obvious to any independent party should be considered as potential defect issues.

NOTE Careful positioning of backlighting or unusual viewing angles (crouching or kneeling, etc.) would not be considered reasonable criteria for identifying a visual defect. The overall appearance of the floor should be consistent (product and installation) unless intentional as part of the product design or pattern.

1.5 Jobsite Checklist

SEE APPENDIX K

CHAPTER 2 - MOISTURE TESTING AND VAPOUR RETARDERS

Below are some basic guidelines regarding sub floors and moisture testing.

For a more comprehensive set of guidelines regarding elimination of construction moisture, please refer to BS8201- 2011, section 12.4.6 .

It is imperative all sub floors are tested for moisture prior to bringing the flooring into the property. This should include recording of all measurements taken including; the date, relative humidity, ambient temperature, type of meter, along with a plan of test locations.

Ensure jobsite conditions are met prior to conducting moisture testing.

NOTE: All tests give a result at the time the test is done. In general they give you the ability to start or not start a job. These tests do not give a permanent condition of your substrate merely an "at the time the test was performed" indication.

The use of vapour retarders reduces the potential moisture related problems; Ted Todd recommends the use of vapour retarders with all installations

2.1 Wood Subfloors

2.1.1 Moisture Testing

Test for moisture at several locations in the room, a minimum of 20 points per 93 square meters averaging the results.

Test for moisture using an electrical resistance moisture meter, ensuring tests are taken with the moisture probes placed in line with the grain.

Target moisture content of wood sub floor should not exceed 12% or be greater than 2% of the moisture content of the floor.

A high reading in one area indicates a problem that must be corrected. Pay special attention to exterior walls and plumbing.

2.1.2 Vapour Retarders

Ted Todd recommend using Sisalkraft 728 Builders paper for all nail down installations and one of the Ted Todd professional underlays with taped seams for all floated installations over wood sub floors. (See Section 6.3.3 for choice of underlay.)

The vapour retarder underlays have some extra benefits in that they eliminate wood-on-wood contact, planks slide more easily when positioning, they minimise the impact of seasonal humidity change and may reduce dust and noise levels.

Over a wood subfloor, do not use an impermeable vapour retarder material such as Ted Todd Moisture Screen Foil or other impermeable materials, as it may trap moisture on or in the wood subfloor.

2.2 Concrete Slabs

2.2.1 Types of test

There are several types of test for measuring the moisture content of a concrete screed:

Concrete Encounter
Non-destructive, very quick, surface test;

Calcium Carbide Test Destructive, quick and very accurate;

Relative Humidity (NB, not to be confused with the Relative Humidity of the ambient atmosphere in the room)
Non-destructive, slow but very accurate.

Each test has its advantages and disadvantages. British Standards 8201:2011 recommends using Relative Humidity testing of concrete sub floors. However to comply with requirements set by the installation products. Ted Todd recommends testing using the Calcium Carbide method.

2.2.2 Moisture Testing

Before moisture testing begins, the concrete screed must be a MINIMUM of 30 days old. As a very rough guideline, for up to 40mm thickness allow drying time 1 day per mm of new concrete screed, (minimum 30 days) and an additional 2 days per mm above this.

For Anhydrite, Calcium Sulphate or similar screeds the guidelines as above should be followed but the laitance (the surface layer after curing) should be removed as soon as possible after curing to allow the moisture to escape.

Select test locations to provide information about moisture distribution across the entire concrete floor slab. For slabs on ground and below ground, include a test location within 1 metre of each exterior wall.

Perform ten tests for the first 93m² and one test for every additional 93m² thereafter. The actual test area should be clean and free of all foreign substances. Use approved work practices for removal of all existing flooring materials and debris.

A high reading in one area indicates a problem that must be corrected. Pay special attention to exterior walls and plumbing

Always follow the meter manufacturer's instructions for use and ensure the correct calibration for the method and material being tested so that a reading of moisture content, by weight, of the concrete screed is obtained.

Target moisture content of concrete screed should not exceed 2%. (See 2.2.3 below ref Vapour Retarders)

If a Gypsum / Anhydrite screed is used, the target moisture content should be below 0.5%, or below 0.3% if Under Floor Heating is being used. (NB readings must be taken once any laitance layers are removed.)

2.2.3 Vapour Retarders

Ted Todd recommends using Ted Todd Primerfast liquid damp proof membrane (LDPM) prior to ALL glue-down installations and the appropriate Ted Todd professional underlay for ALL floated installations. (See section 6.3.3, Floating Plank Installation, for choice of underlay)

If the calcium carbide method test gave a reading for a concrete sub floor of greater than 2% moisture reading but no more than 4%, with a 60mm thick screed or less, using Ted Todd Primer fast liquid damp proof membrane can allow you to continue with the installation. If measurements are outside of these parameters do not bring the floor onto site.

When using Ted Todd underlays all seams must be taped with either Ted Todd Aluminium Tape or the self-adhesive overlap tape where this exists.

If the installation is over water fed under floor heating system do not use Ted Todd Primerfast. One coat can be used if required to seal a loose screed.

Once a Gypsum/Anhydrite screed is deemed dry [usually 0.5% by the calcium carbide method, or in the case of UFH 0.3%] it is often good practice to protect the screed from moisture ingress from spillages, burst pipes, wet trades etc. In this instance and only when the screed is completely dry, the use of a liquid applied damp proof membrane (Ted Todd Primerfast) can be applied to the surface.

For all floated installations over under floor heating (UFH) use the appropriate Ted Todd Underlay with taped seams. (see section 6.3.3)

Ensure that all installations with UFH are equipped with the Ted Todd Fidbox monitoring system.

CHAPTER 3 - ACCLIMATISATION

3.1 Site Checks

Before bringing the timber onto site ensure the requirements have been met for

Jobsite Conditions (Chapter 1)

Moisture Testing (Chapter 2)

3.2 Acclimatisation

Ted Todd recommends that all floors are acclimatised within their packs for 2 to 3 days in the room to be installed to allow the temperature of the floor to equalize with its environment ensuring job site conditions are met.

Ensure that the building is enclosed.

Verify that the building is maintained at normal living conditions for temperature and humidity. Where building codes allow, permanent heating and/or air-conditioning systems should be operating at least five days preceding installation to promote proper acclimatisation.

If it is not possible for the permanent heating and/or air-conditioning system to be operating before, during and after installation, a temporary heating and/or dehumidification system that will mimic normal temperature and humidity conditions can enable the installation to proceed until the permanent heating and/or air-conditioning system is operating.

Packs should be stacked flat on the floor or on battens (not upright) allowing for airflow around the stacks.

If the delivery is for more than one room the order should be broken down into the individual room quantities and stored in the respective rooms.

Extra acclimatisation may be required when using underfloor heating. See Chapter 8.

CHAPTER 4 - ACCEPTABLE SUB FLOORS

4.1 General Sub Floor Requirements.

For a comprehensive listing of sub-floor types and construction layouts, please refer to BS8201, Section 3, Figures 1 to 3. All sub-floors must comply with BS8201-2011.

Ted Todd wood floors can be installed over a variety of sub floors. Please refer to the following sections for minimum sub floor specifications:

4.2 Panel Products;
4.3 Solid-board softwoods;
4.4 Joists;
4.5 Tiles;
4.6 Concrete Screed;
4.7 Mixed Sub Floors.

Sub floor Moisture.

Always check moisture content of wood flooring on both sides before installing. Ensure moisture content of sub-floor/substrate meets the appropriate industry standard for the finish flooring material to be installed.

For wood sub floors there should be no more than 2% difference in moisture content between wood flooring and subflooring materials.

For concrete screeds moisture content should not exceed 2% (calcium carbide measure) moisture content.

Sub floor Flatness and Integrity

Sub floors must be flat to within flatness tolerance of a maximum 3 mm gap showing under a 2 m long straight-edge. The sub floor must also be clean, dry, structurally sound, free of squeaks and free of protruding fasteners

If peaks or valleys in the subfloor exceed the tolerances specified above, level with approved material for use under wood flooring. However, it is usually the builder's or general contractor's responsibility to provide the wood-flooring contractor with a subfloor that is within the tolerances listed above.

Inspect the sub floor carefully. If there is movement or squeaks in the subfloor, refasten the subfloor to the joists in problem areas. Any protruding fasteners within the sub-floor should be dealt with.

Sub floor deviation from level, as defined by BS8201 – 2011, section 12.4.2.2.

The maximum permissible deviation from the level, or from a specified datum, of the finished floor should be specified, taking into account the area of the floor and its end use. For large areas (greater than 25 m2), a deviation of 15 mm from the datum is generally considered to be satisfactory. Greater accuracy to datum can be necessary in small rooms, along the line of partitions walls, in the vicinity of door openings etc. For an area under 5 m × 5 m, a maximum deviation of 5 mm from datum is considered acceptable.

4.2 Panel Products Subfloors.

Sub floor Must Be Flat.

Make sure the panels are flat within a flatness tolerance of a maximum 3 mm gap showing under a 2 m long straight edge. If the panels are out of specification, consider sanding.

When sanding care must be taken to minimize the amount of dust produced. Best practice would include using dust-collection devices. Approved respirators should also be used to minimize the amount of dust inhaled.

Sub floor Must Be Dry.

Refer Chapter 2, Moisture Testing.

Specification.

For panel products subflooring, check for loose panels and re-nail or screw down loose panels securely.

Check that the installation meets the standards of BS8201-2011.

Ensure that there is proper expansion space (3mm) between the panels. If the subfloor panels are not tongue-and-grooved and if there is not sufficient expansion space, use a circular saw to create the specified space. Do not saw through joints on T&G subfloors.

Also check for delaminated or damaged areas and repair those areas as needed. Make sure the subfloor is clean and free of debris before beginning installation.

Ensure that panel sub-floors over joists meet with current local building regulations with regard to the panels' structure and thickness and joist centres spacing.

Fastening and Spacing Specifications

Follow the panel manufacturer's recommendations for spacing and fastening.

Only use fixings and fasteners that comply with BS8201-2011, section 12.7.

Typical panel spacing and fastening requirements for truss/joist systems call for a 3mm expansion space around the perimeter of each panel, with panels fastened every 300 mm along intermediate supports.

Edge swell should also be flattened. This can usually be accomplished by using an edger sander.

4.3 Solid Board Sub floors - (existing plank floor boards)

Sub floor Must Be Flat

Make sure the boards are flat to within 3mm in 2m radius

If the boards are out of specification, consider sanding.

When sanding care must be taken to minimize the amount of dust produced. Best practice would include using dust-collection devices. Approved respirators should also be used to minimize the amount of dust inhaled.

Sub Floor Must Be Dry

Refer Chapter 2, Moisture Testing.

Specification

Ensure that the Solid board sub flooring (existing floorboards) meet all relevant building regulations and that the installation is structurally sound with no signs of rot or infestation.

We do not recommend installing parquet flooring directly onto existing floorboards without the use of minimum 9mm ply panel underlayment installed according to BS8201-2011.

4.4 Joists

Only acceptable for 20mm solid or engineered floors.

Sub floor Must Be Flat

Make sure the joists are flat to within a flatness tolerance of a maximum 3 mm gap showing under a 2 m long straight edge

Sub floor Must Be Dry

Refer Chapter 2, Moisture Testing.

Specification

Check carefully the relevant building regulations with regard to the structure, floorboards thickness and joist centres to ensure that the installation is structurally compliant and safe.

4.5 Tiled Sub Floors

Sub floor Must Be Flat

Make sure the tiles are flat to within 3mm in 2m radius.

Sub floor Must Be Dry

Refer Chapter 2, Moisture Testing.

Specification

Engineered and solid flooring can be installed directly over existing ceramic tile, terrazzo, marble and granite.

4.6 Concrete Subfloors All subfloors must be installed and comply with BS8201-2011.

Sub floor Must Be Flat

Make sure the concrete slab is flat to within a flatness tolerance of a maximum 3 mm gap showing under a 2 m long straight edge

If the slab is out of specification, consider grinding, floating or both. Many high spots can be removed by grinding, depressions can be filled with approved levelling compounds and slabs can also be flattened using a self-levelling concrete product.

When sanding or grinding concrete, care must be taken to minimize the amount of dust produced. Best practice would include using dust-collection devices or applying water to the concrete before sanding. Approved respirators should also be used to minimize the amount of silica dust inhaled.

Sub floor Must Be Dry

Refer Chapter 2, Moisture Testing.

Slab Must Be:

- Minimum 3000 psi
- Free from non-compatible sealers, waxes, and oil, paint, drywall compound etc.
- Check for the presence of sealers by applying drops of water to the slab, if the water beads up, there may be sealers or oils.
- Do not attempt to glue a wood floor over a chalky or soft concrete slab.
- Burnished, slick steel-trowel slabs and power floated slabs may require screening with a 30-grit abrasive and using Ted Todd Primerfast as a primer once the screed is fully dry.

Specifications for Lightweight Concrete

Make sure the concrete is well bonded to the sub-floor. Check for hollow spots, cracks and loose areas.

As with on-ground concrete sub-floors make sure the concrete is clean, flat to specification and dry.

Over lightweight concrete (less than 3000 psi), only float engineered floors directly over the sub floor.

Rule of thumb: Draw a nail across the top; if it leaves an indentation, it is probably lightweight concrete.

For wide solid boards a ply sub floor can be installed over a concrete screed using nominal 15mm Class 1 Exposure ply wood sub floor panels installed according to BS8201-2011.

4.7 Mixed Sub Floors

For areas with mixed sub floors, most commonly extensions whereby the ground floor has a suspended floor and the room is extended with a concrete screed, it is important to level the entire area and to ensure the ridge between the two areas is removed.

Only use one fitting method to install the floor in the area unless the floor is separated by the use of a T section at the join of the sub floors.

If only part of a continuous floor area is to be fitted with UFH, it is recommended that the heated area is separated from the un-heated area by a break in the wood flooring using a T-bar section. This is to avoid any differential in expansion / shrinkage of the two areas that may lead to splitting, cracking, open joints or a squeaky installation.

The best way to install the floor is to ply the entire area (see 4.2 - Panel Products Sub floors) and either nail or glue the flooring to the ply using only Ted Todd MS Flex adhesive.

Refer to section 2.1 and 2.2 to ensure the tolerance for moisture is met and the correct use of vapour retarders for each area.