

Kiltra Timber Technical Guidance and Flooring Specifications

Introduction

These technical guidelines should be read by all purchasers and installers of flooring supplied by Kiltra Timber. They cover our current product range but may be updated at any stage. This document does not cover an exhaustive list of possible scenarios and it is assumed that all flooring will be stored correctly and fitted by competent professionals.

Solid Wood

All Kiltra products are solid wood of a single species. The origin of all timber supplied by Kiltra Timber is known.

These guidelines are intended to cover the normal range of flooring supplied by Kiltra. If physical attributes vary from the norm it is important to check if additional advice is required prior to arrival on site.

Physical Attributes

Thickness: Thickness 16mm to 25mm or more.

The standard is 18 or 20mm. Below this is only recommended in limited applications. Boards above 20mm thick offer greater dimensional stability. (In cases of moisture related cupping reaction will be proportional to the width of the board and the thickness).

Stress Grooves: These are placed on the back of all solid floor boards.

Sides of Boards: Tongue and Groove

This is the standard finish on the sides of the boards.

Bevel: The boards do not normally have a bevel on any edges unless requested.

End Matching: This refers to tongue and groove of the short ends of the boards. It adds to dimensional stability as well as reducing on site labour and waste. It is standard on all except the Southern Yellow Pine boards.

Straight Edge: This was common in historical properties and may be required when repairing traditional floors. If shrinkage occurs the gaps between boards will be more evident. Also as the boards cannot transmit loads edge-wise to adjacent boards it is recommended that thicker boards be used.

Parquet Flooring: This refers to smaller boards, tongue and grooved on all sides that can be laid in a decorative pattern using the glue down method of installation.

End Grain Flooring: Similar to parquet, tongue and grooved on all sides but the pieces are a square shape. These are available by request in Pitch Pine where the reclaimed beam is cut through the length instead of along the length.

Finish: Boards are supplied unfinished and should be sanded and finished with an appropriate flooring product after installation. Please refer to our Care and Maintenance guidelines for further advise.

Visual Appearance: Samples are representative but cannot show all natural variations present. All timbers demonstrate natural colour variations, knots, grain patterns while reclaimed timbers can also have nail holes etc. Please

discuss prior to purchase. Preferences can be accommodated during grading if explained at the order stage. Prime grade is generally supplied blemish free while Rustic grades will have more character.

Moisture Content of Flooring

Equilibrium Moisture Content (EMC):

Wood is hygroscopic and slowly but continuously reacts to moisture levels in the environment. All wood exists in a state of equilibrium with the humidity and temperature of its immediate environment.

The moisture content of the flooring and of the receiving environment are of paramount importance. It is important to plan in advance and to know both the moisture content of the flooring prior to arrival on site as well as the moisture content of the receiving environment.

Moisture Content Measurement

New timber flooring supplied by Kiltra Timber uses timber that has been kiln dried to between 8% and 12 % moisture content. This figure can vary according to the species and the mill.

Reclaimed timber flooring is in the range 10% to 14 % moisture content.

The moisture content of the flooring will be recorded by Kiltra.

It is important to note that moisture content can vary within a bale of timber due to factors such as heart / sap wood content, previous exposure, position in bale etc.

Dimensional Changes

On average a 1% dimensional change can occur across the grain for every 4% change in moisture content of 'medium' movement timber species.

Wood flooring shows greater moisture movement across the grain than along it. The method of restraint (installation method) chosen can mitigate against movement.

The following table shows examples of movement classification of different timber species:

Movement Classification	Change in MC required to cause dimensional movement of 1% across the width of the (unrestrained) boards	Examples of timber species
Small	5%	Reclaimed Pitch Pine, Douglas Fir
Medium	4%	Oak, Ash, Maple, Redwood, Cherry, Pines, Walnut
Large	3%	Birch, Beech

Anticipated Moisture Content

The following guidelines show the expected moisture content of timber in four different in-service heating regimes. To minimise in-service movement it is recommended that flooring be installed with a moisture content as close as possible to the moisture content it will be expected to achieve in-service. The flooring may need to be acclimatized to bring it closer to the EMC but it is imperative that it is not acclimatized in an environment that does not reflect the in-service conditions.

Heating regime:	Expected Moisture Content:
Unheated	15-19%
Intermittent heating	10-14%
Continuous heating	9-11%
Underfloor heating	6-8%

Kiltra Flooring is most suited to intermittent heating conditions where timber flooring will achieve an equilibrium moisture content of 10% to 14%

Under Floor Heating Guidelines

Choose a system where the temperature of the floor surface will not exceed 22 to 24 degrees Celsius and where an even heat is produced throughout the floor. Be aware that dimensional changes can occur if the under floor heating is turned off for a prolonged period. The heating should be turned off for a day or so before the floor is laid and gradually turned back on after the floor is laid. Ensure cement sub-floors have a relative humidity (RH) reading of no higher than 65%.

The Receiving Environment: Site Conditions

Sub Floor Moisture

It is the responsibility of the installer to ensure that all wet trades (plasterwork, screeds etc) have had time to fully dry before bringing the flooring on site and to ensure that moisture levels within the sub floor are low enough to allow for the installation of a wooden floor.

The moisture content of any screed should not exceed 5% and the relative humidity of the air over the screed should not exceed 75%. The hygrometric method is based on measuring the relative humidity of a sealed pocket of air immediately above the exposed sub floor.

The heating should be turned on for at least 10 to 14 days prior to the floor arriving. When the heat is first turned on it may draw moisture from the substrates and the atmospheric humidity may increase which could be taken up by the timber flooring if on site too early. The use of fans and ventilation to disperse humidity is advised.

Remember a typical sand/cement screed will normally dry at the rate of approx. 1mm per day up to a thickness of 50mm.

Industry standards state that flooring should not be laid until a hygrometer test carried out on the sub floor returns an equilibrium reading of no greater than 75%RH. In practice it is recommended to wait until 65%RH.

Level Sub Floor

The sub-floor must be sound and level. A self leveling compound may be used over concrete or screed if required. There should be no more than 3mm deviation in the level of the sub floor when measured over a 2m distance using a straight edge. All sub floors should be de-nibbed to remove any sharp irregularities.

Damp Proof Membrane

A Damp Proof Membrane must be in place in all cementitious sub floors – either within the main concrete base or interposed between the concrete slab and the screed – or both.

Vapour Membrane

A vapour membrane should be installed even where a damp proof membrane is in place to avoid in-service movement from any residual moisture.

A thick gauge polythene membrane will suffice.

Specialist underlays will act as a vapour membrane and may provide additional benefits such as leveling the sub floor, sound reduction, insulation and some have sticky surfaces which assist in securing floating floors.

Joists and Battens

Where used they should not have a moisture content no greater than 12 – 14%. Adequate under floor ventilation and appropriate protection against damp must be provided.

Battens should be at least 36mm wide for a fixed floor and 50mm wide for a floating floor. Joints should be staggered and battens laid at 300mm to 400mm centres.

Wooden Sub Floors

These can be laid over joists or onto a cementitious sub-floor. Check for the absence of moisture or rot damage and ensure moisture levels within 2% of flooring.

Packaging and Acclimatisation

Kiltra Flooring arrives in bales that have been wrapped for protection during transport only. Board lengths are typically 8' to 12' (or longer by request), it is not practical to wrap small quantities of large boards.

Boards should be stacked in the room where the floor is to be laid. (Where spacers are used they should be approx. 19mm and laid at right angles to the timber. There must be ample spacers and they must be exactly above each other to avoid timber distortion through uneven weight distribution.)

The moisture content of the flooring is recorded prior to transportation by Kiltra. Best performance occurs where the moisture content of the flooring at arrival is closest to the anticipated in-service timber flooring moisture content and very importantly where the receiving environment on arrival reflects as close as possible the expected in service conditions in terms of temperature and humidity.

Acclimatisation allows boards to adjust to in-service temperature and humidity prior to installation. This allows minor alterations in moisture content to occur and minimizes post installation shrinkage or swelling.

Acclimatisation of one to two weeks is advisable.

However it is imperative that the timber will not take on moisture from the receiving environment on arrival. Where conditions do not reflect in-service conditions the arrival of the flooring must be delayed.

Use the following table to anticipate in-service equilibrium moisture content. This table cites anticipated moisture content values of timber flooring in different in-service conditions of humidity and temperature:

Relative humidity	Ambient temperature (°C)				
	15	20	25	30	35
20%	6.0	5.5	5.5	5.5	5.0
25%	7.0	7.0	6.5	6.0	6.0
30%	8.0	7.5	7.0	7.0	6.5
35%	9.0	8.5	8.0	7.5	7.5
40%	9.5	9.5	9.0	8.5	8.0
45%	10.0	10.0	9.5	9.5	9.0
50%	11.0	11.0	10.5	10.0	10.0
55%	12.0	12.0	11.5	11.0	10.5
60%	13.0	13.0	12.5	12.0	11.5
65%	14.5	14.0	13.5	13.0	12.5
70%	15.5	15.0	14.5	14.0	14.0
75%	16.5	16.0	16.0	15.5	15.0
80%	18.0	18.0	17.5	17.0	16.5
85%	20.0	20.0	19.0	18.5	18.0

It is advisable that on site records are maintained, these can include site conditions at arrival (air temperature, relative humidity), sub floor (moisture content, relative humidity, type, levelness, presence of vapour barrier), exceptional circumstances (flooding, recent wet trades, wet weather entering through adjacent doors due to construction personnel), conditions at installation including a further moisture reading of flooring.

Boards will naturally appear tighter in Summer and some gaps may appear in Winter due to heating. Where localized higher heat levels are anticipated, eg close to an Aga or stove mitigation measures such as the absence of spacers may be advisable.

Installation Methods

Fixed

A) Mechanical

The floor is face nailed or secret nailed to support battens or joists. In this method the floor is fixed firmly to the sub floor.

B) Glue Down

The boards are glued onto the solid sub floor using an appropriate flooring adhesive

Kiltra flooring is not designed to be fixed by clips or an interlocking click system.

Batten and joist spans, for domestic use.	
Finished board thickness (mm)	Maximum span (centre to centre, mm)
16	505
19	600
21	635
28	790

Floating

Board edges are linked but flooring is not fixed to the base allowing it to respond to changes in humidity. The entire floor reacts and moves as an entire unit.

Expansion Gaps

Gaps must be left at the perimeter of all sides of all floors, approx. 15mm thick. They are also required where the floor meets any fixed objects such as radiator pipes. Additionally, intermediate gaps or spacers may be required through the width of the floor. The frequency and size will be determined by the type of flooring, board width and anticipated site conditions.

Please note:

Kiltra Timber do not accept responsibility for any issues arising from incorrect laying or storage of floors. All flooring that leaves Kiltra Timber is subject to internal quality control and is only dispatched if suitable to perform in normal conditions.