

5 Parquet and its installation

5.1 Installation practice and products

The product prior to laying is referred to as parquet (refer AS 2796) and when installed we refer to a parquetry floor. This section provides information on block parquet which is the main parquet flooring manufactured in Australia as well as the now less common mosaic finger parquet. Block parquet consists of square edge blocks as opposed to some imported parquet that have tongue and groove edges and ends and is often of larger piece sizes. In addition to more specific installation instructions the section will also include information on manufacturing requirements, pre-installation considerations and pattern design names.

The specified recommendations contained in this standard are generic in nature and although used, installers with knowledge and experience in a particular locality, or due to other constraints, may fix a floor in a manner that differs from that outlined here. However, it needs to be recognised that such systems are non-standard and the installation becomes the floor installers system rather than an industry recognised system. Due to this the **atfa** may not be able to comment on the adequacy of such systems. It is expected that all floor installations will be provided with a robust fixing method and guidance on this can be obtained from the recognised methods outlined in this standard.

When parquetry floors are installed with due provision for movement (applicable expansion) it is expected that a floor will be provided that is adequately fixed and without severe block shrinkage or severe expansion related concerns and which has a surface without obvious cupping.

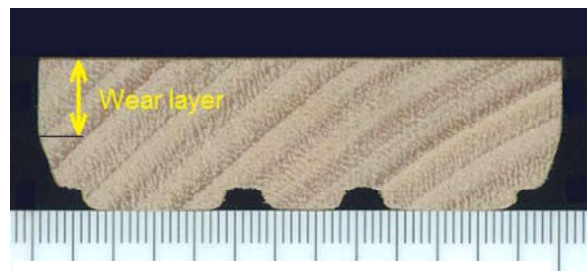
5.2 Block parquet manufacture and standards

The manufacture of parquet in Australia is governed by AS 2796 Timber – Hardwood – Sawn and milled products and it covers the manufacture of both block and finger parquet in Australia.

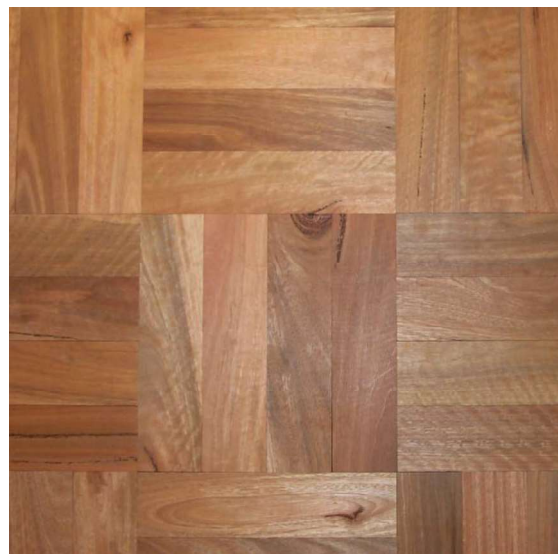
The standard indicates that block parquet is to be manufactured 'square' dressed with a rebate, chamfer or groove machined to the underside in order to accommodate surplus adhesive. The standard also indicates that 10 mm is the minimum thickness even though a thickness of 14 mm to 19 mm is more commonly produced. The minimum wear thickness is half the block thickness.

The standard indicates that the block length is to be a whole number multiple of the width and that the width to length tolerance does not exceed ± 0.5 mm, although manufacturers generally ensure that the multiple of block widths do not exceed block length. In so doing this small but important allowance ensures that block widths fit just inside the block length for the likes of a 'square on square' pattern.

In terms of moisture content the range stated in the standard is from 8% to 13%, however, as parquet is often manufactured from T&G flooring offcuts the manufacturing range is more likely 9% to 13%. This variance makes no significant difference in practical terms. The standard provides for the three grades for T&G timber flooring: Select Grade, Medium Feature Standard Grade and High Feature Grade. However, due to the small block size, a floor with many blocks to Select Grade can appear higher in feature than a Select Grade T&G floor. A parquet Clear Grade (still



Typical 65 x 19mm block parquet profile



Standard grade parquet

with some feature) was included in the standard to compensate for this although the standard dates back many years we are not aware of any Parquet Clear Grade being produced. Parquet in line with the other grades in the standard is produced but may also fall under manufacturer grade names.

A more common size of parquetry block is 260 mm x 65 mm providing a 4:1 ratio. However other sizes may be 300 mm x 60 mm providing a 5:1 ratio or 400 mm x 80 mm also providing a 5:1 ratio.

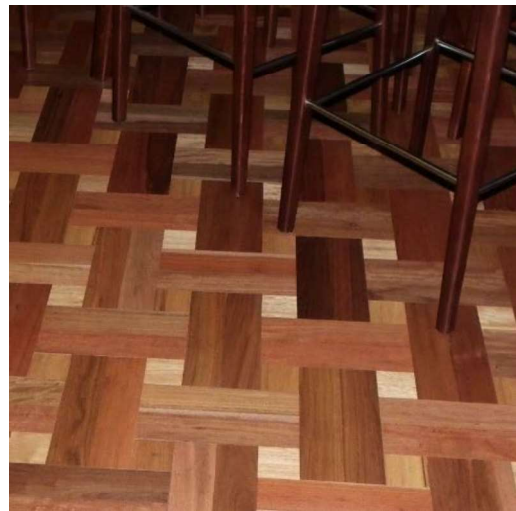
With regard to mosaic finger parquet, the fingers are pre-adhered to a backing sheet and it is required that the sheet is sufficiently open to permit 75% adhesive contact when laid. The minimum finger thickness is 6 mm with 8 mm and 9 mm being the more common thicknesses. Most mosaic finger parquet is a 'square on square' pattern with a 5:1 ratio and 120 mm finger length and a sheet size that can vary between manufacturers from single to groups of square panels. Ratios such as 6:1 with a 133 mm finger length and a 7:1 ratio with 145mm finger length are also used.

The Australian species available are more likely to be the northern and central coast New South Wales hardwoods, the southern Ash species and Jarrah.

5.3 Block parquet patterns

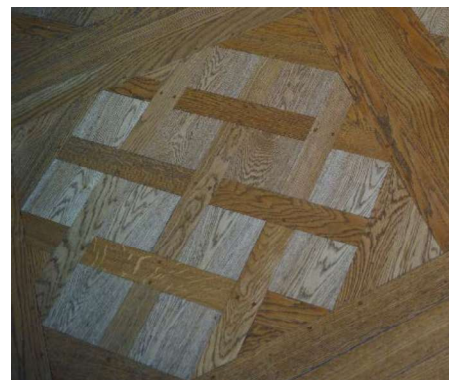
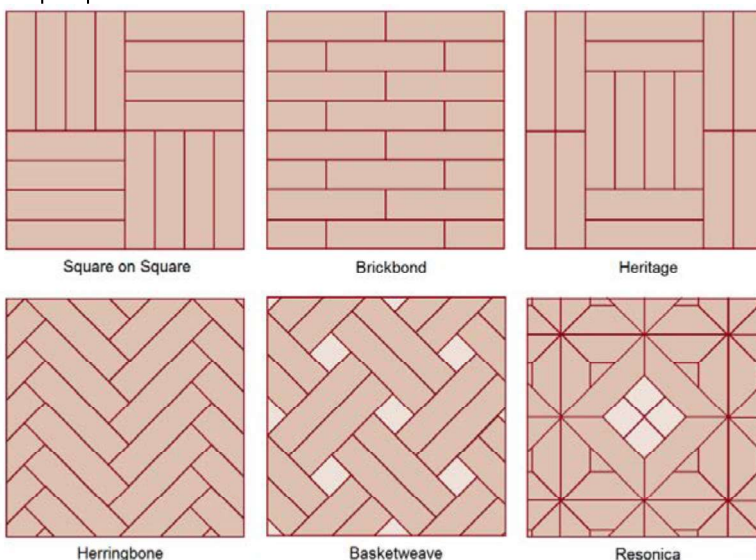
One of the attractions to having a parquetry floor is the variety of patterns that can be achieved and many of these patterns have standard names and are used extensively. However, there are also patterns that can be generated that are less standard or, by using a combination of species a distinct appearance can be achieved or borders to the room can be created. More intricate patterns are used not only in commercial work but also in residential work.

Illustrated in the diagram below are some of the patterns that can be achieved. The simpler patterns being used more often but also indicating the more complex patterns that can be created. Some more complex patterns being reproduced are inspired by floors to be found in European palaces.



With parquet a variety of patterns can be produced.

Parquet patterns



Parquet, Palace of Versailles, Paris

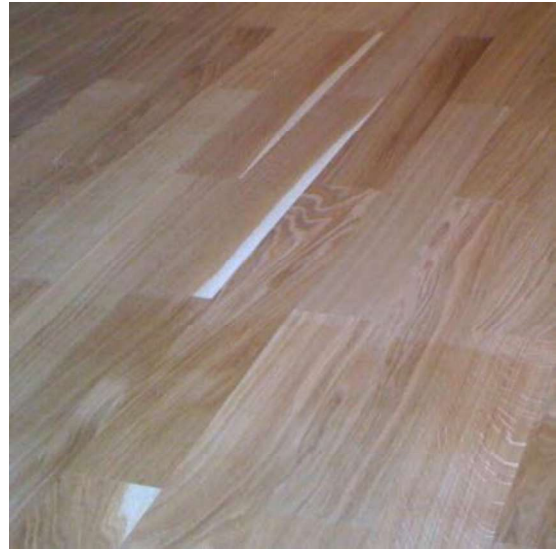
5.4 Product assessment

The products are usually packed into cardboard boxes after manufacture for ease of handling and although often not provided with installation instructions, they are traditional products and subject to relatively few marketplace concerns.

When parquet boxes are received on site it is necessary to ensure that the boxes have not been water or otherwise damaged. The product should be stored in the weathertight dwelling in an area away from external walls and direct sun exposure. If stored over a concrete slab then the boxes should be supported on gluts clear of the slab surface.

Prior to laying the flooring it should be checked and should generally meet the following:-

- Grade – Block parquet is to be supplied to the specified grade, which may be a manufacturer's grade. Note that if a manufacturer has given a specific name to a grade, the product may be similar to one of the grades contained within an Australian Standard but it is likely to differ in some respects. This may or may not be important to customers and should be resolved prior to supply. With imported product grading applicable to the country of origin may apply and differ to that within the Australian manufacturing standard.
- Moisture content –The moisture content range for parquet is 8% to 13%, however, as block parquet is often manufactured as a by-product from strip flooring production a range between 9% and 13% is more common.
- Block or finger moisture contents should be checked and recorded. Resistance moisture metre readings must be corrected for species and temperature, and may be affected by other factors. Corrected readings are estimates only. If in doubt, confirm results by oven-dry tests. Water marks or a significant increase in block width may be indicative of the blocks having been moisture affected.
- Block width should be checked and noted that the check has been made – This is a simple test to ensure that depending on the ratio, the number of blocks on edge do not exceed the length.
- Mosaic finger parquet should be checked and noted that the check has been made – Again this is a simple test with the standard indicating that the sheet is to be within ± 0.5 mm of the ordered size in both directions.



Imported product where their grading rules permit the light coloured sapwood. As this is infrequent it is prudent to check that this meets client expectations.

Any concerns relating to the above should be addressed prior to proceeding to lay the floor. Although installers have a responsibility to check product prior to laying, suppliers have a responsibility to ensure product is adequately cared for usually during transport and storage and manufacturers have a responsibility to supply product meeting the relevant manufacturing standard.

5.5 Parquet Installation

5.5.1 Pre-installation

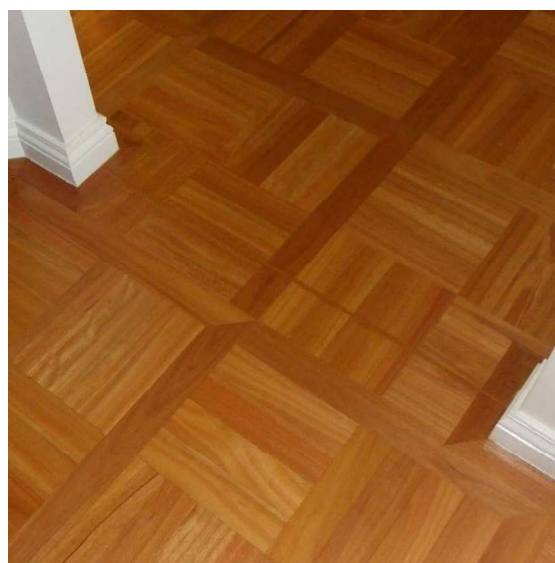
Aspects relating to pre-installation as outlined in Section 2.4 to 2.7 need to be considered for parquet flooring although it is recognised that parquet provides a more stable floor than a T&G strip floor in the same location. These sections indicate that the site and installation environments need to be assessed and that the subfloor conditions need to be appropriate. Ensuring the subfloor and subfloor conditions are correct is particularly

important. With regard to acclimatisation, it is generally not appropriate. This is not only because of the small piece size but also that it is important to maintain that the number of blocks on edge do not exceed the length, and particularly necessary for many of the patterns used with block parquet. With moisture uptake the block and finger width will expand but the block and finger length will not and as such acclimatisation processes could be problematic. With mosaic finger and many block patterns pieces are laid at right angles to each other and although this introduces expansion in both the width and length of the floor, it also halves the expansion that would be experienced from a solid timber strip floor. Attempts to acclimatise will also bring about variation in block width due to differences in block moisture contents and cutting pattern. With wider blocks this effect becomes more apparent. Parquet is also full-bed adhesive fixed and this too limits the degree of expansion that occurs. Experience has shown that problems seldom occur due to expansion in parquet floors, unless the floor has been moisture affected.

5.5.2 Allowance for expansion

Parquetry floors require a minimum 10 mm expansion gap between the floorboards and any internal or external wall structures. Where skirtings may only be 10 mm wide the wall board can be undercut or skirting may need to be replaced.

In many instances other than when the laying pattern is edge on edge, such as the brick bond pattern parquetry in domestic floors does not generally require intermediate expansion allowance. If the pattern is edge on edge then expansion allowance as for solid strip floors should be provided for block parquet (refer Section 3.3). However, at times there will be considered the need to separate one floor area from another and this is more often in, for example, a doorway separating two larger floor areas. In such instances cork expansion joints have been used with block parquet. Around doorways and architraves the blocks can be trimmed to a neat but not tight fit. To other hard floor surfaces a cork expansion joint is generally used.



Cork expansion joint separating larger floor areas between two rooms.

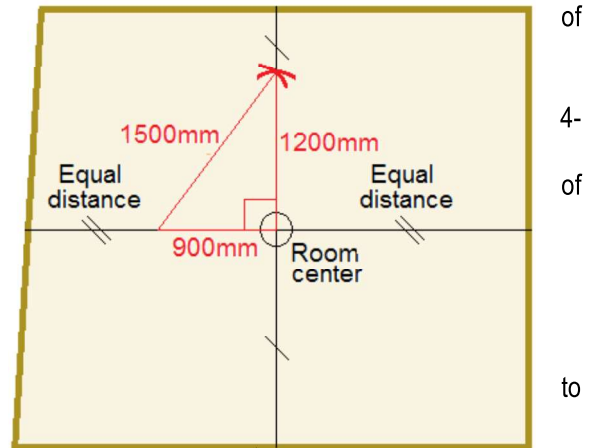
5.5.3 Installation procedures for block parquet

Parquet blocks are adhesive fixed to the subfloor which includes concrete, sheet flooring (particleboard and plywood) and existing timber floors. As such the subfloor assessment and preparation is the same as for site sanded and coated timber floors. For the assessment of concrete slabs refer to Section 4 and Appendix A3. For the assessment and preparation of sheet and timber floors refer to Section 3. Note that in New Zealand a flatness tolerance of 1.5 mm beneath a 3 m straight edge is adhered to. When parquetry is laid over an existing timber floor it may be necessary to provide a plywood underlay over the existing floor first to prevent seasonal movement of a T&G subfloor affecting the appearance of the parquetry floor. In New Zealand it is standard practice to install a plywood underlay. Installation of underlays over T&G subfloors is covered in Section 3.6.4. Masonite has also been used. It is also necessary that all timber and sheet subfloors are level sanded to remove any surface irregularities and to provide a clean surface.

Provided below are the general aspects involved in the set-out and installation of parquet floors and also with consideration for borders. However, due to the wide range of patterns the specifics will be determined by the flooring contractor who will also need to consider the layout of the dwelling.

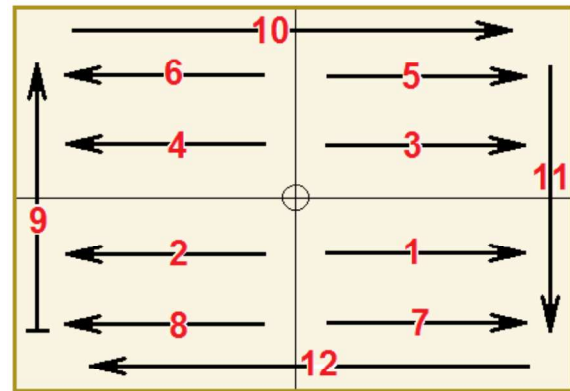
Setting out

Within the room to be laid, it is usual that from the centre of the room, two chalk lines at right angles to each other are made that are also near as possible to being parallel with the walls. A right angle can be determined by using the 3-5 rule and measurements of 900 mm, 1200 mm and 1500 mm. When one chalk line is made the intersection two arcs, one 1200 mm long from the room centre and the other 1500 mm long from the point 900 mm from the room center, will provide the point where the line at right angles can be made. This is shown in the diagram.



When a border is included chalk lines are made parallel and in from the walls, by the width of the border and the perimeter expansion allowance. When laying the blocks adhesive is only applied up to these lines.

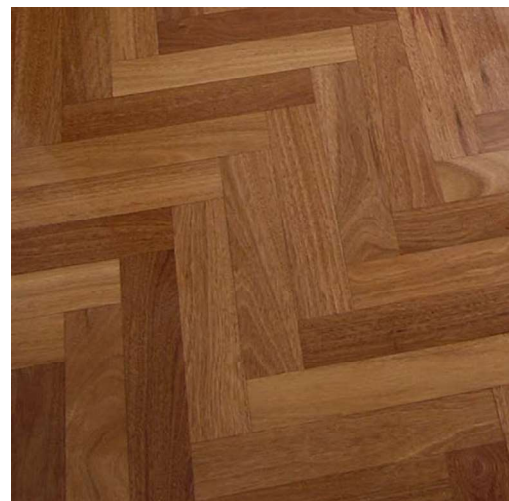
From the centre of the room the block pattern is laid to the right and then to the left and this is then repeated throughout the body of the floor. The perimeter of the floor being completed at the end. This process helps to maintain a consistent and square pattern throughout the installation. The process described is shown in the second diagram. If a border is involved then the blocks from laying the body of the floor will overlap the border lines but in the area of the border they will not be bonded. After the adhesive has cured sufficiently (about 24 hours) the border lines can be remarked and with the saw set to the correct depth, the excess can be cut off and removed to leave the main body of the floor up to the border edge. The border can then be completed.



Fixing practices

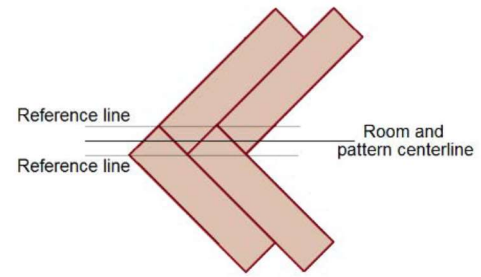
Nowadays the water-based adhesives have been largely replaced with polyurethane adhesives and some polymer adhesives are also entering the market. Also note that some of the polyurethane adhesives foam on curing and due to this some installers prefer not to use this type.

A full trowel bed of adhesive is applied to the slab working from the centre and spreading about 1 m² at a time before laying the blocks into the spread adhesive. Care is needed with the trowel to ensure the full height of adhesive is maintained as required by the adhesive manufacturer. To provide a more even distribution of colour and grade features, blocks should be laid from several boxes at one time (with a mix of manufacturing dates) and the blocks are then laid into the adhesive. During laying it is important to keep to the string lines and also to ensure the pattern remains tight and even. Some variation in block sizes will occur due to timber properties and such variations must be accommodated at the time of laying. If any creep occurs it cannot be corrected so for this reason centre and reference lines as well as the sequence of laying is important. For more intricate patterns, floors laid on the diagonal and the likes of herringbone patterns additional reference lines are needed. A rubber



Tallowwood 5:1 herringbone parquetry floor

mallet and timber block may be used to tap the blocks into the adhesive and reduce any mismatch at block edges. The floor is laid in a sequence as indicated in the diagram. During laying stand or kneel on the subfloor to ensure the blocks do not shift or slip after laying. When the perimeter of the floor is laid, blocks will need cutting remembering that perimeter expansion allowance must be catered for. As outlined above if a border is being installed then the blocks are cut back to the border line before working on the border. Expansion allowance at the floor perimeter is to be covered by the skirtings which need to be of sufficient thickness. The adhesive is then allowed to cure before sanding and coating as outlined in Section 7.



Center and reference lines with herringbone pattern

Parquet may also be laid on acoustic underlays and it is important that the correct underlay is used. More flexible underlays can result in block depressing under foot pressure once the floor is laid. Underlays more specific to parquet are often cork and rubber composites to avoid this.

5.5.4 Installation procedures for mosaic finger parquet

The mosaic finger sheets are adhesive fixed to the subfloor which includes concrete, sheet flooring (particleboard and plywood) and existing timber floors. As such the subfloor assessment and preparation is the same as for site sanded and coated timber floors. For the assessment of concrete slabs refer to Section 4 and Appendix A3. For the assessment and preparation of sheet and timber floors refer to Section 3. Note that when parquetry is laid over an existing timber floor it may be necessary to provide a plywood underlay over the existing floor first to prevent seasonal movement of a T&G subfloor affecting the appearance of the parquetry floor. This is covered in Section 3.6.4. Masonite has also been used. It is also necessary that all timber and sheet subfloors are level sanded to remove any surface irregularities and to provide a clean surface.

The sheet can be laid with a similar set out and procedure to block parquet (as above) with a full trowel bed of timber flooring adhesive being used. Some may also choose to lay the sheets at 45 degrees to the walls which can significantly change the look of the floor.