PK 02 - BONDING OF BAMBOO PARQUET

GENERAL ADVANTAGES OF AN ALL-OVER ADHERED PARQUET FLOOR

All-over adhering of parquet floors achieves greater dimensional stability as well as a reduction in the transverse curvature in combination with less cupping of the elements. As a result, wooden floors have fewer and smaller joints during use. The parquet is bonded directly (connected) to the subfloor, which improves the heat transmission with underfloor heating immensely. The underfloor heating can run with a 2-3°C lower flow temperature, the lower thermal resistance reduces heating costs. Thanks to the full-surface bond between subfloor and top covering with no cavity in between, the room sound and acoustic are also improved.

All-over adhered parquet floors also guarantee a longer life cycle, as they can be refurbished several times. Parquet floors made of wood or bamboo parquet made of bamboo are made from renewable raw materials and are therefore very sustainable, environmentally friendly and good for the life cycle assessment in building sector.

WHAT IS BAMBOO?

From a botanical point of view, bamboo is classified as a grass species, but according to its chemical composition it is classified as wood. The main components of bamboo are approx. 70% cellulose and approx. 25 % lignin. A noticeable difference compared to conventional types of wood is the rapid growth of the bamboo plant. Tropical bamboo species reach a growth rate of 1.20 m in only 24 hours. The bamboo species “phyllostachus pubescens”, which is preferably used for parquet flooring due to its hardness and its low degree of swelling and shrinkage, reaches a growth rate of 30 cm per day. This comparison shows how strongly the properties of bamboo vary according to its origin and species. Due to its characteristics bamboo has been valued and used as a building material for centuries in Asia.

BAMBOO FOR PARQUET FLOORS

Bamboo parquet and floor coverings made of bamboo are standardized in DIN EN 17009 and designated as “floor coverings made of lignified materials that are not wood”. The technical properties of various types of bamboo, the consistently positive ecological balance and the attractive appearance ensured that bamboo is increasingly represented in the parquet market. This has resulted in a very large supplier market in which different types of production, parquet constructions and the use of different types and qualities of bamboo make it difficult to choose from. What they all have in common is that raw friezes are glued together from 20 mm wide bamboo slats, from which parquet strips are planed. A distinction is made between vertical (upright) and horizontal (lying) bamboo slats that are glued together. The thickness of the parquet strips produced in this way varies between 10 and 22 mm. In addition to the dimensions of the strips, manufacturer-specific construction differences exist in the number and position (alignment) of the horizontally glued bamboo slats. In addition to this solid bamboo parquet, which, although glued together from several individual slats, is called solid bamboo parquet, a two-layer single strip (multilayer parquet) with a transverse spruce carrier layer on the underside, a large-format 14 mm-thick 3-layer multilayer parquet with a spruce underlay and cross-layer in the centre, and a panel parquet with plywood backing layer in various dimensions are on the market. Depending on the manufacturer, the “solid” parquet strips as well as the multilayer pre-finished parquet elements are available either sealed or untreated.

The DIN EN 17009 standard differentiates between following types: Multilayer bamboo floor elements, composite bamboo flooring, bamboo veneer floor elements, composite bamboo veneer flooring, solid edge-glued bamboo floor elements, vertical finger or wide finger units made of bamboo.

Compared to wood, bamboo has a relatively low degree of swelling and shrinkage in the transverse direction, but this is 2 to 5 times greater in the longitudinal direction. As a result, in contrast to wood, the longitudinal direction should be given special attention. Bamboo is very hard and can therefore build up great tension. The sorption isotherm for bamboo differs from that of wood. While oak or wood have a moisture balance content of 9.2% at 20°C and a relative humidity of 50%, this is 8.4% for light bamboo and 7.4% for dark bamboo.

The differential shrinkage in % per 1% change in humidity is 0.15% for both light and dark bamboo. With oak the differential shrinkage is radially at 0.19 to 0.22% and tangentially at 0.28 to 0.35%. Dimensional and form stability is high for bamboo and medium for oak.

BUILT-IN MOISTURE OF BAMBOO PARQUET

As with parquet, the built-in moisture of bamboo parquet has a significant effect on the installing (bonding) as well as on the behaviour afterwards and during installing. If parquet and bamboo parquet that is sticked all-over is installed too dry, shearing stresses occur when adjusting to the usual living climate conditions, which can result to a screed cracking. If wooden floors and bamboo parquet are installed too damp, it usually leads to large gaps between the elements. The stresses that occur often lead to detachment from the subsurface.

TECHNICAL DATA SHEET

According to DIN EN 17009, the moisture content of the top layer at the time of delivery must be between 6-10% for laminated bamboo, 5-9% for strandwoven bamboo and 6-10% for flattened bamboo, unless otherwise agreed between buyer and distributor.

HINTS FOR GLUING BAMBOO PARQUET

Our application studies have shown that basically all three commercially available parquet adhesive systems can be used for bonding, but the adhesive properties of the individual systems, the very different parquet shapes and constructions and the properties of the different types of bamboo limit their use in practice.

SUITABLE ADHESIVES FOR BONDING BAMBOO PARQUET

Depending on the parquet dimension and construction, all three types of parquet adhesives from the STAUF range are used for bamboo parquet bonding according to the table below.

The corresponding substrate preparation can be found in our technical data sheet.

ADHESIVE SELECTION:

	Absorbent subfloors	**Low-absorbency substrates**	**Non-absorbent substrates**
	such as: ✔ Cement screed ✔ Calcium sulphate (self-levelling) screed ✔ Cement-based levelling compounds	such as: ✔ Chipboard ✔ OSB panels ✔ Calcium sulphate (self-levelling) screed	such as: ✔ Mastic asphalt
Solid wood flooring[1)] multi-layered all layers of bamboo	PUK 446/455/410, SMP 930/950, SPU 460/555/570/510		
Panel parquet multi-layered plywood carrier layer	PUK 446/455/410, SMP 930/950, SPU 460/555/570/510		
multiple layer parquet 3-layer plank element spruce middle layer/bottom layer bamboo top layer 15 mm thick, max. 160 mm wide	PUK 446/455/410, SMP 930*/950, SPU 460/555/570/510		PUK 446/455/410, SMP 930/950 SPU 460/555/570/510
2-layer or multi-layer single strip spruce or plywood carrier layer bamboo top layer max. 70 mm x 600 mm	M2A 720/910, PUK 446/455/410, SMP 930/950 SPU 460/555/570/510		PUK 446/455/410 SMP 930/950 SPU 460/555/570/510
2-layer or multi-layer single strip spruce or plywood carrier layer bamboo top layer larger than 70 mm x 600 mm	PUK 446/455/410, SMP 930/950, SPU 460/555/570/510		

[1)] Glue solid bamboo parquet preferably with PUK 446 and PUK 455.