BONDING SOLID FLOORBOARDS WITH ELASTIC AND/OR HARD-ELASTIC ADHESIVES (PK 10)

Reactive 1-component or 2-component parquet adhesives based on PU, SMP or SPU are ideal for bonding solid wood planks or solid parquet strips with very large dimensions. These do not cause any swelling of the wood, can be used on almost all substrates and with nearly all types of wood without any problems and usually harden completely within 24-48 hours. Without taking any other considerations into account, almost all SMP, PUK and SPU adhesives from the Stauf product portfolio could therefore be approved for bonding solid floorboards. This uncritical or even rash approval can be applied to a large number of rival products, when the sole focus is placed on a functional bond. No further information or restrictions on use are usually given. This can be explained not only by a lack of sufficient expertise, but often also by a product range that does not allow for further differentiation due to a lack of sensible alternatives.

Particularly for bonding solid planks, STAUF has therefore decided to take requirements for adhesives into account which go beyond the actual bonding function, and to give installers more safety when it comes to avoiding later complaints by providing clearly graded approvals. In addition to the type of wood and the manufactured condition of the plank, i.e. raw or untreated, it is above all the width to thickness ratio that is decisive when selecting a suitable adhesive. An essential element of our technical data sheets is therefore providing information on possible deformations of elastically bonded solid planks, as well as specifying a reasonable width to thickness ratio.

Even a very inexpensive, soft-elastic parquet adhesive can withstand the shearing forces and shear stresses of a solid plank floor when properly bonded (preferably 100% wetting, sufficient adhesive application). In contrast to dimensionally stable multi-layer parquet or multi-layer planks, large-format solid wood elements tend, however, under the influence of climate-induced changes in moisture, to clearly conspicuous deformations, cupping or even pronounced open joint formation. Reducing these deformations to an inconspicuous, not optically conspicuous level, is a requirement for the parquet adhesive that goes beyond the mere bonding itself. Not all solid wood floors are expected to undergo the same deformations. Apart from so-called "nervous" (e.g. beech, maple, olive) and "calm" (e.g. oak, most exotic woods), the shape and dimensions of the individual elements play an important role. Wide elements, for example, are more susceptible to deformation than narrow ones, and open joints are much more pronounced. Thin-layer solid wood reacts more strongly and above all faster to climate fluctuations than thicker wood, so that a direct correlation between the width and thickness of a solid plank and the extent of possible deformations can be derived from this.

In our experience, a width to thickness ratio of 7 to 1 is a good compromise with few noticeable changes under the usual annual climate fluctuations. Up to this range, bonding with hardelastic adhesives of a higher strength class (e.g. SMP 950) can be regarded as unproblematic. For a frequently requested extension of the width to thickness ratio from 7:1 to 10:1, for example, or more, it is necessary to take certain additional deciding criteria into account:

- Are the planks on the long side sharp-edged or chamfered?
- Is the surface, or will it be, oiled or varnished?
- Does the intended type of wood tend to warp or does it tend to be "calm"?
- Is the total thickness of the plank more than or less than 20 mm?
- Is underfloor heating present?

Background:

- Bevelled board edges make slight deformations appear less conspicuous than sharp-edged boards.
- On painted surfaces, especially those sealed on site, deformations are more clearly visible than on oiled, rather dull matte surfaces.
- "Calm" wood species react more slowly and over a longer period of time to climatic fluctuations and their optical changes are therefore less conspicuous.
- Overall, thin solid planks, including currently found thicknesses of less than 14 mm, are more susceptible to deformation.
- On underfloor heating, wooden floors often become very dry from underneath, which in combination with elastic adhesives leads to significantly larger open joints and deformations.

Taking all criteria into account, it is also possible therefore to approve bonding very wide and long solid planks with an elastic or hardelastic adhesive.

The inherent strength of an adhesive such as STAUF SMP 950 or SMP 930 is sufficient in any case in full-surface bonding to satisfy the stresses of large-format solid floorboards within the recommended width to thickness ratio as follows:

Adhesive	Width to thickness ratio	Example of measurements
STAUF SPU 460 STAUF SPU 555	10:1	20 * 200 mm 14 * 140 mm
STAUF SMP 950 STAUF SMP 930 STAUF SPU 425 STAUF S Press	7:1	20 * 140 mm 14 * 98 mm

In May 2010, the French testing institute FCBA in Bordeaux tested SPU 460 during the bonding of oak planks measuring 14 mm * 150 mm and found it to be suitable.

Ultimately, the decisive factor is the consumer's or client's wishes concerning the visual appearance and their willingness to regard minor changes as a natural and welcome characteristic of a solid wooden floor.