

PK03 – STICKING END GRAIN WOOD BLOCKS

DIN 68702 classifies end grain wood blocks into three categories according to their utilization: RE = „representative“, for interiors in administrative and assembly places as well as in the living areas, WE = „workrooms“ and rooms with similar stress without major climate fluctuations, without vehicle and forklift traffic and GE = „Commercial“, for the commercial and industrial sector. The standard also regulates the maximum and minimum dimensions of blocks in the individual areas of use: Wood block RE consists of blocks with heights between 22 and 80 millimeters, widths between 40 and 80 millimeters and lengths between 40 and 120 millimeters.

According to the standard, wood block WE must be made of blocks with a height of between 30 and 80 millimeters, widths of between 40 and 80 millimeters and lengths of between 40 and 140 millimeters. With wood blocks WE combined with light forklift traffic in combination with suitable adhesives, at least 40 millimeters in height, 60 millimeters in width and 100 millimeters in length.

The typical dimensions of wood blocks in the GE range are 50 to 100 millimeters in height, 60 to 80 millimeters in width and 60 to 140 millimeters in length.

In contrast to parquet, wood blocks are not stuck to the subfloor in the direction of the grain, but across the grain (tangentially or radially to the surface). That implies significantly higher swelling and shrinkage of the individual blocks in themselves and on the surface. In combination with the faster cyclic humidity changes that also result from this, the choice of adhesive is all the more important.

Furthermore, in DIN 68702 is described, that the average moisture content of end grain wood blocks must be determined by the purchaser according to the expected room climate. If nothing is agreed following is valid: RE 8 to 12%, WE 8 to 13% and GE 10 to 14%.

The strength and quality of the substrate should also be higher than in combination with parquet. DIN 68702 describes CT-C35-F5 for cement screeds, CA-C35-F5 for calcium sulphate screeds and C25/30 for concrete.

REQUIREMENTS OF WOOD BLOCK FLOORING ADHESIVES

Owing to various properties, wood block makes very high demands on any adhesive suitable for bonding:

- ✓ The much higher absorbency of the end grain compared to the long grain requires very good wetting properties of an adhesive.
- ✓ The open time must be sufficiently long to guarantee the difficult wetting process over the period of time that is necessary for the installing procedure.
- ✓ With regard to the processing properties, good spreadability, in particular, must be guaranteed as this promotes the high installation performance incurred in wood block flooring.
- ✓ The wood swelling produced by the adhesive must be as low as possible, since wood block has a large degree of isotropic swelling and shrinkage.
- ✓ The mechanical properties of the adhesive must be adapted to those of the end grain wood blocks. The adhesive should prevent unhindered swelling and shrinkage of wood blocks as far as possible in order to avoid unnecessary gap formation and swelling pressure in the surface, but must also act as a tension-reducing layer in order to avoid overstressing the subfloor.
- ✓ Wood block adhesives have to be resistant to a number of different influences, especially in the industrial sector, including: Ingress of water, coolants, petrol, oil, strong climatic fluctuations etc.

Depending on the area of use, we recommend different adhesives: Hard-elastic adhesives, usually based on silane, are used both in the RE area and in the WE area. With STAUF SMP 950, STAUF has created a solution especially for these requirements: The solvent-free 1-component polymer parquet adhesive has been awarded the EMICODE EC 1^{plus} and is therefore very low in emissions, prevents wood swelling, contains no components of migration and is characterized, among other things, by a very good rip formation. A well-balanced degree of elasticity ensures a secure connection to the subsurface, even when the room climate changes.

In combination with STAUF comfort pads, we also recommend the solvent-free 2-component polyurethane adhesive STAUF PUK 446 and the solvent-free 1-component polyurethane adhesive STAUF PUK 455 for bonding of wooden blocks in the RE area. Soft-plastic dispersion based adhesives are mainly used in the GE area, since the load from forklifts and vehicle traffic is particularly high there. STAUF HPK was specially developed for sticking end grain wood blocks: The adhesive optimally assist the good slip resistance, high wear resistance and low electrical conductivity

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of wood blocks. It is resistant to impregnating agents and oils and offers users a perfect spreadability. STAUF HPK is also characterized by a long open time and, in particular, by its soft plastic mechanics and high dry tackiness. Due to the soft-plastic mechanics, the high stresses or changes in volume of wood block elements, resulting from climatic changes in the room air, are absorbed as well as possible. The substrate is protected and does not break. However, should a single wood block detaches due to excessive stress, it can simply be rebonded or replaced. Regarding to the high absorbency of wood blocks and the sometimes very high loads on the floor, the consumption of used adhesive should not be too less; here the manufacturer's specifications should be followed.

Especially when using soft-plastic dispersion adhesives, the adhesive allows dimensional changes in the wood blocks. Due to the "pre-swelling" of the wood blocks, sufficient distances to the wall (at least 1 block wide), other components or doorways should be observed during installation. The distance to the wall can then be closed with wood blocks after the "pre-swelling" has subsided, usually 1 day later. Lamella blocks grooved from bottom have proven themselves in this context. Joints must not be closed with joint-filling materials that are difficult to compress (e.g. cork strips). Instead, wherever possible, cover rails or foam rubber strips should be used, under which the wood block can „work freely“. If necessary, the joints in the surface can be swept out before impregnation with wood powder or cork powder.

STAUF RANGE OF INSTALLATION MATERIALS FOR END GRAIN WOOD BLOCK FLOORING

STAUF HPK:

- ✓ Solvent-free dispersion adhesive (GISCODE D 1)
- ✓ EMICODE EC1^{plus} (very low emissions)
- ✓ For "soft-plastic" bonding in GE areas

STAUF SMP 950:

- ✓ Solvent-free 1-component polymer parquet adhesive
- ✓ EMICODE EC1^{plus} (very low emissions)
- ✓ For hard-elastic bonding in RE and WE areas

wood block type	HPK	SMP 950
RE (DIN 68 702)	-	+
WE (DIN 68 702)	-	+
GE (DIN 68 702)	+	-

STAUF PUK 446:

- ✓ Solvent-free 2-component polyurethane adhesive (RU1)
- ✓ EMICODE EC1^{plus} (very low emissions)
- ✓ For bonding in combination with STAUF comfort pad in RE areas

STAUF PUK 455:

- ✓ Solvent-free 1-component polyurethane adhesive (RU1)
- ✓ EMICODE EC1^{plus} (very low emissions)
- ✓ For bonding in combination with STAUF comfort pad in RE areas

STAUF COMFORT PAD – 2 mm

- ✓ Cork-PUR comfort pad, 2 mm
- ✓ Properties: mechanical decoupling, improvement of walking comfort, improvement of thermal insulation, footfall sound insulation, no shear-resistant or hard adhesion
- ✓ Possible areas: RE

POSSIBLE VARIANTS WITH STAUF:

RE wood blocks

- ✓ Hard-elastic/solvent-free: SMP 950
- ✓ elastic/solvent-free: PUK 446/455 + comfort pad + PUK 446/455

WE wood blocks

- ✓ Hard-elastic/solvent-free: SMP 950

GE wood blocks

- ✓ soft plastic/solvent-free: VEP 195 + Quartz sand + HPK
- ✓ soft plastic/solvent-free: VEP 195 + Quartz sand + XP 40 (alternatively SSP Rapid or XP 20) + HPK
- ✓ soft plastic/solvent-free: VDP 130 + HPK

The information provided above corresponds to the current state of the art. The information is purely indicative and non-binding, since we have no control over the installation process and because the actual installation conditions on site vary. Thus no claims can be made based on this information. The same is true for the commercial and technical advisory services that are provided without obligation and free of charge. We therefore recommend carrying out sufficient testing of your own in order to determine whether the result is suitable for the intended purpose.05/2022