ADHESIVE CONSUMPTION WHEN BONDING PARQUET AND RESILIENT AND TEXTILE FLOOR COVERINGS (KL 01)

In order to ensure that parquet, and resilient and textile floor coverings are bonded without complaints, parquet and floor installers must, of course, comply with the relevant standards. In addition to the appropriate substrate preparation and substrate testing in accordance with VOB DIN EN 18356 "Parquet and wood block flooring work" and VOB DIN EN 18365 "Floor covering work", cleanliness, dryness, evenness and strength must be tested in advance by the installer. The work must be carried out in accordance with the generally recognised rules of the trade, manufacturer's instructions must be observed and the correct amount of adhesive must be applied between the substrate and the surface covering. To ensure that parquet installers and floor layers can also calculate their prices reliably, it is also important to make a realistic estimate of the amount of adhesive that will probably be required for laying parquet or resilient and textile floor coverings.

The issue of adhesive consumption could, of course, be viewed from several angles - for example, specifically in relation to batten or machine adhesion. However, application with the classic notched trowel is still the most common method: The floor installer is simply "closer" to the surface, feels the condition of the subfloor and does not "merely" apply the adhesive to the surface, as is the case with batten or machine adhesion, but works it "into the substrate" with a notched trowel. In the following, we talk about the individual factors that decisively influence the usage of parquet and floor covering adhesives during their application.

PROPERTIES OF THE SUBFLOOR

The condition of the subfloor influences the amount of adhesive required: Smooth and even surfaces do not require as much adhesive as rough ones. Screeds, for example, become rougher the coarser the aggregates in the screed are (in living areas, aggregates between 8 mm and 16 mm are common), and the rougher the screed is, the more the adhesive usage increases.

TYPE OF SURFACE COVERING

A) Parquet flooring

As a rule of thumb, installers should remember the following: The larger the laying elements, the higher the order quantity. When laying small-format mosaic parquet, for example, considerably less adhesive has to be applied than with multi-layer parquet - and for solid planks, installers need the highest amounts of adhesive of all. A laying procedure in an "adhesive bed", similar to laying tiles in a mortar bed, is not common practice, but with very wide and long formats of 30 x 300 x 3000 mm, for example, it is quite conceivable. With small formats such as mosaic parquet, as little adhesive as possible should therefore be used to avoid "squeezing" the individual tile elements into place and in doing so cause adhesive to "push up" out of the joints. Undesirable effects of this squeezing could, for example, be block rupture, mutual reactions between surface treatment agents or even joints showing their outlines - particularly noticeable, for example, where light-coloured adhesive meets dark-coloured parquet flooring. It goes without saying that sufficient adhesive wetting must always be ensured on the underside. If the parquet is bonded to the subfloor, the adhesive thickness is usually 0.6 to 1 mm - this applies to all types of parquet. Immediately after applying with notched trowel, the adhesive layer appears much thicker before it is laid. However, floor layers should not be deceived or misled by this.

The Technical Commission on Construction Adhesives (TKB) has issued recommendations in data sheet no. 1, "Installation of parquet", which provide installers with specifications regarding the amount of adhesive and the selection of notched trowels. Detailed specifications can also be found in our technical data sheets.

B) Resilient and textile floor coverings

The amount of adhesive required is essentially determined by the type of covering - different amounts of adhesive are required depending on whether PVC, carpet or linoleum is to be laid. But the backing of the floor covering, i.e. the structure or type of material on the reverse side of the covering, is also decisive: For PVC alone, this can be smooth, fine, coarse structured or even have a honeycomb-like rough texture. The PVC flooring can be bonded to a fabric or to felt - depending on its later use and whether this will be in a living area or an industrial hall, for example. For PVC coverings alone, it is possible to state at least four different usage quantities. For this reason, installers should always observe the manufacturer's instructions and the corresponding recommendations for suitable notched trowels.

NOTCH TYPE

This immediately leads us to another decisive factor: The notch depth and width as well as the tooth width of the trowel used also influence the usage. The Technical Commission for Building Adhesives (TKB) data sheet no. 6, " Trowel Notch Sizes for Installation of Floor Coverings, Wood Flooring and Tiles" provides recommendations for notch dimensions when bonding resilient and textile coverings as well as for parquet and tile work. Therefore: The quality of the levelling compound used is enormously important, so floor layers should only purchase from

reputable and above all reliable manufacturers. Trowel notches with inaccurate dimensions may apply up to 20 percent more or less adhesive than desired - in the worst case, this can lead to complaints during and after bonding the covering.
STAUF also offers special notch sizes: For laying solid planks, for example, a higher notch depth is recommended for some notch spacings (STAUF No. 14). This leads to a high adhesive ridge and thus to a higher and better wetting of the reverse side of the surface covering. Special notch sizes are also required when applying adhesive (STAUF SMP 950 and SPU 570) as a vapour barrier (STAUF No. 12).

TYPE OF ADHESIVE

The type of adhesive used also determines the quantity required. Dispersion adhesives in which the adhesive is dispersed in water can cause the parquet to swell if too much is applied. Small quantities are recommended in this case, and preferably only small-format parquet should be laid with dispersion adhesives.
A general rule of thumb for all types of adhesives is:
"As much adhesive as necessary, but as little as possible."
In the case of full-surface bonding, the adhesive belongs between the screed and the covering, irrespective of the surface covering. The surfaces, joints and flanks of the installation elements are absolutely prohibited.

SPECIFICATIONS OF SURFACE COVERING MANUFACTURERS AND STAUF

The parquet and floor covering manufacturers and STAUF specify exactly which adhesive should be used for what product, how it should be used and in what quantity. Corresponding information can be found on the containers and in technical data sheets.

DENSITY AND USAGE

An often neglected, but decisive factor in the calculation of the adhesive quantity is the density of the adhesive: This is calculated by determining the ratio of mass to volume (mass divided by volume). The result gives the weight of material per unit of volume, for example, one gram per cubic centimetre or, more easy to visualise, one kilogram per litre. As an example: Balsa wood is a very lightweight type of wood - when stuntmen throw chairs during a fight in a film for example, they often use the wood of this tropical tree. The special furniture breaks easily without causing any harm because it is very lightweight and has a low density. Balsa wood has a density of just 0.15 g/cm³, whereas oak has a significantly higher density of 0.8 g/cm³. You therefore need a greater amount of balsa wood to reach one gram in weight. This means that a higher volume is required.
STAUF parquet adhesives have densities ranging from approx. 1.4 g/cm³ to 1.9 g/cm³ - Particularly noteworthy here are the products STAUF M2A 720 or STAUF PUK 455, which have a density of approx. 1.05 to 1.2 g / cm³, while the density of dispersion flooring adhesives ranges from approx. 1.4 g/cm³. These differences sometimes result in a range of up to 35 percent higher usage. The comparison between water and mercury is also helpful here. Water has a density of 1.0 g/cm³, while mercury has a density of 13.4 g/m³. If you compare the filling level of both liquids in glass containers of the same height, the level of mercury is approximately 13 times lower. If both liquids are poured out, water can be applied to a much larger surface than mercury since it has a greater volume, which is the decisive factor when it comes to applying liquids to a surface.

WHY IS THE CORRECT QUANTITY OF ADHESIVE SO IMPORTANT?

The aim is always to obtain full-surface bonding of floorings and coverings. Particularly with parquet flooring or large formats, 100 percent wetting of the surface is desirable, but often difficult to achieve on construction sites in practice: Surface evenness tolerances according to DIN 18202 in combination with rigid top coverings make this almost impossible. Tolerable height differences can be so large that full wetting, especially with large-format elements, can almost be ruled out. In the case of flexible materials, i.e. resilient and textile coverings, 100 percent wetting is a prerequisite, however, for faultless bonding. Due to the elasticity or flexibility of the surface covering, full-surface bonding is easier to achieve: Unevenness is virtually transferred to the surface covering. Even flatness tolerances according to DIN 18202 do not usually pose a problem - quite apart from the fact that the installer carrying out the work may then encounter problems during acceptance testing.
Parquet and floor layers achieve the fullest possible bonding of the surface above all by preparing the subfloor in a separately invoiced step. For resilient and textile coverings, it is a matter of course, and is almost always a prerequisite, that the surface is levelled with self-levelling compounds such as STAUF GS or STAUF XP 10. In the case of parquet flooring, especially involving large-format elements, it is also advisable to use levelling compounds such as STAUF XP 20.

PRACTICAL TIPS AT A GLANCE

1. Buy notched trowels or notched blades from reliable partners with consistent quality.

2. Comply with the recommendations of the parquet and floor covering manufacturer and STAUF. If there are differences between the recommendations, contact the technical depart-

ments and clarify any unclear issues.

3. Replace notched blades or trowels more often. After cleaning, compare the notch size with a "zero sample" (a new trowel) - we recommend that you inspect and, if necessary, replace each trowel after approx. 100 square metres.

4. Make sure that the trowel is guided correctly when applying the adhesive. Grasping firmly (do not "stroke"), spread your fingers on the back of the trowel and press the trowel onto the substrate at an angle of approx. 90 to 60 degrees to the surface.

5. Thoroughly clean the adhesive trowel after and/or before use. Residues in narrow teeth can be very easily removed with a trapezoidal blade, for example.

6. Advising the client in the run-up to the work: Indication that, e.g. with parquet, full-surface bonding cannot always be achieved.

7. Comparison of the different adhesive densities when purchasing adhesives.

You will find overviews of STAUF products, suitable surface coverings and substrates in the download area on our website at https://www.stauf.de/service/downloads/ as well as further information at https://www.stauf.de/info-center/technische-informationen/