

GAPS IN LVT FLOORINGS (BBKL 2)

DIFFERENT EXPECTATIONS

When bonding LVT, conflicting expectations may arise between the contractor and the client of the floor covering work. The client first and foremost expects a robust floor with gaps, that is even and level, and easy to look after. The installer sees things differently when it comes to dimensional changes (gaps). Installers see it as a given property of the material and a fact that they are familiar with, that a pattern of gaps can occur after laying individual planks, panels or sheets of non-welded designer flooring.

ADVICE AND DUTY TO INFORM

Contractors for floor covering work can reduce the subsequent discussion about gaps in the top surface through the advice they give. However, it can also happen that contractors predominantly or exclusively emphasise the positive characteristics of a floor covering during their consultations. This could prove to be a disadvantage if a claim for damages occurs. Like parquet flooring, a LVT often sells more easily if issues such as the formation of gaps or colour changes due to UV radiation are not placed in the foreground of a consultation. If floor installers or sellers point out afterwards that it is inevitable that gaps form in LVT made of individual, non-welded panels, planks or sheets, then in the event that a dispute arises, this could be construed that they have neglected their duty to inform.

DESIGNER FLOORINGS BEHAVE SIMILARLY TO PARQUET FLOORING

"Gaps are part of the wood look" or "designer floor coverings should be based on real wood and behave like it", are quick and easy to put forward as explanations, but as the basis for argumentation are not acceptable. Wood flooring is a natural, hygroscopic material. Designer floorings are synthetic, heterogeneous, thermoplastic materials that react primarily to heat, but even with these floorings, moisture can lead to a change in the edge length.

INFLUENCING FACTORS

There are many factors that, taken together, can result in an unattractive looking gap. It is important that the material, the workmanship and, of course, the choice of adhesive correspond to the state of the art. Designer flooring specifications are regulated for the first time in the draft EN ISO 10582:2015 "Resilient floor coverings - Specification for heterogeneous vinyl flooring to include luxury vinyl tile requirements". Until this standard is fully valid, DIN EN 649 "Resilient floor coverings - Homogeneous and

heterogeneous polyvinyl chloride floor coverings - Specification" and EN ISO 10582:2012-04 "Resilient floor coverings - Heterogeneous poly(vinyl chloride) floor covering - Specifications" must be taken into account, even if they cannot be applied in every detail to the building site situation and do not directly discuss luxury vinyl tiles (LVT). After all, luxury vinyl tiles are almost always heterogeneous designer floor coverings. Deviations from the initial dimensions of up to 0.25% are mentioned here. In DIN EN 14259, "Adhesives for floor coverings - Requirements for mechanical and electrical performance", a maximum dimensional change of 0.2% in the bonded state (laboratory test according to EN 1903) is specified in table 1, line 1 for polyvinyl chloride floor coverings. In addition, there is the edge deviation, which can also be up to 0.15%.

The colour, structure, presence of a bevel, presence of an undercut (burr), dimension of the plank, quality of the composition and quantity of plasticising substances also play an important, sometimes decisive, role. For example, some floor coverings can shrink by up to 0.3% due to plasticiser migration, which is equivalent to 3 mm shrinkage per metre.

By theoretically adding together the maximum change in dimension to be expected according to laboratory tests due to plasticiser migration of up to 0.3% and the edge deviation of 0.15%, shrinkage of up to 0.45% is possible. (See article in "Boden Wand Decke" magazine, issue 9 2015, pages 32 ff)

Contrary to the opinion that a PVC floor covering does not react to the influence of moisture, PVC floor coverings and LVT designer floor coverings have to take into account a climate-induced influence of moisture due to their material properties. In an experiment (cf. article in "Boden Wand Decke" magazine, issue 9 2015, pages 23 ff), in which the humidity of the air was increased from 50% to 85%, enlargements of the edge length of 0.09% were found.

Another factor is the installation procedure itself. This is where accuracy, care and the way the materials are processed play a role.

TIME SEQUENCE OF INFLUENCING FACTORS

If the joints are found to be defective immediately after bonding, this is usually due to an installation error. Acclimatisation, plasticiser flow, floor covering quality and the influence of overstretching only become noticeable after weeks or months, while the consequences of wrong adhesive selection are noticed considerably later, and the consequences of poor adhesive quality even later still, often only after years.

PROCEDURE CONCERNING GAPS

TECHNICAL DATA SHEET

In order to assess gaps in the LVT, various standards, information and fact sheets can be consulted. Often, these offer only limited applicability and should be considered as supplementary information in addition to the evaluation. The seller or contractor must always discuss the formation of gaps etc. at joints within the framework of a consultation. Since there is no specific standard for tolerances in gaps in LVT designer floorings, common sense plays an important role here. The opinions of the contractor and client may differ here, but agreement must be reached. As already described, a designer floor covering without gaps is impossible to obtain over the long term. Small gaps ($\approx 0.2\%$ i.e. 2 mm/m) must be tolerated, depending on the material. If the gap is larger or is very noticeable due to the colour difference, there is an option approved by experts to fill it with a suitable joint sealant. The floor is then considered free from defects. Very large joints of well over 5 mm can no longer be closed; in this case, the affected area must be repaired. In case of doubt, this means that the complete area must be replaced.

takes these factors into account has done their utmost to reduce the number of gaps.

CONCLUSION

Due to the factors described above, it is not possible to prevent gaps from forming at joints in LVT designer floorings. However, the formation of gaps at surface level can be reduced. In order to achieve the best possible result, the substrate must meet some basic requirements. It must be firm, even, clean and dry but most decisive of all are the temperature and sufficient levelling (at least 2 mm) (see, for example, BEB (Association for Screeds and Coverings) fact sheets, TKB (Technical Commission for Building Adhesives) fact sheets). Careful selection of the material is one of the most important factors. Products with a high plasticiser content, an impermissible edge or angle deviation, uneven planks which are not dimensionally stable, cannot be recognised at first glance, but should be avoided. When it comes to making a choice, thrift is not always the best answer. The chosen surface must be acclimatised, of course, according to the manufacturer's specifications. The adhesive must be selected according to recommendations. A wet-bed adhesive with a relatively hard joint, possibly fibre-reinforced, is the first choice when it comes to reducing the formation of gaps. Pressure-sensitive adhesives, fixatives, and dry and roll-on adhesives must be selected according to the application, but these allow for larger joints. Finally, the workmanship must be taken into account. Open times must be adhered to, the floor covering must be laid tension-free, rubbed down/rolled on sufficiently, positioned tightly and only walked on after a sufficient adhesive setting has elapsed. Anyone who

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.