1 The raw material: wood

The basis for our parquet is wood, the only renewable raw material in our natural world. Sufficient quantities of this high-quality raw material are available to us in sustainably utilised forests. Wood is well on the way to becoming the raw material of the 21st century.

The blanks (mostly friezes) from the sawmill are cut to size in the parquet factory, dried and processed to produce parquet elements without changing the natural properties of the wood.

2 Parquet and the environment

All environmentally relevant aspects are taken into account in modern parquet production. Our raw material – wood – sets us a living example of the ecocycle principle. Economical and ecological behaviour is a matter of course for the parquet industry – use of timber from sustainable forestry, optimal exploitation of the available raw material (even including incineration of waste and sawdust for heating and energy purposes), the use of cutting-edge machinery and computer technology, and the majority use of solvent-free adhesives and varnishes: these are just a few examples.

Nowadays, parquet is also installed in keeping with ecological criteria. Parquet installers mostly work with solvent-free and formaldehyde-free dispersion adhesives, modern elastic adhesives and environmentally friendly water-based varnishes or oils. Special adhesives based on polyurethane and similar substances are used rarely, and only in special cases.

The variety of high requirements regarding environmental protection, environmental pollution and household use of raw materials and energy are fully taken into account by the parquet industry, which is aware of its responsibilities towards nature, the environment and the consumer.

Also, most types of parquet now carry labels (certificates) attesting sustainable forestry.

3 Types of wood

Deciduous wood types (varieties of hardwood) are best suited to parquet because of their hardness. Oak, beech, ash and maple (European) are the most popular native varieties of wood for which demand is heaviest. Other types of European timber used for parquet are birch, cherry and walnut. Typical representatives of the conifers (softwoods) such as larch, pine and spruce are only installed occasionally. Exotic woods, which are mainly used because of their superior hardness and generally dark colours, have a very small share of the Swiss market. On the other hand, use is made of various native timbers that are darkened with the help of modern methods such as high-temperature and steam processing or dye treatments.

4 Properties

Shrinkage and swelling are natural properties of wood. During winter (heating period), with low indoor air humidity, the wood dries out (shrinkage). This can lead to the formation of small gaps between the individual parquet elements as well as defor-mations that appear as cupping. In summer, the wood absorbs moisture from the air and grows (swelling). During the course of the year, small natural changes can therefore develop between the individual parquet elements. Air humidifiers can be used to counteract this phenomenon. However, not all types of wood react to changes in humidity to the same degree. Further information about indoor climate is available in ISP Information Sheets no. 5: "Parquet on a heated subsurface" and 27: "Parquet and the indoor climate".

Installing parquet on low-temperature heated floors (maximum surface temperature in the parquet of 27°C) basically poses no problems with today's installation techniques, and virtually all types of parquet can be used. But in order to minimise shrinkage and swelling as far as possible, ISP Information Sheet no. 5, "Parquet on a heated subsurface" should definitely be consulted.

Hardness (measured as "Brinell hardness") can be another positive property of parquet. This attribute differs very widely de-pending on the type of wood (growth structure). Oak, beech and ash are about equally hard. Maple, birch, cherry and other high-grade native timbers are somewhat softer than those just mentioned. Conifers are even softer, so the scope for their use is restricted. Most exotic woods – and also Canadian maple – are considerably harder than the best native timber varieties. However, stiletto heels, sharp objects falling on the floor, incorrect chair or furniture castors and other extreme point loads can leave impressions or cause damage to the surface of any kind of wood.

Each type of wood has its own structure and colour. The basic colour of the wood can be influenced by the surface treatment, i.e. it can be made more intense or left in its natural state. Intense daylight (UV and solar radiation) causes most types of wood to turn yellow, and the colours become darker / paler. Only a few types of wood darken intensely at first (in some cases), but they become lighter again as they fade after several years. Natural discolourations are most pronounced in the first two years after installation and natural colour differences within one type of wood are generally harmonised to a great extent. A new surface treatment (sanding and re-treatment) can restore the wood's original colour at any time.

5 Product range / types of installation

In parquet flooring, a distinction is made between solid parquet and multi-layer parquet. Solid parquet consists of a single piece of wood throughout its thickness, which can range from 8 mm to 25 mm. Multi-layer parquet can be constructed of two, three or even more different layers of wood. Both product groups can be obtained from the factory with unfinished ("raw") or treated surfaces. The terms used here are "raw/unfinished" and "finished/pre-finished" parquet. Factory-treated pre-finished parquet floors are sealed, oiled or waxed.

There is also a wide selection of possible installation methods: "glued (glue-down)", "floating" and "nailed" installation. Gluing over the whole surface is by far the most frequently applied method in Switzerland. It requires a flat, strong, clean and dry subsurface (cement screed, calcium sulphate screed or engineered wood boards). This installation method is mainly used for unfinished and two-layer parquet, but it is also increasingly chosen for three-layer boards and is ideal for installation over underfloor heating.

"Floating installation" means that the parquet is not permanently connected to the subfloor. An additional intermediate layer is installed between the parquet and the subsurface to provide footfall sound insulation or thermal insulation. The parquet there-fore lies on the intermediate layer without a permanent connection to the subsurface, but it is intrinsically connected. Floating installation is especially suitable for applications such as renovations, improvements to footfall sound insulation values and subsurfaces with non-degradable adhesives, and for increasing underfoot comfort.

The oldest method of parquet installation involves nailing the individual wooden elements to a nailable underlay such as a false floor, slatted frame or engineered wood boards. Nowadays, this type of installation is only performed on rare occasions (renovation projects, sports floors, etc.).

6 Variety of designs and application areas

An enormous variety of formats, designs, patterns and wood colours are available, and they can be combined as desired. Virtually no limits are imposed on the imagination.

From small-format mosaic parquet to strip flooring with a ship's-deck effect and very large, long and wide boards known as cottage-style or farmhouse-style floorboards, planners, builders and clients are free to choose the designs they prefer. Parquet can be laid as cubes, strips (English or ship's-deck installation), herringbone, boards with friezes and borders, and in many other designs. Depending on the laying direction of the wood or parquet elements, a distinctive visual touch can be added to the room. As a rule, strip or plank floors are installed in alignment with the main incidence of light in a room. Various types of wood with different colours can also be combined with one another.

Parquet is used in many diverse application areas. Parquet is excellently suited as a floor covering in private residential set-tings, offices and classrooms as well as restaurants or community halls with heavy pedestrian traffic. When making a selection, consideration should be given to the hardness but also, and most importantly, to the structure and behaviour of the wood. The choice of surface treatment, matched to the type of use, is a major factor that decides the durability of a parquet floor.

7 Surface treatments

Nowadays, well over half of parquet floors installed in Switzerland take the form of finished parquet. These are parquet products ready for use in the home; they are sealed with solvent-free and formaldehyde-free UV-cured acrylic varnishes, or they may be oiled / waxed. Water-based varnishes are used on building sites. As the result of constant development, they now offer optimum resistance to abrasion and chemicals. They can be used both in residential properties and public areas. Seals are also available with various degrees of lustre. For many different reasons, varnishes containing solvents should no longer be used.

Besides the film-forming sealants, various oil and wax treatments or even combinations of oil and wax are available. The aim is to obtain a natural matt parquet wood surface with a silky patina. Several of these treatments may initially require more frequent re-treatment. However, this requirement decreases over time and is hardly more intensive than in the case of a sealed surface.

For all factory pre-treated wooden floors (sealed, oiled, waxed, etc.), it is advisable to apply an initial treatment immediately after installation in order to protect the lateral edge areas of the parquet elements, which are generally left untreated.

Important: various carpet underlays (often coloured) that are used to provide slip protection contain high quantities of plasticis-ers. These plasticisers can migrate into or through the surface treatment, leading to discolouration. Vapour-proof underlays can also cause discolourations and deformations in the parquet. Rubber castors under trolleys and furniture of all sorts, or car tyres, can also cause discolourations due to the migration of plasticisers.

8 Lifetime and suitability for renovation

Parquet is the only floor covering that can be partially or fully renovated. In case of severe damage, individual parquet elements can be replaced. For finished parquet elements, this can be done without sanding and sealing, oiling or waxing. However, the entire surface area can also be reworked at any time (sanding and new final surface treatment). When sanding a parquet floor, about 5–7 tenths of a millimetre of wood are removed. This means that a multi-layer product with a wood thickness of 4 mm can also be renovated at least two or three times. With an average lifetime of 10-15 years for a surface treatment, all parquet floors with a wood thickness of at least 2.5 mm when new will attain the defined life expectancy of 40 years (ISP Information Sheet no. 37: "Lifetimes of wooden floor coverings"). Parquet floors with wood thicknesses of 6, 8 or more millimetres are therefore generally in use for many generations. More information is available in ISP Information Sheet no. 37: "Lifetimes of wooden floor coverings".

Renovation by sanding is less possible, or even totally impossible, for real wood or veneer floors with wood thicknesses <2.5 mm. Nevertheless, repairs are possible by local replacement of elements.

Details about possibilities for repairs are given in ISP Information Sheet no. 13: "Repairing installed parquet surfaces – possibilities".

9 Cleaning and care

Natural products such as wood experience natural ageing due to external influences. Small scratches, stains and other traces of daily use result in a natural patina that gives the parquet a personal touch.

However, with the care options listed below, the parquet can retain its authenticity and warmth for a long time and also fulfil its purpose as a floor covering. All parquet floors can be kept clean by vacuuming or occasional damp mopping. Various microfibre cloths offer very good cleaning properties for sealed parquet. Caution: not all microfibre cloths are suitable for cleaning parquet (approval from the manufacturer). Wet cleaning must never be carried out, nor must an automatic cleaner / steam appliance be used. Suitable parquet care products can be used to provide added protection for seals, polish them up or change their degree of lustre.

Oiled and waxed wood surfaces require regular retreatments, but cleaning can be started no earlier than 2–4 weeks after installation depending on the treatment system. On oiled wooden surfaces, use should only be made of microfibres that are suitable for this purpose and have been approved by the manufacturer. Especially when the floor is new, the effort required to maintain it is a little more than for sealed areas. Over time, however, oiled and waxed wooden floors also become saturated and the parquet is then easy to maintain.

Detailed "Care instructions for sealed or oiled parquet" are available from ISP or from an ISP parquet outlet.

Note: It is also mandatory to carry out site cleaning of buildings in accordance with the manufacturer's specifications and the system requirements as appropriate to the surface characteristics of the new wooden floor. Site cleaning specialists must obtain adequate information in this regard and must use suitable products.

10 Parquet and the indoor climate

As already mentioned, a natural product such as wood parquet always sets requirements for the indoor climate to avoid excessive drying out, which leads to extreme deformations or damage.

According to the requirements specified by the Federal Office of Public Health (FOPH) and by Swiss Society of Engineers and Architects (SIA) standards, the minimum relative indoor air humidity throughout the dry weather phase and the heating period, i.e. in winter, should always be at least 30% (approx. 35–45% recommended). According to SIA standards, the surface temperature of a wooden floor installed above underfloor heating must never exceed 27°C at any point on the floor. With these values, a parquet can be free of damage in winter, although it may not be free of deformations. The formation of gaps and minor deformations is natural and can never be entirely prevented; they appear normal as they largely disappear again by the end of the humid weather phase / summer.

Special precautions are unavoidable, especially in case of controlled indoor ventilation systems such as those installed in Minergie buildings. In rooms of this sort, extremely low indoor air humidity levels are often attained for very long periods, and many parquet floors sustain damage as a result. ISP Information Sheet no. 27: "Parquet and the indoor climate" provides additional information on this subject.

A deficient indoor climate can also lead to damage in vacant apartments or rooms. Inadequate indoor air humidity causes the wood to dry out excessively, with the consequences described above. But excessively high air humidity levels can also prevail during summer and, together with residual structural humidity from walls, ceilings and plasterwork, etc., can lead to unnatural discolourations in the parquet. This mainly happens if the rooms are inadequately aired or ventilated. ISP Information Sheet no. 34: "Parquet in unoccupied rooms" describes this problem.

Information: The ISP has many more technical Information Sheets available, as well as information on a variety of topics relating to parquet.

All publications can be accessed free of charge at
www.parkett-verband.ch

Parquet – individualists stand on floors that stand out.

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