Hesse Lignal
inspiring you

CAPTURING NEW MARKET SEGMENTS WITH GENUINE WOODS

Top sales arguments
for your business!

Extended life for beautiful parquet flooring

>>> 01

The European parquet industry is currently suffering from falling turnover figures due to weakness in the construction industry and the reluctance of many end customers to spend. Environmental regulations are similarly becoming more onerous and the trend towards sustainability continues to be driven forward, not least by the EU Commission's Green Deal.

A floor's longevity is a significant building block within sustainability. Sustainable and efficient use of limited resources, recycling of construction and manufacturing materials, energy optimisation of existing buildings and climate protection have become market-defining trends and drivers in the construction sector. How we deal with these subjects is of considerable importance in relation to addressing target groups and for the overall economic orientation of the timber industry.

Your parquet is protected in terms of abrasion resistance by high-quality lacquer systems and this is the prerequisite for a long service life. Complaints nevertheless arise when a high-quality and sustainable parquet floor too quickly becomes dirty or unsightly.

Take advantage of the free capacities that are currently available and further improve your parquet into a floor that will retain the beauty of its first day for a long time to come.

>>> 02

Securing a new market segment: open-pore woods in heavily frequented areas

Staff, customers, service providers, four different parcel delivery services, two craftspeople and the office dog – the entrance door in an average open-plan office rarely stands still. Numerous visitors enter the premises, in wind and all weathers, with dirty shoes, wet jackets and dripping umbrellas. What suffers most: the floor.

Real wood parquet has therefore not been considered for decades, especially in public buildings, although its natural properties actually predestine wood for use in work areas:
it has a positive effect on the indoor climate and attracts very little dust. Given ambient humidity that is too high or too low, the solid wood has a regulating effect, by being able to absorb or release ambient humidity. The durability and longevity of wood combines various rational advantages and at the same time it enhances the emotional component by positively providing a sense of space.

This was usually offset by functional considerations: the pores often become darker over time and cannot be cleaned – or become even darker after cleaning. This is caused by moisture penetrating into the pores, as depicted in Figure 1 with the use of an iron solution. This moisture can be transferred onto the surface via wet shoe soles, liquid spills or damp wiping and is absorbed by the pores.

To protect against moisture, it is generally advisable to coat parquet floors with lacquer: quickly applied over the entire surface using a smooth roller, this protective layer makes the wood more resistant and more durable and offers the possibility for every conceivable finished appearance. Until now, however, open-pore woods suffered from one of the following disadvantages:

Figure 1: Depiction of the discolouration of open-pored wood under the influence of moisture (made visible using an iron solution).

- The usual roller application does not permit the lacquer to reach the pores, regardless of gumming or shore hardness, which means they remain insufficiently protected against moisture and dirt.
- Significantly increasing the lacquer volume during roller application does enable the pores to be coated, although the wood loses its porous structure – the pores become flooded so to speak.
- Spraying does enable the application of pore-deep protection, but it is five to six times slower than roller application.

A trade-off therefore had to be made between maximum protection, maximum naturalness and maximum efficiency. Then along came POREGUARD technology as the remedy.

>>> 03

Pore-deep protection with POREGUARD technology

For the first time in the sector's history, the company Hesse Lignal from Hamm in Westphalia is now offering a procedure for applying pore-deep lacquer via UV roller application, while retaining an open-pore appearance. A license agreement with regard to the procedure's patent in the name of POREGUARD enables it to be directly integrated into a production company's UV rolling line. This ensures that a pore-deep, even coating can be achieved without foregoing the advantages of the streamlined UV rolling process.

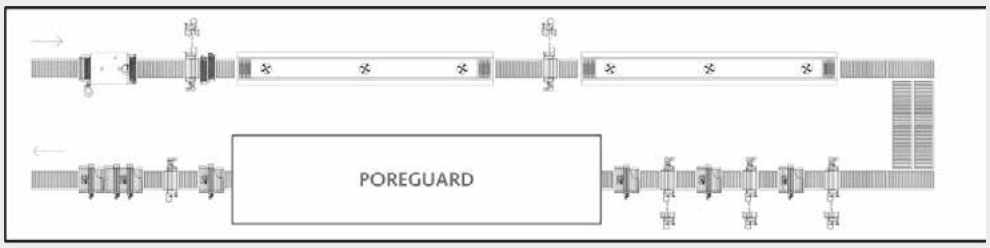

Figure 2: Integration of POREGUARD technology into a standard UV rolling line.

POREGUARD technology is initially based on proven production steps and can therefore be integrated into around 90 per cent of existing production lines with little effort (see Figure 2). The base is formed by applying a HYDRO-UV adhesion primer and a UV basecoat. Preparation for the modified application procedure does not restrict quality in any way: the material withstands more than 10,000 revolutions in a Taber abrasion test on the test bench. The UV top coat is applied in the POREGUARD procedure once the lacquer surface on the wood has been lightly sanded. This involves six steps:

1. Preparation: depending on the pore structure, around 80-120 grams of UV lacquer are required per square metre.
2. Stripping: a spatula machine is used to **press** the prepared amount into the pores, so that around 40-60 grams remain per square metre.

Figure 3: Open-pore wood after the first step in the POREGUARD procedure.

3. Pore roller: a pore roller is used to recreate the open-pore nature of the wood, which involves removing around a further 10 grams of UV lacquer per square metre.
4. Brushing station: the lacquered wood is brushed to prevent silver pores. (Silver pores, as the name suggests, look silvery. They can be caused by air pockets in the lacquer layer.)
5. UV lamp I: a UV emitter is used to gel the lacquer, but not yet cure it.
6. UV lamp II: in combination with final sealing this gives the material its ultimate hardness.

>>> 03

POREGUARD technology can be used wherever open-pored woods are coated industrially over large areas: in the parquet industry as well as on furniture, table tops, worktops and doors.

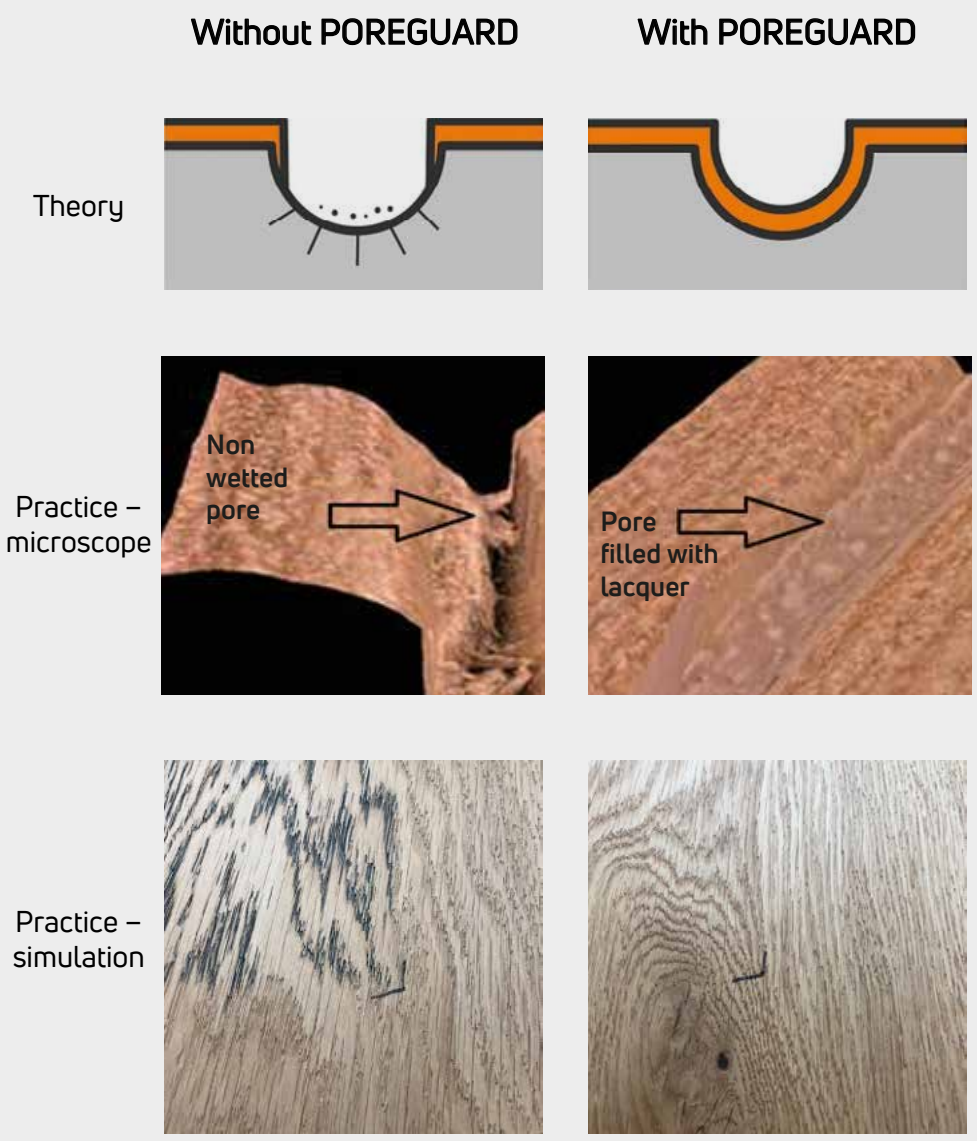

Figure 4: Comparison of different depictions with and without the POREGUARD procedure.

Application example

>>> 04

The application possibilities using this product are demonstrated below by means of a case study. Medium-sized parquet manufacturers have to date used UV roller application to avoid any risk with the parquet's resistance when coating parquet floors made of oak with a weak structure and closed surface. In recent years, however, there has been an increase in requests for an open-pored look and feel without sacrificing the wood's proven protection. The patented POREGUARD solution from Hesse-Lignal has enabled this wish to be fulfilled: woods are protected pore-deep and their natural structure is maintained. Converting the existing rolling line for the patented procedure took two days, the previous parameters such as feed rate and production volume could then be restarted unchanged. The company was able to amortise the costs involved in **patent use** and conversion within two years due to the increased demand resulting from its improved product quality.

Case study

Sector:

- Parquet industry

Objective:

- Long-lasting parquet floors with maximum protection at an attractive price

>>> 04

Pain point:

- Inadequate pore protection

System type:

- Rolling line

Preferred wood:

- Deep-pore woods, strongly brushed woods

Hesse lacquer used:

- Specially adapted UV lacquer system

Feed rate:

- 28 m/min

System downtime for conversion to POREGUARD:

- 2 days

Conclusion

>>> 05

The properties of open-pore woods with a natural look mean they fall precisely into the realm of the sustainability megatrend. This also includes the aspect of longevity, however, and in this respect there has so far been a decisive disadvantage with the natural look and feel of lacquer finishes: the pores could **not also be adequately protected**. Unattractive dark discolouration therefore develops over time and can no longer be removed. Help is at hand with the POREGUARD technology from Hesse Lignal: this patented solution can be integrated into over 90 percent of existing systems without a large investment in system technology and enables pore-deep protection without detracting from the natural pore structure.

Licenses for POREGUARD

Our innovative POREGUARD technology is patented (Hesse EP 3453464 A2 and EP 19150746). Interested companies can conclude a license agreement to exploit the new technology for their own benefit.

We signed a technology license partnership agreement relating to our POREGUARD technology with the company i4F. This agreement means that i4F becomes the sole global licensor of POREGUARD.

The i4F Group develops patented technologies for the flooring industry and related sectors. www.i4F.com

>>> 06

Ralf Untiedt
Product management

About Hesse Lignal

From Bockum-Hövel around the world - every day Hesse produces around 200 tonnes of lacquers and stains based on 45,000 different formulations. The formulations are constantly being developed to meet changing market demands, but particularly in terms of environmental protection. This gives solvent-free and environmentally friendly solutions an ever-increasing role. Hesse's quality management ensures a consistently high level of quality. The range of products ranges from coloured oil for parquet layers, through lacquers for interior fittings and the furniture industry, to products for foil coating in major industries. Our strategic product development activities place special emphasis on ecologically friendly water-based lacquers, modern UV systems and products from sustainable raw materials. Traditional products such as nitrocellulose- or solvent-based PU lacquers are the foundation.

Reliable quality – MADE IN GERMANY.

Interested?
We will be happy to advise you personally and individually!

Ralf Untiedt
Product management

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