KLEBCHEMIE M. G. Becker GmbH & Co. KG, producer of KLEBERIT products – modern and innovative. The company’s competence is especially reflected in the tremendous development and productivity in PUR-adhesives, which is why KLEBERIT products have become market leaders in this future technology sector – worldwide!

In our modern laboratories, experienced, innovative and highly qualified chemists develop high quality products in accordance to customer requirements. Emphasis is placed on the development of environmentally friendly and ecologically clean adhesives.

Our applications laboratory has an extensive range of machinery, so our skilled technicians and engineers are able to conduct tests under “real life” conditions.

The combination of our inbound quality control, production quality control and constant product development ensures that our customers will only receive quality products.

KLEBERIT products are being used worldwide by many well known companies in the woodworking, plastics and automotive industries.

- PUR-Adhesive: One and two components
- PUR-Hotmelts, PUR-Glue
- Dispersions: PUR, EVA, PVAC
- Hotmelts: PUR, EVA, PO, PA, PE
- Two component PUR and Epoxy Systems
- Foams and Sealing Compounds
- Solvent based Adhesives

Working internally and in the field, our highly motivated employees always provide the best customer service through excellent customer care, high quality technical assistance, fast order processing, and quick, worldwide delivery.

Modern Technology, Know-how, Commitment... are the components that determine success – today and in the future.

... we hold the world together

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KLEIBERIT PUR HC 717 is solid at room temperature and has to be melted with the aid of a pre-melter. The PUR coating is applied to the surface during the HotCoating process.

The chemical cross linking of the PUR material achieves a very high surface hardness, which is extremely shock and wear resistant. The PUR material also has very high UV stability and chemical resistance.

Direct application of a UV hardening topcoat ensures precise setting of the desired gloss level and allows for variations in colouring.

The possibility to emboss three dimensional structures, for example pores, with the calender lets your creativity run free.

HotCoating in-line process

HotCoating is the process in which KLEIBERIT PUR HC 717 is applied to the surface. Even with low coat weight, the coating has high wear resistance and shock resistance. The coat weight and the degree of gloss can be adjusted to customer requirements.

The KLEIBERIT HotCoating® process is not only uncomplicated and easy to operate, there are also no VOC or formaldehyde emissions.

KLEIBERIT PUR 717

HotCoating - this process offers a wide variety of advantages:

- Singular application
- 100 % solids
- Smaller production areas
- Lower capital expenditure
- Reliable production
- Variable

With KLEIBERIT PUR HC 717, the company KLEBCHEMIE developed a new technological process which:

- revolutionises surface sealing
- achieves a surface which enhances the natural optic and haptic of solid wood
- significantly simplifies the complete process

Products

<table>
<thead>
<tr>
<th>Products</th>
<th>Application</th>
<th>Basis</th>
<th>Viscosity [mPas] at 120°C</th>
<th>Application temperature [°C]</th>
<th>Coat weight [g/m²]</th>
<th>Colour</th>
<th>Properties</th>
</tr>
</thead>
</table>
| PUR HC 717.0 | Veneer/paper | PUR   | 30.000                     | 100-140                     | 2.5-100             | Transparent | • Highly flexible
|             |             |       | 15.000                     | 100-140                     |                     |         | • UV resistant |
| PUR HC 717.5 | Veneer/paper | PUR   | 16.000                     | 100-140                     | 6.0-100             | Transparent | • High abrasion resistance
|             |             |       | 8.000                      | 100-140                     |                     |         | • Contains corundum
|             |             |       |                            |                            |                     |         | • UV resistant |
| PUR HC 717.1 | Furniture/Alcove | PUR   | 5.000                       | 100-140                     | 1.5-100             | Transparent | • Low viscosity
|             |             |       | 3.000                       | 100-140                     |                     |         | • UV resistant |
| UV TopCoat 659 | Topcoat     | Acrylat | 20 sec (dew DIN-clip)       | 20-30                      | 5-15                | Transparent | • Various gloss levels |
KLEIBERIT HotCoating®...

The alternative to lacquering WITHOUT losing the desired properties of a lacquered surface.

Flooring / Complete Parquet

Up to now ...

Complete parquet, meaning already surface sealed parquet, is in strong demand. Many end customers who want to avoid the sealing process in their homes or businesses are therefore buying surface treated parquet.

From today ...

KLEIBERIT HotCoating® offers an alternative and a very compact and easy to operate technology with low capital expenditure.

By merely adjusting the application quantity, the abrasion class of the flooring can be simply varied to the high-end area. The surface also offers the following important flooring characteristics:

- Excellent shock resistance
- Very good water resistance
- Brilliant transparency
- Universal bond
- Pleasant acoustic characteristics

HotCoating® High Abrasion Resistance

KLEBCHemie has further developed the innovative HotCoating technology. The industry can now use a HotCoating coating with the highest abrasion resistance reaching the highest abrasion class (HACS) according to DIN EN 13329. It is still applied in one simple step with uncomplicated application technology.

There is no micro-cracking which can destroy the sealing. In addition, even with low coat weight, HotCoating offers a very high wear resistance which additionally guarantees the ability for long-term use of the flooring.

HotCoating - the surface has the following characteristics:

- High UV stability
- Very high shock resistance
- Very high wear resistance
- High scratch resistance
- Good chemical resistance

Tested by the ihd Institute für Holztechnologie in Dresden (Institute for Wood Technology in Dresden)

Significant material and machine cost savings!

In comparison to the traditional lacquering process, users of KLEIBERIT HotCoating® realize enormous cost savings through lower coat weights and eliminating extensive sanding.

... more than 20% per m²

UV hardened lacquer systems are predominately used in parquet and flooring production. These lacquers are applied in multiple layers by rollers and are hardened with the aid of UV light.

This process is the status of technology, however, it has several disadvantages:

- Very large production areas required
- Requires several applications of individual lacquer layers
- Several products required
- Filler - Base coat - Lacquer
- Interim sanding required several times
- High capital expenditure

Flooring experts confirm that while in use, wrapping of flooring can never be absolutely avoided. HC 717 keeps its form through its extraordinary flexibility and shock resistance, even with mechanical impact (pebbles, heels, etc.) of the protective function.

HotCoating®... no interim sanding

Furniture Surfaces / Doors

KLEIBERIT HotCoating® enables the furniture and door industries to produce high quality surfaces with a cost-effective and easy-to-operate technology.

The compact roller application technology enables reproducible surfaces at very high line speeds.

Since HotCoating is a 100% solid content system and does not contain water or solvents whatsoever, there are no problems with stringing, VOC or formaldehyde emissions.

HotCoating - the modern surface refinement of the future.

The good surface properties of KLEIBERIT HotCoating®, like the extremely good shock resistance and the high wear resistance, are complemented with the very pleasant haptic of the HotCoating PUR system.

Therefore, real wood surfaces are not only optimally protected, but its warmth and natural structure is also emphasized.

Decorative Surfaces / Direct Print / Digital Print

KLEIBERIT HotCoating® offers many possible combinations in laminating and printing technology. The very good bonding properties of PUR HC 717 to paper, print colours and lacquer systems allow for the use as protective refinement or as the sealing basis for printing.

HotCoating is applied as a smooth film on wood derived material with an intelligent roller application system and therefore replaces an extensive, multilayered under layer build-up which is required in the corresponding drying zones and interim sanding.

In profile wrapping, diverse decorative papers and foils are being used in addition to real wood veneer. As the décor is always being more perfectly developed, printing technology is experiencing a revival through advanced processes.

The first trends and imminent future use of printing technology shows individual and creative design which can also be realized with smaller lot sizes.

...no interim sanding
KLEIBERIT HotCoating®

Set up:

HC application

Pre-heating

Topcoat1

Topcoat2

UV curing

calander
Comparison: Production layout flooring

Lacquering line

KLEIBERIT HotCoating®
The wear resistance class can be simply adjusted by the coat weight

<table>
<thead>
<tr>
<th>Thickness Coating in µm</th>
<th>KLEIBERIT HC 717.5 (9383/323)</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>AC3</td>
</tr>
<tr>
<td>40</td>
<td>AC4</td>
</tr>
<tr>
<td>50</td>
<td>AC5</td>
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<tr>
<td>140</td>
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<td>150</td>
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</tr>
</tbody>
</table>
TEST CERTIFICATE

ST-09-01-16-01

Product: PDL-floorings with surfaces of "Kleiberit HotCoating VP 9383/323" named by the producer with variant A and B (surface coating system according to the producer instruction)

Producer: Klebchemie
M.G. Becker GmbH & Co. KG
Max-Becker-Str. 4
76356 Weingarten

Order / Test method: Determination of the resistance against abrasion according to EN 15468 / EN 13329 annex F

Test report: 278324 / part 1

Test result:

<table>
<thead>
<tr>
<th>Variant</th>
<th>Average number of revolutions until the IP value according to EN 13329 (n = 2)</th>
<th>Average layer thickness in μm</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>2000</td>
<td>62</td>
</tr>
<tr>
<td>B</td>
<td>5000</td>
<td>80</td>
</tr>
</tbody>
</table>

n = number of test pieces

Dresden, 16.01.2009

Head of laboratory

Engineer in charge