



木器和装饰涂料
WOOD AND DECORATIVE COATINGS

Hidden inside – Performance outside!



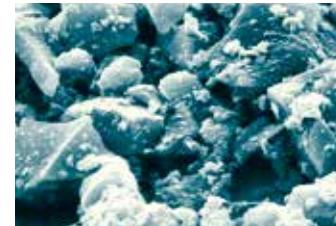
The Mineral Engineers

A DIVISION OF QUARZWERKE GROUP



石英、方英石、石英制品：
MILLISIL®, **SIKRON®**, **SILBOND®**

- 高莫氏硬度
- 高化学耐受性
- 透明涂料的光学性能极佳：
折射率与聚合物相近、低双折射



石英 | *quartz*



方英石 | *cristobalite*

适用木材、镶木地板和
层压板涂层的高性能填
料

- 在清漆中透明
- 高填充度下仍高度透明
- 光泽度可调节
- 表面硬度高
- 改善耐磨性和耐划性
- 易分散

*High-performance fillers
for wood, parquet and
lamine coatings*

- show a transparent performance even in clear coats
- offer the possibility of high filling degrees without loss of transparency
- allow the gloss to be adjusted individually
- cause a high surface hardness
- improve abrasion and scratch resistance
- are easy to disperse

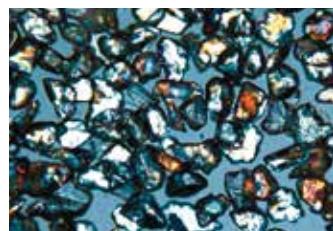
Quartz, cristobalite, fused silica:
MILLISIL®, **SIKRON®**, **SILBOND®**

- *high Mohs hardness*
- *high chemical resistance*
- *favorable optical properties for transparent coatings:
refractive index similar to that of the polymer component,
low birefringence*



白刚玉：
SEPASIL® EK

- 高莫氏硬度
- 化学耐受性好
- 高密度 (4.0 g/cm^3)
- 粒度分布窄、透明度高
- 多种形貌（角形、块状）可供选择
- 多种表面改性可供选择



SEPASIL® EK

长石、霞石正长岩：
MICROSPAR®, TREMINEX®

- 中等莫氏硬度
- 化学耐受性好
- 透明涂料光学属性极佳
- 折射率与聚合物相近、双折射率低
- 片形颗粒、表面光滑



TREMINEX®

硬石膏：
TREFIL® 1313

- 低莫氏硬度
- 易打磨
- 透明涂料光学属性优异
- 折射率与聚合物相近、双折射率低



TREFIL® 1313

滑石粉：
TIKRON®

- 极低莫氏硬度
- 易打磨
- 化学惰性
- 极出色的片形结构



TIKRON®

White fused alumina:
SEPASIL® EK

- very high Mohs hardness
- high chemical resistance
- high density (4.0 g/cm^3)
- good transparency caused by a narrow particle size distribution
- depending on the processing, different particle shapes are available (angular, blocky).
- different surface modifications available

Feldspar, Nepheline Syenite:
MICROSPAR®, TREMINEX®

- medium Mohs hardness
- high chemical resistance
- favorable optical properties for transparent coatings
- refractive index similar to that of the polymer component, low birefringence
- platelet-like particles and smooth surface structure

Anhydrite:
TREFIL® 1313

- low Mohs hardness
- good sandability
- favorable optical properties for transparent coatings
- refractive index similar to that of the polymer component, low birefringence

Talc:
TIKRON®

- very low Mohs hardness
- good sandability
- chemically inert
- very pronounced platelet structure



高性能填料可改善涂料的耐划性、
同时保持透明度。

High-performance fillers improve the scratch resistance of coatings while at the same time providing good transparency properties.

矿物 Mineral	产品系列 <i>product line</i>	化学式 <i>chemical formula</i>	密度 <i>density [g/cm³]</i>	莫氏硬度 <i>hardness</i>	折射率 <i>refractive index</i>	双折射 <i>birefringence</i>
石英 <i>quartz</i>	SIKRON® , SILBOND®	SiO ₂	2.65	7	1.54	0.009
方英石 <i>cristobalite</i>	SIKRON® , SILBOND®	SiO ₂	2.35	6.5	1.76	0.003
石英制品 <i>fused silica</i>	AMOSIL®, SILBOND®	SiO ₂	2.2	6	1.48	0
长石 <i>feldspar</i>	MICROSPAR®	(Na,K) AlSi ₃ O ₈	2.6	6	1.53	0.007
白刚玉 <i>white fused alumina</i>	SEPASIL® EK	Al ₂ O ₃	4.0	9	1.76	0.008
硬石膏 <i>anhydrite</i>	TREFIL® 1313	CaSO ₄	3.0	3.5	1.58	0.04
滑石粉 <i>talc</i>	TIKRON®	Mg ₃ Si ₄ O ₁₀ (OH) ₂	2.7	1	1.58	0.05



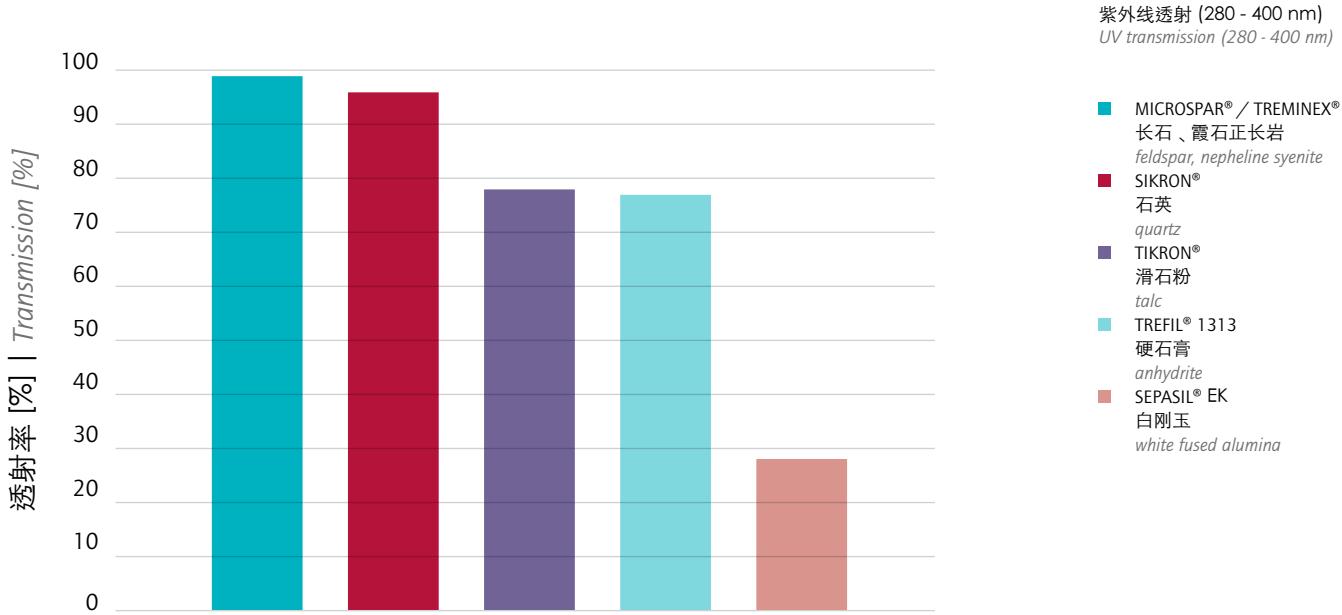
高性能填料对紫外线透 明度的影响

紫外线透射对许多涂料应用起到决定性作用。比如、紫外
线硬化涂料要求材料紫外线透明、较厚的涂层才能完全硬化。
另一方面、填料的紫外线吸收能力则对涂料的耐候性和耐光性
有积极的影响。

Impact of high-performance fillers on UV transparency

*UV transmittance plays a key role for numerous coating applications.
In UV-curable coatings, for example, high UV transparency is desired so
that the filled coating can cure completely even in higher film thicknesses.
A UV-absorbing effect of the fillers, on the other hand, has a beneficial
effect on weathering and light resistance.*

提高木器表面光泽度的高性能填料 *High-performance fillers for glossy wood surfaces*



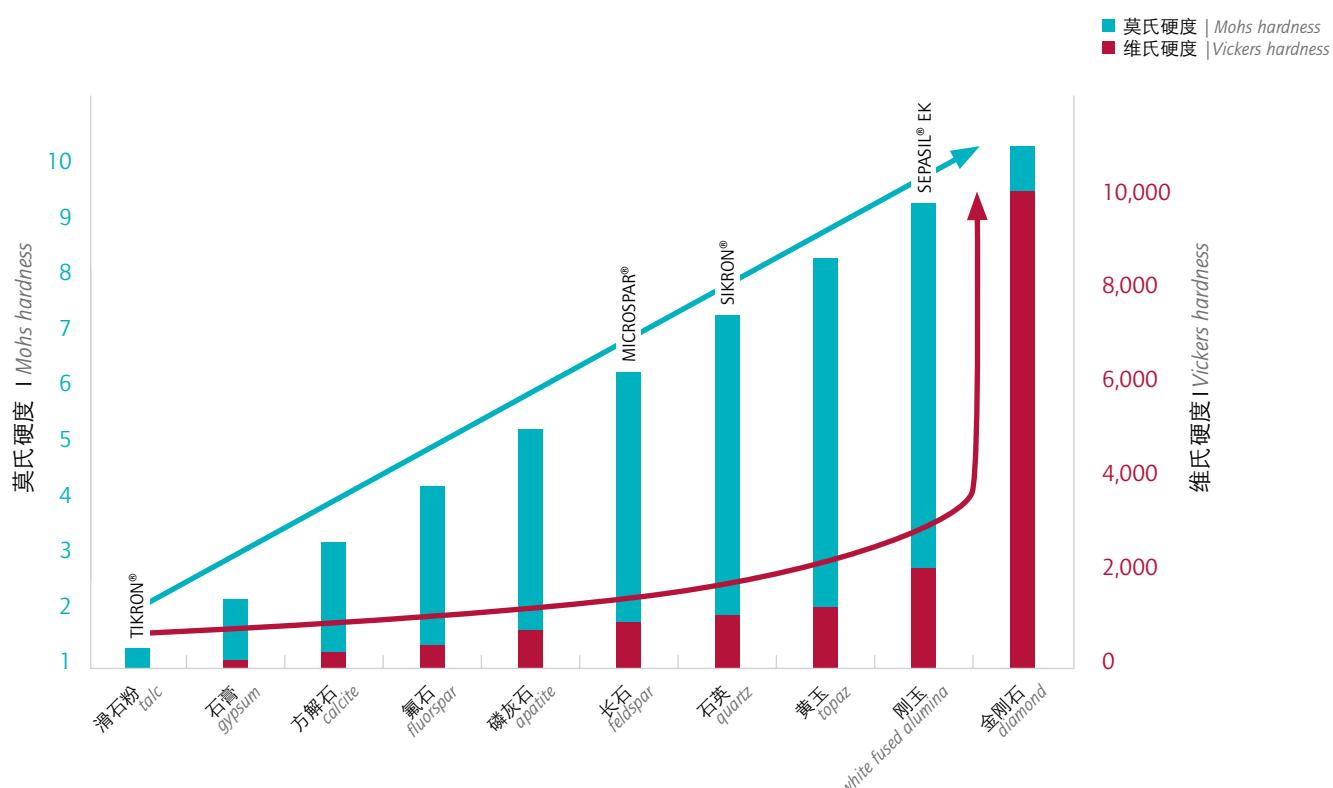
莫氏硬度和维氏硬度对比

Comparison of the Mohs hardness and Vickers hardness

滑石粉 talc	石膏 gypsum	方解石 calcite	氟石 fluorspar	磷灰石 apatite	长石 feldspar	石英 quartz	黄玉 topaz	刚玉 white fused alumina	金刚石 diamond
莫氏硬度 <i>Mohs hardness</i>									
1	2	3	4	5	6	7	8	9	10
指甲 <i>fingernail</i>		小刀 <i>pocket knife</i>		钢锉 <i>steel file</i>		刮划玻璃 <i>scratch window glass</i>			
维氏硬度 <i>Vickers hardness</i>									
2	36	109	189	536	795	1120	1427	2060	10060

硬质填料提高耐划性

Hard fillers for improved scratch resistance





折射率如何影响透明度

填料和聚合物的折射率决定了涂料涂层透明度。

两种成份的折射率差异越大、填料和聚合物界面光散射越强、填料的覆盖能力就越好。因此欲获得高透明度、填料和硬化后聚合物的折射率应尽可能一致。

许多矿物由光学各向异性晶体组成。折射率在不同入射光方向的不同、这一特性被称为双折射。它同样决定了含有填料的涂料的透明度。双折射越低、漆膜透明度越高。

我们可以提供与聚合物折射率相近、非或低双折射的填料。

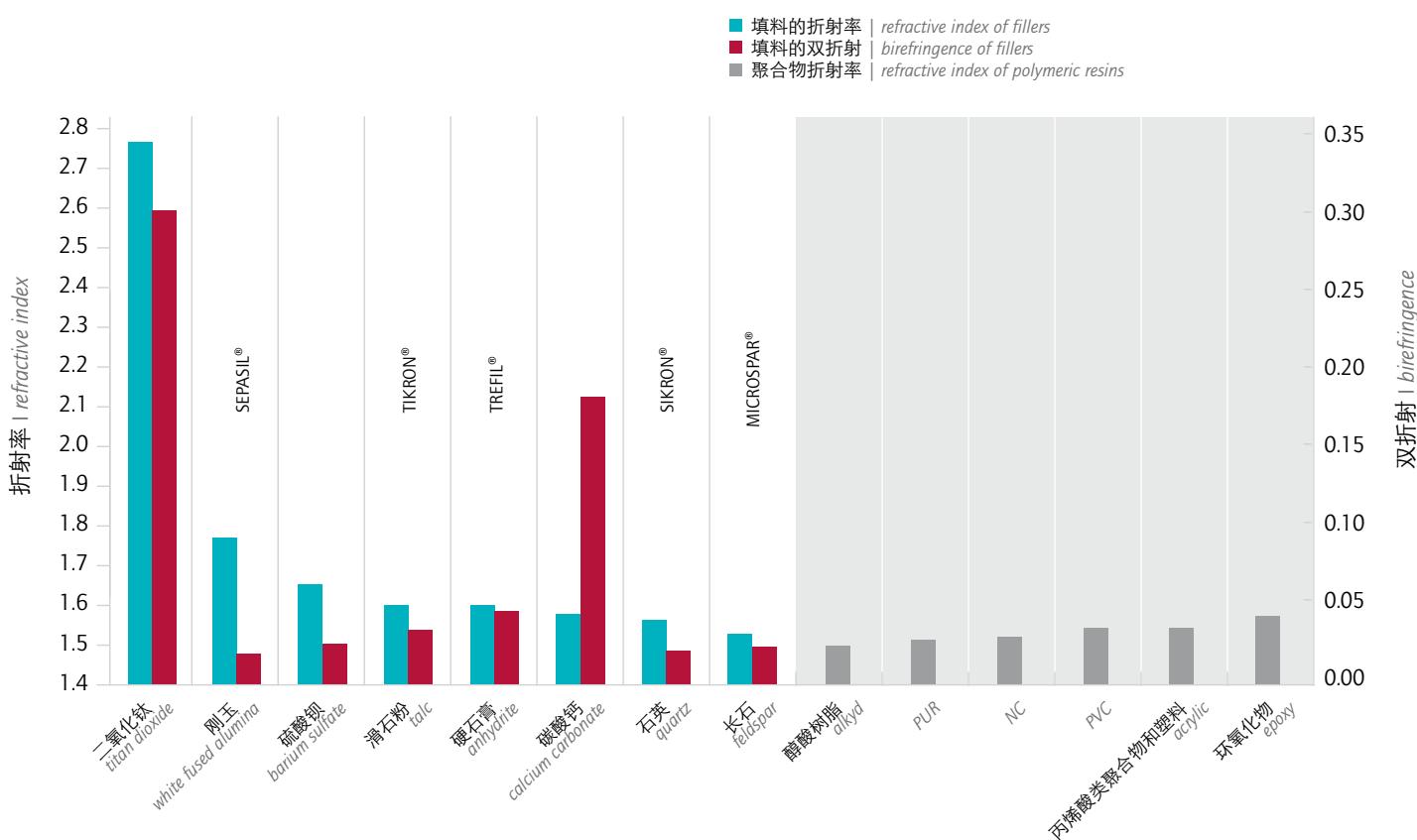
How the refractive index affects transparency

The refractive index of the embedded filler in relation to the surrounding polymer matrix (film-forming agent) essentially determines the transparency of a filled coating.

The more the refractive indices of the two components differ, the more intensively light is scattered at the interface between filler and polymer matrix and the more opaque is the coating. For high transparency, therefore, the refractive indices of the filler and the cured polymer matrix must match as closely as possible.

Many minerals consist of optically anisotropic crystals, i.e. they have a different refractive index depending on the direction of the incident light. This property is called birefringence. In addition to the refractive index, the birefringence also affects the transparency of a filled coating. The lower the birefringence, the more transparent the film.

We offer numerous fillers with refractive indices that correspond to that of the polymer component and have little or no birefringence.



适合溶剂基透明双组份 PU 油漆的 TREFIL® 1313 (硬石膏)

本研究比较了两种填料在双组份 PU 打磨密封剂的性能。PUR-1配方含有标准滑石粉和硬脂酸锌、在PUR-2配方中只添加TREFIL® 1313-400。

两种配方在室温下均不易沉淀、木器涂层有相近的硬度和耐划性(赤松为 2 – 2.5 N、山毛榉为 3.5 – 4 N、钢针检测、依据 DIN 55656)。

填加 TREFIL® 1313 的 PUR-2 与填充有滑石粉/硬脂酸锌的 PUR-1相比的优势：

- 粘度低
- 干膜透明度更高
- 木材粘着力显著改善
- 易打磨

TREFIL® 1313 (anhydrite) for solvent-based, transparent 2K PU coatings

In the present study, two differently filled 2K PU coatings for sanding sealants were comparatively investigated. PUR-1 contains a standard talc and zinc stearate as functional fillers, whereas in PUR-2 only one type of filler, the anhydrite TREFIL® 1313-400, was added.

Both coating formulations are sedimentation stable at room temperature and give wood coatings of very similar hardness and scratch resistance (2 – 2.5 N on spruce, 3.5 - 4 N on beech, steel test pin, according to DIN 55656). Benefits of TREFIL® 1313 filled PUR-2 compared to PUR-1, filled with talc and zinc stearate:

- reduction of viscosity
- higher transparency of the dry film
- clearly enhanced adhesion to wood
- significantly improved sandability



油漆配方 | coating formulations

成份 component	原料 raw materials	功能 purpose	PUR-1 [质量 % wt.%]	PUR-2 [质量 % wt.%]
树脂 resin	Desmophen® PL 300 X	聚酯 polyester resin	30	
	乙酸丁酯 butyl acetate	溶剂 solvent	5.0	
	PGMEA ¹⁾	溶剂 solvent	3.0	
	滑石粉 talc	填料 filler	6.6	-
	TREFIL® 1313-400	填料 filler	-	13.6
	硬脂酸锌 zinc stearate	消光剂 matting agent	6.0	-
	THIXATROL® P220X-MF	流变添加剂 rheological additive	3.0	
	Desmophen® PL 300 X	聚酯 polyester resin	36	35
	乙酸丁酯 butyl acetate	溶剂 solvent	10	
	BYK-066	消泡剂 defoamer	0.3	
硬化剂 curing agent	BYK-300	表面添加剂 surfactant	0.1	
	Desmodur® ultra IL BA	聚异氰酸酯 polyisocyanate	25	
	Desmodur® L-75	聚异氰酸酯 polyisocyanate	30	
	乙酸丁酯 butyl acetate	溶剂 solvent	30	
	PGMEA ¹⁾	溶剂 solvent	15	

1) PGMEA : 1-甲氧基-2-丙基乙酸酯 | 1-methoxy-2-propanol acetate

按照表中的顺序 搅拌混合原材料 树脂/硬化剂混合比例 = 2/1

The raw materials were mixed under stirring with a dissolver in the order given in the table. Mixing ratio resin/curing agent = 2/1.



树脂成份的粘度 | viscosity of the resin

25°C 时的粘度 Viscosity at 25 °C	单位 unit	PUR-1 PUR-1	PUR-2 PUR-2
方法 A 1) method A	mPa·s	6720	860
方法 B 2) method B	mPa·s	7140	1210

1) Anton Paar MCR 92, CP50、剪切率 = 10 s^{-1}
2) HAAKE 旋转粘度计、试样 E30、等级 5

1) Anton Paar MCR 92, CP50, shear rate = 10 s^{-1}
2) HAAKE rotational viscometer, test specimen E30, level 5

色值 | colour values

CIELAB	无涂层 without coating		PUR-1 PUR-1		PUR-2 PUR-2	
	白色 white	黑色 black	白色 white	黑色 black	白色 white	黑色 black
背景 1) background ¹⁾	白色 white	黑色 black	白色 white	黑色 black	白色 white	黑色 black
L*	92.5	26.5 2)	90.3	37.5	90.5	27.4 2)
a*	-0.9	0.4	-1.0	0.4	-1.1	0.3
b*	3.4	0.8	4.8	-1.4	5.8	0.5

1) BYK 的 byko-chart 不透明度 2A (产品编号 2810)、湿膜厚度 = 120 μm 、干膜上的色度测量。

2) PUR-2 可提供接近背景的 L* 值。该结果表明透明度出色。

1) byko-chart opacity 2A from BYK (item no. 2810), wet film thickness = 120 μm , colour measurement on dry film.

2) PUR-2 gives an L* value approximately equal to that of the background. This result indicates excellent transparency.

粘着能力 - 网格切割测试 | Adhesion - Cross-cut test

基质 substrate	PUR-1	PUR-2
赤松 spruce		
山毛榉 beech		
评估 ¹⁾ rating ¹⁾	Gt 5	Gt 0

1) 符合 DIN EN ISO 2409 标准的横切测试

1) Cross-cut test according to DIN EN ISO 2409

可打磨性 | Sandability

基质 substrate	PUR-1	PUR-2
赤松 spruce		
评估 ¹⁾ rating ¹⁾	4-5	1-2
山毛榉 beech		
评估 ¹⁾ rating ¹⁾	6	1

打磨后的表面质量：40 个双行程、刚玉砂纸粒度 120、打磨压力约 1,000 - 1,100 g
树脂/硬化剂混合比例 = 2/1。

Surface quality after sanding: 40 double strokes, corundum sandpaper grain 120,
sanding pressure approx. 1,000 - 1,100 g/1.

1) 表面质量评估标准：1（优）至 6（不合格）。

1) Surface quality rating scale: 1 (very good) to 6 (poor).

我们的 HPF 填料对 100% 紫外漆微观耐划性的影响

对填充不同硬度填料的透明紫外漆进行马丁代尔测试、并进行外观评估。

马丁代尔测试是一种评估家具和木材表面微观耐划性的方法。快速模拟日常生活中的磨损、确定产品光泽度变化和耐磨性。

在透明 100 % 紫外漆中使用我们高性能填料的优点：

- 通过添加 SEPASIL® EK 改善微观耐划性
- 添加 SIKRON® SF 6000 和 SEPASIL® EK、增加涂料的固含量、且不影响耐划性

Influence of our HPF fillers on the micro-scratch resistance of a 100% UV varnish

Various fillers with different Mohs hardnesses in a transparent 100% UV coating of medium scratch resistance were subjected to the Mini-Martindale test and then visually evaluated.

The Mini-Martindale test is a method for evaluating the micro-scratch resistance of all types of furniture and wood-based surfaces. It simulates everyday wear at an accelerated pace to determine a product's resistance to gloss changes and visible scratches.

Advantages of our high-performance fillers in a transparent 100% UV coating are:

- *improvement of micro-scratch resistance through the addition of SEPASIL® EK*
- *increase of the solid (body) of the unfilled coating without deterioration of the scratch resistance by adding SIKRON® SF 6000 and SEPASIL® EK*

测试方法

紫外家具面漆中添加了质量百分比为 10 % 的 HPF 填料：

- 将涂料分别涂覆到较厚的黑色塑料薄膜上
- 使用马丁代尔设备和以下参数检测耐划性：
 - 摩擦材料：思高洁
 - 循环数：80 (= 利萨如运动)
 - 负荷：6 N
 - 对施加过负荷的表面进行目视评估

Test procedure

10% by weight HPF fillers were incorporated into a pre-formulated 100% UV topcoat for furniture:

- *the varnish was applied to thick, black plastic film*
- *the scratch resistance was tested using a Mini-Martindale device and the following parameters:*
 - *scuffing material: Scotch Brite*
 - *number of cycles: 80 (= Lissajous movement)*
 - *load: 6 N*
 - *visual assessment of the loaded surface*



马丁代尔测试、
外观评估标准 1 - 5

*Mini-Martindale test,
optical assessment Quality rating scale 1 - 5*

5 = 优
1 = 差

5 = very good
1 = deterioration

矿物 <i>mineral</i>	产品名称 <i>product name</i>	马丁代尔测试 Mini-Martindale Test				
		之前 <i>before</i>		之后 <i>after</i>		
		光泽度 60° <i>gloss 60°</i>	亮度 Y <i>brightness Y</i>	光泽度 60° <i>gloss 60°</i>	亮度 Y <i>brightness Y</i>	外观评估 <i>visual assessment</i>
参考 <i>reference</i>	无填充 <i>unfilled</i>	88.8	0.47	75.3	0.82	3
方英石 <i>cristobalite</i>	SIKRON® SF 6000	83.3	0.5	67.7	1.04	3
长石 <i>feldspar</i>	MICROSPAR® 1379-600	82.2	0.53	63.6	1.21	2
刚玉 <i>white fused alumina</i>	SEPASIL® EK F1000 HP	84.6	0.67	71.4	1.14	4

参考未填充 | *reference unfilled*

SIKRON® SF 6000



MICROSPAR® 1379-600

SEPASIL® EK F1000 HP





TREFIL® 1313 硬石膏高填充的透明紫外漆

透明紫外漆广泛用于家具地板行业。透明的硬质填料、如霞石正长岩和刚玉、由于其耐磨性好、常用于地板涂料。然而、家具部件、如床架、压条或镶板、可能与输送辊道接触摩擦、因而不能使用含有硬质填料的涂料。高性能填料® 1313-600基于天然硬石膏、能够解决紫外固化漆的问题。下面的测试结果展示了TREFIL® 1313-600 在透明度、加工处理及光泽度方面的优势。

High filled transparent UV-varnishes with TREFIL® 1313 anhydrite

Transparent UV varnishes are widely used in the furniture industry and for the coating of parquet flooring. Hard functional fillers with very good transparency properties, such as nepheline syenite and white fused alumina, have established themselves in parquet coatings, where the abrasion resistance is an important parameter. Coatings for furniture components such as bed frame slats, battens and panels are frequently unable to endure hard, abrasive fillers on account of the metal abrasion that is incurred, e.g. due to conveyor rollers. The high-performance filler TREFIL® 1313-600, which is based on a natural anhydrite, provides a filler solution for these UV varnish applications. The following test results show the efficiency of TREFIL® 1313-600 in terms of the transparency, processing capability and the gloss life of the filled system.

适合耐紫外线和耐划清漆系统的功能性填料

Functional fillers for UV- and scratch resistant clear varnishes



紫外固化漆配方 | Recipe of the tested UV varnish

技术参数 Technical parameter	TREFIL® 1313-600	成份 Components	重量 Weight [g]
吸油率 [g/100 g] Oil absorption [g/100 g]	19	Desmolux VP LS 2265	97
密度 [g/cm³] Density [g/cm³]	3	Darocur 1173	3
d50 [µm]	3	TREFIL® 1313-600	不同比例 various proportions
莫氏硬度 Hardness according to Mohs	3.5		

制备和检测：使用搅拌器制备紫外固化漆。使用speedmixer除去泡沫。在红木上精确喷涂 90 µm厚的涂料。红木的颜色和光泽分别使用 Data Color microflash 200 D和Micro-TRIgloss测量（10 次测量的平均值）。使用圆柱转子和 HAAKE RheoStress 6000 测量粘度。

Manufacture and tests: The manufacture of the UV varnish was performed with dissolvers. Upon completion the microfoam was removed from the varnish system with a speed mixer. The 90 µm application of the varnishes was by means of a precision squeegee on mahogany. The colours and gloss were measured with a Data Color microflash 200 D (the mean of 10 measurements) and with a Micro-TRIgloss on the mahogany. The viscosity measuring of the varnishes was performed with a HAAKE, RheoStress 6000 with a cylindrical spindle.

结果 | Results

填料 (质量 %) Filler (wt. %)	TREFIL® 1313-600				滑石粉 TALC			
	L*	ΔL 与未填充对比 ΔL compared with unfilled	光泽度 60 % Gloss 60%	粘度 [mPa*s] Viscosity [mPa*s]	L*	ΔL 与未填充对比 ΔL compared with unfilled	光泽度 60 % Gloss 60%	粘度 [mPa*s] Viscosity [mPa*s]
0	32.6	0	87.7	ca. 800	32.6	0	87.7	ca. 800
10	35.1	2.5	83.1	1059	36.1	2.5	69.8	1373
20	35.4	2.8	73.3	1253	38.2	2.8	29.1	2994
30	37.1	4.5	70.3	1590	40.1	4.5	14.4	9950

- 经过检测、所有紫外漆耐磨性相近。
- 添加质量百分比 20 % 的 TREFIL® 1313-600 的涂料加工性能优异。同等填充度的滑石则对涂料的流动性有明显的影响。
- TREFIL® 1313-600较滑石粉相比、光泽度下降幅度较低。
- 在颜色较深的红木上、填充有 TREFIL® 1313-600 的紫外漆与未填充紫外漆相比、亮度变化明显低于含有滑石粉的涂料。
- TREFIL® 1313-600 涂料的低亮度变化说明该填料透明性极佳。
- 存储 2个月后、含TREFIL® 1313-600的涂料易搅拌均匀。

- all of the tested filled UV varnishes have a comparable abrasion capability.
- with TREFIL® 1313-600 up to a fullness of 20 % by weight the processing capability of the varnish, which begins with the incorporation of the fillers, is good. With this filler proportion talcum already has a considerable influence on the flow of the UV varnish.
- the gloss reduction with TREFIL® 1313-600 is comparably slight in relation to talcum.
- the lightening in colour of varnishes filled with TREFIL® 1313-600 in comparison with an unfilled UV varnish on a dark mahogany substrate is distinctly lower than when talcum is used.
- the slight lightening in colour when TREFIL® 1313-600 is used indicates a very good transparency behaviour of the filler.
- with TREFIL® 1313-600 the stirring capability of the UV varnish is good after 2 months.





适合硝化纤维素漆 的透明填料

硝化纤维素漆通常用于单件家具木材表面的精整。其特点包括易加工、由于使用高比例的溶剂而可以快速物理干燥以及极好的木材纹理。为开发成本低廉的硝化纤维素填料、以及添加有在系统中稳定或者方便重新搅拌并具有透明性能填料的硝化纤维素面漆、测试以下高性能填料、结果合格：

Transparent Fillers in Nitrocellulose Lacquers

Nitrocellulose lacquers are often used for the purpose of finishing the wooden surfaces of furniture. Their main features are easy application, fast physical drying due to the high proportion of solvent and very good grain enhancement. In order to develop a low-cost nitrocellulose filler and nitrocellulose covering lacquer the following high-performance fillers that are stabilized in the system or that can be easily stirred up again and exhibit transparent behaviour were used for tests:

参数 Parameter	TREFIL® 1313-400	MICROSPAR® 1380-600
吸油值 Oil Absorption [g/100 g]	18	25
密度 Density [g/cm³]	3.0	2.6
d50 [μm]	6	3
硬度 (莫氏) Hardness (Mohs)	3.0	6.0

TREFIL® 1313 和 MICROSPAR® 1380 用于木材面漆 *Finishing of wooden surfaces through the use of TREFIL® 1313 and MICROSPAR® 1380*

成份 Components	填料 [质量 %] Filler [wt%]	面漆 [质量 %] covering lacquer [wt%]	功能 function
低氮硝化纤维素 E400； 在异丙醇中 30% <i>Colloidiumwolle E400; 30% in Isopropanol</i>	8.0	14.5	硝化纤维素成膜剂 binder
乙酸乙酯 Ethylacetat	15.8	21.0	溶剂 solvent
乙酸丁酯 Butylacetat	2.1	2.7	溶剂 solvent
甲苯 Toluol	17.5	23.0	溶剂 solvent
二甲苯 Xylol	1.5	2.0	溶剂 solvent
丁醇 Butanol	2.6	3.4	溶剂 solvent
Worleekyd C 628 (在二甲苯中 70%) <i>Worleekyd C 628 (70% in Xylol)</i>	12.0	17.3	成膜剂 binder
邻苯二甲酸二异丁酯 Diisobutylphthalat	3.0	3.7	增塑剂 solvent
TREFIL® 1313-400	36.0	-	填料 filler
MICROSPAR® 1380-600	-	10.0	填料 filler
Deuteron SF707	-	0.7	表面添加剂 surfactant
BYK 378	-	0.2	表面添加剂 surfactant
Thixatrol P220X-MF	1.5	1.5	流变添加剂 <i>rheological additive</i>

结果

显而易见：

- 使用填料确保合适的加工粘度。
- 保证填料在体系中的稳定性。
- 在橡木和核桃木上透明度优异。
- 使用 TREFIL® 1313-400 可以实现高填充、且透明度高。节省纤维素和硬脂酸锌用量。
- 面漆中使用MICROSPAR® 1380-600凸显木材纹理、同时改善了耐磨性。
- 使用 MICROSPAR® 1380-600 可降低成本。

*The results
speak for themselves:*

- with the fillers a suitable application viscosity is achieved.
- the stabilization of the fillers in the system is ensured.
- there is a good transparency on oak and walnut.
- by using TREFIL® 1313-400 high filler levels and good transparency are achieved. As a result, cellulose and zinc stearate can be saved.
- MICROSPAR® 1380-600 in the topcoat causes good kindling of the wood while improving abrasion resistance
- cost savings through the use of MICROSPAR® 1380-600

划痕测试 | scratch test results

无填料的 NC 面漆 色值 L*				含 MICROSPAR® 1380-600 的 NC 面漆 色值 L*			
Covering lacquer without filler colour value L*				Covering lacquer with MICROSPAR® 1380-600 colour value L*			
L* 之前 before 划痕测试 Scratch-Test	L* 之后 after 划痕测试 Scratch-Test	ΔL* (之后 - 之前) (after - before)	ΔL* 亮度 [%] brightening [%]	L* 之前 before 划痕测试 Scratch-Test	L* 之后 after 划痕测试 Scratch-Test	ΔL* (之后 - 之前) (after - before)	ΔL* 亮度 [%] brightening [%]
7.4	14.5	7.1	96.0	20.2	21.1	0.9	4.5



产品适用于
涂料、油漆和抹灰
*Products for
paints, coatings and plasters*

	道路标线 road markings	乳化油漆 dispersion paints	无机颜料 silicate paints	防腐漆 anticorrosive coatings	粉末漆 powder coatings	印刷油墨 inks	木材漆 wood coatings	电绝缘漆 wire coatings	UV 紫外漆 UV curing coatings	工业漆 industrial coatings	乳胶抹灰 emulsion plasters	彩色抹灰 coloured plasters	硅酸盐抹灰 silicate plasters	矿物抹灰 mineral plasters	粘接剂 adhesives	中值粒径 [μm] median grain size [μm]	密度 [g/cm³] density [g/cm³]	莫氏硬度 Mohs hardness	白度 Y 值 brightness Value of various products	吸油值 oil absorption	
石英砂 quartz sand	■															80 - 2000	2.65	7	25-50	8	
白色石英 white quartz	■															100 - 3000	2.60	7	60 - 68		
彩色石英 coloured quartz	■																2.60				
AMOSIL®, MILLISIL®, SIKRON®, SIBELITE® 石英、方英石、石英制品 quartz, cristobalite, fused silica	■ ■ ■ ■ ■ ■															2 - 70	2.20 - 2.65	6 - 7	67 - 95	21 - 34	
硅烷化处理的 SILBOND® silanized 石英、方英石、石英制品 quartz, cristobalite, fused silica	■ ■ ■ ■ ■ ■															2.5 - 40	2.20 - 2.65	6 - 7	71 - 97	11 - 27	
TREMIN® 硅烷化处理的硅灰面 surface treated wollastonite		■		■ ■												2.5 - 99	2.85	4.5	80 - 94	23 - 50	
TREMINEX® 硅烷化处理的霞石正长岩 surface treated nepheline syenite				■ ■			■	■ ■								2 - 32	2.60	6	85 - 93	13 - 27	
MICROSPAR® 长石 feldspar		■	■ ■ ■ ■			■	■ ■									0.5 - 10	2.60	6	96 - 97		
Chinafill, AK Pure Gloss 高岭土 kaolin		■ ■ ■ ■ ■ ■														0.5 - 6.5	2.60	2	82 - 88	46 - 56	
AK Pure 哑光 + 超哑光 AK Pure matt + supermatt 煅烧 calcinate		■ ■							■ ■							4 - 6	2.70	7	92 - 94	37 - 42	
HYDRAFIL® 氢氧化铝 aluminium hydroxide		■ ■ ■ ■ ■ ■				■ ■ ■ ■		■ ■ ■ ■								0.8 - 106	2.40	3	91 - 99	15 - 31	
TREFIL® 1232, TREMICA® 云母 mica		■ ■ ■ ■ ■ ■				■ ■ ■ ■ ■ ■		■ ■ ■ ■ ■ ■		■ ■ ■ ■ ■ ■						30 - 50	2.85	2 - 2.5	39 - 83	62 - 71	
SEPASIL® EK 白刚玉 white fused alumina	■					■ ■	■ ■									3 - 45	4.00	9	97 - 99		
SILATHERM® 导热填料 thermally conductive fillers						■ ■										2 - 31	3.65	5	78 - 87	25	
TREFIL® 1313 硬石膏 anhydrite					■			■ ■								3 - 7	3.00	4	86 - 89	19	
SIPOR® PC 珠光岩 perlite								■ ■		■ ■ ■ ■ ■ ■						55 - 115		7	55 - 115		
TIKRON® 滑石粉 talc		■ ■ ■ ■ ■ ■				■ ■ ■ ■ ■ ■		■ ■ ■ ■ ■ ■								3	2.80	1	92	77	

本应用技术宣传册中所列的数值是按照我们所了解的情况确定并展示的。但请您理解，
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我们愿意为您提供进一步的咨询。采用含高岭土的纸打印。

The figures documented in this brochure were collected and shown to the best of our knowledge.
However, we ask for understanding that we cannot take over liability for the results in individual
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We are available for further questions and consultation. Printed on paper containing kaolin.

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