FUNCTIONAL FILLERS

PAINTS AND VARNISHES

REACTIVE RESINS
ADHESIVES AND SEALANTS

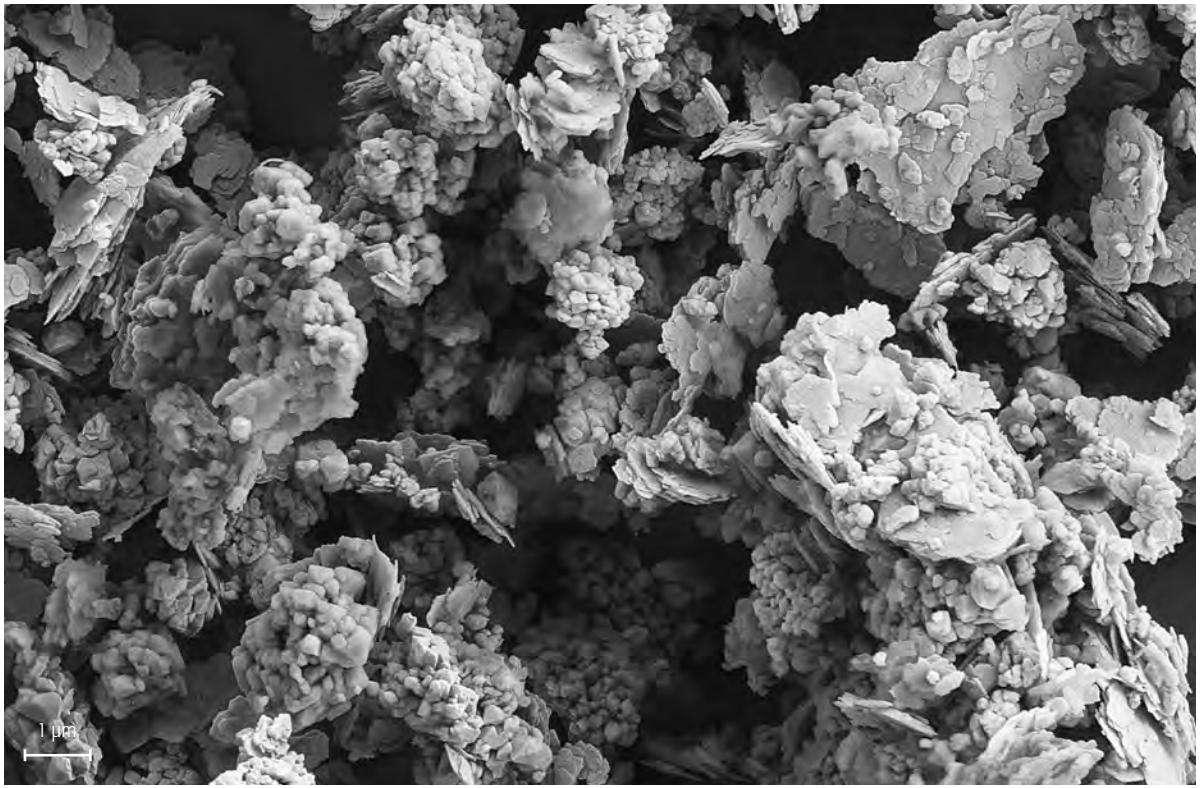
Sillitin
aktiSil
Sillikolloid
aktifit
Silfit

HOFFMANN MINERAL

CONTENTS

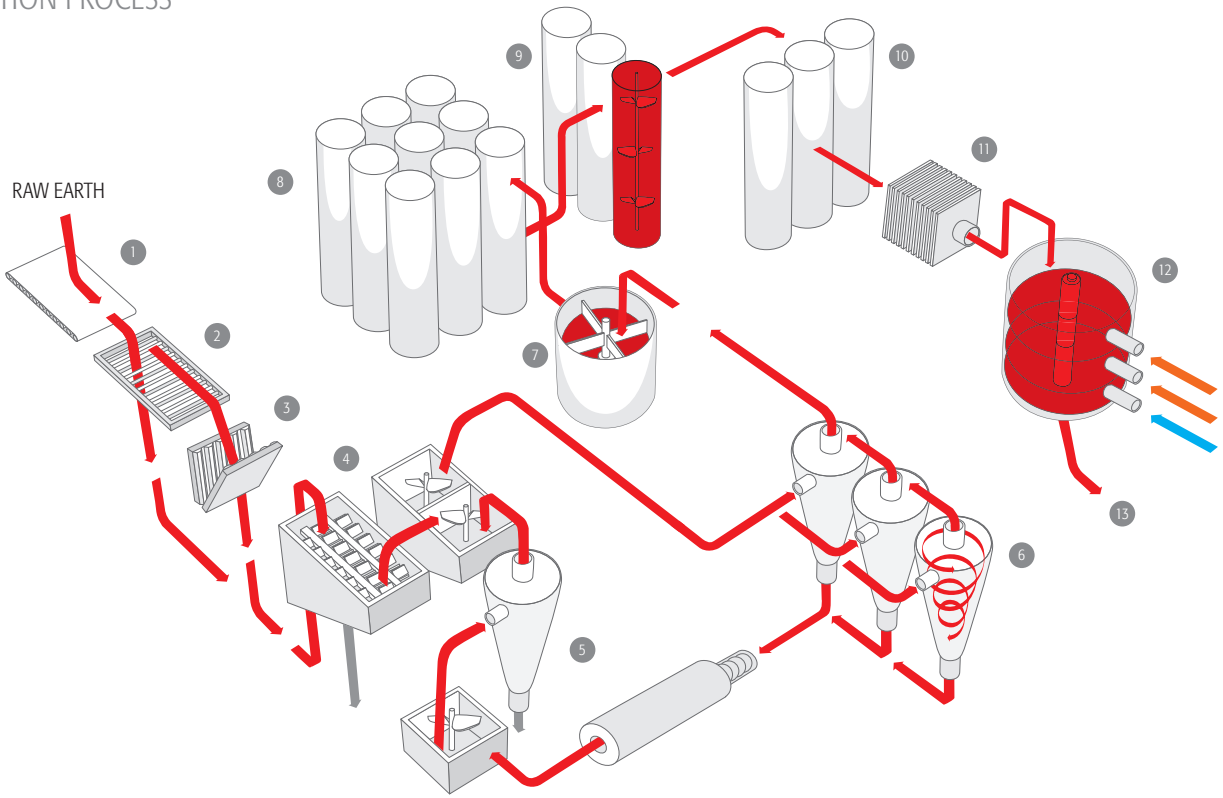
PRODUCTS

Sillitin Sillikolloid – MORPHOLOGY



Classic Neuburg Siliceous Earth is a natural combination of corpuscular silica and lamellar kaolinite: a loose mixture impossible to separate by physical methods. As a result of natural aging, the silica portion exhibits a round grain shape and consists of aggregated primary particles of about 200 nm diameter. Such a unique structure is responsible for a relatively high specific surface area and oil absorption, which result, besides rheological activity, also in a whole range of application properties.

SEPARATION PROCESS



Basically speaking, our entire production process is a process of separation – only about 30 % of the raw earth extracted are an usable fine product. A particularly structure-conserving process separates the fine product from sand and sundry stones and rock. In the first step the raw material is dispersed in water and thus separated from gravel fractions. This is followed by the hydrocyclone unit which separates the sand fractions and sorts the fine particles into different particle sizes. The slurry obtained is then concentrated and the water removed in filter presses. Finally, the natural gas powered turbine dryers remove the remaining moisture. The slurry is then pulverized and stored for further processing.

1–3

Input and crushing of raw earth, separation of coarse material through vibration sieve

4–5

Separation of gravel fractions and dispersion in water

6

Separation of sand fractions and sorting into different particle sizes with a hydrocyclone unit

7–10

Concentration, storage and blending of different product types in the form of slurry

11–12

Removal of water in filter presses, extraction of remaining moisture in dryers

13

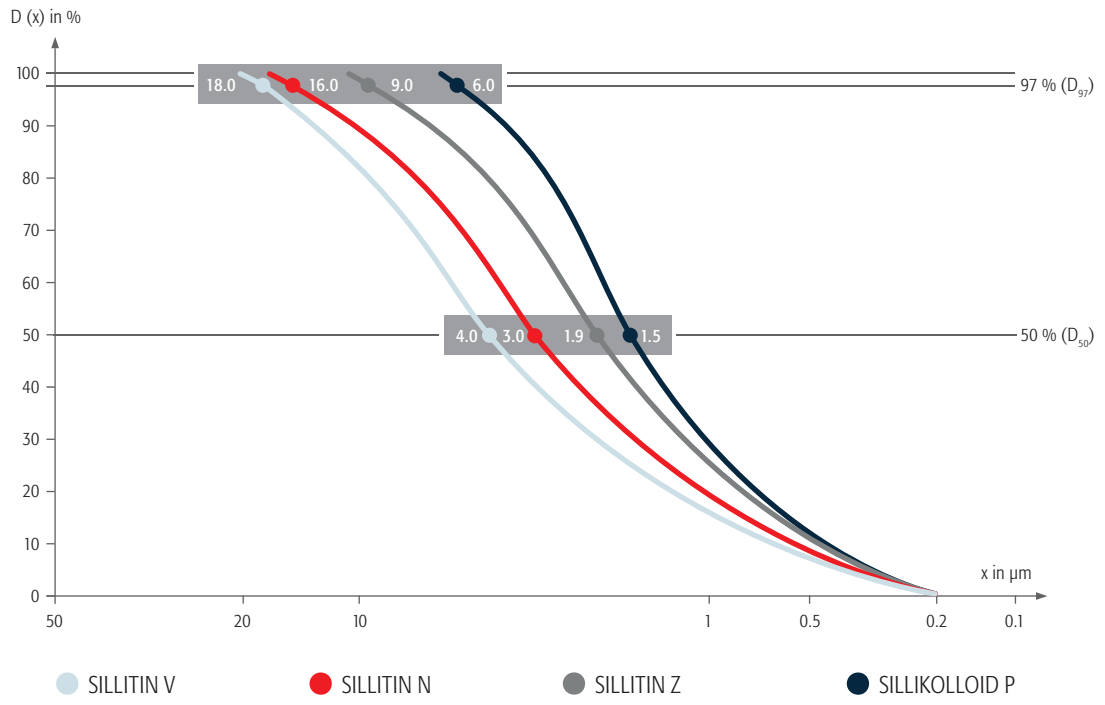
Refining, surface treatment, packaging

Sillitin Sillikolloid –
PARTICLE SIZE DISTRIBUTION

The particle size distribution, color value graphs and overview tables on the following pages show the physical properties and chemical composition of the Neuburg Siliceous Earth. The most significant differentiating characteristics are the particle size distribution and color neutrality.

Neuburg Siliceous Earth is available in four different particle fractions, identified by the letters V, N, Z and P.

PARTICLE SIZE DISTRIBUTION

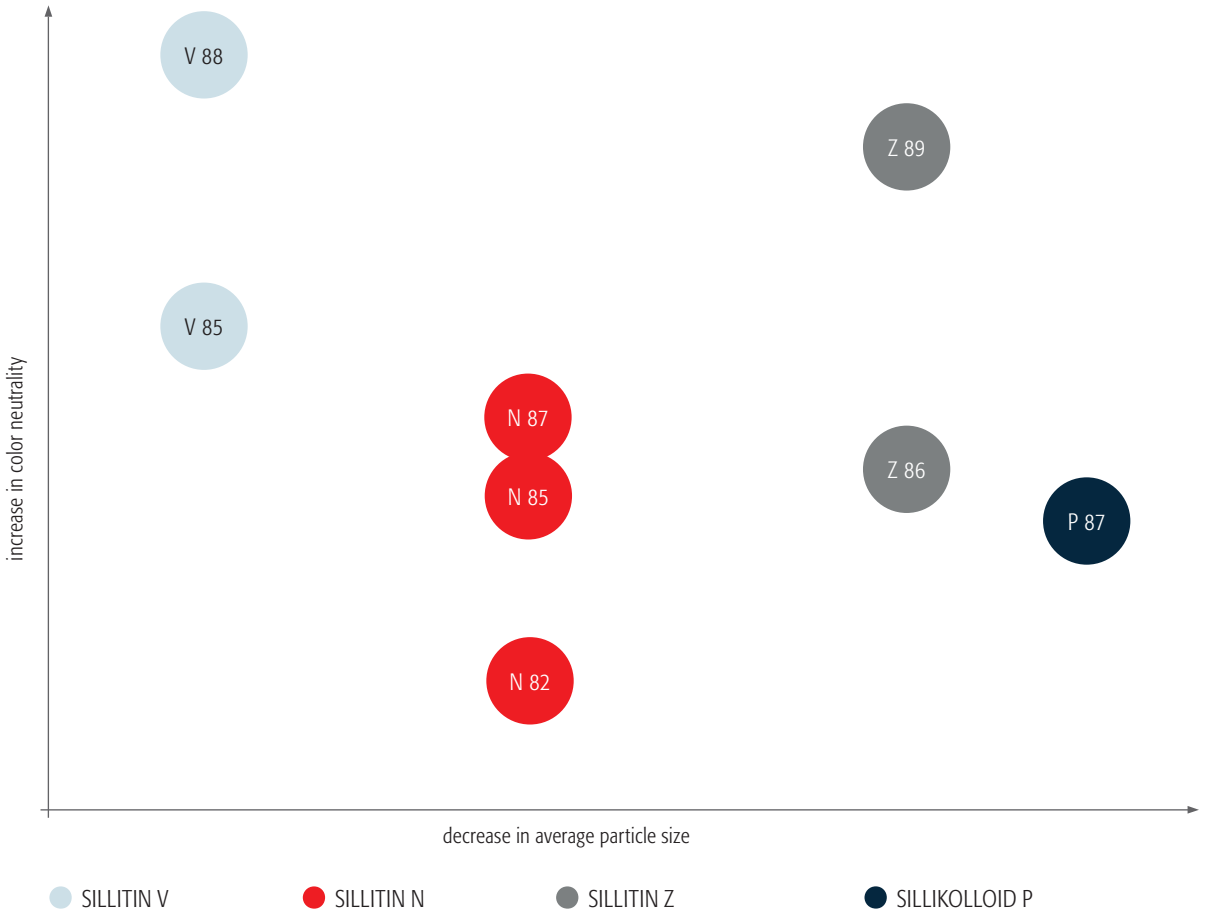


The measuring method for this particle size distribution is based on the Fraunhofer analysis of diffraction spectra. The analyses were performed with the Mastersizer 3000, a laser device from Malvern Instruments.

Sillitin Sillikolloid – COLOR NEUTRALITY

In addition, classic Neuburg Siliceous Earth is available in different shades and colors ranging from yellow to off-white to white depending on the particle size distribution. This color neutrality is expressed in numbers.

COLOR NEUTRALITY



Sillitin Sillikolloid – PRODUCT CHARACTERISTICS

PRODUCT CHARACTERISTIC	UNIT	SILLITIN V 85	SILLITIN V 88	SILLITIN N 82	SILLITIN N 85	SILLITIN N 87	SILLITIN Z 86	SILLITIN Z 89	SILLIKOLLOID P 87
Brightness Y		82	86	77	82	83	82	86	82
Brightness Z		76	88	65	75	76	75	86	76
Particle size D_{50}	µm	4.0	4.0	3.0	3.0	3.0	1.9	1.9	1.5
D_{97}	µm	18.0	18.0	16.0	16.0	16.0	9.0	9.0	6.0
Residue > 40 µm	mg/kg	25	25	25	25	20	20	20	20
> 200 µm	mg/kg	5	5	5	5	5	3	3	3
Volatile matter at 105 °C	%	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Electrical conductivity	µS/cm	80	80	80	80	80	80	80	80
Density	g/cm³	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
Bulk density	g/cm³	0.35	0.35	0.30	0.30	0.30	0.25	0.25	0.25
Tamped density	g/cm³	0.60	0.60	0.50	0.50	0.50	0.40	0.40	0.40
Spec. surface area (BET)	m²/g	8	8	11	10	10	12	11	13
Oil absorption	g/100 g	45	45	45	45	45	55	55	55
Hardness silica/kaolinite		7/2.5	7/2.5	7/2.5	7/2.5	7/2.5	7/2.5	7/2.5	7/2.5
Abrasivity	mg	40	40	40	35	35	30	30	25
Refractive index n		1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55
Water solubility	%	insoluble	insoluble	insoluble	insoluble	insoluble	insoluble	insoluble	insoluble
Acid solubility	%	0.4	0.4	0.5	0.5	0.5	0.4	0.4	0.5
CHEMICAL ANALYSIS:									
SiO_2	%	87	88	82	84	84	82	82	80
Al_2O_3	%	8	8	12	10	10	12	12	14
Fe_2O_3	%	< 1	< 1	< 1.5	< 1	< 1	< 1	< 1	< 1
MINERALOGICAL COMPOSITION:									
Corpuscular silica	%	70	70	60	65	65	60	60	55
Kaolinite	%	17	17	25	20	20	25	25	30
Amorphous mineral phases	%	8	8	10	10	10	10	10	10
Other minerals	%	5	5	5	5	5	5	5	5

The values shown in the table are to be considered as guidelines only.
Material specifications for each product are binding and are available on our website www.hoffmann-mineral.com.

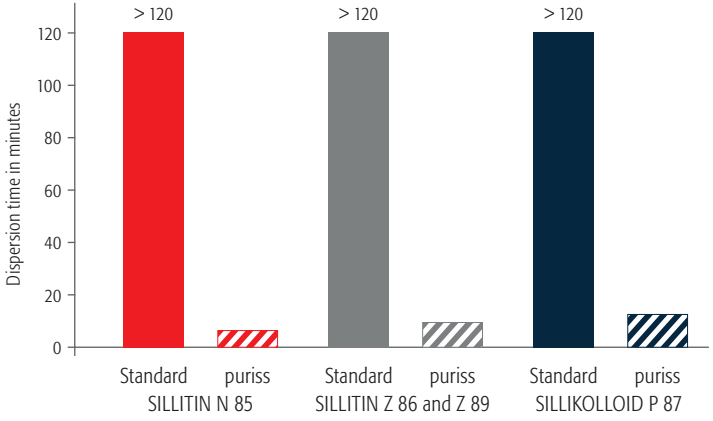
EINECS no.: 310-127-6
CAS no.: 1020665-14-8 (Siliceous Earth)
CAS no.: 7631-86-9 (silica), 1318-74-7 (kaolinite)
TSCA no.: 7631-86-9 (silica), 1318-74-7 (kaolinite)

puriss – PRODUCTS WITH IMPROVED DISPERSION PROPERTIES

- The extremely low residue of > 40 µm is significantly reduced even more
- Reduction of abrasivity of this product series. Protection of user's processing equipment (e. g. mixers, tools and airless spray nozzles)
- The puriss products are the No. 1 choice for all non-water-based formulas thanks to the excellent dispersion properties. They are also recommended for solvent-free systems like polyester, epoxy and polyurethane as well as for corresponding UV coatings. The use of puriss products even in water-based formulas is in particular an advantage in the case of critical dispersion conditions
- puriss products are especially suitable for thin layers
- In adhesives and sealants the puriss versions usually have greater tensile strength and elongation at break

DISPERSION PROPERTIES IN ESTER PLASTICIZER

Stirred with blade mixer 1200 rpm, 20 % filler concentration, grain size (Hegmann gauge) ≤ 20 µm



PRODUCT CHARACTERISTIC	UNIT	SILLITIN N 85 puriss	SILLITIN Z 86 puriss	SILLITIN Z 89 puriss	SILLIKOLLOID P 87 puriss
Brightness Y Brightness Z		82 75	82 75	86 86	82 76
Particle size D_{50} D_{97}	µm µm	3.0 16.0	1.9 9.0	1.9 9.0	1.5 6.0
Residue > 40 µm > 200 µm	mg/kg mg/kg	8 1	8 1	8 1	8 1
Volatile matter at 105 °C	%	0.5	0.5	0.5	0.5
Electrical conductivity	µS/cm	80	80	80	80
Density Bulk density Tamped density	g/cm³ g/cm³ g/cm³	2.6 0.28 0.48	2.6 0.23 0.37	2.6 0.20 0.34	2.6 0.20 0.34
Oil absorption	g/100 g	45	55	55	55
Hardness silica/ kaolinite Abrasivity	 mg	7/2.5 35	7/2.5 30	7/2.5 30	7/2.5 20
Refractive index n		1.55	1.55	1.55	1.55
Water solubility Acid solubility	% %	insoluble 0.5	insoluble 0.4	insoluble 0.4	insoluble 0.5
Dispersion time in ester plasticizer	min	3	7	7	8
CHEMICAL ANALYSIS: SiO_2 Al_2O_3 Fe_2O_3	 % % %	 84 10 < 1	 82 12 < 1	 82 12 < 1	 80 14 < 1
MINERALOGICAL COMPOSITION: Corpuscular silica Kaolinite Amorphous mineral phases Other minerals	 % % % %	 65 20 10 5	 60 25 10 5	 60 25 10 5	 55 30 10 5

The values shown in the table are to be considered as guidelines only. Material specifications for each product are binding and are available on our website www.hoffmann-mineral.com.

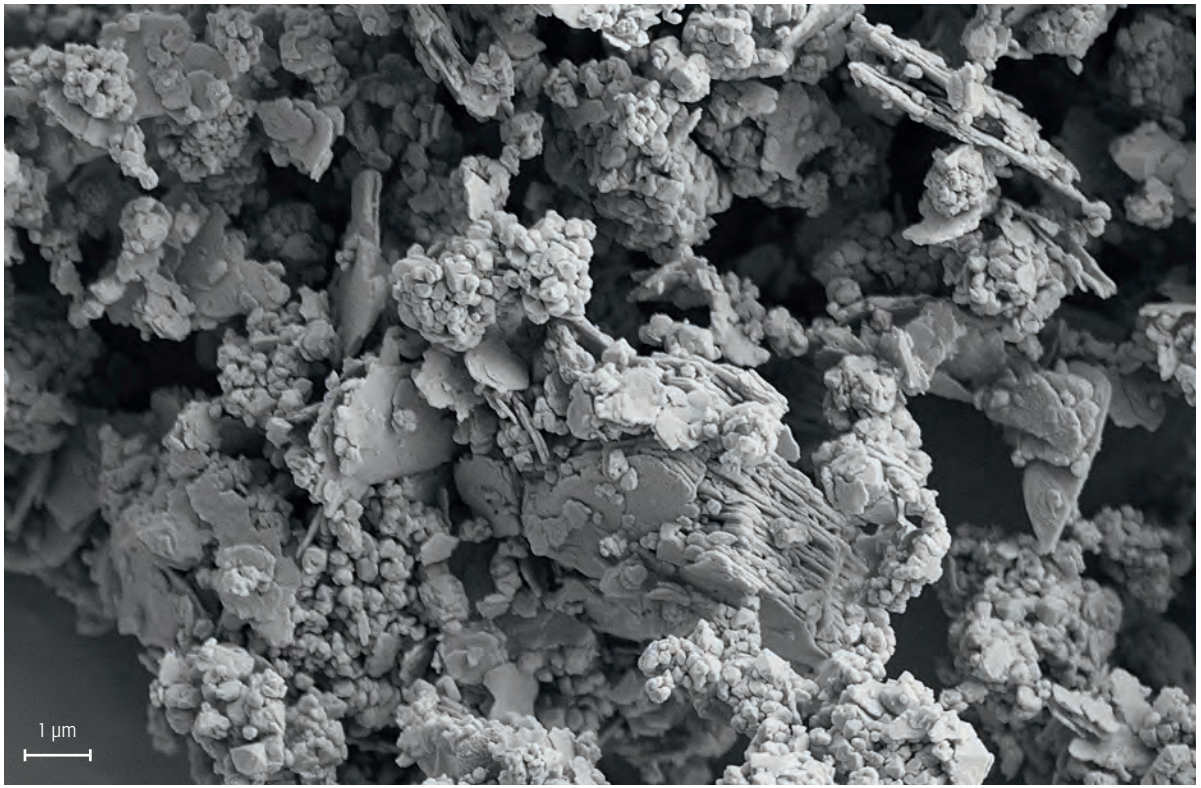
aktiSil – PRODUCT CHARACTERISTICS

This special filler is made by treating the surface of Neuburg Siliceous Earth with chemical agents, mostly silanes.

PRODUCT CHARACTERISTIC	UNIT	AKTISIL AM	AKTISIL EM	AKTISIL MAM	AKTISIL MAM-R	AKTISIL MM	AKTISIL PF 216	AKTISIL PF 777	AKTISIL VM 56	AKTISIL VM 56/89	AKTISIL WW
Basic material SILLITIN		Z 86	Z 86	V 88	V 85	Z 86	Z 86	Z 86	Z 86	Z 89	V 88
Silanized with		Amino silane	Epoxy silane	Methacrylic silane	Methacrylic silane	Mercapto silane	Tetrasulfane silane	Alkyl silane	Vinyl silane	Vinyl silane	Paraffin
Brightness Y Brightness Z		82 77	82 77	83 85	80 76	81 76	82 77	80 75	81 76	85 85	79 77
Particle size D_{50} D_{97}	µm µm	2.2 10.0	2.2 10.0	4.0 18.0	4.0 18.0	2.2 10.0	2.2 10.0	2.2 10.0	2.2 10.0	2.0 9.0	4.0 18.0
Residue > 40 µm > 200 µm	mg/kg mg/kg	30 3	20 3	20 3	20 3	30 3	15 3	20 3	20 3	20 3	20 3
Volatile matter at 105 °C	%	0.2	0.5	0.2	0.2	0.7	0.3	0.3	0.8	0.8	not specified
Density Bulk density	g/cm³ g/cm³	2.6 0.32	2.6 0.32	2.6 0.45	2.6 0.45	2.6 0.32	2.6 0.25	2.6 0.25	2.6 0.32	2.6 0.32	2.1 0.4
Spec. surface area (BET) Oil absorption	m²/g g/100 g	9 45	9 45	7 45	9 45	9 45	9 60	9 35	9 45	8 45	not specified 22
Water absorption	ml/g	not specified	not specified	0.9	0.9	not specified	0.01	0.01	not specified	not specified	not specified
reactive		✓	✓	✓	✓	✓	✓		✓	✓	
hydrophobic							✓	✓			

The values shown in the table are to be considered as guidelines only. Material specifications for each product are binding and are available on our website www.hoffmann-mineral.com.

Silfit aktifit – MORPHOLOGY



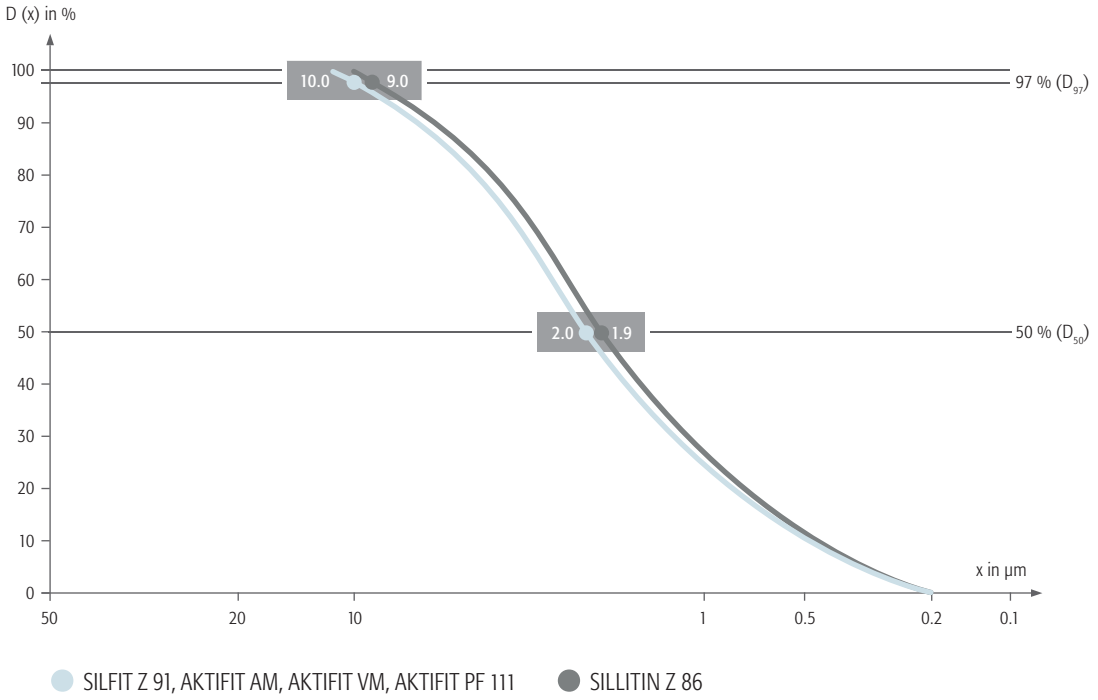
Our calcined products SILFIT and AKTIFIT are based on the standard product SILLITIN Z 86. A thermal process is used to expel the crystalline water in the kaolinite portion and new mineral phases are formed practically amorphous. The silica portion remains inert at the temperature used. The resulting products have an outstandingly high degree of white and color neutrality.

Silfit aktifit – COMPARISON OF PARTICLE SIZE DISTRIBUTION

THERE ARE FOUR CALCINED NEUBURG SILICEOUS EARTH PRODUCTS AVAILABLE:

- Basic product SILFIT Z 91
- Three surface-treated products:
  - AKTIFIT AM treated with amino silane
  - AKTIFIT PF 111 treated with alkyl silane
  - AKTIFIT VM treated with vinyl silane

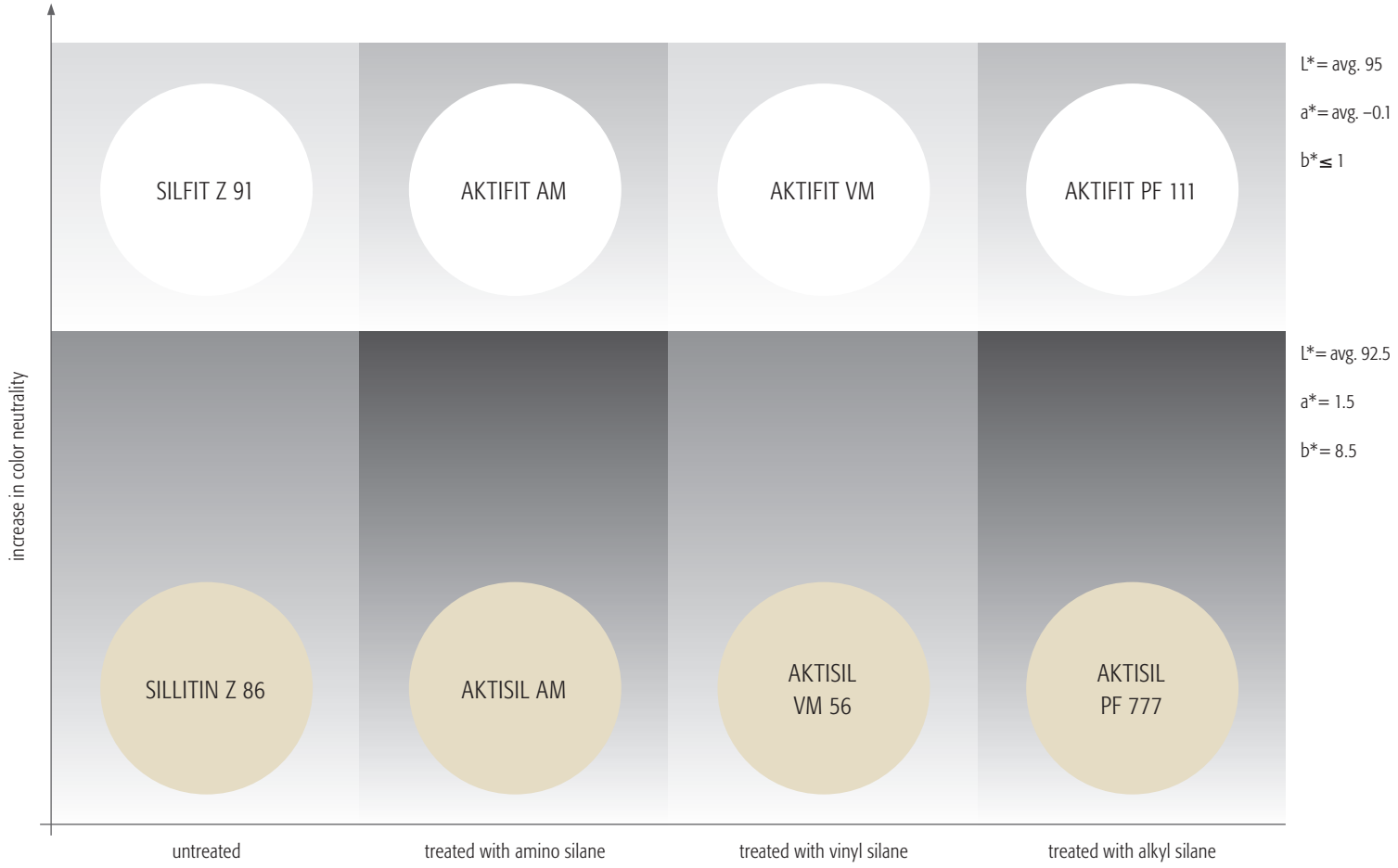
All calcined products have a particle size close to that of the uncalcined basic material SILLITIN Z 86.



The measuring method for this particle size distribution is based on the Fraunhofer analysis of diffraction spectra. The analyses were performed with the Mastersizer 3000, a laser device from Malvern Instruments.

Silfit aktifit – CIELAB COLOR VALUES

With regard to the CIELAB Color Values L*, a* and in particular b*, the calcined products are significantly brighter and more color neutral than the basic material.



Silfit aktifit – PRODUCT CHARACTERISTICS

PRODUCT CHARACTERISTIC	UNIT	SILFIT Z 91	AKTIFIT AM	AKTIFIT PF 111	AKTIFIT VM
Basic material		SILLITIN Z 86	SILFIT Z 91	SILFIT Z 91	SILFIT Z 91
Silanized with		untreated	Amino silane	Alkyl silane	Vinyl silane
Color values L*		95	95	94	94
a*		– 0.1	– 0.1	– 0.2	– 0.1
b*		1	1	1	1
Particle size D_{50}	µm	2.0	2.0	2.0	2.0
D_{97}	µm	10.0	10.0	10.0	10.0
Residue > 40 µm	mg/kg	10	10	10	10
Volatile matter at 105 °C	%	0.2	0.2	0.2	0.1
Electrical conductivity	µS/cm	20	60	not applicable	not applicable
Density	g/cm³	2.6	2.6	2.6	2.6
Bulk density	g/cm³	0.33	0.31	0.38	0.42
Tamped density	g/cm³	0.55	0.55	0.70	0.70
Spec. surface area (BET)	m²/g	8	7	7	7
Oil absorption	g/100 g	55	55	49	55
Silica hardness/calcined kaolinite		7/4.5	7/4.5	7/4.5	7/4.5
Refractive index n		1.55	1.55	1.55	1.55
Water solubility	%	insoluble	insoluble	insoluble	insoluble
Acid solubility	%	0.25	0.25	0.25	0.25
pH value		6.5	9	not applicable	not applicable
CHEMICAL ANALYSIS: SiO_2	%	86	86	86	86
Al_2O_3	%	13	13	13	13
Fe_2O_3	%	< 1	< 1	< 1	< 1
MINERALOGICAL COMPOSITION:					
Corpuscular silica	%	60	60	60	60
Calcined kaolinite	%	30	30	30	30
Amorphous mineral phases	%	10	10	10	10
Equilibrium moisture content at 25 °C					
and 50% relative humidity	%	0.12	0.11	0.07	0.05
and 80% relative humidity	%	0.22	0.29	0.10	0.07
and 90% relative humidity	%	0.54	0.55	0.13	0.08
reactive			✓		✓
hydrophobic				✓	✓

The values shown in the table are to be considered as guidelines only. Material specifications for each product are binding and are available on our website www.hoffmann-mineral.com.

EINECS-Nr.: 310-127-6
CAS-Nr.: 1214268-39-9 (Siliceous Earth, calcined)
CAS-Nr.: 7631-86-9 (silica), 92704-41-1 (kaolin, calcined)
TSCA-Nr.: 7631-86-9 (silica), 92704-41-1 (kaolin, calcined)

ADVANTAGES OF NEUBURG SILICEOUS EARTH AND CALCINED NEUBURG SILICEOUS EARTH IN PAINTS AND VARNISHES

FILLER PROPERTY	EFFECT IN THE SYSTEM/FORMULA
loose structure, small particle size	easy and rapid incorporation, excellent dispersion properties (especially puriss products), very low sedimentation, no hard sediment, good rheological properties (shear thinning, thixotropic), matting effect, very fast drying, water vapor permeability, good pigment dispersion (spacer effect), good edge covering, easy and rapid sanding, excellent stone-chipping resistance, good mechanical properties, good corrosion protection
non-ground filler, low grit content	low abrasivity
mineralogical composition (hardness)	scratch resistance, abrasion resistance
very low electrical conductivity (< 100 µS) / no buffer effect	no disturbing salts/electrolytes, good stability in water-based systems, good pigment paste stability and good bath stability in electrophoretic applications, good corrosion protection
chemically inert	weather and chemical resistance, especially against acids
refraction index similar to binder	good transparency in clear coatings
surface treatment possible	good interaction with the polymer matrix, rheology control
high purity	also suitable for food contact incl. drinking water as per BfR and FDA regulations

SPECIAL ADVANTAGES OF CALCINED NEUBURG SILICEOUS EARTH

FILLER PROPERTY	EFFECT IN THE SYSTEM/FORMULA
low moisture, low moisture absorption	also suitable for moisture-curing systems, good storage stability
very high brightness and color neutrality	for transparent or white products without yellow-tint, increase in hiding power or reduction of pigment content
outstanding dispersion properties (like puriss grades)	quick and easy coating production
reduced influence on certain curing reactions	fast reaction start, fast and complete final reaction, less need for catalysts
reduced interaction of filler particles	lower viscosity, improved leveling

aktisil aktifit – APPLICATIONS

These special fillers are based on Neuburg Siliceous Earth, the surface of which is treated with chemical agents, mostly silanes.

The AKTISIL and AKTIFIT products have largely functional groups that enable covalent bonds or intensive interaction with the polymer matrix and thereby achieve control and improvement of the thin-film coating properties.

PRODUCT NAME	APPLICATION
AKTISIL AM	primers, clear and pigmented coatings with low requirements for color neutrality, powder coatings (functional epoxies, FBE), OEM primer-surfacer water-based, anti-corrosion coatings
AKTISIL EM	primers, clear and pigmented coatings with low requirements for color neutrality, anti-corrosion coatings, also water-based
AKTISIL MAM	primers, clear and pigmented coatings with high requirements for color neutrality, very easily dispersible, good leveling in mat powder coatings, very good matting effect and abrasion resistance, radically cured systems like UV wood coatings etc.
AKTISIL MAM-R	similar to AKTISIL MAM, but with lower requirements for color neutrality
AKTISIL MM	primers, clear and pigmented coatings with low requirements for color neutrality, powder coatings (functional epoxies, FBE), water-based anti-corrosion coatings
AKTISIL PF 777	rheology control, strongly shear thinning, thixotropic, high yield point/ stability/non-sagging, very good adhesion; anti-corrosion coatings, adhesion primer (also water-based), generally hydrophobic coatings
AKTISIL VM 56	primers, clear and pigmented coatings with low requirements for color neutrality, radically cured systems like UV coatings etc.
AKTISIL VM 56/89	same as AKTISIL VM 56, but for higher color neutrality requirements and slightly improved dispersion
AKTISIL WW	matting agent in dispersion-based coatings with good resistance to water and stains, preferably for mat clear coatings for wood

PRODUCT NAME	APPLICATION
AKTIFIT AM	similar to AKTISIL AM, but with highest color neutrality and improved dispersion performance, often with lower viscosity; coil coatings (primer, back coat, top coats), OEM primer-surfacer water-based, powder coatings, anti-corrosion coatings (primers and top coats), clear coatings
AKTIFIT PF 111	similar to AKTISIL PF 777, but with highest color neutrality and improved dispersion performance, better flow performance, very low moisture content with no increase in humid climatic conditions; moisture-curing coatings like 1K PU, anti-corrosion coatings, adhesion primers (also aqueous), generally hydrophobic coatings
AKTIFIT VM	similar to AKTISIL VM 56 and VM 56/89, but with highest color neutrality and improved dispersion performance, hydrophobic, very low moisture content with no increase in humid climatic conditions, often with lower viscosity; moisture-curing coatings like 1K PU, radically curing systems like clear and pigmented UV coatings etc., dispersion-based clear coatings for wood and concrete coatings with good water resistance

Following properties can be significantly influenced through functionalization: wetting, viscosity, yield point, leveling, gloss, reaction rate, hardness, adhesion, abrasion resistance, water absorption, water resistance, transparency, corrosion protection, chemical resistance.

METAL COATINGS

ELECTROPHORETIC COATINGS

ADVANTAGES:

- small particle size
- low grit content (oversized particles)
- excellent dispersion properties
- very low sedimentation, no hard sediment
- very low electrical conductivity, no disturbing electrolytes
- good flexibility (Erichsen cupping, impact)
- potential for reducing the titanium dioxide, especially in low-density systems

RECOMMENDED PRODUCTS:

- SILLITIN Z 86
  balanced profile of properties, standard product
- SILLIKOLLOID P 87
  lowest sedimentation, improved edge covering, higher gloss
- SILLITIN Z 89
  same as Z 86, but for brighter coatings
- AKTISIL PF 777
  same as Z 86, but with enhanced low temperature impact toughness and lower rust creep in VDA test
- SILFIT Z 91
  same as Z 89, but with highest brightness and color neutrality
- AKTIFIT PF 111
  similar to PF 777, but with highest brightness and color neutrality, more easily dispersible, better leveling

PRIMER-SURFACER

ADVANTAGES:

- small particle size
- low grit content (oversized particles)
- excellent dispersion properties
- very low electrical conductivity, no disturbing electrolytes
- good sanding, low visibility of sanding marks
- improved appearance of subsequent coating layers
- good corrosion protection
- excellent stone-chipping resistance
- gloss at high volume solids

RECOMMENDED PRODUCTS:

APPLICABLE IN ALL FILLER SYSTEMS:

- SILLITIN Z 86
  balanced profile of properties, standard product
- SILLITIN Z 89
  same as Z 86, but for brighter coatings
- SILFIT Z 91
  same as Z 89, but with highest brightness and color neutrality

IN SOLVENT-BASED SYSTEMS:

- SILLIKOLLOID P 87
  reduction of sanding marks and lowest sedimentation
- SILLIKOLLOID P 87 puriss
  same as P 87, but with improved dispersion

IN WATER-BASED SYSTEMS:

- AKTISIL AM
  OEM primer-surfacer water-based, excellent stone-chipping resistance, high volume solids with high gloss, especially in combination with Disperbyk 111
- AKTIFIT AM
  same as AKTISIL AM, but with highest brightness and color neutrality, excellent stone-chipping resistance, gloss at high volume solids

METAL COATINGS

CORROSION PROTECTION COATINGS

ADVANTAGES:

- excellent dispersion properties
- good rheological properties
- very low sedimentation
- low abrasivity
- fast drying
- good weathering resistance
- good corrosion protection
- good chemical resistance, especially against acids
- excellent abrasion resistance
- potential for reducing the corrosion protection pigment

RECOMMENDED PRODUCTS:

GENERALLY IN CORROSION PROTECTION COATINGS AND POLYASPARTIC SYSTEMS:

- SILLITIN V 85
  low viscosity, high gloss in polyaspartic systems
- SILLITIN Z 86/SILLITIN Z 89
  shear thinning, good and well-balanced results in the salt spray test and humidity test
- AKTISIL PF 777
  strongly shear thinning, very good adhesive strength and good humidity test results also on non-blasted steel, good chemical resistance
- AKTIFIT PF 111
  similar to PF 777, but with highest brightness and color neutrality, more easily dispersible, better leveling

IN EPOXY SYSTEMS CONTAINING SOLVENTS:

- SILLITIN Z 86
  standard product
- AKTISIL AM
  good leveling, good corrosion protection even with reduced zinc phosphate concentrations, also on non-blasted steel very good results for addition of amino silane, good chemical resistance
- AKTISIL PF 777
  strongly shear thinning, high sag resistance, good corrosion protection and good adhesion even with reduced zinc phosphate concentrations, also on non-blasted steel very good results for addition of amino silane, good chemical resistance, sedimentation stability
- AKTIFIT PF 111
  similar to PF 777, but with highest brightness and color neutrality, more easily dispersible, better leveling

IN WATER AND DISPERSION-BASED PRIMERS:

- AKTISIL MM
- AKTISIL EM
- AKTISIL PF 777
- AKTIFIT PF 111
  similar to PF 777, but with highest brightness and color neutrality, more easily dispersible, better leveling

FOR HIGHEST BRIGHTNESS AND COLOR NEUTRALITY AND LOW VISCOSITY:

- SILFIT Z 91
- AKTIFIT AM

IN EPOXY SYSTEMS, AQUEOUS, CLEAR COAT WITHOUT CORROSION PROTECTION PIGMENTS:

- SILLITIN Z 89
  reduction of blooming and improvement of transparency after exposure to condensation water, improvement of delamination after salt spray test
- SILFIT Z 91
  same as Z 89, but greatest reduction of blooming and best transparency after exposure to condensation water
- AKTISIL AM
  improvement of the anti-corrosion properties after salt spray test, especially in high concentrations

METAL COATINGS

POWDER COATINGS

ADVANTAGES:

- excellent dispersion properties
- low abrasivity
- good edge covering
- good corrosion protection, especially low delamination and rust creep
- scratch resistance
- abrasion resistance
- flexibility (Erichsen cupping, impact)
- good chemical resistance, especially against hot water
- improved hiding power or partial replacement of titanium dioxide

RECOMMENDED PRODUCTS:

IN PURE EPOXY POWDER COATINGS (FBE):

- SILLITIN N 82
  low color requirements, standard product
- SILLITIN Z 86
  same as N 82, but with higher color neutrality and lower abrasivity
- SILLITIN Z 89
  same as Z 86, but for brighter coatings
- puriss products
  lower abrasivity
- AKTISIL AM/AKTISIL MM
  improved hot water resistance

IN HYBRID (EPOXY/POLYESTER) AND PURE POLYESTER POWDER COATINGS:

- SILFIT Z 91
  partial replacement of titanium dioxide, improved scratch resistance, very good leveling, excellent impact with higher dosing

IN UV-CURED POWDER COATINGS ACCORDING TO REQUIREMENTS:

- SILLITIN V 88
- SILFIT Z 91
- AKTIFIT VM
- AKTISIL MAM

CAN & COIL COATING

ADVANTAGES:

- small particle size
- excellent dispersion properties
- low sedimentation
- good leveling
- good adhesion
- good scratch resistance
- retention of good weathering resistance
- retention of good flexibility
- slight matting effect (depending on formulation and dosage)
- improved hiding power/opacity or partial replacement of titanium dioxide (top coats)
- partial replacement of corrosion protection pigments (primers and back coats)

RECOMMENDED PRODUCTS:

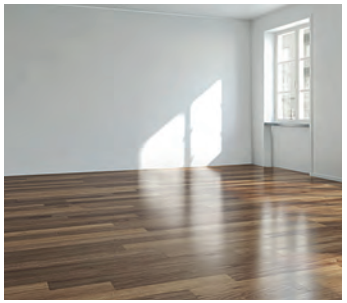
IN TOP COATS:
Polyester-based, partial replacement of titanium dioxide (up to 20 %)

- SILFIT Z 91
  balanced profile of properties, standard product
- AKTIFIT AM
  same as Z 91, but with higher hardness, improved scratch resistance

IN PRIMERS AND BACK COATS:
Polyester-based, as filler and for partial replacement of the corrosion protection pigment (up to 50 %)

- SILFIT Z 91
  balanced profile of properties, standard product
- AKTIFIT AM
  good deaeration and good leveling, therefore suitable for the direct roller coating process, increase of moisture resistance, improved hiding power

WOOD AND FILM COATINGS



UV-CURING CLEAR COATINGS FOR WOOD AND FILMS

ADVANTAGES:

- adjustable rheology through choice of product
- low sedimentation
- no hard sediment
- low abrasivity
- scratch resistance
- abrasion resistance
- very good transparency
- matting effect
- no effect on UV-curing

RECOMMENDED PRODUCTS:

- SILLITIN V 88
  low viscosity, good matting effect, good transparency and abrasion resistance
- AKTISIL MAM
  same as V 88, but with improved abrasion resistance
- SILFIT Z 91
  similar to V 88, but with highest color neutrality, best dispersion properties, higher viscosity at low shear rates, reduced sedimentation, minimally whitish glaze, higher gloss
- AKTIFIT VM
  same as Z 91, but with lower viscosity at low shear rates, improved abrasion resistance, improved hiding power without UV-curing problems in white pigmented top coats
- SILLITIN Z 89
  same as V 88, but with lower color neutrality, higher viscosity, reduced sedimentation, higher gloss
- SILLITIN Z 89 puriss
  same as Z 89, but with improved dispersion
- AKTISIL VM 56/89
  same as Z 89, but with improved abrasion resistance

DISPERSION-BASED CLEAR WOOD COATINGS

ADVANTAGES:

- easy dosing and incorporation, hardly any dust formation
- excellent dispersion properties
- little to no foam formation
- better sanding after shorter drying time
- improved abrasion resistance
- anti-blocking effect
- good transparency
- excellent matting effect
- resistance to water and stains
- good appearance on dark woods, wood grain enhancement

RECOMMENDED PRODUCTS:

- SILLITIN V 88
  good transparency and matting
- SILLITIN Z 89
  same as V 88, but no sedimentation, slightly higher gloss
- AKTISIL MAM
  same as V 88, but with improved resistance to abrasion, water and stains
- AKTISIL WW
  same as V 88, but with optimum resistance to water and stains and best appearance on dark woods, easy dosing and incorporation, hardly any dust formation, wood grain enhancement
- SILFIT Z 91
  similar to V 88 and Z 89, but with highest color neutrality, slightly whitish glaze, for pigmented coatings
- AKTIFIT VM
  same as Z 91, but with improved resistance to abrasion, water and stains

WOOD AND FILM COATINGS

EXTERIOR TOP COATS AND BREATHABLE PRIMERS

ADVANTAGES:

- excellent dispersion properties
- balanced rheology
- very low sedimentation
- fast drying
- water vapor permeability

RECOMMENDED PRODUCTS:

- SILLITIN Z 89
  balanced profile of properties, standard product
- SILLITIN Z 89 puriss
  same as Z 89, but with improved dispersion performance in solvent-based coatings (sufficient dispersion with dissolver)

PLASTIC COATINGS

SOFT-FEEL COATINGS

ADVANTAGES:

- low sedimentation
- excellent matting
- extended retention of the soft-feel effect
- good chemical resistance
- good abrasion resistance

RECOMMENDED PRODUCTS:

- SILLITIN V 85
  intensive matting
- SILLITIN V 88
  same as V 85, but for brighter coatings
- SILLITIN Z 86
  same as V 85, but with less matting, reduced sedimentation, reduced surface roughness
- SILLITIN Z 89
  same as Z 86, but for brighter coatings

PLASTIC PRIMERS

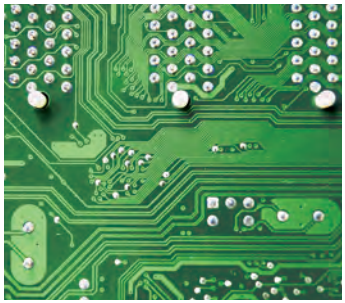
ADVANTAGES:

- very low sedimentation
- balanced rheology with only minimal sagging and good leveling
- good adhesion

RECOMMENDED PRODUCTS:

- SILLITIN Z 86
  balanced profile of properties, standard product
- AKTISIL PF 777
  same as Z 86, but with greatly reduced sagging and improved adhesion
- AKTIFIT PF 111
  similar to PF 777, but with highest brightness and color neutrality, more easily dispersible, better leveling

PLASTIC COATINGS



SOLDER RESIST INKS

ADVANTAGES:

- particle size spectrum meeting requirements
- no disturbing electrolytes
- excellent dispersion properties
- low sedimentation
- balanced rheology
- good edge covering
- no effect on UV-curing
- superior chemical resistance

RECOMMENDED PRODUCTS:

- SILLITIN Z 89 puriss
  balanced profile of properties
- SILLIKOLLOID P 87
  finer than Z 89 puriss, higher viscosity at low shear rates
- SILLIKOLLOID P 87 puriss
  same as P 87, but with improved dispersion performance
- AKTISIL AM
  according to requirements
- AKTISIL MAM
  according to requirements, mainly for low-viscosity UV-curing systems

CONSTRUCTION COATINGS AND DECORATIVE PAINTS

ROAD MARKING PAINTS

ADVANTAGES:

- very low sedimentation
- fast drying
- improved hiding power (opacity) or partial replacement of titanium dioxide
- abrasion resistance
- night visibility/improved anchoring of reflecting glass beads
- improved early rain resistance

RECOMMENDED PRODUCTS:

- SILLITIN Z 89
  balanced profile of properties
- SILLITIN V 88
  same as Z 89, but with lower viscosity and better color neutrality
- SILFIT Z 91
  same as Z 89, but with highest brightness and color neutrality, partial replacement of titanium dioxide, low viscosity, standard product

CONSTRUCTION COATINGS AND DECORATIVE PAINTS

INTERIOR DISPERSION PAINTS WITH SPECIAL PROPERTIES

ADVANTAGES:

- cleanability
- resistance against cleaning agents and disinfectants
- wet-scrub resistance
- good burnish resistance
- also suitable for transparent coatings

RECOMMENDED PRODUCTS:

- AKTISIL MAM
  standard product, good matting effect, good burnish resistance, good wet scrub resistance, good soiling resistance and cleanability
- AKTISIL WW
  similar to MAM, but with improved cleanability for dry soiling like metal abrasion, improved mud-cracking resistance at high dry film thickness
- AKTIFIT VM
  hydrophobic, highest brightness and color neutrality, higher gloss

FAÇADE PAINTS

ADVANTAGES:

- excellent dispersion properties
- very low sedimentation
- good abrasion resistance
- matting
- improved hiding power or partial replacement of titanium dioxide
- water vapor permeability

RECOMMENDED PRODUCTS:

- SILLITIN N 82
  same as replacement for yellow pigments
- SILLITIN Z 89
  balanced profile of properties
- SILLITIN V 88
  same as Z 89, but with greater matting effect and better color neutrality
- SILFIT Z 91
  same as Z 89, but with highest brightness and color neutrality, partial replacement of titanium dioxide, low viscosity, standard product
- AKTISIL MAM
  same as V 88, but with less water absorption

INTERIOR DISPERSION PAINTS

ADVANTAGES:

- excellent dispersion properties
- matting
- no sedimentation
- improved hiding power or partial replacement of TiO_2/pigment
- good wet-scrub resistance

RECOMMENDED PRODUCTS:

- SILLITIN N 82
  as replacement for yellow pigments
- SILLITIN Z 89
  balanced profile of properties
- SILLITIN V 88
  same as Z 89, but with greater matting effect, better color neutrality and better wet-scrub resistance
- SILFIT Z 91
  as Z 89, but with highest brightness and color neutrality, standard product for partial replacement of titanium dioxide
- AKTISIL MAM
  as V 88, but with less absorption, better stain resistance, best wet-scrub resistance

DISPERSION COATINGS FOR CONCRETE FOR ROOFS AND BALCONIES

ADVANTAGES:

- balanced rheology
- fast drying, even with thick layers and humid climate
- abrasion resistance

RECOMMENDED PRODUCTS:

- AKTISIL MAM
  low water absorption, abrasion resistance, matting
- SILLITIN Z 89
  higher viscosity at low shear rates, low sedimentation, less matting
- SILFIT Z 91
  highest brightness and color neutrality
- AKTIFIT VM
  same as Z 91, but with improved abrasion resistance, lower water absorption

ADVANTAGES OF NEUBURG SILICEOUS EARTH AND CALCINED NEUBURG SILICEOUS EARTH IN REACTION RESINS, ADHESIVES AND SEALANTS

FILLER PROPERTY	EFFECT IN THE SYSTEM/FORMULA
loose structure, small particle size	easy and rapid incorporation, excellent dispersion properties (especially puriss grades), very low sedimentation, no hard sediment, good rheological properties (shear thinning, thixotropic), matting effect, very fast drying, good pigment dispersion (spacer effect), good mechanical properties (tensile strength, lap shear strength, tear resistance), good corrosion protection
non-ground filler, low grit content	low abrasivity
mineralogical composition (hardness)	scratch resistance, abrasion resistance
very low electrical conductivity (< 100 µS)/no buffer effect	no disturbing salts/electrolytes, good stability in water-based systems, good corrosion protection
chemically inert	weather and chemical resistance, especially against acids
refraction index similar to binder	good transparency/translucency
surface treatment possible	good interaction with the polymer matrix, rheology control
high purity	also suitable for food contact incl. drinking water as per BfR and FDA regulations

SPECIAL ADVANTAGES OF CALCINED NEUBURG SILICEOUS EARTH

FILLER PROPERTY	EFFECT IN THE SYSTEM/FORMULA
low moisture, low moisture absorption	also suitable for moisture-curing systems, good storage stability
very high brightness and color neutrality	for transparent/translucent or white products without yellow-tint, reduction of pigment content
outstanding dispersion properties (like puriss grades)	quick and easy dispersion process/production
reduced influence on certain curing reactions	fast reaction start, fast and complete final reaction, less need for catalysts
reduced interaction of filler particles	lower viscosity

aktisil aktifit – APPLICATIONS

These special fillers are based on Neuburg Siliceous Earth, the surface of which is treated with chemical agents, mostly silanes.

The AKTISIL and AKTIFIT products have largely functional groups that enable covalent bonds or intensive interaction with the polymer matrix and thereby achieve control and improvement of the properties.

PRODUCT NAME	APPLICATION
AKTISIL AM	2K PU applications with higher requirements for mechanical properties, abrasion resistance and chemical resistance, for example for roof and flooring membranes, concrete pipe seals, pipeline coating, sealing membranes, mortar and grouting with improved chemical resistance, adhesive tapes (in adhesive layer), plastisols
AKTISIL EM	2K epoxy industrial floors with higher ultimate elongation and good processing properties, 2K polysulfide concrete lining
AKTISIL MAM	radically curing reactive resins and UV-curing adhesives
AKTISIL MAM-R	similar to AKTISIL MAM, but with lower requirements for color neutrality
AKTISIL MM	2K PU applications with improved mechanics
AKTISIL PF 216	polysulfide sealants, sealing compounds, adhesive tapes (in adhesive layer)
AKTISIL PF 777	products requiring a hydrophobic filler to minimize water absorption or if a higher rheological activity of the filler is required; non-sagging 2K PU applications with improved water resistance, for example for roof and flooring membranes, pipe seals, 2K PU adhesives, mortar and grouting with improved water resistance, adhesives for wind turbine rotor blades, non-sagging 2K epoxy systems, MS and STP systems with improved water and acid resistance, plastisols
AKTISIL VM 56	radically curing reactive resins and UV-curing adhesives, adhesive tapes (in adhesive layer), plastisols
AKTISIL VM 56/89	as AKTISIL VM 56 but for higher color neutrality requirements and slightly improved dispersion performance
AKTIFIT AM	similar to AKTISIL AM, but with highest color neutrality and improved dispersion performance, often with lower viscosity; moisture-curing STP adhesives for parquet, windscreens and general industrial applications, coatings for pipelines with drinking water contact, 2K PU roller coverings, 2K PU sealants, seals and sealing membranes
AKTIFIT PF 111	similar to AKTISIL PF 777, but with highest color neutrality and improved dispersion performance, very low moisture content with no increase in humid climatic conditions; gel coats with improved thixotropy, 1K and 2K PU applications, adhesive tapes (in adhesive layer), non-sagging moisture-curing STP adhesives and sealants for parquet, windscreens and general industrial applications with excellent hot water resistance and adhesive strength on aluminum, plastisols
AKTIFIT VM	similar to AKTISIL VM 56 and VM 56/89, but with highest color neutrality and improved dispersion performance, hydrophobic, very low moisture content with no increase in humid climatic conditions, often with lower viscosity; generally products requiring an extreme hydrophobic filler to minimize water absorption without higher rheological activity, systems sensitive to moisture which are produced without pre-drying the filler, e. g. MS and STP systems, 1K and 2K PU applications, gel coats with improved water resistance, adhesive tapes (in adhesive layer), moisture-curing STP adhesives for parquet, car windscreens and general industrial applications with excellent hot water resistance and adhesive strength on aluminum

Following properties can be significantly influenced: wetting, viscosity, yield point, reaction time/catalyst requirement, tensile strength, tear resistance, compression set, hardness, adhesive strength, shear adhesion at high temperatures (SAFT), abrasion resistance, water absorption, water resistance, transparency, corrosion protection, chemical resistance.

REACTIVE RESINS

GEL COATS

ADVANTAGES:

- excellent dispersion properties
- improves pigment dispersion (spacer effect)
- low sedimentation
- balanced rheology (good deaeration/non-sagging)
- good weathering resistance
- good chemical resistance
- good water resistance
- good flexibility
- abrasion resistance

RECOMMENDED PRODUCTS:

- SILLITIN Z 89 puriss
  balanced profile of properties, standard product
- SILFIT Z 91
  same as Z 89 puriss, but with highest brightness and color neutrality, faster reaction start
- AKTIFIT VM
  same as Z 91, but with improved water resistance
- AKTIFIT PF 111
  same as VM, but with higher rheological activity (higher viscosity at low shear rates, yield point, greater shear thinning)

ACRYLIC SINKS

ADVANTAGES:

- excellent dispersion properties
- low increase in viscosity
- high brightness
- high color neutrality
- improves pigment dispersion (spacer effect) and potential for partial pigment replacement
- thermal shock resistance
- scratch resistance
- abrasion resistance

RECOMMENDED PRODUCTS:

- SILFIT Z 91
  balanced profile of properties
- AKTIFIT AM
  same as Z 91, but for higher requirements regarding mechanics, scratch and abrasion resistance
- AKTIFIT VM
  same as AKTIFIT AM, but in addition hydrophobic

REACTIVE RESINS

INDUSTRIAL FLOORING BASED ON EPOXY RESIN

ADVANTAGES:

- very good dispersion properties
- good transparency in sealers
- anti-settlement additive for coarse fillers
- good processing properties, also with minimized additive content:
  - good leveling
  - good deaeration
  - good pigment stability
  - appearance of crossover-area of adjacent lines
- improved mechanical properties, also with minimized additive content:
  - tensile and compressive strength
  - tensile modulus
  - abrasion resistance
- good chemical resistance
- also suitable for food contact and drinking water applications (as per BfR and FDA regulations)

RECOMMENDED PRODUCTS:

SELF-LEVELING SYSTEMS, SOLVENT FREE AND WATER-BASED

- SILLITIN Z 86
  balanced profile of properties, standard product
- SILLITIN Z 89
  same as Z 86, but also for brighter applications
- AKTISIL EM
  same as Z 86, but with higher ultimate elongation and abrasion resistance, improved deaeration and leveling in additional highly sand-extended versions

TRANSPARENT SEALER (TOP COAT)

- SILLITIN Z 86 puriss
  balanced profile of properties, standard product
- SILLITIN Z 89 puriss
  same as Z 86 puriss, but also for sealers with better color neutrality
- SILFIT Z 91
  same as Z 89 puriss, but with highest color neutrality, lower viscosity

MORTAR, GROUTING, COATINGS WITH HIGHEST CHEMICAL RESISTANCE

ADVANTAGES:

- selectable rheology (free-flowing to non-sagging)
- easy processing
- good mechanical properties (high strength)
- good chemical resistance
- also suitable for food contact and drinking water applications (as per BfR and FDA regulations)

RECOMMENDED PRODUCTS:

- SILLITIN Z 86
  balanced profile of properties, standard product
- SILLITIN Z 86 puriss
  same as Z 86, but with improved dispersion
- SILFIT Z 91
  same as Z 86 puriss, but with highest brightness and color neutrality, lower viscosity and higher acid resistance
- AKTISIL PF 777
  same as Z 86, but with higher rheological activity (higher viscosity at low shear rates, yield point, greater shear thinning) and improved water resistance/hydrophobic properties
- AKTISIL AM
  same as Z 86, but with improved chemical resistance
- AKTIFIT AM
  same as Z 91, but with improved chemical resistance

2K POLYURETHANE APPLICATIONS

COATINGS, SEALANTS, ADHESIVES, TOOLING RESINS

ADVANTAGES:

- excellent dispersion properties
- selectable rheology (free-flowing to non-sagging)
- easy processing
- good mechanical properties:
  - tensile strength
  - tear resistance
  - elasticity/compression set
  - abrasion resistance
- good chemical resistance, especially against acids
- good water resistance
- also suitable for food contact and drinking water applications (as per BfR and FDA regulations)

RECOMMENDED PRODUCTS:

- SILLITIN Z 86 puriss
  balanced profile of properties, standard product
- SILLITIN Z 89 puriss
  same as Z 86 puriss, but also for brighter applications
- SILLITIN Z 86/SILLITIN Z 89
  for lower requirements for dispersion properties
- SILLIKOLLOID P 87 puriss
  same as Z 86 puriss, but with slightly higher tensile strength and tear resistance, higher viscosity
- AKTISIL AM
  same as Z 86, but with better mechanical properties like higher tensile strength, better compression set and abrasion resistance as well as partly higher adhesive strength and chemical resistance
- AKTISIL PF 777
  same as Z 86, but with higher rheological activity (higher viscosity at low shear rates, yield point, greater shear thinning) and improved water resistance
- SILFIT Z 91
  same as Z 89 puriss, but with highest brightness and color neutrality, lower viscosity, faster crosslinking reaction
- AKTIFIT AM
  same as Z 91, but with better mechanical properties like higher tensile strength, better compression set and abrasion resistance as well as partly higher adhesive strength and chemical resistance
- AKTIFIT VM
  same as Z 91, but with improved water resistance
- AKTIFIT PF 111
  same as VM, but with higher rheological activity (higher viscosity at low shear rates, yield point, greater shear thinning)

SPORTS SURFACES/SEALERS

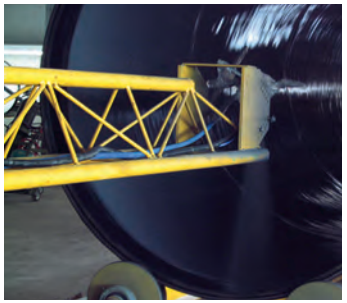
ADVANTAGES:

- excellent dispersion properties
- easy processing
- good mechanical properties
- abrasion resistance
- transparency

RECOMMENDED PRODUCTS:

- SILLITIN Z 86 puriss
  balanced profile of properties, standard product
- SILLITIN Z 89 puriss
  same as Z 86 puriss, but also for brighter and transparent/translucent applications
- SILLITIN Z 86/SILLITIN Z 89
  for lower requirements for dispersion properties
- SILFIT Z 91
  same as Z 89 puriss, but with highest brightness and color neutrality also for transparent/translucent applications, lower viscosity, faster crosslinking reaction

2K POLYURETHANE APPLICATIONS



PIPELINE COATING

ADVANTAGES:

- excellent dispersion properties
- easy processing
- good mechanical properties
- abrasion resistance
- good corrosion protection properties
- good chemical resistance, especially against acids
- good water resistance
- also suitable for food contact and drinking water applications (as per BfR and FDA regulations)

RECOMMENDED PRODUCTS:

- SILLITIN Z 86 puriss
  balanced profile of properties, standard product
- SILFIT Z 91
  same as Z 86 puriss, but with highest brightness and color neutrality, lower viscosity, faster crosslinking reaction
- AKTIFIT AM
  same as Z 91, but with better mechanical properties like higher tensile strength and abrasion resistance as well as chemical resistance

SEALANTS AND MEMBRANES, FREE-FLOWING TO NON-SAGGING

ADVANTAGES:

- selectable rheology (free-flowing to non-sagging)
- good mechanical properties (high strength)
- good chemical resistance
- also suitable for food contact and drinking water applications (as per BfR and FDA regulations)

RECOMMENDED PRODUCTS:

- SILLITIN Z 86 puriss
  balanced profile of properties, standard product
- SILLITIN Z 86
  for lower requirements for dispersion properties
- AKTISIL AM
  same as Z 86, but with better mechanical properties like higher tensile strength, better abrasion resistance as well as partly higher adhesive strength and chemical resistance
- AKTISIL PF 777
  same as Z 86, but with higher rheological activity (higher viscosity at low shear rates, yield point, greater shear thinning) and improved water resistance
- SILFIT Z 91
  same as Z 86 puriss, but with highest brightness and color neutrality, lower viscosity, faster crosslinking reaction
- AKTIFIT AM
  same as Z 91, but with better mechanical properties like higher tensile strength, better abrasion resistance as well as partly higher adhesive strength and chemical resistance
- AKTIFIT VM
  same as Z 91, but with improved water resistance
- AKTIFIT PF 111
  same as VM, but with higher rheological activity (higher viscosity at low shear rates, yield point, greater shear thinning)

2K POLYURETHANE APPLICATIONS

ROLLER COVERINGS

ADVANTAGES:

- excellent dispersion properties
- balanced profile of properties for strength, abrasion resistance, low swelling, heat build-up and durability

RECOMMENDED PRODUCTS:

- SILLITIN Z 89 puriss
  balanced profile of properties, standard product
- SILFIT Z 91
  same as Z 89 puriss, but with highest brightness and color neutrality, lower viscosity, faster crosslinking reaction
- AKTIFIT AM
  same as Z 91, but with higher abrasion resistance, less swelling, lower heat build-up

MOLDMAKING COMPOUNDS AND MOLDS FOR PRECAST CONCRETE COMPONENTS

ADVANTAGES:

- good mechanical properties in tensile strength, tear resistance and abrasion resistance

RECOMMENDED PRODUCTS:

- SILLITIN Z 86
  balanced profile of properties, standard product
- SILLITIN Z 86 puriss
  same as Z 86, but with improved dispersion

PLASTISOLS

COATINGS

ADVANTAGES:

- good adhesive strength
- mechanical resistance (abrasion, stone chipping)

RECOMMENDED PRODUCTS:

- AKTISIL VM 56
  balanced profile of properties
- AKTISIL AM
  same as VM 56, but with improved stone chip impact resistance
- AKTISIL PF 777
  same as AKTISIL AM, but for higher requirements for moisture resistance and higher thixotropy, hydrophobic, improved adhesion, partially lowered gelation temperature
- AKTIFIT AM
  same as AKTISIL AM, but with highest brightness and color neutrality
- AKTIFIT VM
  same as VM 56, but with highest brightness and color neutrality, lower viscosity, for higher requirements for moisture resistance, hydrophobic
- AKTIFIT PF 111
  same as VM, but with higher thixotropy, hydrophobic

ADHESIVES

MOISTURE-CURING ADHESIVES BASED ON STP AND PUR, E. G. FOR PARQUET, CAR WINDSCREENS, INDUSTRIAL APPLICATIONS

ADVANTAGES:

- selectable rheology (free-flowing to non-sagging)
- excellent strength of properties, up to 2-fold or 3-fold calcium carbonate (tensile strength and lap shear strength), mostly without reducing the ultimate elongation
- good water resistance and chemical resistance

RECOMMENDED PRODUCTS:

STP-E- AND STP-U ADHESIVES

- SILLITIN V 85
  balanced profile of properties, standard product
- SILLITIN Z 86 puriss
  same as V 85, but with higher viscosity and higher tensile and lap shear strength
- SILFIT Z 91
  same as V 85, but with highest brightness and color neutrality, lower moisture content, lower viscosity, higher tensile and lap shear strength, standard product for high-strength adhesives
- AKTIFIT AM
  same as Z 91, enables lower concentrations of amino silane in the formula
- AKTIFIT VM
  same as Z 91, but with very low moisture content without increase under humid climatic conditions, very high tensile and lap shear strength, excellent hot water resistance and adhesive strength on aluminum
- AKTIFIT PF 111
  same as VM, but with high rheological activity (higher viscosity at low shear rates, yield point, greater shear thinning) with high tensile and lap shear strength

1K PUR ADHESIVES

- AKTIFIT VM
  hydrophobic, very low moisture content without increase under humid climatic conditions, low rheological activity, high tensile and lap shear strength
- AKTIFIT PF 111
  same as VM, but with high rheological activity (higher viscosity at low shear rates, yield point, greater shear thinning)

POLYCHLOROPRENE ADHESIVES

ADVANTAGES:

- excellent dispersion properties
- selectable rheology (free-flowing to non-sagging)
- low sedimentation
- improved strength

RECOMMENDED PRODUCTS:

- SILLITIN Z 86 puriss
  standard product, balanced profile of properties
- AKTISIL PF 777
  same as Z 86 puriss, but with higher rheological activity, hydrophobic
- AKTIFIT PF 111
  same as PF 777, but improved dispersion, highest brightness and color neutrality

MOUNTING ADHESIVES (POLYESTER/ACRYLIC BASED)

ADVANTAGES:

- excellent dispersion properties
- selectable rheology (free-flowing to non-sagging)
- low sedimentation
- improved strength

RECOMMENDED PRODUCTS:

- SILLITIN V 85
  standard product, balanced profile of properties
- AKTISIL VM 56
  same as V 85, but improved strength properties, covalent bond with the polymer
- AKTIFIT VM
  same as VM 56, but hydrophobic, improved dispersion, highest brightness color neutrality
- AKTIFIT PF 111
  same as VM, but higher rheological activity

ADHESIVES

ADHESIVES FOR WIND TURBINE ROTOR BLADES

ADVANTAGES:

- excellent dispersion properties
- low sedimentation
- rheology/thixotropy
- high bond strength

RECOMMENDED PRODUCTS:

- SILLITIN Z 89
  balanced profile of properties, standard product
- SILLITIN Z 89 puriss
  same as Z 89, but with improved dispersion
- AKTISIL PF 777
  same as Z 89, but with higher yellow tint and higher rheological activity (higher viscosity at low shear rates, yield point, greater shear thinning) hydrophobic
- SILFIT Z 91
  same as Z 89 puriss, but with highest brightness and color neutrality, lower viscosity
- AKTIFIT AM
  same as Z 91, but with increased stability under moisture exposure
- AKTIFIT PF 111
  same as AKTIFIT AM, but with higher rheological activity (higher viscosity at low shear rates, yield point, greater shear thinning), hydrophobic

PAPER ADHESIVES (DISPERSION-BASED)

ADVANTAGES:

- excellent dispersion properties
- low sedimentation
- good bond strength

RECOMMENDED PRODUCTS:

- SILLITIN Z 89
  balanced profile of properties, standard product
- SILLITIN Z 86
  for lower requirements for color

ADHESIVES FOR ELECTRONIC COMPONENTS

ADVANTAGES:

- thermal shock resistance

RECOMMENDED PRODUCTS:

- SILLITIN Z 86
  balanced profile of properties, standard product
- SILLITIN Z 86 puriss
  same as Z 86, but with improved dispersion

ADHESIVES

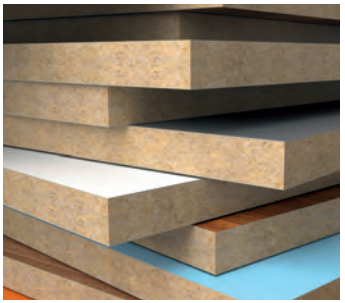
ADHESIVE TAPES PSA, (ADHESIVE LAYER)

ADVANTAGES:

- improved bond strength through increased cohesion
- reduction/elimination of adhesive layer residues on the substrate after removing the adhesive tape
- improvement of the shear adhesion at high temperatures (SAFT)

RECOMMENDED PRODUCTS:

- SILLITIN Z 86
  balanced profile of properties, standard product
- AKTISIL AM/AKTISIL VM 56/ AKTISIL PF 216
  for high requirements for adhesive strength and SAFT
- AKTIFIT AM/AKTIFIT VM
  same as AKTISIL types, but with highest brightness and color neutrality, lower viscosity
- AKTIFIT PF 111
  same as VM, but with higher rheological activity (higher viscosity at low shear rates, yield point, greater shear thinning)



LAMINATING ADHESIVES (FILMS ON CHIPBOARDS, DISPERSION-BASED)

ADVANTAGES:

- excellent dispersion properties
- low sedimentation
- good resistance and appearance of laminating films under exposure to warm and humid conditions

RECOMMENDED PRODUCTS:

- SILLITIN Z 89
  balanced profile of properties, standard product

PACKING

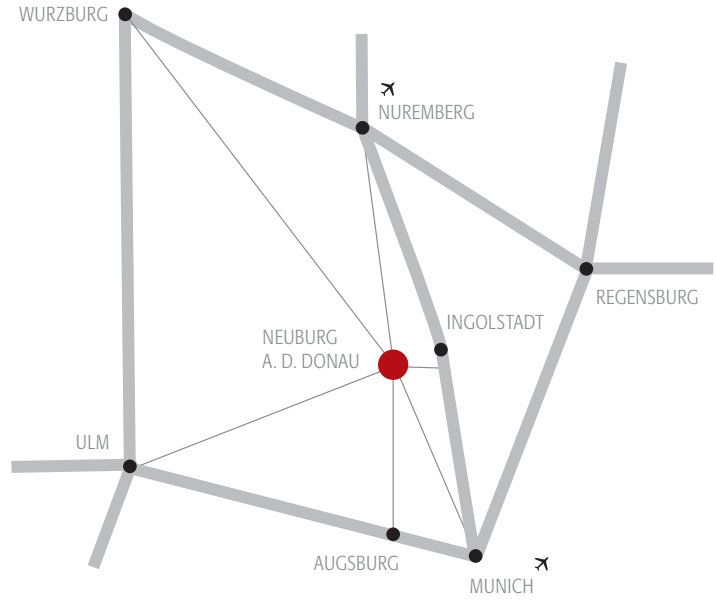
PRODUCT	PAPER BAG	PE BAG	EVA BAG	BIG BAG TYPE 1/TYPE 2/TYPE 3	BULK
Sillitin					
SILLITIN V 85	25 kg	on request	5 to 20 kg	≤ 750/850/1200 kg	≤ 25 t
SILLITIN V 88	25 kg	on request	5 to 20 kg	≤ 750/850/1200 kg	≤ 25 t
SILLITIN N 82	25 kg	on request	5 to 20 kg	≤ 750/850/1200 kg	≤ 25 t
SILLITIN N 85	25 kg	on request	5 to 20 kg	≤ 750/850/1200 kg	≤ 25 t
SILLITIN N 87	25 kg	on request	5 to 20 kg	≤ 750/850/1200 kg	≤ 25 t
SILLITIN Z 86	25 kg	on request	5 to 20 kg	≤ 600/750/1000 kg	≤ 22 t
SILLITIN Z 89	25 kg	on request	5 to 20 kg	≤ 550/700/900 kg	≤ 22 t
Sillikolloid					
SILLIKOLLOID P 87	25 kg	on request	5 to 15 kg	≤ 550/700/900 kg	≤ 22 t
puriss					
SILLITIN puriss	25 kg	–	–	–	–
SILLIKOLLOID P 87 puriss	20 kg	–	–	–	–
aktiSil					
AKTISIL AM	25 kg	on request	5 to 20 kg	≤ 550/700/900 kg	–
AKTISIL EM	25 kg	on request	5 to 20 kg	≤ 550/700/900 kg	–
AKTISIL MAM	25 kg	on request	5 to 20 kg	≤ 550/700/900 kg	–
AKTISIL MAM-R	25 kg	on request	5 to 20 kg	≤ 550/700/900 kg	–
AKTISIL MM	25 kg	on request	5 to 20 kg	≤ 550/700/900 kg	–
AKTISIL PF 216	25 kg	on request	10 to 20 kg	≤ 550/700/900 kg	–
AKTISIL PF 777	25 kg	on request	5 to 20 kg	≤ 550/700/900 kg	–
AKTISIL VM 56	25 kg	on request	5 to 20 kg	≤ 550/700/900 kg	≤ 24 t
AKTISIL VM 56/89	25 kg	on request	5 to 20 kg	≤ 550/700/900 kg	–
AKTISIL WW	25 kg	on request	5 to 20 kg	≤ 550/700/900 kg	–
Silfit					
SILFIT Z 91	25 kg	10 to 20 kg	10 to 20 kg	≤ 600/750/900 kg	on request
aktifit					
AKTIFIT AM	25 kg	10 to 20 kg	10 to 20 kg	≤ 600/750/900 kg	on request
AKTIFIT PF 111	25 kg	10 to 20 kg	10 to 20 kg	≤ 750/900/– kg	–
AKTIFIT VM	25 kg	10 to 20 kg	on request	≤ 750/900/– kg	–

Special packaging and sizes are available on request.

Sillitin **Sillikolloid** **aktiSil** **Silfit** **aktifit**

PRODUCT CHRACTERISTIC	TESTING METHOD
Brightness Y Brightness Z	acc. to DIN 53 163/measuring geometry d/8°
Color values L* a* b*	acc. to CIELAB
Particle size D_{50} D_{97}	acc. to ISO 13320
Residue > 40 µm > 200 µm	acc. to DIN EN ISO 787 part 18
Volatile matter at 105 °C	acc. to DIN EN ISO 787 part 2
Electrical conductivity	acc. to DIN EN ISO 787 part 14
Density Bulk density Tamped density	acc. to DIN EN ISO 787 part 10 acc. to DIN ISO 903-1976 acc. to DIN EN ISO 787 part 11
Spec. surface area (BET) Oil absorption	acc. to DIN ISO 9277 acc. to DIN EN ISO 787 part 5
Water absorption	acc. to Baumann
Hardness silica/kaolinite Abrasivity	acc. to Mohs acc. to Einlehner
Refractive index n	sin α/sin β
Water solubility Acid solubility	acc. to DIN EN ISO 787 part 3 acc. to DIN 53 770 (0.1 N HCl)
pH value	acc. to DIN EN ISO 787 part 9
CHEMICAL ANALYSIS: SiO_2 Al_2O_3 Fe_2O_3	acc. to DIN 51001 (RFA)
MINERALOGICAL COMPOSITION: Corpuscular silica Amorphous mineral phases Kaolinite and other minerals	based on X-ray diffraction pattern analysis combined with Rietveld
Equilibrium moisture content at 25 °C and 50% relative humidity and 80% relative humidity and 90% relative humidity	following DIN 66138
Dispersion time in ester plasticizer	UGR-PV/PT/67

HOW TO FIND US



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