



SILFIT Z 91

Field of application: Paint & Varnish

1. Description

SILFIT Z 91 is a natural combination of corpuscular silica and lamellar kaolinite, which has been subjected to a heat treatment. The components and the thermal process lead to a product that offers special performance benefits as a functional filler

Characteristics

Appearance		free-flowing powder
Color CIELAB scale:	L* a* b*	96.2 - 0.1 1.0
Residue > 40 µm		10 mg/kg
Volatile matter at 105 °C		0.2 %
Density		2.6 g/cm ³
Particle size distribution	D ₅₀ D ₉₇	2 µm 10 µm
Surface area BET		10 m ² /g
Oil absorption		65 g/100 g
pH value		6.5
Electrical conductivity		20 µS/cm
Refractive index n		1.55
Equilibrium moisture content at 23 °C:		
50 % relative humidity		0.12 %
80 % relative humidity		0.22 %
90 % relative humidity		0.54 %

Packaging

Paper bags	á 25 kg
EVA bags	≤ 20 kg
Big Bags	600 - 900 kg
Bulk	on demand

Shelf life

Unlimited if stored properly under dry conditions.



2. Applications

In paint and varnish applications SILFIT Z 91 can be used as functional filler either on its own or combined with extenders or matting agents.

Fields of application

- road marking paints
- coil coatings
- powder coatings
- emulsion and silicate paints
- industrial paints
- wood and foil coatings
- primers and surfacers, also for the automotive industry
- electrophoretic paints (anaphoretic and cataphoretic)
- adhesives and sealants

It stands out for its excellent dispersion properties, low yield point and pseudo plasticity in high solid formulations as well as very high brightness and color-neutrality.

SILFIT Z 91 enhances the opacity effect of pigments, thus it provides a replacement potential of titanium dioxide up to 20 %.

In clear coats it achieves good transparency without yellow tint, a slight whitish glazing effect can result depending on formulation principle and loading.

The outstanding dispersion behavior enables paint production potentially without grinding, even for low film thickness applications.

Formulation principle:

Solvent-based, solvent-free, water-based

Hardening principle:

All conventional reaction types, also UV-curing

Minimum film thickness:

> 10 µm, less in special cases

Dosage:

up to 55 % depending on intended application likewise up to PVC 35, often 10 to 20 % w/w



3. Benefits

- low sieve residues
- outstanding dispersion behavior, even without grinding
- improved opacity (spacer effect), likewise potential for partial pigment replacement
- relatively low abrasivity
- quick drying
- weathering resistance
- scratch resistance
- abrasion resistance
- good transparency
- matting effect¹
- complies with the standards on articles in contact with foodstuffs of the BfR and FDA

SILFIT Z 91 also provides the following benefits compared with SILLITIN/SILLIKOLLOID:

- lower moisture content, less moisture absorption
- very high brightness
- very high color neutrality
- improved dispersion behavior like the Sillitin puriss grades
- stronger matting effect¹ combined with lower viscosity compared with similar fine SILLITIN Z

¹strongly dependent on formulation

4. Comparison of properties

	SILLITIN V 85	SILLITIN V 88	SILLITIN N 82	SILLITIN N 85	SILLITIN N 87	SILLITIN Z 86	SILLITIN Z 89	SILFIT Z 91	SILLIKOLLOID P 87
Dispersion effort (required shear forces)	••	••	••••	•••	•••	••••	•••	•	•••••
Viscosity at high shear rate	•	•	••	••	••	•••	•••	•(••) ¹	••••
Yield point, viscosity at low shear rate	•	•	•••	••	••	•••	•••	•(••) ¹	••••
Color neutrality	•••	•••••	•	••	•••	••	••••	••••••	••
Sedimentation	•••••	•••••	•••	•••	•••	••	••	••(•••) ¹	•
Matting	•••••	•••••	•••	•••	•••	••	••	••(•••) ¹	•
Abrasion resistance	••••	••••	•••	•••	•••	••	••	••	•

• = low ••••• = high

¹ strongly dependent on formulation principle



5. Application examples

Road marking paints

- cost cutting potential by partial replacement of titanium dioxide up to 40 %
- improved abrasion resistance

Technical report: “Neuburg Siliceous Earth in Road Marking Paints (water based, white, low film thickness)” and “Technical report: Neuburg Siliceous Earth in Road Marking Paints (water based, white, wet film thickness 600 µm)”

Coil coating

SILFIT Z 91 represented by the surface treated Aktifit AM, color values and opacity are similar, other properties may vary.

- cost cutting potential by partial replacement of titanium dioxide up to 20 %

Technical report: “Partial Replacement of Titanium Dioxide by Neuburg Siliceous Earth in a White Polyester-based Coil Coating Top Coat”

Adhesives based on silane terminated polymers (STP, 1 C moisture curing)

SILFIT Z 91 performs generally similar to Sillitin Z 86 puriss in adhesives for parquet floors:

- easy and quick incorporation, very good dispersion
- very high tensile strength of free film and high lap shear strength

Additional benefits versus SILLITIN Z 86 puriss:

- lower viscosity
- neutral light grey color of the adhesive without titanium dioxide addition

All technical reports are available at our homepage www.hoffmann-mineral.com.

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