



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*	96.5
	a*	- 0.2
	b*	1.0
Residue > 40 µm	10 mg/kg	
Volatile matter at 105 °C	0.2 %	
Density	2.6 g/cm³	
Particle size distribution	D ₅₀	2.1 µm
	D ₉₇	9.5 µm
Surface area BET	10 m²/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.

Information on compliance with certain regulations/recommendations and other safety-related aspects: [Product safety information](#)

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	••••
Yielt 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.

Our applications engineering advice and the information contained in this memorandum are based on experience and are made to the best of our knowledge and belief, they must be regarded however as non-binding advice without guarantee. Working and employment conditions over which we have no control exclude any damage claim arising from the use of our data and recommendations. Furthermore we cannot assume any responsibility for patent infringements, which might result from the use of our information.