

AKTIFIT PF 111

Field of application: Paint & Varnish

1. Description

AKTIFIT PF 111 is an activated SILFIT Z 91, produced by modifying the surface with a special alkyl functional group. The by-products split off during the treatment reaction are largely removed during the production process which firmly attaches the functional group to the filler surface. This helps minimizing undesirable side effects, which are potentially encountered with in-situ mixing (direct addition of additive to the compound).

The non-polar alkyl groups of the coating agent and a special process technology during production of AKTIFIT PF 111 provide high hydrophobicity as well as low moisture absorption even under very humid conditions.

Characteristics

Appearance		free-flowing powder
Color CIELAB scale:	L*	96.3
	a*	- 0.1
	b*	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	2 µm
	D ₉₇	10 µm
Surface area BET		9 m ² /g
Oil absorption		60 g/100 g
Equilibrium moisture content at 23 °C:		
50 % relative humidity		0.07 %
80 % relative humidity		0.10 %
90 % relative humidity		0.13 %

Packaging

Paper bags		à 25 kg
EVA bags		on demand
Big Bags		on demand

Shelf life

2 years if stored properly under dry conditions.



2. Applications

In paint and varnish applications AKTIFIT PF 111 can be used as a functional filler either on its own or combined with extenders or matting agents.

The optimum efficiency depends on the binder used. In non-polar to slightly polar vehicle systems, AKTIFIT PF 111 is easily dispersed already with low shear energy input, and in rheological respects gives rise to shear thinning. In highly polar systems, appropriate loadings cause thixotropic properties, strong shear thinning and lead to a yield point.

It stands out for its good wettability, excellent dispersion properties, which enable paint production potentially without grinding, very high brightness and color-neutrality. AKTIFIT PF 111 enhances the opacity effect of pigments, thus it provides a replacement potential of titanium dioxide up to 20 % or increasing hiding power.

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

Beyond that it generates excellent mechanical properties with good scratch, abrasion, water and chemical resistance.

Fields of application

- high performance industrial coatings
- anti-corrosion coatings
- fillers and primers
- adhesives, sealants and casting compounds, including moisture curing systems i. e. MS or STP (silane terminated polymer)
- thickening and rheology control of epoxide resins, PU systems and plastisols

Minimum film thickness:

> 10 µm, less in special cases

Dosage:

up to 55 % depending on intended application likewise up to PVC 35



3. Benefits

The excellent properties of the base material SILFIT Z 91 are retained:

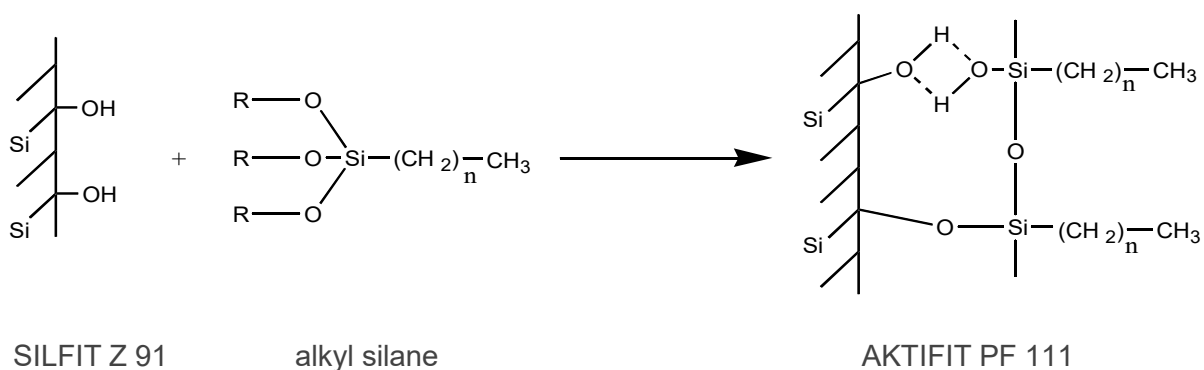
- low sieve residues
- low moisture content, low moisture absorption
- very high brightness
- very high color-neutrality
- outstanding dispersion behavior, even without grinding
- improved opacity (spacer effect), likewise potential for partial pigment replacement
- relatively low abrasivity
- quick drying
- weathering resistance
- scratch resistance
- abrasion resistance
- good transparency
- matting effect¹

AKTIFIT PF 111 also provides the following benefits compared with the base SILFIT Z 91:

- hydrophobic filler
- low moisture absorption, even under damp conditions
- improved wettability even using binders with low polarity
- rheological activity
- rheological stability
- improved abrasion resistance and scratch resistance
- increased resistance to moisture, chemicals and weathering
- improvement of adhesion on non-blasted steel
- improvement of anti-corrosive properties (blistering, rust creepage and delamination at scribe, adhesion)
- improved humidity test results

¹strongly depending on formulation

4. Reaction at Hoffmann Mineral (model)





5. Application examples

White pigmented anti-corrosion coatings

- partial replacement of white pigment like titanium dioxide
- good anti-corrosion properties
- cost reduction potential

Dental impression material (Pt catalyzed addition curing liquid silicone)

- high storage stability
- improved mechanical properties

STP-adhesives

- improved rheology
- improved tensile and lap shear strength vs. calcium carbonate

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.