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* a* b*	96.2 - 0.1 1.0
Residue > 40 µm		10 mg/kg
Volatile matter at 105 °C		0.2 %
Densitiy		2.6 g/cm³
Particle size distribution	D_{50} D_{97}	2.3 µm 11.0 µm
Surface area BET		9 m²/g
Oil absorption		55 g/100 g
Equilibrium moisture content at 23 °C: 50 % relative humidity 80 % relative humidity 90 % relative humidity		 0.07 % 0.10 % 0.13 %

Packaging

Paper bags	á 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.

Information on compliance with certain regulations/recommendations and other safety-related aspects: Product safety information

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:

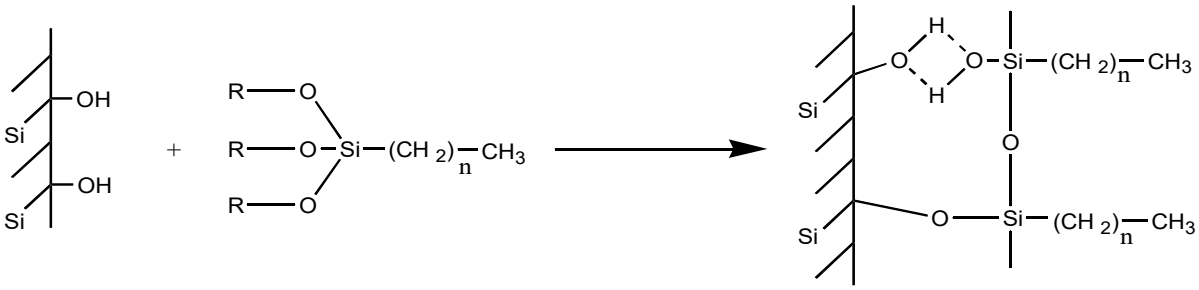
- low sieve residues
- low moisture content, low moisture absorption
- very high brightness
- very high color-neutrality
- outstanding dispersion behavior, even without grinding
- improved opacity (spacer effect), likewise potential for partial pigment replacement
- relatively low abrasivity
- quick drying
- weathering resistance
- scratch resistance
- abrasion resistance
- good transparency
- matting effect[1]

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

[1]strongly depending on formulation

4. Reaction at Hoffmann Mineral (model)



SILFIT Z 91 alkyl silane AKTIFIT PF 111

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

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