



AKTIFIT PF 115

Field of application: Paint & Varnish

1. Description

AKTIFIT PF 115 is an activated SILFIT Z 91, produced by modifying the surface with a special amino 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 minimize undesirable side effects, as they are potentially encountered with in-situ mixing (direct addition of additive to the compound).

A special process technology during production of AKTIFIT PF 115 provides high hydrophobicity as well as outstanding low moisture absorption even under very humid conditions. During curing (hardening) of the coating, the amino groups of AKTIFIT PF 115 react with appropriate functional groups of the binder or generate a strong interaction via hydrogen bonds.

Characteristics

Appearance		free-flowing powder
Color CIELAB scale:	L* a* b*	95.7 0 1.0
Residue > 40 µm		10 mg/kg
Volatile matter at 105 °C		0.1 %
Density		2.6 g/cm ³
Particle size distribution	D ₅₀ D ₉₇	2 µm 10 µm
Surface area BET		9 m ² /g
Oil absorption		60 g/100 g
Equilibrium moisture content at 23 °C:		
50 % relative humidity		0.04 %
80 % relative humidity		0.06 %
90 % relative humidity		0.07 %

Packaging

Paper bags		à 25 kg
EVA and Big Bags		on demand

Shelf life

2 years if stored properly under dry conditions.



2. Applications

Optimum performance of AKTIFIT PF 115 is achieved in binder systems which have functional groups with active hydrogen or which can react with. With inert, polar groups hydrogen bonds can be generated.

In particular these include:

- epoxy and polyurethane resins
- polyester and alkyd resins
- acrylic, phenolic and melamine resins
- all stoving enamel resins

In addition it is applicable in moisture-curing systems like:

- 1C polyurethane
- silane-terminated polyurethane (STP-U)

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 115 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.

Beyond that it generates excellent mechanical properties with very good scratch and abrasion resistance as well as chemical and corrosion resistance (in water-based formulations too). In solvent-free systems, AKTIFIT PF 115 often increases the viscosity at low shear rates.

Fields of application

- coil coatings
- stoving enamels
- powder coatings
- anti-corrosion coatings
- E-coats, primers and surfacers
- moisture-curing adhesives and sealants, potting compounds

Minimum film thickness:

> 10 µm, less in special cases.

Dosage:

up to 55 % m/m 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 (depending on formulation principle)

AKTIFIT PF 115 additionally provides benefits compared with the base SILFIT Z 91:

- hydrophobic filler
- outstandingly low moisture absorption, even under damp conditions
- pre-drying usually not required for moisture curing systems
- improved wettability even using binders with medium polarity
- increase of viscosity at low shear rates
- reduction or avoidance of sedimentation
- increased tensile and flexural strength as well as impact strength and enhanced cupping and impact test
- improved abrasion resistance and scratch resistance
- increased resistance to moisture, corrosion, chemicals and weathering
- best grade for high gloss and low haze in powder coatings based on polyester/HAA (Primid)
- very high lap shear strength in STP-U adhesives

4. Possible reaction in binder system

<p>AKTIFIT PF 115</p>	<p>+ reactive group isocyanate methyol epoxy carboxy etc.</p>		<p>covalent bond filler to binder</p>
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<p>AKTIFIT PF 115</p>	<p>+ polar group amide ester ether etc.</p>		<p>hydrogen bond filler to binder</p>
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5. Application examples

Anti-corrosion primer water-based styrene acrylic

High performance in salt spray test and humidity test

- good adhesion
- hardly blistering
- low rust creep at scribe and low delamination at scribe

Softfeel coatings water-based, transparent too

- good matting effect enables partial replacement of expensive organic and anorganic matting agents
- good transparency and color neutrality
- good resistances and adhesion

Electro coats cataphoretic black

- excellent pigmentpaste stability, even at higher storage temperatures
- higher loss
- higher flexibility of the coating-film (cupping and impact)

Powder coatings based on polyester/hydroxyalkyl amide (Primid)

- high gloss
- low haze
- good surface appearance / good leveling
- high flexibility (impact)
- very good water-spot-resistance
- excellent corrosion resistance / lowest delamination at scribe
- retaining good weatherability

Pipeline coatings based on solvent-free 2K polyurethane

- pre-drying of filler usually not required due to the outstandingly low moisture level and low absorption, even under damp conditions well below 0.1%
- moderate increase of viscosity at low shear rates, low viscosity at high shear rates
- good shelf life without sedimentation
- high flexibility (elongation at break) and high impact strength
- good anticorrosion properties

Adhesive moisture-curing, silane terminated polyurethane (STP-U)

- pre-drying of filler usually not required due to the outstandingly low moisture level and low absorption, even under damp conditions well below 0.1%
- low viscosity
- outstandingly high lap shear strength up to 17 MPa wood/wood, corresponding to 40 % improvement vs. precipitated calcium carbonate

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