AKTIFIT VM

Field of application: Paint & Varnish

1. Description

AKTIFIT VM is an activated SILFIT Z 91, produced by modifying the surface with a special vinyl 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 additivs to the compound).

A special process technology during production of AKTIFIT VM provides high hydrophobicity as well as outstanding low moisture absorption even under very humid conditions. During curing (hardening) of the coating, the vinyl groups of AKTIFIT VM react with the functional groups of the binder, especially in the presence of radicals.

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		0.1 %
Densitiy		2.6 g/cm³
Particle size distribution	D_{50} D_{97}	2.3 µm 11.0 µm
Surface area BET		10 m²/g
Oil absorption		65 g/100 g
Equilibrium moisture content at 23 °C: 50 % relative humidity 80 % relative humidity 90 % relative humidity		 0.05 % 0.07 % 0.08 %

Packaging

Paper bags	á 25 kg
EVA bags	on demand
Big Bags	550 - 900 kg

Shelf life

2 years if stored properly under dry conditions.

2. Applications

In paint and varnish applications AKTIFIT VM can be used as a functional filler either on its own or combined with extenders or matting agents. The best effect is achieved in binder systems which polymerize or cure due to a radically initiated reaction.

In particular these include:
- UV or electron-beam cured coatings
- unsaturated polyester and vinyl ester resins
- acrylic resins
- other radically cured systems

It is also suitable for moisture curing polymers:
- 1 C polyurethanes
- MS / silane terminated polymers

It stands out for its good wettability, excellent dispersion properties, which enable paint production potentially without grinding, very high brightness and color-neutrality.

AKTIFIT VM 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 Applikation

- UV cured clear coats (varnishes)
- and pigmented coatings
- UV cured powder coatings
- peroxide cured polyester and vinyl ester coatings and objects
- moisture curing adhesives and sealants, potting compounds

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:

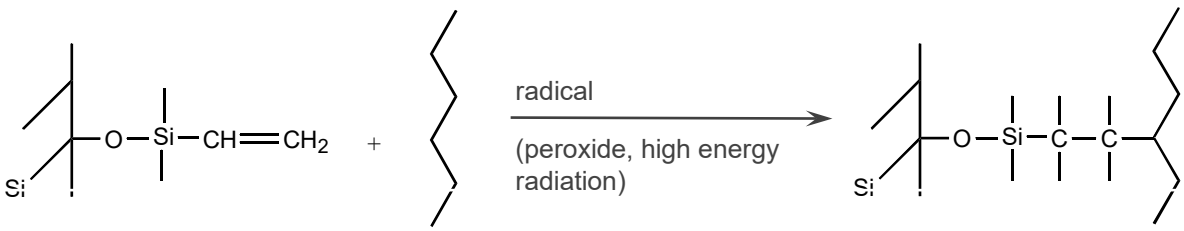
- low sieve residues
- low moisture content, low moisture absorption
- very high brightness
- very high color-neutrality
- outstanding dispersion behavior, even without grinding
- improved opacity (spacer effect), likewise potential for partial pigment replacement
- relatively low abrasivity
- quick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

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

- hydrophobic filler
- outstandingly low moisture absorption, even under damp conditions
- improved wettability even using binders with low polarity
- minimizing yield point likewise low shear viscosity
- increased tensile and flexural strength as well as impact strength
- improved abrasion resistance and scratch resistance
- increased resistance to moisture, chemicals and weathering
- best grade for improving hiding power of white pigmented UV cured coatings

[1]strongly depending on formulation

4. Possible reaction in binder system



AKTIFIT VM oligomer or polymer

5. Application examples

White pigmented UV curing coatings

- improving hiding power (opacity) by adding Aktifit VM additionally to the given titanium dioxide loading
- cost reduction potential

UV curing clear coats

- very high transparency without yellow tint
- improved abrasion resistance
- cost reduction potential

2 C polyurethane compounds i.e. heavy duty electrical potting

- good dispersion behavior
- no negative effect on pot life
- high electrical resistivity, even after long term salt water immersion
- cost reduction potential

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