AKTIFIT AM

Field of application: Paint & Varnish

1. Description

AKTIFIT AM is an activated SILFIT Z 91, produced by modifying the surface with an 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).
During curing (hardening) of the coating, the amino groups of AKTIFIT AM react with appropriate functional groups of the binder or generate a strong interaction in the form of hydrogen bonds.

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		65 g/100 g
Electrical conductivity		60 µS/cm
Equilibrium moisture content at 23 °C: 50 % relative humidity 80 % relative humidity 90 % relative humidity		 0.11 % 0.29 % 0.55 %

Packaging

Paper bags	á 25 kg
EVA bags	on demand
Big Bags	600 - 900 kg
Bulk	on demand

Shelf life

2 years if stored properly under dry conditions.

2. Applications

In paint and varnish applications AKTIFIT AM can be used as functional filler either on its own or combined with extenders or matting agents. The best effect 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 resins
- polyurethane resins
- polyester resins
- alkyd resins
- acrylic resins
- phenolic and melamine resins
- all stoving enamel resins

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

AKTIFIT AM 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 good scratch, abrasion and chemical resistance.

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

Fields of application

- coil coatings
- can coatings
- stoving enamels
- powder coatings
- reactive industrial coatings
- anti-corrosion coatings
- primers and surfacers, also for the automotive industry
- adhesives and sealants

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

- improved wettability even using binders with medium polarity
- 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 partial titanium dioxide replacement in polyester based can and coil coatings

[1]strongly dependent on formulation

4. Possible reaction in binder system

AKTIFIT AM **+ reactive group** → **covalent bond filler to binder**

- isocyanate
- methylol
- epoxy
- carboxy
- etc.

AKTIFIT AM **+ polar group** → **hydrogen bond filler to binder**

- amide
- ester
- ether
- etc.

5. Application examples

Coil coating top coat

- cost cutting potential by partial replacement of titanium dioxide up to 20 %
- slight reduction of gloss
- similar brightness L* and thus comparable hiding power
- color neutrality
- good weathering resistance
- slightly higher hardness
- improved scratch resistance

Technical report: “Partial Replacement of Titanium Dioxide by Neuburg Siliceous Earth in a White Polyester-based Coil Coating Top Coat”

Can coating (polyester based)

- cost cutting potential by partial replacement of titanium dioxide up to 20 %, for highly white and glossy about 10 %

All technical reports are available at our homepage www.hoffmann-mineral.com.

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