

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*	96.3 - 0.1 1.1
Residue > 40 µm		10 mg/kg
Volatile matter at 105 °C		0.2 %
Density		2.6 g/cm ³
Particle size distribution	D ₅₀ D ₉₇	2 µm 10 µm
Surface area BET		7 m ² /g
Oil absorption		55 g/100 g
pH value		9
Electrical conductivity		60 µS/cm
Equilibrium moisture content at 23 °C:		
50 % relative humidity		0.11 %
80 % relative humidity		0.29 %
90 % relative humidity		0.55 %

Packaging

Paper bags		à 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.

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 effect¹


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

¹strongly dependent on formulation

4. Possible reaction in binder system

<p>AKTIFIT AM</p>	<p>+ eactive group isocyanate methylool epoxy carboxy etc.</p>		<p>covalent bond filler to binder</p>
--------------------------	---	---	--

<p>AKTIFIT AM</p>	<p>+ polar group amide ester ether etc.</p>		<p>hydrogen bond filler to binder</p>
--------------------------	--	---	--



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.

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.