# AKTIFIT AM

Field of application: Elastomers

## 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 vulcanization, the amino groups of AKTIFIT AM react in the presence of appropriate crosslinking agents with the polymer. In non crosslinked polymers, the amino groups of AKTIFIT AM in the presence of appropriate functional groups generate a strong interaction in the form of hydrogen bonds.

## Characteristics

| | | |
|---|---|---|
| Appearance | | free-flowing powder |
| Color CIELAB scale: | L*<br>a*<br>b* | 96.2<br>- 0.1<br>1.0 |
| Residue > 40 µm | | 10 mg/kg |
| Volatile matter at 105 °C | | 0.2 % |
| Densitiy | | 2.6 g/cm³ |
| Particle size distribution | $D_{50}$<br>$D_{97}$ | 2.3 µm<br>11.00 µm |
| Surface area BET | | 9 m²/g |
| Oil absorption | | 65 g/100 g |
| Equilibrium moisture content at 23 °C:<br>50 % relative humidity<br>80 % relative humidity<br>90 % relative humidity | | <br>0.11 %<br>0.29 %<br>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 elastomer applications AKTIFIT AM is used as a functional filler either on its own or in combination with other non-reinforcing or reinforcing fillers. An optimum effect will be obtained in polar elastomers in combination with sulfur or sulfur donor, amine or bisphenolic crosslinking systems.

AKTIFIT AM can also interact with the polar groups of polymers via hydrogen bonds in thermoplastic compounds, e. g. based on EVM (EVA). The product can also be used in the polyol component of elastomeric polyurethane resp. TPU compounds as a mineral additive.

It can be used whenever high cure speed, high tensile strength and high modulus, combined with a low tensile and compression set, are as important as excellent processing and extrusion properties.

These properties are an ideal combination, in particular for pressure-less cured extruded products and sponge rubber.

It is also suitable for very bright and white compounds.

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

## Fields of application

- pressure-less cured extruded products (profiles, hoses)
- cable sheaths and cable insulation
- pharmaceutical stoppers
- molded products and gaskets
- roller coverings
- sponge rubber products
- prevention of filler caused mold fouling during the injection process or deposits in the orifice die (plating) during extrusion

**Elastomers:**
CR, NBR, HNBR, IIR, BIIR, CIIR,
EVM, EVA, CM, CSM, AEM, ACM, FKM, ECO, EPDM, U / PU / TPU

**Dosage:**

| | |
|---|---|
| TPU: | 5 % - 10 % in polyol, |
| all others: | 25 - 300 phr |

## 3. Benefits

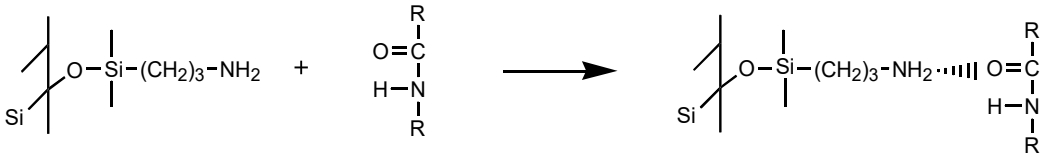
The excellent properties of the base material SILFIT Z 91 are retained:

- low sieve residues
- low moisture, low moisture absorption
- very high brightness
- very high color-neutrality
- good, fast incorporation
- excellent dispersion behavior, even in critical compounds
- good rheological properties
- excellent surfaces
- excellent extrusion properties
- no negative influence on curing rate
- low tensile and compression set
- high electrical resistance
- good aging properties
- high chemical resistance
- matting effect
- prevention of filler caused mold fouling during the injection process or deposits in the orifice die (plating) during extrusion

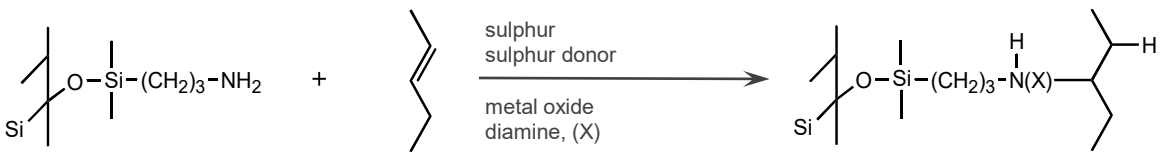
**AKTIFIT AM also provides the following benefits compared with the base SILFIT Z 91**:

- improved vulcanization using amine crosslinkers (i. e. BIIR) or bisphenolic crosslinkers (FKM)
- increased tensile strength
- maximum tensile strength at higher filler loading
- increase of modulus
- reduced tension and compression set
- improved abrasion resistance
- improved resistance to fuel, oil and water

## 4. Possible reaction at user‘s plant (model)




AKTIFIT AM polar functional group of polymer
i. e. amide, urethane or vinyl acetate group




AKTIFIT AM rubber polymer

## 5. Application examples

### Plating, mould fouling

Prevention of filler caused mold fouling during the injection process or deposits in the orifice die (plating) during extrusion (Aktifit AM represented by Silfit Z 91)
Technical report: “Die plating”

### Carbon black N 990 replacement

**EPDM Air Intake Hose**
low mooney viscosity, short cure time, high tear resistance, cost reduction potential
Technical report: „Air intake hose EPDM - replacement of carbon black N990 with NSE“

**NBR Oil Seal**
low mooney viscosity, short cure time, high elongation at break, high tear resistance, low compression set, cost reduction potential
Technical report: „Molded NBR parts for automotive oil seals ASTM D2000 - replacement of carbon black N 990“

### AEM and ACM compounds

low mooney viscosity, short cure time, good compression set along with high oil resistance, high filler loading and cost reduction potential
Technical report: „Aktifit AM in AEM Seals and Gaskets“

### FKM compounds

short cure time, high tensile strength, excellent abrasion resistance and very good resistance to fuel and water
Technical report: „Neuburg Siliceous Earth in bisphenolic cured FKM“

### Generelly profiles and seals, gaskets and o-rings

with low compression set and good resistances

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

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