

AKTIFIT PF 111

Field of application: Elastomers

1. Description

AKTIFIT PF 111 is an activated SILFIT Z 91, produced by modifying the surface with a special alkyl 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 minimizing undesirable side effects, which are potentially encountered with in-situ mixing (direct addition of additive to the compound).

The non-polar alkyl groups of the coating agent and a special process technology during production of AKTIFIT PF 111 provide high hydrophobicity as well as low moisture absorption even under very humid conditions.

Characteristics

Appearance	free-flowing powder	
Color CIELAB scale:	L*	96.2
	a*	- 0.1
	b*	1.0
Residue > 40 µm	10 mg/kg	
Volatile matter at 105 °C	0.2 %	
Density	2.6 g/cm³	
Particle size distribution	D <sub>50</sub>	2.3 µm
	D <sub>97</sub>	11.0 µm
Surface area BET	9 m²/g	
Oil absorption	55 g/100 g	
Equilibrium moisture content at 23 °C:		
50 % relative humidity	0.07 %	
80 % relative humidity	0.10 %	
90 % relative humidity	0.13 %	

Packaging

Paper bags	à 25 kg
EVA bags	on demand
Big Bags	on demand

Shelf life

2 years if stored properly under dry conditions.



## 2. Applications

In elastomer applications AKTIFIT PF 111 is used as a functional filler either on its own or in combination with other non-reinforcing or reinforcing fillers. It is universally suitable in all crosslinking systems (sulfur, sulfur donor, amine, peroxide or bisphenol). AKTIFIT PF 111 obtains its optimum effect in FKM, independently from bisphenol or peroxide cure.

In bisphenolic cured FKM compounds AKTIFIT PF 111 generally performs similar to Aktifit AM: high tensile strength and high moduli as well as low tension and compression set.

AKTIFIT PF 111 outperforms Aktifit AM in higher elongation at break and oil resistance as well as compression set according to Volkswagen test procedure at higher filler loading (45 phr), along with slightly lower viscosity and better flow behavior.

In peroxide cured FKM compounds AKTIFIT PF 111 generally performs similar to bisphenolic cure. In addition it stands out for resistance to acetic acid with less weight and volume increase as well as at higher loading less hardness loss. The higher tear resistance completes the positive property profile.

Generally AKTIFIT PF 111 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

- preferably FKM compounds with high requirements for high elongation at break and resistance to fuel, oil and acid (blow-by condensate)
- prevention of filler caused mold fouling during the injection process or deposits in the orifice die (plating) during extrusion

### Elastomers:

all standard and special elastomers

### Dosage:

25 - 300 phr



### 3. Benefits

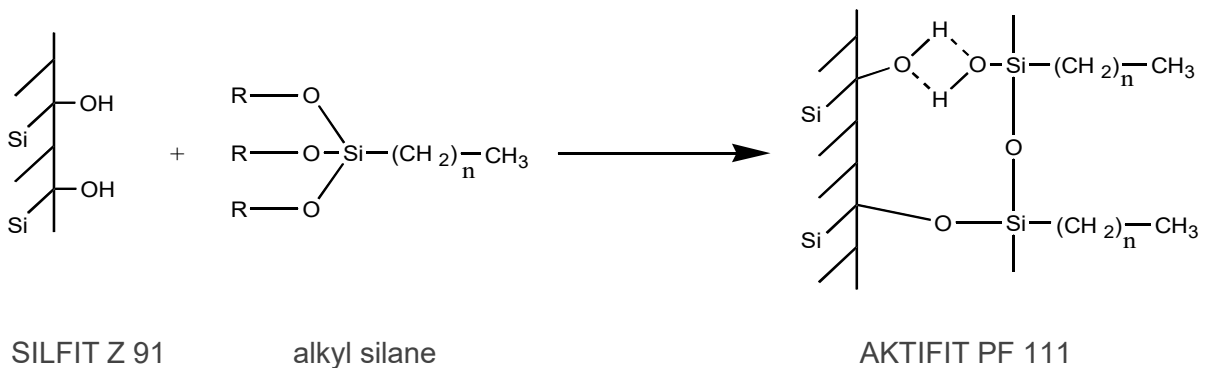
The excellent properties of the base material SILFIT Z 91 are retained:

- 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 PF 111 also provides the following benefits compared with the base SILFIT Z 91:**

- highly hydrophobic filler
- very low moisture
- outstandingly low moisture absorption under very humid conditions
- slightly lower viscosity
- increased tensile strength
- increased moduli
- lower compression set
- improved resistance to oil and in particular acid (blow-by condensate)

### 4. Reaction at Hoffmann Mineral (model)





## 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 PF 111 represented by Silfit Z 91).

Technical report: "Die plating"

### EPDM compounds high hardness, high filler loading

lower viscosity

### FKM compounds, bisphenolic cure

slightly lower viscosity, high tensile strength, high elongation at break, low compression set at high filler loading acc. to Volkswagen test procedure, good resistance to hot air, fuel, oil and water, especially to engine oil OS206304 in FKM grade with high curative level and low viscosity (Viton A-201C)

Technical report: „Neuburg Siliceous Earth in bisphenolic cured FKM“

### FKM compounds, peroxide cure

slightly lower viscosity, high tensile strength, high elongation at break, low compression set, good to high resistance to hot air, fuel, oil and in particular acetic acid

### Generally 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](http://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.