



## AKTIFIT PF 115

Field of application: Elastomers

### 1. Description

AKTIFIT PF 115 is an activated SILFIT Z 91, produced by modifying the surface with a special 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).

A special process technology during production of AKTIFIT PF 115 provides high hydrophobicity as well as outstanding low moisture absorption even under very humid conditions. During vulcanization, the amino groups of AKTIFIT PF 115 react in the presence of appropriate crosslinking agents with the polymer. In non-crosslinked polymers, the amino groups of AKTIFIT PF 115 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*	95.7
	a*	0
	b*	1.0
Residue > 40 µm		10 mg/kg
Volatile matter at 105 °C		0.1 %
Density		2.6 g/cm <sup>3</sup>
Particle size distribution	D <sub>50</sub>	2 µm
	D <sub>97</sub>	10 µm
Surface area BET		9 m <sup>2</sup> /g
Oil absorption		60 g/100 g
Equilibrium moisture content at 23 °C:		
50 % relative humidity		0.04 %
80 % relative humidity		0.06 %
90 % relative humidity		0.07 %

### Packaging

Paper bags	á 25 kg
EVA and Big Bags	on demand

### Shelf life

2 years if stored properly under dry conditions.



## 2. Applications

In elastomer applications AKTIFIT PF 115 is used as a functional filler. An optimum effect will be obtained in FKM with a bisphenolic crosslinking system.

AKTIFIT PF 115 can also interact with the polar groups of polymers via hydrogen bonds in thermoplastic compounds. This product can be used in the polyol component of elastomeric polyurethane, respectively TPU compounds as a mineral additive as well.

Generally AKTIFIT PF 115 performs similar to Aktifit AM, providing high cure speed, high tensile strength and high modulus, along with a low tensile and compression set.

In bisphenolic cured FKM compounds AKTIFIT PF 115 outperforms Aktifit AM in oil resistance as well as often in abrasion resistance along with slightly lower viscosity, largely retaining other properties like fuel and water resistance.

## Fields of application

preferably FKM-Compounds with high requirements of resistances to fuel, oil, water and abrasion

### Polymers:

- FKM, preferably bisphenolic cure
- TPU
- generally all polymers capable to react or interact with amino groups

### Dosage:

TPU: 5 % - 10 % in polyol,  
FKM: 20 to 50 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 115 also provides the following benefits compared with the base SILFIT Z 91:**

- highly hydrophobic filler
- outstandingly low moisture absorption under very humid conditions
- 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

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.



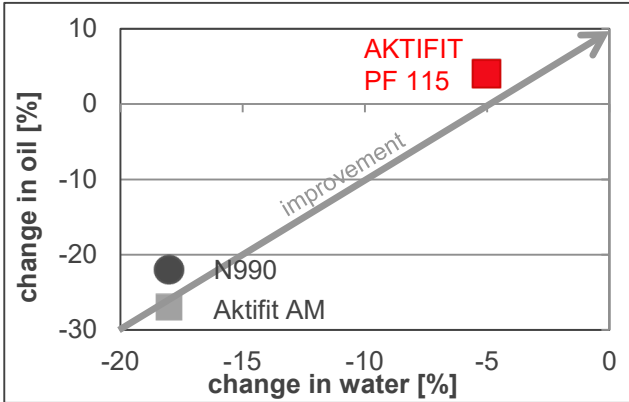
**4. AKTIFIT PF 115 in FKM**

**Dyneon FC 2181Z**

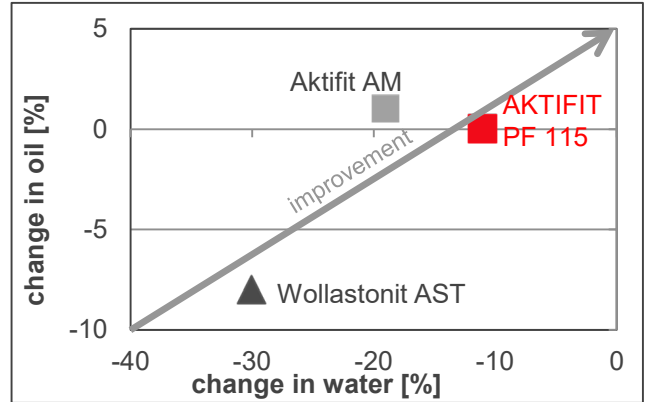
All changes based on delta tensile strength  
 Water di. 168 h / 60 °C  
 Oil OS206304 168 h / 150 °C  
 Fuel FAM B (containing methanol and ethanol)  
 70 h / 23 °C

**oil vs. water resistance**

80 Shore A, 45 phr AKFITIFT PF 115 vs. 30 phr Ruß N 990



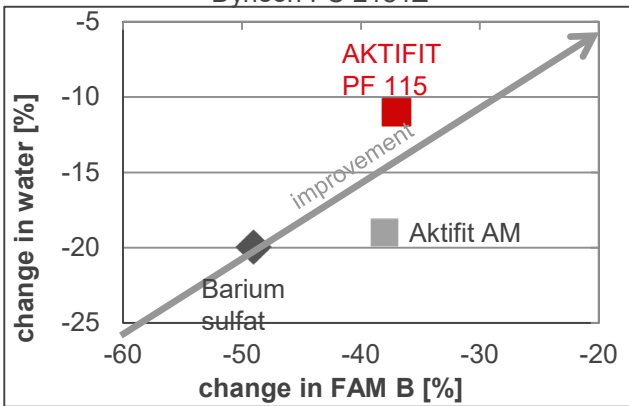
70 Shore A, 30 phr AKFITIFT PF 115 vs. 45 phr Wollastonit amino functionalized



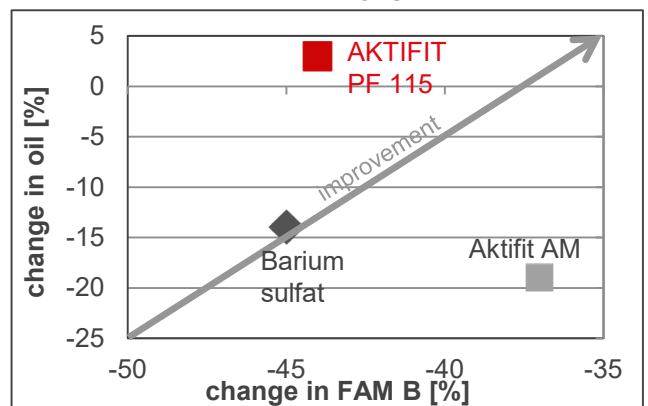
**water/oil vs. fuel resistance**

70 Shore A, 30 phr AKTIFIT PF 115 vs. 74 phr barium sulfat

Dyneon FC 2181Z



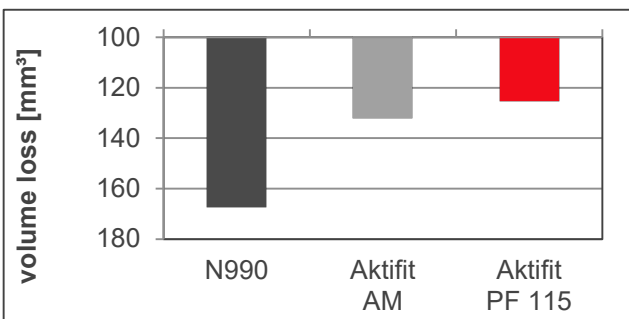
Viton A-201C



**abrasion loss**

80 Shore A, 45 phr AKTIFIT PF 115 vs. 30 phr Ruß N 990

Dyneon FC 2181Z



Viton A-201C

