



AKTISIL PF 115/89

Field of application: Paint & Varnish

1. Material Description

AKTISIL PF 115/89 is an activated SILLITIN Z 89 in which the surface has been modified with a special amino-functional group. The byproducts released during the manufacture of AKTISIL grades are largely removed during the process. The coupling reaction fixes the functional group to the surface of the filler; undesirable side effects, such as those that occur during in-situ mixing (i.e., when the additive is added directly), are therefore virtually completely avoided. A special process technology used in the manufacture of AKTISIL PF 115/89 produces both partial hydrophobicity and reduced moisture absorption at high ambient humidity.

During the cross-linking (curing) of the coating system, the amino groups of AKTISIL PF 115/89 react with suitable functional groups of the binder or form a strong interaction in the form of hydrogen bonds.

Characteristics

Appearance		Free-flowing powder
Color values according to CIELAB:	L* a* b*	96 0.2 3.8
Residue > 40 µm		35 mg/kg
Volatile content at 105 °C		0.3 %
Density		2.6 g/cm ³
Particle size distribution	D ₅₀ D ₉₇	2.2 µm 10 µm
Oil absorption		60 g/100 g
Water absorption according to Baumann		≤ 0.1 ml/g
Equilibrium moisture content at 25°C		
50% relative humidity		0.16 %
80% relative humidity		0.27 %
90% relative humidity		0.45 %

Packaging Options

Paper bag	20 kg
EVA bag	5 – 20 kg
Big bag	550 – 900 kg

Shelf life

2 years when stored in a dry, suitable location.



2. Applications

In the paint and varnish sector as well as in adhesives, AKTISIL PF 115/89 is used as a functional filler both on its own and in combination with extender fillers or matting agents. Optimal performance is achieved in binder systems that contain functional groups with active hydrogen or that can react with them. A strong interaction in the form of hydrogen bonds can also be formed with non-reactive, polar groups.

These include, in particular:

- epoxy resins
- polyurethane resins
- acrylic resins
- alkyd resins
- polyester resins
- phenolic, melamine, and urea resins
- polysulfide systems
- all stoving paints/enamels in general
- adhesives, including those based on silane-terminated polymers (SMP, STP-E, STP-U) with increased strength

Applications are wherever optimal wettability and very low sedimentation tendency are just as important as outstanding mechanical properties and high chemical and corrosion resistance.

In solvent-free polar systems, AKTISIL PF 115/89 often increases viscosity at low shear rates.

In aqueous anti-corrosion primers and DTM coatings, it often reduces blistering in the condensation water test and achieves good wet adhesion with minimal under-cutting at the scratch in the salt spray test. This potentially allows for a reduction in, or even complete replacement of, anti-corrosion pigments.

AKTISIL PF 115/89 exhibits high brightness as well as color neutrality and is therefore also suitable for use in light-colored and color-sensitive applications.

In adhesives, particularly those based on silane-terminated polymers, it achieves high strengths.

Fields of application

- high-quality, reactive industrial coatings
- STP-based adhesives, reactive adhesives
- sealants and potting compounds
- baking enamels, including powder coatings
- corrosion protection coatings, including water-based and DTM acrylate, epoxy, including for clear coats
- high-solid fillers and primers, topcoats

Minimum film thickness:

> 10 µm, lower in special cases

Dosage:

up to 55% depending on the application.



3. Advantages

The excellent properties of the SILLITIN Z 89 base are retained:

- highly dosable
- excellent dispersibility
- good pigment distribution (spacer effect)
- low abrasivity
- very low tendency to settle
- soft sediment
- good edge-covering
- fast drying
- weather resistance
- breathability
- scratch resistance
- high abrasion resistance
- good transparency
- slight matting effect

Compared to the base SILLITIN Z 89, AKTISIL PF 115/89 offers the following additional advantages:

- lower moisture content
- increased yield strength in polar systems with high solids content or 100% solids
- increased tensile and flexural strength as well as impact resistance
- improved abrasion resistance and scratch resistance
- increased chemical and moisture resistance
- improved corrosion protection
- increased gloss

4. Possible reactions in the binder system

AKTISIL PF 115/89 + reactive group → **covalent bond filler to binder**
 isocyanate
 methylol
 epoxy
 carboxy
 etc.

AKTISIL PF 115/89 + polar group → **hydrogen bond filler to binder**
 amide
 ester
 ether
 etc.

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