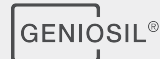


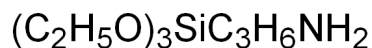
# GENIOSIL<sup>®</sup> GF 93



## Organofunctional Silanes

3-Aminopropyltriethoxysilane

Empirical formula  $C_9H_{23}NO_3Si$  | Molecular weight 221,4



## Properties

In addition to its application as an adhesion promoter in formulations and primers, GENIOSIL<sup>®</sup> GF 93 functions as a surface modifier in fillers and pigments, where it improves the dispersibility of the filler and the mechanical properties - such as flexural strength, tensile strength and modulus - of the composites. The silane also reduces the filler's sedimentation tendency in the uncured polymer. GENIOSIL<sup>®</sup> GF 93 also greatly increases water (vapor) and corrosion resistance. GENIOSIL<sup>®</sup> GF 93 is an alkoxy silane with an amino-functional group. It's a clear, colorless liquid with a characteristic amine odor. Due to the nature of the amino group, this substance reacts as a strong base. The silane hydrolyzes autocatalytically in the presence of moisture (Ethanol is released) to form silanols, which can subsequently react with themselves to produce siloxanes or can bind to inorganic substrates. As a typical amine, GENIOSIL<sup>®</sup> GF 93 can also interact with numerous organic polymers and thus function as a molecular bridge between organic and inorganic substrates.

## Technical data

### General Characteristics

Property	Condition	Value	Method
Amine number	-	approx. 4.5 mmol/g	WSTM 1297A
Boiling point	1013 hPa	217 °C	-
Density	25 °C	0.94 g/cm <sup>3</sup>	DIN 51757
Flash point	-	93 °C	ISO 2719
Purity	-	> 97 %	-
Refractive index	25 °C	1.42	-
Viscosity, dynamic	25 °C	approx. 1.6 mPa·s	DIN 51562

These figures are only intended as a guide and should not be used in preparing specifications.

All the information provided is in accordance with the present state of our knowledge. Nonetheless, we disclaim any warranty or liability whatsoever and reserve the right, at any time, to effect technical alterations. The information provided, as well as the product's fitness for an intended application, should be checked by the buyer in preliminary trials. Contractual terms and conditions always take precedence. This disclaimer of warranty and liability also applies particularly in foreign countries with respect to third parties' rights.

## Applications

- Building & Construction Adhesives
- Interior Paints
- Sealants
- Flooring Installation
- Do It Yourself
- Waterproofing Membranes

## Application details

### 1. General processing information:

GENIOSIL® GF 93 is highly miscible with standard organic solvents, such as ethers and hydrocarbons.

Mixing with ketones results in imine formation, while mixing with alcohols other than ethanol leads to an autocatalytic exchange of alkoxy groups until the system reaches thermodynamic equilibrium.

GENIOSIL® GF 93 shows typical amine behavior when exposed to acids, epoxides or isocyanates.

GENIOSIL® GF 93 is highly soluble in neutral water and undergoes hydrolysis.

Caution: due to the enthalpy of solution, mixing GENIOSIL® GF 93 with water is exothermic. A solution of GENIOSIL® GF 93 in water has a pH of 10 - 11 and remains stable for several weeks. Due to the highly reactive nature of GENIOSIL® GF 93, contact with moisture must be avoided during processing to prevent undesired hydrolysis.

### 2. GENIOSIL® GF 93 as a surface modifier:

Fillers are treated either with pure GENIOSIL® GF 93 or a solution thereof. It may be necessary to pretreat the substrate with water.

The modified filler is preferably bonded to the organic material, e.g. an epoxy resin, by mixing it with a standard curing agent.

In an alternative procedure referred to as "blending", GENIOSIL® GF 93 is added directly to the polymer - either before the organic materials is compounded with the filler or at the same time.

A prerequisite for the blending process is that GENIOSIL® GF 93 and the polymer are compatible and that the resin and GENIOSIL® GF 93 do not react prematurely.

3. GENIOSIL® GF 93 as an adhesion promoter in formulations:

In silane crosslinking formulations (e.g. silane-terminated polyethers or polyurethanes and polysiloxanes), GENIOSIL® GF 93 may be added to the formulation as an adhesion promoter. Processing is effected by means of standard mixing methods. Usually, about 1 - 2 wt % silane is added to the formulation.

## Packaging and storage

### Packaging

Information on available container sizes is obtainable from WACKER subsidiaries.

### Storage

The 'Best use before end' date of each batch is shown on the product label. Storage beyond the date specified on the label does not necessarily mean that the product is no longer usable. In this case however, the properties required for the intended use must be checked for quality assurance reasons.

### Registration (selected countries / regions)

Listed on or in accordance with the following inventories:

EINECS - Europe

ECL - Korea

ENCS - Japan

AICS - Australia

IECSC - China

DSL - Canada

PICCS - Philippines

TSCA - USA

## Safety notes

Comprehensive instructions are given in the corresponding Material Safety Data Sheets. They are available on request from WACKER subsidiaries or may be printed via WACKER web site <http://www.wacker.com>.

## QR Code GENIOSIL® GF 93



**For technical, quality or product safety questions, please contact:**

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info@wacker.com, www.wacker.com

The data presented in this medium are in accordance with the present state of our knowledge but do not absolve the user from carefully checking all supplies immediately on receipt. We reserve the right to alter product constants within the scope of technical progress or new developments. The recommendations made in this medium should be checked by preliminary trials because of conditions during processing over which we have no control, especially where other companies' raw materials are also being used. The information provided by us does not absolve the user from the obligation of investigating the possibility of infringement of third parties' rights and, if necessary, clarifying the position. Recommendations for use do not constitute a warranty, either express or implied, of the fitness or suitability of the product for a particular purpose.