GENIOSIL® GPTE

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Organofunctional Silanes

3-Glycidoxypropyltriethoxysilane

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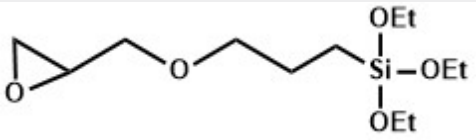

CAS No. 2602-34-8 | Empirical formula $C_{12}H_{26}O_5Si$ | Molecular weight 278.4

Properties

GENIOSIL® GPTE is an epoxy functional alkoxysilane. It´s a clear, colorless liquid with a characteristic gasoline-like odor. It hydrolyzes slowly in the presence of water (ethanol is released). It forms silanols, which can then react with themselves to produce siloxanes or can bind to inorganic substrates. The epoxy group of GENIOSIL® GPTE can undergo a ring- opening reaction with nucleophiles such as alcohols and amines. An acidic or basic catalyst may be required. As a bifunctional, organically unsaturated molecule, GENIOSIL® GPTE is able to function as a molecular bridge between inorganic and organic substrates.
The use of GENIOSIL® GPTE as a coupling agent in mineral-filled plastics improves filler dispersibility, reduces its sedimentation tendency and greatly lowers the resin's viscosity. In addition, it leads to higher filler loading and a marked increase in water (vapor) resistance, as well as resistance to acids and bases. As a component of adhesives and sealants, GENIOSIL® GPTE improves both adhesion to the substrate and mechanical properties such as flexural strength, tensile strength and modulus of elasticity. In potting compounds for electronic components, it has a positive influence on properties such as volume resistivity and dielectric constant.

Applications

- Anti-Corrosive Coatings
- Building & Construction Adhesives
- Do It Yourself
- Flooring Installation
- Heat-Resistant Coatings
- Industrial Coatings
- Sealants
- Waterproofing Membranes

Application details

1. General processing information:
GENIOSIL® GPTE is highly miscible with standard organic solvents such as alcohols, hydrocarbons and acetone. GENIOSIL® GPTE is practically insoluble in neutral water. By incorporating a hydrolysis catalyst (e.g. acetic acid), hydrolysis can be greatly accelerated at pH values of 3 - 4. However, at pH values below 4, the epoxy ring may start to open.

2. GENIOSIL® GPTE in mineral-filled polymers:
Fillers are treated either with pure GENIOSIL® GPTE or a solution thereof (e.g. in alcohol or an alcohol/water mix). It may be necessary to pretreat the substrate with water and/ or a catalyst (e.g. ammonia). Subsequent binding of the treated filler, for example to epoxy resins, is preferably affected during the normal crosslinking process. In an alternative procedure referred to as "blending," GENIOSIL® GPTE is added directly to the polymer - either before the filler is incorporated or at the same time. A prerequisite for the blending process is that GENIOSIL® GPTE and the polymer are compatible and that the resin and GENIOSIL® GPTE do not react prematurely.

3. GENIOSIL® GPTE as a surface modifier:
Used as a primer, GENIOSIL® GPTE is applied as a 0.5 - 2.5 percent solution (preferably organic) to an inorganic substrate (e.g. metal or glass surfaces) for example by spraying or knife coating. After GENIOSIL® GPTE has dried and bonded to the surface (postcure if necessary) a coating can be applied using a standard e (e.g. spraying, knife coating) technique. In a further application, GENIOSIL® GPTE can be used together with other hydrolyzable silicon compounds, such as silicates (e. g. SILICATE TES 28), as a constituent of aqueous sol-gel materials.

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.

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® GPTE

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

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