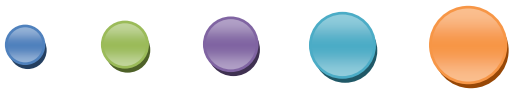
Regular Silane Coupling Agents

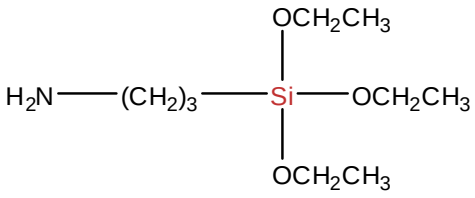
Power Chemical Corporation Limited

SiSiB® SILANES

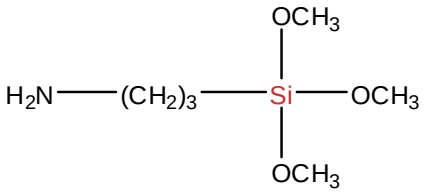
Power Chemical Corporation Limited



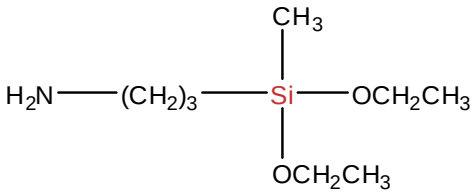
SiSiB® PC1100	Aminopropyltriethoxysilane Synonym: N-(3-triethoxysilylpropyl)amine	919-30-2



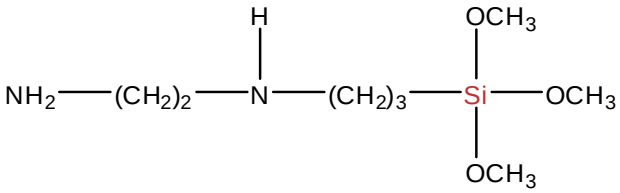
SiSiB® PC1110	Aminopropyltrimethoxysilane Synonym: N-(3-trimethoxysilylpropyl)amine	13822-56-5



SiSiB® PC1120	Aminopropylmethyldiethoxysilane Synonym: N-(3-methyldimethoxysilylpropyl)amine	3179-76-8



SiSiB® PC1200	Aminoethylaminopropyltrimethoxysilane Synonym: N-(2-aminoethyl)-3-aminopropyltrimethoxysilane N-(3-trimethoxysilylpropyl)ethylenediamine	1760-24-3



SiSiB® PC1220	Aminoethylaminopropylmethyldimethoxysilane Synonym: N-(2-aminoethyl)-3-aminopropylmethyldimethoxysilane; N-(3-methyldimethoxysilylpropyl)ethylenediamine	3069-29-2

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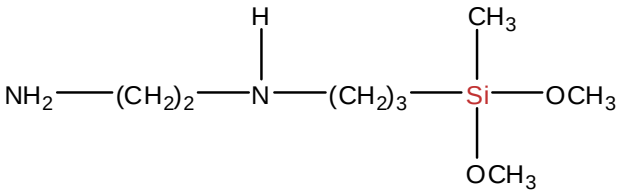
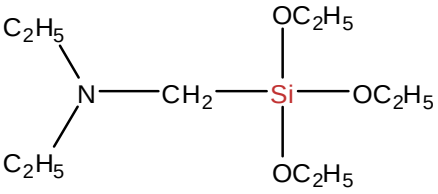
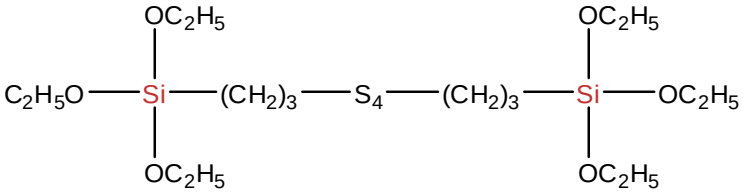


SiSiB® PC1800	Diethylaminomethyltriethoxysilane	15180-47-9
	Synonym: (Triethoxysilylmethyl)diethylamine	

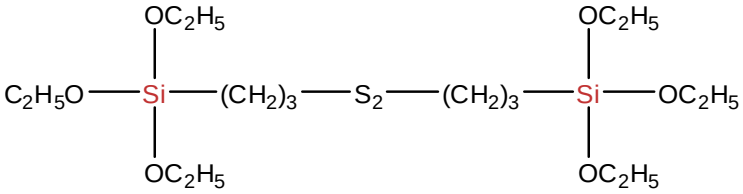


SiSiB® PC2000	Bis(triethoxysilylpropyl)tetrasulfide	40372-72-3
	Synonym: Bis(triethoxysilylpropyl)tetrasufane	

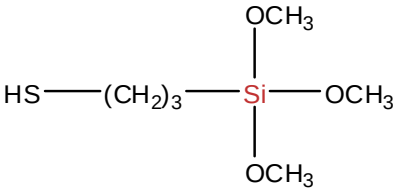


SiSiB® PC2000B	Mixture of bis(triethoxysilylpropyl)tetrasulfide and carbon black N330	

SiSiB® PC2200	Bis(triethoxysilylpropyl)disulfide	56706-10-6
	Synonym: Bis(triethoxysilylpropyl)disulfane	



SiSiB® PC2300	Mercaptopropyltrimethoxysilane	4420-74-0
	Synonym: 3-(Trimethoxysilyl)propanethiol	
	3-trimethoxysilypropylmercaptan	



SiSiB® PC2310	Mercaptopropyltriethoxysilane	14814-09-6
	Synonym: 3-(Triethoxysilyl)propanethiol	

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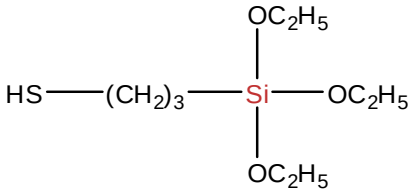
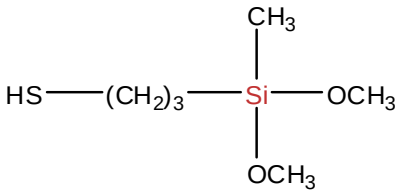
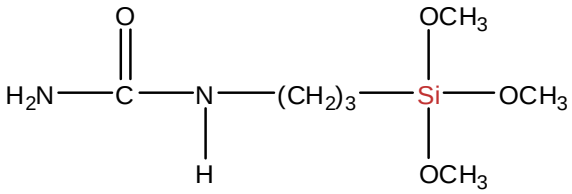
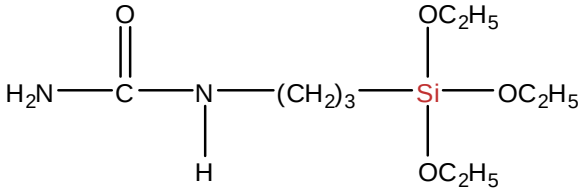
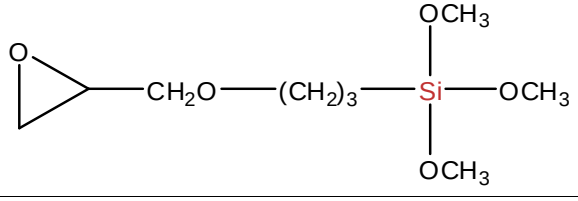
	3-Triethoxysilypropylmercaptan	
		
SiSiB® PC2320	Mercaptopropylmethyldimethoxysilane	31001-77-1
	Synonym: 3-(methyldimethoxysilyl)propanethiol	
	3-methyldimethoxysilypropylmercaptan	
		
SiSiB® PC2510	3-ureidopropyltrimethoxysilane	23843-64-3
	Synonym: 1-[3-(Trimethoxysilyl)propyl]urea	
		
SiSiB® PC2520	3-ureidopropyltriethoxysilane	23779-32-0
	Synonym: 1-[3-(Triethoxysilyl)propyl]urea	
		
SiSiB® PC2521	3-ureidopropyltriethoxysilane (50% in methanol)	116912-64-2
	Synonym: 1-[3-(Triethoxysilyl)propyl]urea	
SiSiB® PC3100	3-glycidoxypropyltrimethoxysilane	2530-83-8
	Synonym: 3-(2,3-epoxypropoxypropyl)trimethoxysilane	
		

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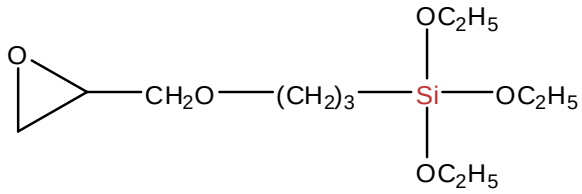
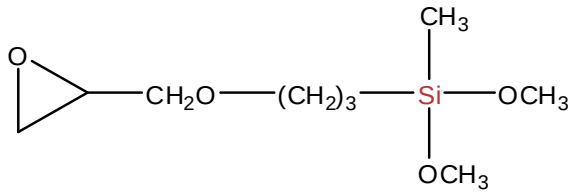
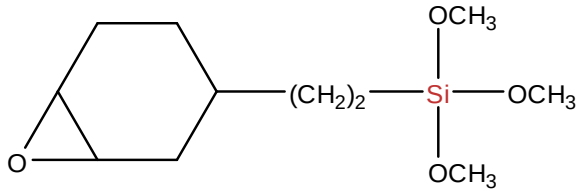
SiSiB® PC3200	3-glycidoxypropyltriethoxysilane Synonym: 3-(2,3-epoxypropoxypropyl)triethoxysilane	2602-34-8



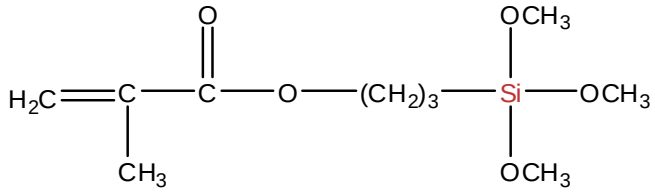
SiSiB® PC3400	3-glycidoxypropylmethyldimethoxysilane Synonym: 3-(2,3-epoxypropoxypropyl)methyldimethoxysilane	65799-47-5



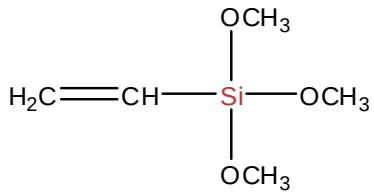
SiSiB® PC3500	2-(3,4-epoxycyclohexyl)-ethyltrimethoxysilane Synonym: (2-(7-oxabicyclo[4.1.0]heptan-3-yl)ethyl)trimethoxysilane	3388-04-3



SiSiB® PC4100	3-methacryloxypropyltrimethoxysilane Synonym: (3-trimethoxysilyl)propylmethacylate	2530-85-0



SiSiB® PC6110	Vinyltrimethoxysilane Synonym: Ethenyltrimethoxysilane (Trimethoxysilyl)ethane; Trimethoxyvinylsilane	2768-02-7



SiSiB® PC6120	Vinyltriethoxysilane	78-08-0

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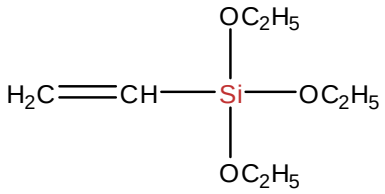
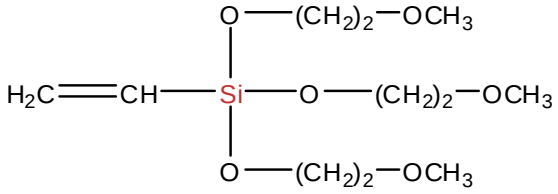
Synonym: Ethenyltriethoxysilane

(Triethoxysilyl)ethane; Triethoxyvinylsilane



SiSiB® PC6130	Vinyltris(2-methoxyethoxy)silane	1067-53-4



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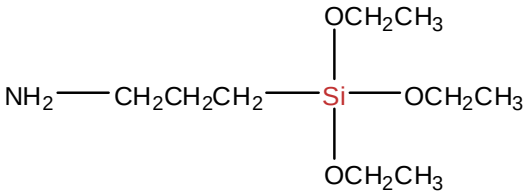
SiSiB® PC1100 SILANE

Chemical Name

gamma-Aminopropyltriethoxysilane

Chemical Structure



Introduction

SiSiB® PC1100 is a versatile amino-functional coupling agent used over a broad range of applications to provide superior bonds between inorganic substrates and organic polymers. The silicon-containing portion of the molecule provides strong bonding to substrates. The primary amine function reacts with a wide array of thermoset, thermoplastic, and elastomeric materials.

Typical Physical Properties

CAS No.	919-30-2
EINECS No.	213-048-4
Formula	$C_9H_{23}NO_3Si$
Molecular Weight	221.3
Viscosity $_{25°C}$	2 cSt
Boiling Point	215°C [760mmHg]
Flash Point	96°C
Color and Appearance	Colorless transparent liquid
Density $_{25/25°C}$	0.945-0.955
Refractive Index	1.420 [25°C]
Min. Purity	99.0% Technical grade: 95.0%

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Solubility: SiSiB® PC1100 is completely and immediately soluble in water (with reaction), alcohol, and aromatic and aliphatic hydrocarbons. Ketones are not recommended as diluents.

Applications

SiSiB® PC1100 is applied in plastic products (including cables, glassfiber-reinforcement plastics etc.), rubber products, adhesives, coatings, pigments dispersion, inks, magnetic materials (plastic magnet and rubber magnet), metallic casting resins and resins concrete, etc.

SiSiB® PC1100 maximizes the physical and electrical properties of mineral-filled phenolics, epoxies, polyamides, polybutylene terephthalate, and a host of other thermoset and thermoplastic composites. Filler wetting and dispersibility in the polymer matrix are also improved.

SiSiB® PC1100 improves adhesion between magnetic powder and organic resins and dispersion of magnetic powder inorganic resins. Also these magnetic appliances attain higher magnetic orientation and excellent magnetic properties, higher mechanical strength, good processability, excellent weathering resistance.

In glass-reinforced thermoset plastics, SiSiB® PC1100 enhances the flexural, compressive, and interlaminar shear strengths before and after exposure to humidity. SiSiB® PC1100 greatly improves wet electrical properties.

With nitrile, polysulfide, epoxy, urethane, and adhesives and sealants, SiSiB® PC1100 improves pigment dispersion and maximizes adhesion to glass, aluminum, and steel.

When SiSiB® PC1100 is used, glass-reinforced thermoplastics, polyamides, polyesters, and polycarbonates exhibit increased flexural and tensile strengths before and after wet exposure.

In glass fiber and mineral wool insulation, as a phenolics resin binder additive, SiSiB® PC1100 imparts moisture resistance and allows recovery after compression.

In shell molding foundry applications, SiSiB® PC1100 strengthens the bond between the phenolics binder and foundry sand.

In grinding wheels, SiSiB® PC1100 promotes an improved, water-resistant bond between the abrasive grit and phenolics resin binder.

SiSiB® PC1100 is an excellent adhesion prompter in urethane, epoxy, and acrylic latex coatings, adhesives, and sealants.

Packing and Storage

SiSiB® PC1100 is supplied in 20Kg plastic drum, 180Kg steel drum or 900Kg IBC container.

In the unopened original container SiSiB® PC1100 has a shelf life of one year in a dry and cool place.

Notes

All information in the leaflet is based on our present knowledge and experience. We reserve the right to make any changes according to technological progress or further developments. Performance of the product described herein should be verified by testing.

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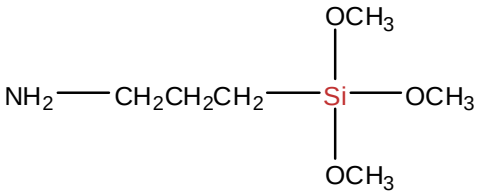
Please send all technical questions concerning quality and product safety to: silanes@SiSiB.com.

SiSiB® PC1110 SILANE

Chemical Name

Gamma-Aminopropyltrimethoxysilane

Chemical Structure



Introduction

SiSiB® PC1110 is an amino-functional silane that may be used over a broad range of applications to give an improvement in the bond between a substrate, filler or reinforcement and resins that react with the amino group.

SiSiB® PC1110 is especially recommended to thermoplastic resins and thermosetting resins such as epoxy, PBT, polyurethane etc. It can improve reinforced plastic's physical properties and electric properties as flexural strength, compression strength and shear strength. It also can improve the dispersion and wet ability of filler in the high molecular materials. SiSiB® PC1110 is an excellent promoter of adhesion and sealant (such as polyurethane, epoxy, and phenol). In the glass wool and FRP products, it can be added into phenol resins to improve the wet resistance and mechanical performance.

Applications

SiSiB® PC1110 can be used as superior adhesion promoter in RTV silicones and other hybrid sealants. (SPUR^{SM})

SiSiB® PC1110 can be used as excellent adhesion promoter in SPUR^{SM} technology, particularly for difficult substrates such as ABC, PVC ad Poly Shyrene.

SiSiB® PC1110 acts as useful component in primer systems for hybrid and polyurethane sealants.

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Typical Physical Properties

CAS No.	13822-56-5
EINECS No.	237-511-5
Formula	$C_6H_{17}NO_3Si$
Molecular Weight	179.3
Viscosity $_{25°C}$	1.68 cSt
Boiling Point	210°C [760mmHg]
Flash Point	82°C
Color and Appearance	Colorless transparent liquid
Density $_{25/25°C}$	1.0140
Refractive Index	1.420 [25°C]
Min. Purity	98.0%

Solubility: SiSiB® PC1110 reacts with water. Take precautions to avoid contact with atmospheric moisture.

Packing and Storage

SiSiB® PC1110 is supplied in 25Kg plastic drum, 200Kg steel drum or 1000Kg IBC container.

In the unopened container SiSiB® PC1110 has a shelf life of one year.

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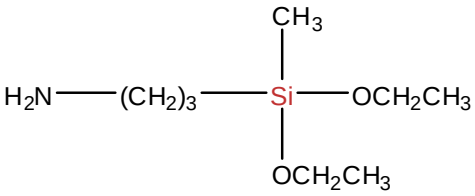
SiSiB® PC1120 SILANE

Chemical Name

gamma-Aminopropylmethyldiethoxysilane

Chemical Structure



Introduction

SiSiB® PC1120 is a colorless to yellowish liquid with an amine-like odor which is soluble in alcohols and aliphatic and aromatic hydrocarbons.

SiSiB® PC1120 acts as an adhesion promoter between inorganic materials and organic polymers, as a surface modifier and for material changes to chemical substances.

Typical Physical Properties

CAS No.	3179-76-8
EINECS No.	221-660-8
Formula	$C_8H_{21}NO_2Si$
Molecular Weight	191.3
Boiling Point	88°C [15mmHg]
Flash Point	68°C
Color and Appearance	Colorless transparent liquid
Density $_{25/25°C}$	0.916
Refractive Index	1.4272 [20°C]
Purity:	98.0%

Reactivity:

SiSiB® PC1120 is a bifunctional organic compound in which the silicon-functional OC2H5 -groups hydrolyze in the presence of water to give ethanol and the corresponding reactive

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silanols, which can be bonded to an inorganic substrate; the organophilic amino group can interact with a suitable polymer.

The hydrolysis of SiSiB® PC1120 takes place autocatalytically in a short time of about 5-10 minutes. Hydrolysates having a concentration of < 5% are stable for more than 72 hours. The pH is about 11.

Examples of suitable inorganic substrates are glass, glass fibres, glass wool, mineral wool, silicic acid, quartz, sand, cristobalite, wollastonite and mica; also suitable are aluminium hydroxide, kaolin, talc, other silicate fillers, metal oxides and metals.

Examples of suitable polymers are epoxy resins, polyurethanes, phenolic resins, furane resins, melamine resins, PA, PBT, PC, PEK, PE, EVA, PP, PVB, PVAC, PVC, acrylates and silicone.

SiSiB® PC1120 can undergo reactions with ketones or esters as solvents. Silane or silanized substrates can react with carbon dioxide to form the corresponding carbonates resp. carbamates. Product modifications are possible through addition reactions with suitable monomeric or polymeric compounds (for example isocyanates, epoxides, etc.) or by co-condensation with polysiloxanes.

Applications

SiSiB® PC1120 is an important or even essential constituent in many applications. SiSiB® PC1120 is particularly important as an additive to cold-curing phenolic and furan foundry resins to improve the flexural strength of sand/resin elements with very long shelf life of the resins.

Further examples are:

Glass fiber/glass fabric composites: as size constituent or finish
Glass and metal primers
Abrasives: as additive to phenolic resin binders
Sealants and adhesives: as primer or additive and for chemical modification
Mineral-filled composites: for pretreatment of fillers and pigments or as additive
Synthesis of functional silicones

The most important effects which can be achieved using PC1120 are improvements in product properties, such as

Adhesion
Mechanical properties, for example flexural strength, tensile strength, impact strength and modulus of elasticity

Moisture and corrosion resistance
Electrical properties, for example dielectric constant, volume resistivity

And improvements in processing properties, such as

Better filler dispersion
Rheological behavior: reduction in viscosity, Newtonian behaviour
Higher degree of filling

Packing and Storage

SiSiB® PC1120 is supplied in 180Kg steel drum or 900Kg IBC container.

In the unopened original container SiSiB® PC1120 has a shelf life of one year in a dry and cool place.

Notes

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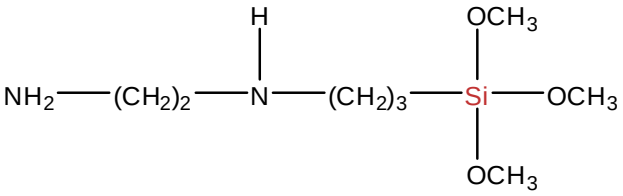
SiSiB® PC1200 SILANE

Chemical Name

N-beta-(aminoethyl)-gamma-aminopropyl-trimethoxysilane

Chemical Structure



Introduction

SiSiB® PC1200 is a clear, colorless, strongly alkaline liquid with smell being very sensitive to hydrolysis.

SiSiB® PC1200 is used as adhesion promoter at organic/inorganic interfaces, for modification of surfaces (corrosion prevention, component of primers) or silicone-polymers or as crosslinker (moisture crosslinking of polymers). The application as “coupling agent” leads in general to an improvement of mechanical and electrical product properties above all under exposure to heat and/or moisture.

Typical Physical Properties

CAS No.	1760-24-3
EINECS No.	212-164-2
Formula	$C_8H_{22}N_2O_3Si$
Molecular Weight	222.4
Boiling Point	259°C [760mmHg]
Flash Point	128°C
Color and Appearance	Colorless transparent liquid
Density $_{25/25°C}$	1.025
Refractive Index	1.446 [25°C]
Purity:	Min.98.0%

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Solubility: SiSiB® PC1200 is unlimited miscible with water with spontaneous hydrolysis occurring.

Caution: Due to solution enthalpies mixing water is exothermic. Always stir SiSiB® PC1200 into water. With alcohols miscibility is, in general, possible with self-catalyzed exchange of the alkoxy-groups. In aliphatic and aromatic hydrocarbons and (moisture-free!) ethers or esters SiSiB® PC1200 is easily soluble at differing levels. With ketones and various halogenated compounds a slow reaction can occur. Towards acids, epoxides or isocyanates SiSiB® PC1200 shows typical amine function. Some nonferrous metals can discolor upon contact.

Applications

SiSiB® PC1200 may be used as an effective coupling agent for clay reinforced elastomers such as natural and nitrile rubber, to improve physical and dynamic properties.

SiSiB® PC1200 may be used as an effective coupling agent for mineral reinforced nylon 6, nylon 6/6 and polybutyleneterephthalate, to increase the flexural and tensile strength of the thermoplastic composite.

SiSiB® PC1200 may be used as a fiberglass finish or a resinous additive for fiberglass reinforced phenolic, melamine and expoxy thermoset composites.

SiSiB® PC1200 may be used as a mineral binders in in foundry and abrasive composite applications, to improve adhesion, increase composite strength.

SiSiB® PC1200 may be used as a glass and metal primer, to improve the adhesion of many coatings (urethanes, epoxies, phenolics and others) to glass and metal surfaces.

SiSiB® PC1200 may be used as an adhesion promoters in polysulfide, polyvinyl chloride plastisol, silicone two part urethane and epoxy adhesives and sealants.

Packing and Storage

SiSiB® PC1200 is supplied in 200Kg steel drum or 1000Kg IBC container.

In the unopened original container SiSiB® PC1200 has a shelf life of one year in a dry and cool place.

Notes

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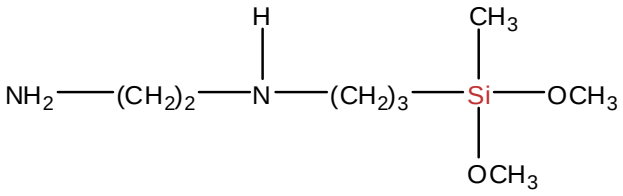
Please send all technical questions concerning quality and product safety to: silanes@SiSiB.com.

SiSiB® PC1220 SILANE

Chemical Name

N-beta-(aminoethyl)-gamma-aminopropyl-methyldimethoxysilane

Chemical Structure



Introduction

SiSiB® PC1220 is a colorless, strongly alkaline liquid with amine smell being very sensitive to hydrolysis.

SiSiB® PC1220 is a diamino-functional silane capable of providing good adhesion and superior elougation and flexibility at the polymer-substrate interface. It is used to promote adhesion between glass, mineral and metal surfaces - reinforcements, fillers and substrates - and resins that react with amino groups in systems such as PVC plastisol, polyurethane, or epoxy-based adhesives and sealant, or in phenolic and epoxy molding compounds. Its reduced alkoxy functionality might also be useful in waterborne systems such as latex coatings, adhesives and sealants, providing lower reactivity and therefore higher stability in the aqueous environment.

Typical Physical Properties

CAS No.	3069-29-2
EINECS No.	221-336-3
Formula	$C_8H_{22}N_2O_2Si$
Molecular Weight	206.4
Boiling Point	265°C [760mmHg]
Flash Point	93°C
Ignition temperature	290°C
Color and Appearance	Colorless transparent liquid

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Density $_{25/25°C}$	0.970-0.980
Refractive Index	1.445 [25°C]
Purity:	Min.98.0%

Solubility: SiSiB® PC1220 is easily soluble in water with spontaneous hydrolysis occurring.

Caution: Due to solution enthalpies mixing water is exothermic. Always stir SiSiB® PC1220 into water. With alcohols miscibility is, in general, possible with self-catalyzed exchange of the alkoxy-groups. In aliphatic and aromatic hydrocarbons and (moisture-free!) ethers or esters SiSiB® PC1220 is easily soluble at differing levels. With ketones and various halogenated compounds a slow reaction can occur. Towards acids, epoxides or isocyanates SiSiB® PC1220 shows typical amine function. Some nonferrous metals can discolor upon contact.

Applications

SiSiB® PC1220 can be used as adhesion promoters in polysulfide, polyvinyl chloride plastisol, silicone two-part urethanes and epoxy adhesives and sealants.

SiSiB® PC1220 can be used as additives for cold-curing phenolic and furan foundry resins to improve the flexural strength of the sand-resin composites while

SiSiB® PC1220 can be used to maintain the shelf life of the resin over long periods.

SiSiB® PC1220 can be used as starting material in the synthesis of amino-functional silicones.

SiSiB® PC1220 can be used as additives to latex coatings, adhesives and sealants.

SiSiB® PC1220 can be used as adhesion promoters in one-part silylated urethane adhesives and sealants.

Packing and Storage

SiSiB® PC1220 is supplied in 200Kg steel drum or 950Kg IBC container.

In the unopened original container SiSiB® PC1220 has a shelf life of one year in a dry and cool place.

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Notes

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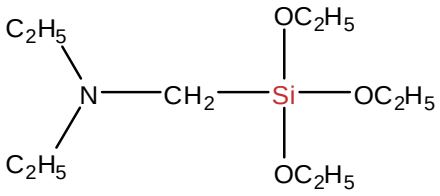
SiSiB® PC1800 SILANE

Chemical Name

Diethylaminomethyltriethoxysilane

Chemical Structure



Introduction

SiSiB® PC1800 is a novel alfa silane. The close proximity of the nitrogen atom to the silicon atom can accelerate hydrolysis reaction compared to (amino-propyl)silanes .

Typical Physical Properties

CAS No.	15180-47-9
EINECS No.	N.A.
Formula	$C_{11}H_{27}NO_3Si$
Molecular Weight	249.42
Boiling Point	110-130°C [5mmHg]
Flash Point	>110°C
Color and Appearance	Colorless to yellowish clear liquid
Density $_{25/25°C}$	0.916-0.933
Refractive Index	1.432 [25°C]
Min. Purity	98.0% Technical grade: 75.0%

Solubility: SiSiB® PC1800 is soluble in most organic solvent like alcohol, acetone, toluene, acetic ether and gasoline; also soluble in water;

Applications

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SiSiB® PC1810 can be used as freezing agent of silicon sulfide rubber in normal temperature;

SiSiB® PC1810 can be used as anchoring agent of synthetic resin;

SiSiB® PC1810 can be used as raw material of finishing agent to manufacture fabrics.

Packing and Storage

SiSiB® PC1800 is supplied in 20Kg plastic drum, 180Kg steel drum or 900Kg IBC container.

In the unopened original container SiSiB® PC1800 has a shelf life of one year in a dry and cool place.

Notes

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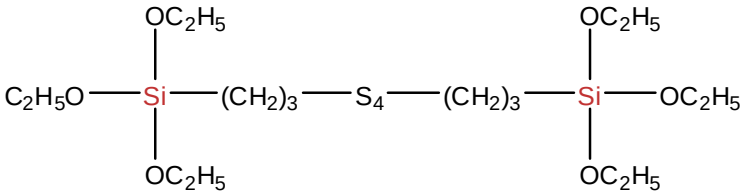
SiSiB® PC2000 SILANE

Chemical Name

Bis(3-triethoxysilylpropyl)tetrasulfide

Chemical Structure



Background

Heretofore, carbon black has been used as a reinforcing filler for rubber because carbon black provides higher reinforcement and more excellent abrasion resistance than other fillers. Recently, because of social requirements to save energy and to save resources, particularly to cut down fuel consumption of automobiles, a decrease in the heat buildup of rubber compositions is also required.

For decreasing the heat buildup of rubber compositions by using carbon black, use of a small amount of carbon black or carbon black having a large particle size is considered. It is, however, well known that, in both methods, decreasing heat buildup is in a contradictory relation with improving reinforcement and abrasion resistance of a rubber composition.

On the other hand, silica is known as a filler which provides decreased heat buildup of a rubber composition. However, silica particles tend to cohere together due to hydrogen bonding of silanol groups which are functional groups on the surfaces of the silica particles. For improving the dispersion of silica particles into rubber, the mixing time must be increased. When dispersion of silica particles into rubber is insufficient, a problem arises in that processability in processes such as extrusion and the like deteriorates due to the increase in the Mooney viscosity.

Moreover, the surfaces of the silica particles are acidic. Therefore, there are problems in that basic substances used as vulcanization accelerators are absorbed such that vulcanization is not carried out sufficiently, and a sufficient modulus of elasticity is not obtained.

In order to solve these problems, we developed various types of silane coupling agents. For example, SiSiB® PC2000 and SiSiB® PC2200. In the following article we would like to inform you about the silane coupling agent SiSiB® PC2000, SiSiB® PC2200 and its other commercial forms SiSiB® PC2000B and SiSiB® PC2000S.

Introduction

SiSiB® PC2000 is a bifunctional polysulfidic organosilane for the rubber industry defined chemically as Bis(3-triethoxysilylpropyl)tetrasulfide. It is used to improve the reinforcing capability of fillers with silanol group on their surface (e.g., silicas, silicates, clay, etc.), and also as an integral part of curing systems to improve crosslinking network properties.

Typical Physical Properties

CAS No.	40372-72-3
EINECS No.	254-896-5
Empirical Formula	$C_{18}H_{42}O_6S_4Si_2$
Molecular Weight	539
Color and Appearance	Yellowish liquid
Density(16/24°C)(g/cm^3)	1.1 +/- 0.02
Secondary Components	Propyltriethoxysilane
	Chloropropyltriethoxylsilane
	Ethanol
Boiling Point at 1013 mbar(°C)	Decomposition above 250
Pour Point(°C)	App. –80
Flash Point (°C)	>100
Volatiles Components(%)	<= 4.0
Average Chain Length(%)	3.75 +/- 0.15
Total Sulfur (standard value)(%)	22.7 +/- 0.8

Solubility:

Soluble in Primary alcohols, ketones, benzene, toluene, dimethylformaminde, chlorinated hydtocarbons, cetonitrile, dimethysulfoxide; Insoluble in Water;

Effects

When used in rubber compounds, it produces these effects:

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- ✧ **Coupling agent for non-black pigments.**
- ✧ **Cure equilibrium for reversion resistance.**
- ✧ **Curing agent for good heat aging.**

Coupling Agent - With as little as 0.5 to 1.0 phr with clay fillers and 1.0 to 4.0 phr for silica pigments, SiSiB® PC2000 couples the non-black pigment and elastomers resulting in increases in modulus and increase in abrasion resistance.

Cure Equilibrium - SiSiB® PC2000 has four sulfur atoms positioned in the center.

At cure temperatures, these participate with sulfur in producing polysulfidic crosslinks. The SiSiB® PC2000 replaces crosslinks broken during cure, resulting in reversion resistant, and with proper compounding, reversion free compounds. This is known as equilibrium cure. The dynamic flex characteristics, E.G., heat generation and crack growth, are dramatically improved.

Curing Agent - Removing all sulfur from the compound for NR, SBR, NBR and replacing it with SiSiB® PC2000 and certain thiuram accelerators, produces compounds with excellent heat aging characteristics in addition to the coupling effects.

SiSiB® PC2000 is a silane coupling agent that has crosslinking and accelerator activity in rubber compounds.

Suggest Dosage

Suggested dosage per 100 parts of filler:
For silica----------3~13 parts
For clay and talc---------0.5~1.0 parts

Application Area

Footwear
- Abrasion resistance
- Cutting and chunking resistance
- Flex life improvement

Rolls
- Abrasion resistance
- Aging resistance
- Processing

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- Set reduction (better load bearing)
- Reduced water swell
- Lower hysteresis

Mechanical Molded Goods

- Increased modulus
- Better heat aging
- Compression set reduction
- Dynamic property improvement
- Reduced swell to polar liquids
- Filler substitution (non-black for black)

Hose

- Improved abrasion on cover
- Better heat aging
- Increased modulus
- Lower compression set
- Improved adhesion to reinforcing elements

Solid Tires

- Improved abrasion
- Lower hysteresis
- Higher modulus
- Improved processing
- Possibly better adhesion

Tires

- Treads for abrasion, hot tear
- Carcass for adhesion and/or filler substitution
- Breaker (belt) stocks for adhesion

Belts

Flat Belts

- Increased abrasion
- Improved reversion resistance
- Reduced cost with clay substitution for black
- Improved cord adhesion
- Increased flex life and modulus

V Belts

- Increased modulus
- Improved abrasion
- Longer flex life
- Improved adhesion to reinforcing elements

Packing and Storage

SiSiB® PC2000 is supplied in net weight 200Kg steel drum or 1000Kg IBC tote.

In the unopened original container SiSiB® PC2000 has a shelf life of five years in a dry and cool place.

Notes

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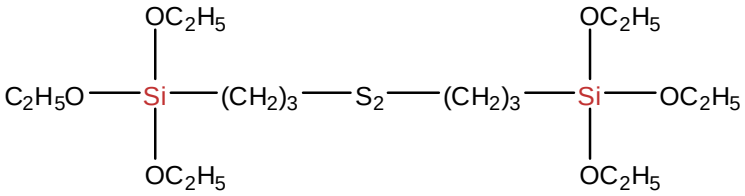
SiSiB® PC2200 SILANE

Chemical Name

Bis(3-triethoxysilylpropyl)disulfide

Chemical Structure



Background

When the mixing temperature of rubber is low, the sufficient reinforcing effect is not obtained by silane coupling agent SiSiB® PC2000. Dispersion of the silica into the rubber is also inferior, and this causes deterioration of the low heat buildup property that is the strong point of a rubber composition containing silica. Moreover, the silane coupling agent is hydrolyzed, and the generated ethanol does not vaporize sufficiently and vaporizes during extrusion. Thus, there is a drawback in that blisters are formed.

On the other hand, when mixing is conducted at high temperatures of 150°C. or more, the reinforcing property is improved. However, as a drawback, the polysulfide is to decarbolize to form free sulfur during mixing at high temperatures of 150°C or higher. The free sulfur will result in the vulcanization of rubber at the temperatures. So that, in this temperature range, gelation of the polymer reduces the rheological property of system. Thus, processing in later stages becomes impossible in actuality.

To prevent gelation of the polymer, it is necessary to reduce the content of high polysulfide silane such as pentasulfide silane, heptasulfide silane, hexasulfide silane, and the like, in the polysulfide Silane. Therefore, as a result we developed a novel silane coupling agent SiSiB® PC2200 which is suitable for mixing at a high temperature.

Introduction

The novel silane coupling agent SiSiB® PC2200 solves the above problems of the conventional art. The polysulfide structure in which the distribution of sulfur is specified

can ensure its stability at high temperature. Thus, it can be avoided to decarbolize to form free sulfur. The silanol group on the surface of silica can react sufficiently with the silane coupling agent. And at the same time, the dispersion of the silica into a rubber is remarkably improved; furthermore there are no effects on the property processing. Thus it can improve the productivity of rubber processing and the low heat buildup property and abrasion resistance is improved.

Typical Physical Properties

Chemical Name	Bis(3-triethoxysilylpropyl)disulfide
CAS No.	56706-10-6
EINECS No.	260-350-7
Empirical Formula	$C_{18}H_{42}O_6S_2Si_2$
Molecular Weight	486
Color and Appearance	Light Yellowish liquid
Density(16/24°C)(g/cm^3)	1.03 +/- 0.02
Secondary Components	Propyltriethoxysilane
	Chloropropyltriethoxylsilane
	Ethanol
Flash Point (°C)	>120
Volatiles Components(%)	<= 4.0
Average Chain Length(%)	2.35 +/- 0.15
Total Sulfur (standard value)(%)	15.2 +/- 0.5

Solubility:

Soluble in Primary alcohols, ketones, benzene, toluene, dimethylformaminde, chlorinated hydtocarbons, cetonitrile, dimethysulfoxide; Insoluble in Water;

Application Area

Footwear

- Abrasion resistance
- Cutting and chunking resistance
- Flex life improvement

Rolls

- Abrasion resistance
- Aging resistance
- Processing

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- Set reduction (better load bearing)
- Reduced water swell
- Lower hysteresis

Mechanical Molded Goods

- Increased modulus
- Better heat aging
- Compression set reduction
- Dynamic property improvement
- Reduced swell to polar liquids
- Filler substitution (non-black for black)

Hose

- Improved abrasion on cover
- Better heat aging
- Increased modulus
- Lower compression set
- Improved adhesion to reinforcing elements

Solid Tires

- Improved abrasion
- Lower hysteresis
- Higher modulus
- Improved processing
- Possibly better adhesion

Tires

- Treads for abrasion, hot tear
- Carcass for adhesion and/or filler substitution
- Breaker (belt) stocks for adhesion

Belts

Flat Belts

- Increased abrasion
- Improved reversion resistance
- Reduced cost with clay substitution for black
- Improved cord adhesion
- Increased flex life and modulus

V Belts

- Increased modulus
- Improved abrasion
- Longer flex life
- Improved adhesion to reinforcing elements

Packing and Storage

SiSiB® PC2200 is supplied in net weight 200Kg steel drum or 1000Kg IBC tote.

In the unopened original container SiSiB® PC2200 has a shelf life of five years in a dry and cool place.

Notes

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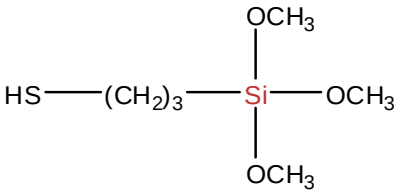
SiSiB® PC2300 SILANE

Chemical Name

gamma-Mercaptopropyltrimethoxysilane

Chemical Structure



Introduction

SiSiB® PC2300 is a bifunctional organosilane possessing a reactive organic mercapto and a hydrolyzable inorganic methoxysilyl group. SiSiB® PC2300 is a clear, colorless to light yellow liquid with a slightly mercaptan odor. It is soluble in alcohols, ketones and aliphatic or aromatic hydrocarbons.

Typical Physical Properties

CAS No.	4420-74-0
EINECS No.	224-588-5
Formula	$C_6H_{16}O_3SSi$
Molecular Weight	196.4
Boiling Point	212°C [760mmHg]
Flash Point	88°C
Color and Appearance	Colorless to light yellow clear liquid
Density $_{25/25°C}$	1.057
Refractive Index	1.440 [25°C]
Purity:	Min.98.0%

Applications

SiSiB® PC2300 can be used as coupling agent to improve the adhesion of sulfur cured

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elastomers (polysulfide, polyurethane sealants) to inorganic fillers (such as silica, clay, glass, mica and talc etc.), fiberglass and surfaces. Mineral-reinforced articles such as shoe soles, rubber rollers and wheels, white sidewalls, and wire and cable insulation also can be produced with lower silane loadings.

SiSiB® PC2300 can be used to improve properties of mineral filled elastomer, including modulus, tensile and tear strength, heat buildup, abrasion resistance, resilience, compression set and cure time.

SiSiB® PC2300 can be used as a pretreatment on minerals or added at the time of compounding.

SiSiB® PC2300 can be used to improve low-rolling resistance in silica-reinforced tire tread compounds.

Packing and Storage

SiSiB® PC2300 is supplied in 200Kg steel drum or 1000Kg IBC container.

In the unopened original container SiSiB® PC2300 has a shelf life of one year in a dry and cool place.

Notes

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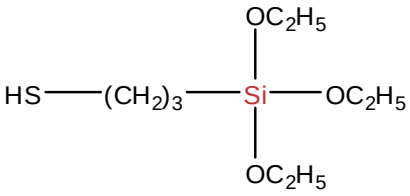
SiSiB® PC2310 SILANE

Chemical Name

gamma-Mercaptopropyltriethoxysilane

Chemical Structure



Introduction

SiSiB® PC2310 is a bifunctional organosilane possessing a reactive organic mercapto and a hydrolyzable inorganic methoxysilyl group. SiSiB® PC2310 is a clear, colorless to light yellow liquid with a slightly mercaptan odor. It is soluble in alcohols, ketones and aliphatic or aromatic hydrocarbons.

Typical Physical Properties

CAS No.	14814-09-6
EINECS No.	238-883-1
Formula	$C_9H_{22}O_3SSi$
Molecular Weight	238.42
Boiling Point	210°C [760mmHg]
Flash Point	88°C
Color and Appearance	Colorless to light yellow clear liquid
Density $_{25/25°C}$	0.993
Refractive Index	1.4331 [25°C]
Purity:	Min.98.0%

Applications

SiSiB® PC2310 can be used as coupling agent to improve the adhesion of sulfur cured

Power Chemical
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elastomers (polysulfide, polyurethane sealants) to inorganic fillers (such as silica, clay, glass, mica and talc etc.), fiberglass and surfaces. Mineral-reinforced articles such as shoe soles, rubber rollers and wheels, white sidewalls, and wire and cable insulation also can be produced with lower silane loadings.

SiSiB® PC2310 can be used to improve properties of mineral filled elastomer, including modulus, tensile and tear strength, heat buildup, abrasion resistance, resilience, compression set and cure time.

SiSiB® PC2310 can be used as a pretreatment on minerals or added at the time of compounding.

SiSiB® PC23010 can be used to improve low-rolling resistance in silica-reinforced tire tread compounds.

Packing and Storage

SiSiB® PC2310 is supplied in 200Kg steel drum or 1000Kg IBC container.

In the unopened original container SiSiB® PC2300 has a shelf life of one year in a dry and cool place.

Notes

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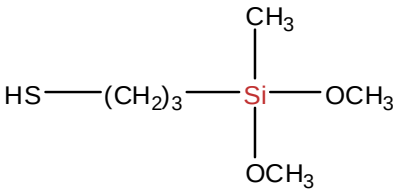
SiSiB® PC2320 SILANE

Chemical Name

gamma-Mercaptopropylmethyldimethoxysilane

Chemical Structure



Introduction

SiSiB® PC2320 is a bifunctional organosilane possessing a reactive organic mercapto and a hydrolyzable inorganic methoxysilyl group. SiSiB® PC2320 is a clear, colorless to light yellow liquid with a slightly mercaptan odor. It is soluble in alcohols, ketones and aliphatic or aromatic hydrocarbons.

Typical Physical Properties

CAS No.	31001-77-1
EINECS No.	250-426-8
Formula	$C_6H_{16}O_2SSi$
Molecular Weight	180.34
Boiling Point	96°C [30mmHg]
Flash Point	93°C
Color and Appearance	Colorless to light yellow clear liquid
Density $_{25/25°C}$	1.00
Refractive Index	1.4502 [25°C]
Purity:	98.0%

Applications

SiSiB® PC2320 can be used as coupling agent to improve the adhesion of sulfur cured

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elastomers (polysulfide, polyurethane sealants) to inorganic fillers (such as silica, clay, glass, mica and talc etc.), fiberglass and surfaces. Mineral-reinforced articles such as shoe soles, rubber rollers and wheels, white sidewalls, and wire and cable insulation also can be produced with lower silane loadings.

SiSiB® PC2320 can be used to improve properties of mineral filled elastomer, including modulus, tensile and tear strength, heat buildup, abrasion resistance, resilience, compression set and cure time.

SiSiB® PC2320 can be used as a pretreatment on minerals or added at the time of compounding.

SiSiB® PC2320 can be used to improve low-rolling resistance in silica-reinforced tire tread compounds.

Packing and Storage

SiSiB® PC2320 is supplied in 200Kg steel drum or 1000Kg IBC container.

In the unopened original container SiSiB® PC2300 has a shelf life of one year in a dry and cool place.

Notes

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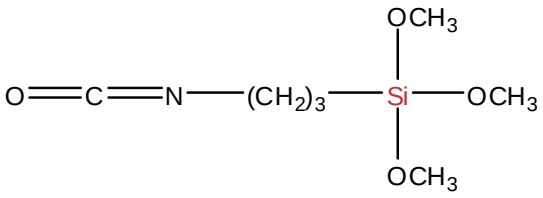
SiSiB® PC2710 SILANE

Chemical Name

3-isocyanatepropyltrimethoxysilane

Chemical Structure



Introduction

SiSiB® PC2710 is an isocyanate functional silane. It is used for the functionalization of numerous compounds with active hydrogen atoms. SiSiB® PC2710 hydrolyzes in the presence of moisture to form silanols, which can react with themselves to produce siloxanes.

Typical Physical Properties

CAS No.	15396-00-6
EINECS No.	239-415-9
Formula	$C_7H_{15}NO_4Si$
Molecular Weight	205.28
Boiling Point	210°C [760mmHg]
Flash Point	108°C
Color and Appearance	Colorless transparent liquid
Density $_{25/25°C}$	1.08
Refractive Index	1.421 [25°C]
Active Purity	Min.95.0%

Applications

SiSiB® PC2710 and SiSiB® PC2720 can be used as crosslinkers for one part moisture

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curable urethane adhesives, sealants and coatings.

SiSiB® PC2710 and SiSiB® PC2720 can be used as adhesion promoters for one part moisture curable and two part reactive urethane systems.

SiSiB® PC2710 and SiSiB® PC2720 can be used as adhesion promoters for silicone sealants or coatings, to enhance adhesion to organic substrates with active hydrogen atoms.

SiSiB® PC2710 and SiSiB® PC2720 can provide good wet adhesion to glass, metal and other inorganic substrates, and can provide good thermal, chemical and UV stable performance.

SiSiB® PC2720 hydrolyzes slower than SiSiB® PC2710. SiSiB® PC2720 is better for applications requring greater open time or enhanced shelf stability.

Packing and Storage

SiSiB® PC2710 is supplied in 25Kg plastic drum, 200Kg steel drum or 1000Kg IBC container.

In the unopened container SiSiB® PC2710 has a shelf life of one year.

Notes

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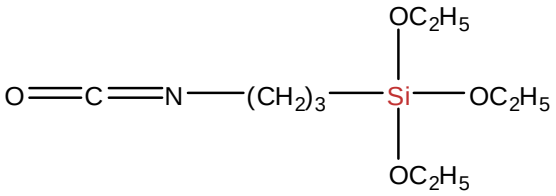
Please send all technical questions concerning quality and product safety to: silanes@SiSiB.com.

SiSiB® PC2720 SILANE

Chemical Name

3-isocyanatepropyltriethoxysilane

Chemical Structure



Introduction

SiSiB® PC2720 is an isocyanate functional silane. It is used for the functionalization of numerous compounds with active hydrogen atoms. SiSiB® PC2720 hydrolyzes in the presence of moisture to form silanols, which can react with themselves to produce siloxanes.

Typical Physical Properties

CAS No.	24801-88-5
EINECS No.	246-467-6
Formula	$C_{10}H_{21}NO_4Si$
Molecular Weight	247.36
Boiling Point	238°C [760mmHg]
Flash Point	80°C
Color and Appearance	Colorless transparent liquid
Density $_{25/25°C}$	1.00
Refractive Index	1.421 [25°C]
Active Purity	Min.95.0%

Applications

SiSiB® PC2710 and SiSiB® PC2720 can be used as crosslinkers for one part moisture

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curable urethane adhesives, sealants and coatings.

SiSiB® PC2710 and SiSiB® PC2720 can be used as adhesion promoters for one part moisture curable and two part reactive urethane systems.

SiSiB® PC2710 and SiSiB® PC2720 can be used as adhesion promoters for silicone sealants or coatings, to enhance adhesion to organic substrates with active hydrogen atoms.

SiSiB® PC2710 and SiSiB® PC2720 can provide good wet adhesion to glass, metal and other inorganic substrates, and can provide good thermal, chemical and UV stable performance.

SiSiB® PC2720 hydrolyzes slower than SiSiB® PC2710. SiSiB® PC2720 is better for applications requring greater open time or enhanced shelf stability.

Packing and Storage

SiSiB® PC2720 is supplied in 20Kg plastic drum, 190Kg steel drum or 950Kg IBC container.

In the unopened container SiSiB® PC2720 has a shelf life of one year.

Notes

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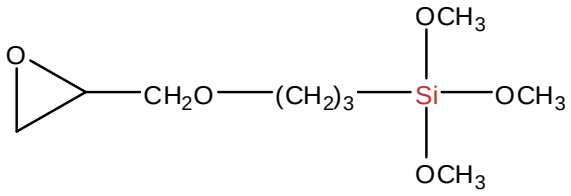
SiSiB® PC3100 SILANE

Chemical Name

gamma-Glycidoxypropyltrimethoxysilane

Chemical Structure



Introduction

SiSiB® PC3100 is an epoxy-functional silane, it is a clear, light straw liquid. PC3100 may used as a coupling agent in polysulfide and polyurethane caulks and sealants, in mineral-filled or glass-reinforced thermosets and thermoplastics, and in glass roving size-binders. It is particularly employed as an adhesion-promoting additive in waterborne systems, e.g. improving the adhesion of acrylic latex sealants.

Typical Physical Properties

CAS No.	2530-83-8
EINECS No.	219-784-2
Formula	$C_9H_{20}O_5Si$
Molecular Weight	236.34
Boiling Point	290°C [760mmHg]
Flash Point	110°C
Color and Appearance	Colorless transparent liquid
Density $_{25/25°C}$	1.070
Refractive Index	1.4270 [25°C]
Purity:	Min.99.0%

Caution: SiSiB® PC3100 reacts with water. Take precautions to avoid contact with atmospheric moisture.

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Applications

SiSiB® PC3100 may improve dry and wet strength in cured composites reinforced with glass fiber rovings.

SiSiB® PC3100 may enhance wet electrical properties of epoxy-based encapsulate and packaging materials.

SiSiB® PC3100 may eliminate the need for a separate primer in polysulfide and urethane sealants.

SiSiB® PC3100 may improve adhesion in waterborne acrylic sealants and in urethane and epoxy coatings.

Packing and Storage

SiSiB® PC3100 is supplied in 200Kg steel drum or 1000Kg IBC container.

In the unopened original container SiSiB® PC3100 has a shelf life of one year in a dry and cool place.

Notes

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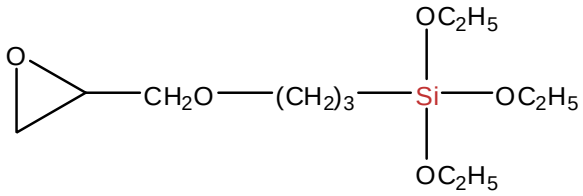
SiSiB® PC3200 SILANE

Chemical Name

gamma-Glycidoxypropyltriethoxysilane

Chemical Structure



Introduction

SiSiB® PC3200 is a clear colorless, low-odor liquid. PC3200 may be used as an adhesion promoter (coupling agent) for organic/inorganic interfaces, as a surface modifier (e.g. regulating surface polarity) or as a crosslinking agent (moisture-curing of polymers). When used as coupling agent, it generally reduces the sensitivity of the products' mechanical and electrical properties to heat and/or moisture.

Typical Physical Properties

CAS No.	2602-34-8
EINECS No.	220-011-6
Formula	$C_{12}H_{26}O_5Si$
Molecular Weight	278.4
Boiling Point	124°C [3mmHg]
Flash Point	110°C
Color and Appearance	Colorless clear liquid.
Density $_{25/25°C}$	1.004
Refractive Index	1.425 [25°C]
Purity:	Min 98.0%;

Solubility and Reactivity: SiSiB® PC3200 is a sparingly miscible with neutral water. In acidified water, hydrolysis to the soluble silanol occurs (PH<4). SiSiB® PC3200 is

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miscible with practically all organic compounds and enters into the typical reactions of an organic epoxide with, e.g. acids, amines and alcohols. Alkaline or acid catalysts might be advisable for the desired reaction. Polymerization via the epoxide groups cannot be ruled out completely under extreme conditions.

Applications

SiSiB® PC3200 may improve dry and wet strength in cured composites reinforced with glass fiber rovings.

SiSiB® PC3200 may enhance wet electrical properties of epoxy-based encapsulate and packaging materials.

SiSiB® PC3200 may eliminate the need for a separate primer in polysulfide and urethane sealants.

SiSiB® PC3200 may improve adhesion in waterborne acrylic sealants and in urethane and epoxy coatings.

Packing and Storage

SiSiB® PC3200 is supplied in 200Kg steel drum or 1000Kg IBC container.

In the unopened original container SiSiB® PC3200 has a shelf life of one year in a dry and cool place.

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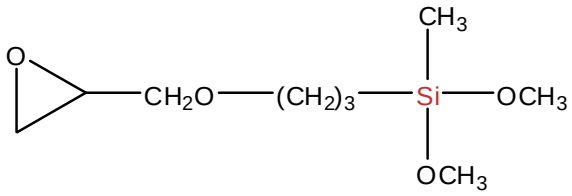
SiSiB® PC3400 SILANE

Chemical Name

gamma-Glycidoxypropylmethyldimethoxysilane

Chemical Structure



Introduction

SiSiB® PC3400 is a clear colorless, low-odor liquid. SiSiB® PC3400 may be used as an adhesion promoter (coupling agent) for organic/inorganic interfaces, as a surface modifier (e.g. regulating surface polarity) or as a crosslinking agent (moisture-curing of polymers). When used as coupling agent, it generally reduces the sensitivity of the products' mechanical and electrical properties to heat and/or moisture.

Typical Physical Properties

CAS No.	65799-47-5
EINECS No.	265-929-8
Formula	$C_9H_{20}O_4Si$
Molecular Weight	220.34
Boiling Point	100°C [4mmHg]
Flash Point	105°C
Color and Appearance	Colorless clear liquid
Density $_{25/25°C}$	1.02
Refractive Index	1.431 [25°C]
Purity:	Min 97.0%;

Caution: SiSiB® PC3400 reacts with water. Take precautions to avoid contact with atmospheric moisture.

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Applications

SiSiB® PC3400 may improve dry and wet strength in cured composites reinforced with glass fiber rovings.

SiSiB® PC3400 may enhance wet electrical properties of epoxy-based encapsulate and packaging materials.

SiSiB® PC3400 may eliminate the need for a separate primer in polysulfide and urethane sealants.

SiSiB® PC3400 may improve adhesion in waterborne acrylic sealants and in urethane and epoxy coatings.

Packing and Storage

SiSiB® PC3400 is supplied in 200Kg steel drum or 1000Kg IBC container.

In the unopened original container SiSiB® PC3400 has a shelf life of one year in a dry and cool place.

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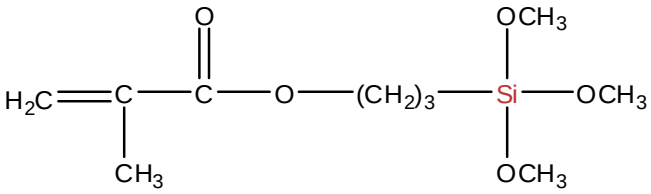
SiSiB® PC4100 SILANE

Chemical Name

Gamma-Methacryloxypropyltrimethoxysilane

Chemical Structure



Introduction

SiSiB® PC4100 is a methacryl-functional silane; it is a clear, light and heat sensitive liquid with a faintly sweet odour.

SiSiB® PC4100 is used as adhesion promoter at organic/inorgainc interfaces, as surface modifier (e.g. imparting water repellency, organophilic surface adjustment) or as crosslinking of polymers). It is used as a coupling agent to improve the physical and electrical properties of glass-reinforced and mineral-filled thermosetting resins under exposure to heat and/or moisture. It is typically employed as a blend additive in resin systems that cure via a free radical mechanism (e.g. polyester, acrylic) and in filled or reinforced thermoplastic polymers, including polyolefins and polyurethanes. It is also used to functionalize resins via radical initiated processes - copolymerization or grafting - and to modify surfaces.

Applications

SiSiB® PC4100 can improve strength as glass fiber size composite in reinforced polyester composites.

SiSiB® PC4100 can enhance initial and wet strength of reinforced polyester resin composites.

SiSiB® PC4100 can enhance the wet electrical properties of many mineral-filled and reinforced composites.

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SiSiB® PC4100 crosslinked acrylic type resins can improve adhesion and durability of adhesives and coatings.

Typical Physical Properties

CAS No.	2530-85-0
EINECS No.	219-785-8
Formula	$C_{10}H_{20}O_5Si$
Molecular Weight	248.35
Viscosity $_{25°C}$	2 cSt
Boiling Point	255°C [760mmHg]
Flash Point	108°C
Color and Appearance	Colorless transparent liquid
Density $_{25/25°C}$	1.045
Refractive Index	1.430 [25°C]
Min. Purity	98.5%

Solubility: SiSiB® PC4100 is soluble in methanol, ethanol, isopropanol, acetone, benzene, toluene, and xylene. After hydrolysis, it is soluble in water with adequate stirring if the pH is adjusted to 4.0. Hydrolysis releases methanol.

SiSiB® PC4100 shows copolymerization or grafting reactions when catalyzed by (organic) initiator systems, e.g. peroxides or by radiation (e.g. UV).

Packing and Storage

SiSiB® PC4100 is supplied in 25Kg plastic drum, 200Kg steel drum or 1000Kg IBC container.

In the unopened original container SiSiB® PC4100 has a shelf life of one year in a dry and cool place.

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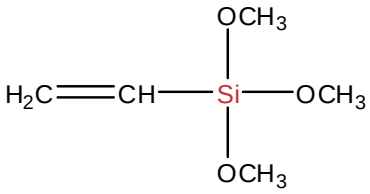
SiSiB® PC6110 SILANE

Chemical Name

Vinyltrimethoxysilane

Chemical Structure



Introduction

SiSiB® PC6110, vinyltrimethoxysilane, is used as a polymer modifier via grafting reactions. The resulting pendant trimethoxysilyl groups can function as moisture-activated crosslinking sites. The Silane grafted polymer is processed as a thermoplastic and crosslinking occurs after fabrication of the finished article upon exposure to moisture.

Typical Physical Properties

CAS No.	2768-02-7
EINECS No.	220-449-8
Formula	$C_5H_{12}O_3Si$
Molecular Weight	148.2
Boiling Point	122°C [760mmHg]
Flash Point	28°C
Color and Appearance	Colorless transparent liquid
Density $_{25/25°C}$	0.960-0.970
Refractive Index	1.3905 [25°C]
Purity:	Min 99.0%

Reactivity: In the presence of moisture the methoxy groups of SiSiB® PC6110 hydrolyze to produce methanol and reactive silanol (Si-OH) groups which can bond to a variety of

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inorganic substrates or react with each other to form siloxane bonds (Si-O-Si). The organophilic vinyl end of SiSiB® PC6110 can also react with a suitable polymer (activated by peroxide or radiation).

Applications

SiSiB® PC6110 is suitable for the preparation of moisture-curing polymers, e.g. polyethylene. Silane crosslinked polyethylene is widely used as cable isolation, and sheathing mainly in low voltage applications as well as for hot water/sanitary pipes and underfloor heating.

SiSiB® PC6110 is used as a co-monomer for the preparation of different polymers such as polyethylene or acrylics. Those polymers show an improved adhesion to inorganic surfaces and they can also be crosslinked with moisture.

SiSiB® PC6110 is used as an efficient adhesion promoter for various mineral-filled polymers, improving mechanical and electrical properties especially after exposure to moisture.

SiSiB® PC6110 is used to improve the compatibility of fillers with polymers, leading to a better dispersibility, reduced melt viscosity and easier processing of filled plastics.

SiSiB® PC6110 is used to pretreat of glass, metals, or ceramic surfaces, improve the adhesion of coatings on these surfaces and corrosion resistance.

SiSiB® PC6110 is used as moisture scavenger. SiSiB® PC6110 reacts rapidly with water. This effect is used widely in sealants.

Packing and Storage

SiSiB® PC6110 is supplied in 190Kg steel drum or 950Kg IBC container.

In the unopened original container SiSiB® PC6110 has a shelf life of one year in a dry and cool place.

Notes

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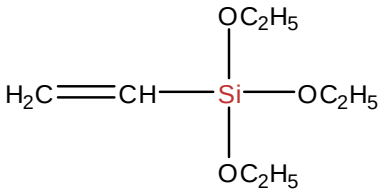
SiSiB® PC6120 SILANE

Chemical Name

Vinyltriethoxysilane

Chemical Structure



Introduction

SiSiB® PC6120, vinyltriethoxysilane, is a vinyl-functional silane that may be used to improve the bond between glass fiber or mineral fillers and resins that are reactive towards the vinyl group. It is also employed to functionalize resins via free radical mechanisms - copolymerization or grafting - and to modify surfaces.

Typical Physical Properties

CAS No.	78-08-0
EINECS No.	201-081-7
Formula	$C_8H_{18}O_3Si$
Molecular Weight	190.4
Boiling Point	160°C [760mmHg]
Flash Point	44°C
Color and Appearance	Colorless transparent liquid
Density $_{25/25°C}$	0.904-0.908
Refractive Index	1.3965 [25°C]
Purity:	Min 99.0%

Reactivity: In the presence of moisture the ethoxy groups of SiSiB® PC6120 hydrolyze to produce ethanol and reactive silanol (Si-OH) groups which can bond to a variety of inorganic substrates or react with each other to form siloxane bonds (Si-O-Si). The

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organophilic vinyl end of SiSiB® PC6120 can also react with a suitable polymer (activated by peroxide or radiation).

Applications

SiSiB® PC6120 is suitable for the preparation of moisture-curing polymers, e.g. polyethylene. Silane crosslinked polyethylene is widely used as cable isolation, and sheathing mainly in low voltage applications as well as for hot water/sanitary pipes and underfloor heating.

SiSiB® PC6120 is used as a co-monomer for the preparation of different polymers such as polyethylene or acrylics. Those polymers show an improved adhesion to inorganic surfaces and they can also be crosslinked with moisture.

SiSiB® PC6120 is used as an efficient adhesion promoter for various mineral-filled polymers, improving mechanical and electrical properties especially after exposure to moisture.

SiSiB® PC6120 is used to improve the compatibility of fillers with polymers, leading to a better dispersibility, reduced melt viscosity and easier processing of filled plastics.

SiSiB® PC6120 is used to pretreat of glass, metals, or ceramic surfaces, improve the adhesion of coatings on these surfaces and corrosion resistance.

SiSiB® PC6120 is used as moisture scavenger. SiSiB® PC6120 reacts rapidly with water. This effect is used widely in sealants.

Packing and Storage

SiSiB® PC6120 is supplied in 180Kg steel drum or 900Kg IBC container.

In the unopened original container SiSiB® PC6120 has a shelf life of one year in a dry and cool place.

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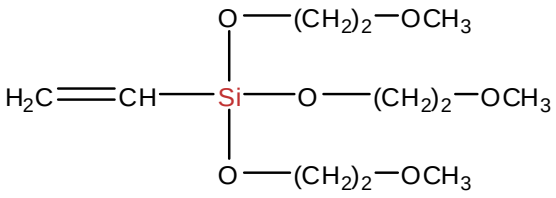
SiSiB® PC6130 SILANE

Chemical Name

Vinyltris(2-methoxyethoxy)silane

Chemical Structure



Introduction

SiSiB® PC6130 is a vinyl-functional coupling agent that promotes adhesion among unsaturated, polyester-type resins or crosslinked polyethylene resins or elastomers and inorganic substrates, including fiber glass, silica, silicates and many metal oxides. When used as coupling agent, it reduces the sensitivity of the products' mechanical and electrical properties to heat and/or moisture.

Typical Physical Properties

CAS No.	$C_{11}H_{24}O_6Si$
EINECS No.	280.4
Formula	1067-53-4
Molecular Weight	213-934-0
Boiling Point	285°C [760mmHg]
Flash Point	92°C
Color and Appearance	Colorless transparent liquid
Density $_{25/25°C}$	1.035
Refractive Index	1.427 [25°C]
Purity:	Min.99.0%

Reactivity: In the presence of moisture the methoxyethoxy groups of SiSiB® PC6130 hydrolyze to produce 2-methoxyethanol and reactive silanol (Si-OH) groups which can

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bond to a variety of inorganic substrates or react with each other to form siloxane bonds (Si-O-Si). The organophilic vinyl end of SiSiB® PC6130 can also react with a suitable polymer (activated by peroxide or radiation).

Applications

SiSiB® PC6130 is used as an efficient adhesion promoter for various mineral-filled polymers, improving mechanical and electrical properties especially after exposure to moisture.

SiSiB® PC6130 is used as a co-monomer for the preparation of different polymers such as polyethylene or acrylics. Those polymers show an improved adhesion to inorganic surfaces and they can also be crosslinked with moisture.

SiSiB® PC6130 is used to improve the compatibility of fillers with polymers, leading to a better dispersibility, reduced melt viscosity and easier processing of filled plastics.

SiSiB® PC6130 is used to pretreat of glass, metals, or ceramic surfaces, improve the adhesion of coatings on these surfaces and corrosion resistance.

Packing and Storage

SiSiB® PC6130 is supplied in 200Kg steel drum or 1000Kg IBC container.

In the unopened original container SiSiB® PC6130 has a shelf life of one year in a dry and cool place.

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