

Silquest A-1100™

Silane Coupling Agent

Silquest A-1100*

Description

Silquest A-1100 silane coupling agent, gamma-aminopropyltriethoxysilane, a versatile amino-functional coupling agent may be an excellent candidate for use in a range of broad applications to provide superior bonding between inorganic substrates and organic polymers.

Typical Physical Properties

Physical Form	Liquid
Color	Clear, colorless
Specific Gravity at 25/25°C	0.9500
Boiling Point at 760 mm Hg, °C (°F)	220 (428)
Refractive Index, n_D 25°C	1.420
Flash Point, Pensky-Martens Closed Cup ⁽¹⁾ , °C (°F)	96 (205)

(1) ASTM Method D 93

Typical physical properties are average data and are not to be used as or to develop specifications.

Chemical Structure

The silicon-containing portion of the molecule can help provide a covalent bond to many inorganic media. The primary amine function reacts with a wide array of thermoset, thermoplastic and elastomeric materials. **Silquest A-1100** silane coupling agent has the following structural formula:



Potential Applications

Coatings, Adhesives and Sealants

This amino silane is an excellent adhesion promoter to consider for use in many coating, adhesive, and sealant systems. With polysulfide, urethane, RTV silicones, epoxy, nitrile, and phenolic adhesives and sealants, the product can improve pigment dispersion and adhesion to glass, aluminum, steel and various other substrates.

Glass-Reinforced Resin Systems

In glass-reinforced thermosets, **Silquest A-1100** silane coupling agent can enhance the flexural, compressive and interlaminar shear strengths before and after exposure to humidity and greatly improve wet electrical properties. Glass-reinforced thermoplastics, polyamides, polyesters and polycarbonates typically exhibit increased flexural and tensile strengths before and after wet exposure when this silane is used.

Glass Fiber and Mineral Wool Insulation

As a phenolic resin binder additive, **Silquest A-1100** silane coupling agent can impart moisture resistance and allow recovery after compression.

Mineral-Filled Resin Systems

Silquest A-1100 silane coupling agent can improve 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 can also be improved.

Foundry Applications

In shell molding, this silane can strengthen the bond between the phenolic binder and foundry sand.

Grinding Wheels

The product can promote an improved, water-resistant bond between the abrasive grit and phenolic resin binder.

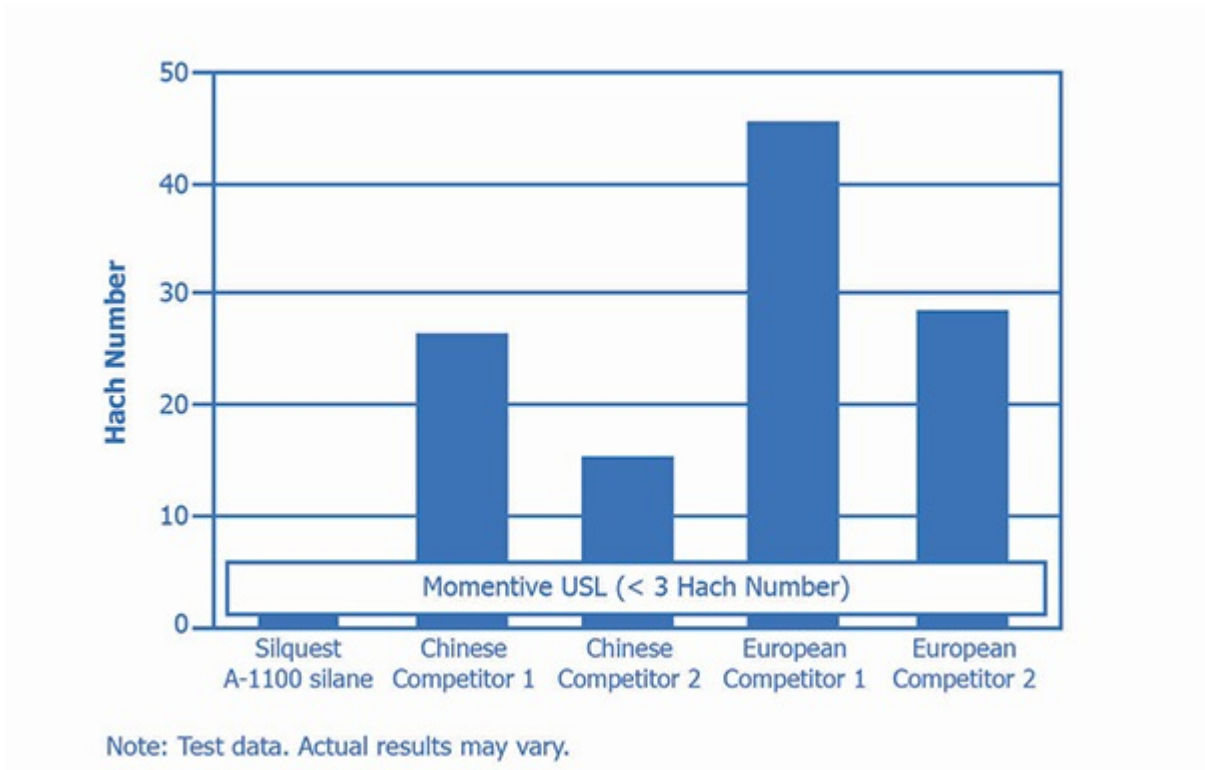
Solubility

Many of the potential applications for **Silquest A-1100** silane coupling agent require complete solubilization without the formation of finely dispersed particles. These particles appear as a haze when dispersed in water.

Figure 1 illustrates the very low levels of haze of **Silquest A-1100** silane coupling agent, as measured by Hach number, when compared with certain Chinese and European competitors' products. Hach number, a typical measurement of the amount of dispersed particles in the water solution of the silane, is a quantitative measurement of the haze of the aqueous silane solution. The upper specification limit (USL) for Hach number for **Silquest A-1100** silane coupling agent is less than or equal to three.

Silquest A-1100 silane coupling agent is completely and immediately soluble in water (with reaction), alcohol and aromatic and aliphatic hydrocarbons. Ketones are not recommended as diluents. Hydrolysis is noticeably exothermic and releases ethanol.

Figure 1. The Hach numbers of aqueous solutions Silquest A-1100 silane and several competitive aminosilane offerings



Patent Status

Standard copy to come

Product Safety, Handling and Storage

Standard copy to come

Limitations

Standard copy to come

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