

## Silquest™ Y-9669

### Silquest\* Y-9669

#### Description

Silquest silane Y-9669 combines phenyl and amino functionality in the same molecule. It is an extremely effective adhesion promoter for many filled and reinforced resin systems.

Silquest silane Y-9669 is a versatile adhesion promoter, particularly for resin systems that will react with a secondary amino group, such as isocyanates, acrylates, epoxies, phenolics and RTV silicones. This silane is especially useful when the resulting material must withstand higher temperatures; e.g., in phenolic resin/fiberglass composites.

#### Key Features and Benefits

- Secondary phenyl amino group reacts with such resin systems as isocyanates, acrylates, epoxies, phenolics and silicones
- Methoxy silane ester for fast hydrolysis time
- Aromatic amino group for increased stability of resin/silane bond at elevated temperature
- Phenyl group for good resin wet-out

#### Typical Physical Properties

Appearance	Clear liquid
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Color	Straw-to-amber
Specific Gravity at 25/25°C	1.07
Boiling Point, °C (°F)	310 (590)
Flash Point, Pensky-Martens Closed Cup <sup>(1)</sup> , °C (°F)	146 (295)

(1) ASTM Method D 93

### Chemical Structure

Silquest silane Y-9669 has the following chemical structure:

Silquest Y-9669 MB.indd\_Chemical Structure\_Image1

N-Phenyl-gamma-aminopropyltrimethoxy Silane

### Potential Applications

Silquest silane Y-9669 significantly improves adhesion between inorganic surfaces and polymers that react with a secondary amine. Evaluation is recommended for such polymers as urethanes, epoxies, acrylates and phenolics that must adhere to inorganic substrates; e.g., glass, metals, fiberglass and particulate fillers. Applications include adhesives and sealants coatings, glass fiber sizes and finishes, primers and foundry sand binders.

The excellent high-temperature performance of silane Y-9669 is demonstrated by the improvement in durability of a glass fiber reinforced phenolic resin laminate. As shown in Table 1, composites prepared with silane Y-9669 better maintained the superior flexural strength of the laminate, even after prolonged exposure to high temperature and moisture, as compared to similar composites prepared with Silquest A-1100\* silane.

### Table 1: Effect of Silanes on High-Temperature Flexural Strength Properties of Phenolic/Fiberglass Composites

	Flexural Strength, psi x 10 <sup>-3</sup>		
	Initial	96 hr at 500°F (260°C)	192 hr at 500°F (260°C)
Silane	Dry/Wet	Dry/Wet	Dry/Wet
Silquest A-1100	64/62	47/41	22/13
Silquest Y-9669	65/66	58/48	41/34

These data confirm that silane Silquest silane Y-9669 offers superior high-temperature aging characteristics in GFR composites. Consequently, it is a likely candidate for other resin systems and applications that involve high-temperature exposure.

### Patent Status

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### Product Safety, Handling and Storage

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### Processing Recommendations

Silquest silane Y-9669 may be added directly to the matrix resin or during formulation, or used independently as a primer. For waterborne applications, the silane can be diluted in acidified water. When properly diluted, these aqueous solutions are stable for up to 72 hours. A typical solution is prepared by adding 1 gram of Silquest silane Y-9669 to 99 grams of water acidified to pH 2.9 with glacial acetic acid.

### Limitations

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