

Silquest™ A-1120, Silquest™ A-2120(1)

Silquest* A-2120

Description

Silquest A-1120, N(beta-aminoethyl) gamma-aminopropyltrimethoxy-silane, and Silquest A-2120, N(beta-aminoethyl) gamma-aminopropylmethyldimethoxy-silane, are diamino functional silanes that may be used over a broad range of applications. They are used to promote the adhesion of amino-reactive resins such as silicone, silylated polyurethane, two-part urethanes and two-part epoxies to inorganic surfaces, plastic surfaces, and inorganic fillers or reinforcements.

Silquest A-1120 and Silquest A-2120 silanes find uses as:

- Adhesion promoters in polysulfide, polyvinyl chloride plastisol, silicone two-part urethanes and epoxy adhesives and sealants
- Additives in phenolic and epoxy molding compounds
- Additives to latex coatings, adhesives and sealants
- Adhesion promoters in one-part silylated urethane adhesives and sealants based on the Momentive Performance Materials SPUR* prepolymer technology.

Key Features and Benefits

Feature	Benefit
Polyamino Functionality	<ul style="list-style-type: none"> • Provides reactive site for aminoreactive resins • Good wetting of substrates
Silquest A-1120 Trifunctional Silane	<ul style="list-style-type: none"> • Excellent adhesion to inorganic substrates such as metal, glass, etc • Superior adhesion to plastics when employed in SPUR* prepolymer technology-based adhesives or sealants
Silquest A-2120 Difunctional Silane	<ul style="list-style-type: none"> • Excellent adhesion to inorganic substrates such as metal, glass, etc • Superior adhesion to plastics when employed in SPUR

	<p>Technology-based adhesives or sealants</p> <ul style="list-style-type: none"> • Provides as much as a 35% improvement in elongation over Silquest A-1120 silane • Provides superior stability in waterborne systems over other trifunctional amino silanes
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Typical Physical Properties

	Silquest A-1120 Silane	Silquest A-2120 Silane
Physical Form	Straw-colored liquid	Straw-colored liquid
Specific Gravity, 25/25°C	1.03	0.98
Refractive Index, nD 25°C	1.448	–
Flash Point, Pensky-Martens Closed Cup ⁽¹⁾ , °C (°F)"	138 (280)	>93 (>200)

(1) ASTM Method D93

Chemical Structure

Silquest A-1120 Silane



Silquest A-2120 Silane



Potential Applications

Silquest A-1120 silane and Silquest A-2120 silane may be used as additives, helping to eliminate the need for special primers in numerous bonding applications. Specific systems that demonstrate improved adhesion when Silquest A-1120 silane or Silquest A-2120 silane are used include:

RTV Silicones and Hybrid Silane-Crosslinked Sealants

Silquest A-1120 silane or Silquest A-2120 silane addition to one- and two-part silicone-

crosslinked sealants improves adhesion to a variety of substrates, including glass, steel, aluminum and concrete. These silanes can dramatically enhance adhesion to a wide array of plastics when used in combination with the Momentive Performance Materials SPUR Technology for silylating urethane polymers. (For formulation and silylated prepolymer preparation information, please refer to Literature Bulletin 112-026-30, "Silquest Organofunctional Silanes - Crosslinkers and Adhesion Promoters for Urethane Adhesives and Sealants". This bulletin may be obtained from the Momentive Performance Materials sales office nearest you.)

Silquest A-2120 silane, a difunctional variant of Silquest A-1120 silane, can be utilized to provide an enhanced adhesion performance and as much as a 35% increase elongation performance.

Loading levels of 0.5 to 2.0 percent by weight are typically recommended for both products.

The performance of Silquest A-1120 silane in a one-part SPUR* prepolymer-based sealant is shown in the following table. Similar results would be anticipated using Silquest A-2120 silane.

Table 1: Adhesion-in-Peel⁽¹⁾ Performance of One-Part SPUR Sealant Using Silquest A-1120 and Silquest A-2120 Silane⁽²⁾

Substrate	Peel Strength, pli ⁽³⁾ (Failure Mode)	
	Silquest A-1120 Silane	Silquest A-2120 Silane
Aluminum	21 (100% C ⁽⁴⁾)	20 (100% C)
Glass	23 (100% C)	23 (100% C)
PVC	23 (100% C)	21 (100% C)
ABS	25 (75% C)	25 (100% C)
Polystyrene	23 (100% C)	3(<75% C)

(1) ASTM Method C-794

(2) 1.5 weight percent silane

(3) Pounds per linear inch

(4) Cohesive failure of the bond

Polysulfide Sealants

When added to one- and two-part polysulfide sealants, Silquest A-1120 silane and A-2120 silane provide better adhesion to a variety of substrates, including glass, aluminum and steel. Silquest A-1120 silane and A-2120 silane are typically used at a loading of 0.5 to 1.0 percent by weight to the sealant. They disperse well and produce cohesive failure in the sealant rather than adhesive failure of the bond between the sealant and the substrate.

Furthermore, the use of Silquest A-1120 silane or A-2120 silane can eliminate the need for primers normally required to achieve adhesion to surfaces.

Plastisol Sealants

Adding Silquest A-1120 silane (0.5 to 1.5 weight percent) as a replacement for polyamino amide adhesion promoters in plastisol sealants improves bonding to metal substrates.

Silquest A-1120 silane-modified plastisol systems have a very light color, and the cured compound is bubble-free.

Additive in Phenolic and Epoxy Molding Compounds Silquest A-1120 silane, as an additive in phenolic and epoxy molding compounds, reduces the water absorption of molded composites. This, in turn, leads to improved wet electrical properties, particularly at low frequencies. High-temperature strength properties are also improved.

Patent Status

Standard copy to come

Product Safety, Handling and Storage

Standard copy to come

Limitations

Standard copy to come

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