

Silquest* A-1170

Silquest* A-1170

Description

Silquest A-1170, Silquest Y-9627 and Silquest Y-11699 silanes are secondary aminofunctional bis-silanes. This category of silanes is generally useful to consider for a broad range of applications to promote adhesion in coatings, adhesives and sealants between organic polymers and glass, metal, wood or cast plastic substrates.

Typically, they can function as coupling agents to particulate mineral fillers in composites, as in foundry molds and cores, to improve mechanical properties such as tensile and flexural strengths.

These property improvements have been maintained in the presence of aggressive environments, such as high temperature and high humidity conditions.

Key Features and Benefits

- Bis-silyl functionality - generally affords greater bonding or adhesion promotion to inorganic substrates.
- Secondary amino functionality - can typically improve shelf stability in various resin systems.
- Methoxy silane ester versions Silquest A-1170 silane and Silquest Y-9627 silane generally offer fast reaction with moisture, which translates to rapid cure or adhesion build.
- Ethoxy silane ester version Silquest Y-11699 silane generally provides a controlled cure with a by-product of the coupling or crosslinking mechanisms that have a lower impact on the environment.

Typical Physical Properties

Property	Silquest A-1170 silane	Silquest Y-9627 silane	Property	Silquest Y-11699
Appearance	Clear liquid	Clear liquid	Appearance	Clear liquid
Color	Clear, pale	Straw to dark	Color	Pale
Odor	Ester	Ester	Odor	Ester
Percent Actives	100	100	Percent Actives	100
Density, g/cm ³	1.04	1.03	Density, g/cm ³	0.968
Percent Purity	> 95 / 90	> 95 / 90	Flash Point, Estimated,	> 93 (200)

			ASTM D93, °C (°F)	
Specific Gravity, 25/25°C	1.0423	1.0423	Boiling Point, °C	>150
Flash Point, PMCC, ASTM Method D 93, °C (°F)	112.7 (235)	82 (179.6)	Freezing Point, °C (°F)	< 0 (32)
Boiling Point, at 4mm Hg, °C (°F)	152 (306)	>100 (>212)	Molecular Weight, g/mole	425.5
Molecular Weight, g/mole	341.5	341.5		

*Silquest is a trademark of Momentive Performance Materials Inc.

Potential Applications

Amino bis-silanes such as Silquest A-1170, Silquest Y-9627 and Silquest Y-11699 silanes have been shown to be effective in reacting with epoxy, urethane, melamine, polyimide, phenolic and furan thermosetting resins as well as many thermoplastics, such as polyamides and polyesters.

Durable water-resistant bonds are generally achieved when the silyl portion of these aminosilanes are condensed with an inorganic surface and are covalently bonded with the resin matrix of the composite, paint, adhesive or sealant.

The bis-alkoxysilane structure of the Silquest A-1170, Silquest Y-9627 and Silquest Y-11699 silanes result in the addition of two silyl groups to a resin. This typically yields more durable wet adhesion and more efficient bonding per mole of added silane.

The ethoxy ester groups, as on Silquest Y-11699 silane, generally provide slower reaction with moisture, giving longer shelf stability when exposed to incidental or atmospheric moisture on storage.

The Silquest A-1170 silane and Silquest Y-9627 silane, as the methoxy ester versions, generally offer a quick cure and or rapid adhesion build.

The higher purity grade of Silquest A-1170 silane may be considered for applications which demand low color, and greater control of reaction stoichiometry.

Silquest Y-9627 silane may be considered for similar reactivity with potential savings.

These versatile silanes typically can be added directly to polymers during system formulation, or used independently as primers.

Typical Sealant Application – Adhesion to Cast Plastics

The Effect of Silquest A-1170 / Silquest Y-9627 Silanes on Adhesion of Filled RTV Silicone to Plastic Substrates

Substrate	Adhesion, pli w/ Silquest A-1170 or Silquest Y-9627 Silanes		Control	
	Wet	Dry	Wet	Dry
ABS	17	24	0.1	0.1
PVC	29	32	1.3	0.5
Styrene	31	31	1.1	0.5
Acrylic	26	36	0.5	0.5

Note: Test data. Actual results may vary.

Typical Foundry – Sand Mold Compounds

FURAN			PHENOLIC		
		Parts By Weight			Parts By Weight
Furfuryl Alcohol/ Phenol Resin		2.0	Resin		1.0
Silica Foundry Sand		100.0	Silica Foundry Sand		100.0
Silquest A-1170 / Silquest Y-9627 Silanes		0.10	Silquest A-1170 / Silquest Y-9627 Silanes		0.1
Hardener		0.60	Benzene Sulfonic Acid		0.4
Measured Properties			Measured Properties		
	No Silane	Silane		No Silane	Silane
Flexural Strength, Initial (psi)	142	187	Tensile Strength, Initial	11.0	53.0
Flexural Strength, Aged in resin -2 months	77	130	Tensile Strength, Aged in 2 months	16.0	69.0

Product formulations are included as illustrative examples only. Momentive makes no representation or warranty of any kind with respect to any such formulations, including, without limitation, concerning the efficacy or safety of any product manufactured using such formulations.

*Silquest is a trademark of Momentive Performance Materials Inc.

Patent Status

Nothing contained herein shall be construed to imply the nonexistence of any relevant patents or to constitute the permission, inducement or recommendation to practice any invention covered by any patent, without authority from the owner of the patent.

Product Safety, Handling and Storage

Customers should review the latest Safety Data Sheet (SDS) and label for product safety information, safe handling instructions, personal protective equipment if necessary, emergency service contact information, and any special storage conditions required for safety. Momentive Performance Materials (MPM) maintains an around-the-clock emergency service for its products. SDS are available at www.momentive.com or, upon

request, from any MPM representative. For product storage and handling procedures to maintain the product quality within our stated specifications, please review Certificates of Analysis, which are available in the Order Center. Use of other materials in conjunction with MPM products (for example, primers) may require additional precautions. Please review and follow the safety information provided by the manufacturer of such other materials.

Limitations

Customers must evaluate Momentive Performance Materials products and make their own determination as to fitness of use in their particular applications.

Contact Information

For product prices, availability, or order placement, contact our customer service at Momentive.com/CustomerService/

For literature and technical assistance, visit our website at: www.momentive.com

DISCLAIMER:

THE MATERIALS, PRODUCTS AND SERVICES OF MOMENTIVE PERFORMANCE MATERIALS INC. AND ITS SUBSIDIARIES AND AFFILIATES (COLLECTIVELY “SUPPLIER”), ARE SOLD SUBJECT TO SUPPLIER’S STANDARD CONDITIONS OF SALE, WHICH ARE INCLUDED IN THE APPLICABLE DISTRIBUTOR OR OTHER SALES AGREEMENT, PRINTED ON THE BACK OF ORDER ACKNOWLEDGMENTS AND INVOICES, AND AVAILABLE UPON REQUEST. ALTHOUGH ANY INFORMATION, RECOMMENDATIONS, OR ADVICE CONTAINED HEREIN IS GIVEN IN GOOD FAITH, SUPPLIER MAKES NO WARRANTY OR GUARANTEE, EXPRESS OR IMPLIED, (i) THAT THE RESULTS DESCRIBED HEREIN WILL BE OBTAINED UNDER END-USE CONDITIONS, OR (ii) AS TO THE EFFECTIVENESS OR SAFETY OF ANY DESIGN INCORPORATING ITS PRODUCTS, MATERIALS, SERVICES, RECOMMENDATIONS OR ADVICE. EXCEPT AS PROVIDED IN SUPPLIER’S STANDARD CONDITIONS OF SALE, SUPPLIER AND ITS REPRESENTATIVES SHALL IN NO EVENT BE RESPONSIBLE FOR ANY LOSS RESULTING FROM ANY USE OF ITS MATERIALS, PRODUCTS OR SERVICES DESCRIBED HEREIN.

Each user bears full responsibility for making its own determination as to the suitability of Supplier’s materials, services, recommendations, or advice for its own particular use. Each user must identify and perform all tests and analyses necessary to assure that its finished parts incorporating Supplier’s products, materials, or services will be safe and suitable for use under end-use conditions. Nothing in this or any other document, nor any oral recommendation or advice, shall be deemed to alter, vary, supersede, or waive any provision of Supplier’s standard Conditions of Sale or this Disclaimer, unless any such modification is specifically agreed to in a writing signed by Supplier. No statement contained herein concerning a possible or suggested use of any material, product, service or design is intended, or should be construed, to grant any license under any patent or other intellectual property right of Supplier covering such use or design, or as a recommendation for the use of such material, product, service or design in the infringement of any patent or other intellectual property right.

Momentive and the Momentive logo are trademarks of Momentive Performance Materials Inc.