

SILQUEST* A-186 silane & SILQUEST A-187 silane

SILANES - ADHESIVES & SEALANTS ADDITIVES



Silquest A-186 silane and Silquest A-187 silane are epoxy functional silanes which may be suitable for use as adhesion promoters in SPUR⁺, urethane, epoxy, polysulfide, silicone, and acrylic caulks, coatings, sealants and adhesives.

Key Features and Typical Benefits

Feature	Benefit
Epoxy Functionality	<ul style="list-style-type: none"> ■ Epoxy ring is reactive with many organic functionalities. ■ Epoxy functionality will offer non-yellowing adhesion in many resin systems. ■ May improve flexibility of systems vs. other adhesion promoters.
Trimethoxy Silane Functionality	<ul style="list-style-type: none"> ■ Bonds to inorganic substrates to provide excellent wet and dry adhesion ■ Very fast hydrolysis rate

Typical Physical Properties

	Silquest A-186 Silane	Silquest A-187 Silane
Appearance	Clear, pale	Clear, pale
Molecular Weight	246.1	236.1
Specific Gravity at 25/25°C	1.065	1.069
Refractive Index n_D 25°C	1.448	1.427
Flash Point, Tag Closed Cup, °C (°F)	113 (235)	
Flash Point, ASTM D 93, °C (°F)		110 (230)
Boiling Point, °C (°F)	310 (590)	290 (554)

Solubility

Silquest A-186 silane and Silquest A-187 silane are soluble in water after hydrolysis, alcohol, acetone and most aliphatic esters at normal application levels under five percent. Hydrolysis releases methanol.

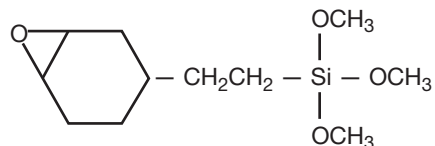
SILQUEST* A-186 Silane and SILQUEST A-187 Silane

Key Features and Typical Benefits (continued)

- Enhanced electrical properties of epoxy based electronic encapsulant and packaging materials, resulting from improved bonding between resin and substrate or filler.
- An excellent candidate for waterborne applications such as acrylic and vinyl-acrylic caulks.
- Improved adhesion to glass, and metal substrates can be obtained in epoxy, polysulfide, urethane and acrylic bases adhesives, sealants and caulks.
- SPUR+ perpolymer applications benefit from adhesion without decrease in elongation and yellowing.
- Urethane applications benefit from enhanced adhesion to glass and metal substrates, while providing improved shelf stability over amino silane alternatives. Typical use level ranges from 0.5 to 1.5 pbw.
- Epoxy applications benefiting from the use of Silquest A-186 silane or Silquest A-187* silane include quartz filled epoxy encapsulants, pre-mix formulations, sand-filled epoxy concrete patching materials, and metal filled epoxy materials suitable for mold die tools. Epoxy encapsulation systems benefit from Momentive Performance Materials epoxy family of Silquest silanes' ability to enhance wet adhesion, reducing the risk of semiconductor or integrated circuit failure due to water ingress or surface corrosion. Typical use level is 1.0 pbw.
- Polysulfide applications benefit from enhanced adhesion performance, without suffering odor issues associated with mercapto based silanes. Typical use level ranges from 0.5 to 1.5 pbw.
- Latex caulk applications benefit from enhanced adhesion to glass and metal substrates, without suffering yellowing issues associated with amino silane adhesion promoters. Typical use level ranges from 0.2 to 0.5 pbw.

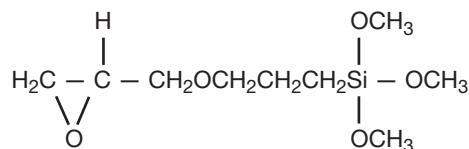
Chemical Structure

Silquest A-186 Silane



Beta-(3,4-Epoxycyclohexyl)ethyltrimethoxysilane

Silquest A-187 Silane



Gamma-Glycidoxypropyltrimethoxysilane

SILQUEST* A-186 Silane and SILQUEST A-187 Silane

Patent Status

Technical subject matter in this publication is described and protected by one or more of the following U.S. Patents and their foreign counterpart patents and/or patent applications: U.S. Patent Nos. 6,639,008, 6,592,997, 5,489,479 and 5,698,653. Other U.S. and foreign patents and/or patent applications not listed covering the subject matter may be relevant.

Product Safety, Handling and Storage

Customers considering the use of this product should review the latest Material Safety Data Sheet and label for product safety information, handling instructions, personal protective equipment if necessary, and any special storage conditions required. Material Safety Data Sheets are available at www.momentive.com or, upon request, from any Momentive Performance Materials representative. Use of other materials in conjunction with Momentive Performance Materials products 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.

Emergency Service

Momentive Performance Materials maintains an around-the-clock emergency service for its products. The American Chemistry Council (CHEMTREC) and CareChem24 International also maintain an around-the-clock emergency service for all chemical products:

<u>Location</u>	<u>Momentive Performance Materials Products</u>	<u>All Chemical Products</u>
Mainland U.S., Puerto Rico	518.233.2500	CHEMTREC: 800.424.9300
Alaska, Hawaii	518.233.2500	CHEMTREC: 800.424.9300
Canada	518.233.2500	CHEMTREC: 800.424.9300
Europe	+518.233.2500 (Albanian, Czech, Danish, Dutch, English, Finnish, French, German, Greek, Hungarian, Italian, Lithuanian, Norwegian, Polish, Portuguese, Romanian, Russian, Serbo-Croatian, Slovak, Spanish, Swedish, Turkish, Ukrainian)	+44.(0)208.762.8322 (UK)
Middle East,		
All countries, except Israel	+518.233.2500	+961.3.487.287 (Lebanon)
Middle East, Israel	+518.233.2500	+44.(0)208.762.8322 (UK)
Latin America, Asia/Pacific,	+518.233.2500	CHEMTREC: +1-703.527.3887 (collect)
all other locations worldwide		
At sea	Radio U.S. Coast Guard, which can directly contact Momentive Performance Materials at 518.233.2500 or CHEMTREC at 800.424.9300.	

DO NOT WAIT. Phone if in doubt. You will be referred to a specialist for advice.

CUSTOMER SERVICE CENTERS

North America	E cs-na.silicones@momentive.com		
	• Specialty Fluids	T +1.800.523.5862	F +1.304.746.1654
	• UA, Silanes and Specialty Coatings	T +1.800.334.4674	F +1.304.746.1623
	• RTVs and Elastomers	T +1.800.332.3390	F +1.304.746.1623
	• Consumer Sealants & Construction Sealants and Adhesives	T +1.877.943.7325	F +1.304.746.1654
Latin America	E cs-la.silicones@momentive.com		
	• Argentina & Chile	T +54.11.4862.9544	F +54.11.4862.9544
	• Brazil	T +55.11.4534.9650	F +55.11.4534.9660
	• Mexico & Central America	T +52.55.2169.7670	F +52.55.2169.7699
	• Venezuela, Ecuador, Peru, Colombia & Caribbean	T +58.212.285.2149	F +58.212.285.2149
Europe, Middle East, Africa and India	E cs-eur.silicones@momentive.com	T +00.800.4321.1000 T +40.21.3111848	
Pacific	E cs-ap.silicones@momentive.com		
	• China	T +1.800.820.0202 or T +86.21.3860.4892	F +86.21.5079.3725
	• Japan	T +0120.975.400 or T +81.276.20.6182	F +81.276.31.6259
	• Korea	T +82.2.6201.4600	F +82.2.6201.4601
	• Malaysia	T +60.3.9206.1532	F +60.3.9206.1533
	• Thailand	T +662.207.3456	F +66.2207.3488
Worldwide Hotline		T +1.607.786.8131 T +1.800.295.2392	F +1.607.786.8309

Visit us at Momentive.com



Momentive Performance Materials
22 Corporate Woods Boulevard
Albany, NY 12211

*Silquest, Silquest A-187 and SPUR+ are trademarks of Momentive Performance Materials Inc.
Momentive is a trademark of Momentive Performance Materials Holdings LLC.
Copyright 2003-2011 Momentive Performance Materials Inc. All rights reserved.

MOM-112-073-100E-GL 02/11 Printed in U.S.A.

THE MATERIALS, PRODUCTS AND SERVICES OF MOMENTIVE PERFORMANCE MATERIALS INC., MOMENTIVE PERFORMANCE MATERIALS USA INC., MOMENTIVE PERFORMANCE MATERIALS ASIA PACIFIC PTE. LTD., MOMENTIVE PERFORMANCE MATERIALS WORLDWIDE INC., MOMENTIVE PERFORMANCE MATERIALS GmbH, THEIR SUBSIDIARIES AND AFFILIATES DOING BUSINESS IN LOCAL JURISDICTIONS (collectively "SUPPLIERS"), ARE SOLD BY THE RESPECTIVE LEGAL ENTITY OF THE SUPPLIER SUBJECT TO SUPPLIERS' 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, SUPPLIERS MAKE 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 SUPPLIERS' PRODUCTS, MATERIALS, SERVICES, RECOMMENDATIONS OR ADVICE. AFOREMENTIONED EXCLUSIONS OR LIMITATION OF LIABILITY ARE NOT APPLICABLE TO THE EXTENT THAT THE END-USE CONDITIONS AND/OR INCORPORATION CONDITIONS CORRESPOND TO THE RECOMMENDED CONDITIONS OF USE AND/OR OF INCORPORATION AS DESCRIBED BY SUPPLIER IN ITS PRODUCT DATA SHEET AND/OR PRODUCT SPECIFICATIONS. EXCEPT AS PROVIDED IN SUPPLIERS' STANDARD CONDITIONS OF SALE, SUPPLIERS AND THEIR 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 Suppliers' 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 Suppliers' 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 Suppliers' Standard Conditions of Sale or this Disclaimer, unless any such modification is specifically agreed to in a writing signed by Suppliers. 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 Suppliers or any of its subsidiaries or affiliates 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.