



Technical Data Sheet

XIAMETER™ OFS-6011 Silane

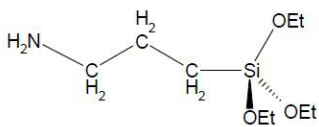
Amino functional alkoxy silane

Features & Benefits

- High purity
- Amino reactive group
- Triethoxy functional
- Improved adhesion
- Increased composite wet and dry tensile strength and modulus
- Increased composite wet and dry flexural strength and modulus
- Increased wet and dry compressive strength
- Increased transparency of fiberglass composites

Composition

- Aminopropyltriethoxysilane



Applications

- Coupling agent to improve adhesion of many plastics, resins and elastomers to inorganic materials and surfaces
- Useful for improving the properties of mineral filled rubber
- Additive for foundry resins

Typical Properties

Specification Writers: These values are not intended for use in preparing specifications.

CTM ¹	ASTM ²	Property	Unit	Result
0176		Appearance		Colorless to very pale yellow liquid
0004	D445	Viscosity at 25°C (77°F)	cst	1.6
0001A	D1298	Specific Gravity at 25°C (77°F)		0.946
0005	D1209	APHA Color		< 25

1. CTM: Corporate Test Method, copies of CTM's are available on request.
2. ASTM: ASTM International, www.astm.org

Typical Properties (Cont.)

CTM	ASTM	Property	Unit	Result
0917		Flash Point, Setflash Closed Cup	°C (°F)	96 (205)
0053		Purity by GC	%	> 98.5
		Molecular Weight	g/mol	221.37
		CAS#		919-30-2

Description

XIAMETER™ OFS-6011 Silane is a reactive chemical containing an aminopropyl organic group and a triethoxysilyl inorganic group. Chemically, XIAMETER OFS-6011 Silane is designated gamma-minopropyltriethoxysilane (fw 221.4).

Possessing both organic and inorganic reactivity, XIAMETER OFS-6011 Silane can react with organic resins and elastomers as well as with the surface of inorganic materials such as fiberglass and silica.

This aminopropyl functional silane is one of a series of XIAMETER™ organofunctional silane chemicals.

Other reactive silanes include di-amine (XIAMETER™ OFS-6020 Silane), methacrylate (XIAMETER™ OFS-6030 Silane), epoxy (XIAMETER™ OFS-6040 Silane), vinyls (XIAMETER™ OFS-6300 Silane and XIAMETER™ OFS-6518 Silane), chloroalkyl (XIAMETER™ OFS-6076 Silane) and vinylbenzylamine (XIAMETER™ OFS-6032 Silane and XIAMETER™ OFS-6224 Silane).

XIAMETER OFS-6011 Silane is particularly recommended for fiberglass-reinforced phenolic, melamine, and epoxy thermoset composites, either as a fiberglass finish or as a resinous additive. Data suggests that this silane can also improve the performance of these types of thermoset resins when used as mineral binders in foundry and abrasive composite applications. When used as a resin additive, generally the silane is added at a level of 1 percent based on the weight of the resin solids. For each specific application, the optimum level of additive should be determined by testing several concentrations. When used as an additive to epoxy coating, XIAMETER OFS-6011 Silane improves adhesion of the coating, particularly in very humid environments.

XIAMETER OFS-6011 Silane has also been found to be an effective coupling agent for clay-reinforced elastomers such as natural and nitrile rubber. The silane-treated clay provides improvement in both physical and dynamic properties compared with similar cured elastomers containing untreated clay.

XIAMETER OFS-6011 Silane will also improve the adhesion of many coatings (urethanes, epoxies, phenolics, and others) to glass and metal surfaces. Best performance is realized when XIAMETER OFS-6011 is used as a primer, although addition to the coating can also give benefits.

UNRESTRICTED – May be shared with anyone

®™ Trademark of The Dow Chemical Company ("Dow") or an affiliated company of Dow

XIAMETER™ OFS-6011 Silane

© 2017 The Dow Chemical Company. All rights reserved.

How To Use

XIAMETER OFS-6011 Silane can be applied to inorganic surfaces as a dilute aqueous solution (0.1 to 0.5 percent silane). Aqueous solutions can be prepared by simply adding the silane to water and stirring. (CAUTION: Poor agitation when adding XIAMETER OFS-6011 Silane to water can result in locally high concentration that may form gel particles.) It is commonly recommended that the silane solution be acidified to a pH of 3.5 to 6 (3.5 to 4 is optimal) with an organic acid such as acetic or oxalic, to obtain optimum performance of reinforcing material such as fiberglass.

Inorganic surfaces can be treated with the aqueous solution by any suitable method. In the case of siliceous mineral fillers, the mineral can be treated by slurring in the aqueous solution or mixing with the silane at very high shear (with a high-intensity or professional blender) as a 10 percent solution in isopropanol or etherglycol.

After applying this silane, the glass or mineral surface can be air-dried or dried briefly at 105 to 121°C (220 to 250°F) to effect complete condensation of silanol groups at the surface and to remove water and/or traces of ethanol from hydrolysis. Optimum application and drying conditions, such as time and temperature, should be determined for each application before use in a commercial process.

For use as a primer, two methods are suggested:

Method 1

Dissolve 5 percent XIAMETER OFS-6011 Silane in isopropyl alcohol; wipe onto the glass or metal substrate; dry at 75°C (167°F) for 15 minutes or at room temperature for 30 minutes; then apply coating.

Method 2

To 40 percent XIAMETER OFS-6011 Silane in isopropanol, add 5 percent water; allow to stand for 6 hours; dilute to 5 percent active with isopropyl alcohol; then apply as in Method 1.

Handling Precautions

PRODUCT SAFETY INFORMATION REQUIRED FOR SAFE USE IS NOT INCLUDED IN THIS DOCUMENT. BEFORE HANDLING, READ PRODUCT AND SAFETY DATA SHEETS AND CONTAINER LABELS FOR SAFE USE, PHYSICAL AND HEALTH HAZARD INFORMATION. THE SAFETY DATA SHEET IS AVAILABLE ON THE DOW WEBSITE AT WWW.CONSUMER.DOW.COM, OR FROM YOUR DOW SALES APPLICATION ENGINEER, OR DISTRIBUTOR, OR BY CALLING DOW CUSTOMER SERVICE.

XIAMETER OFS-6011 Silane generates ethanol upon exposure to moisture. Appropriate ventilation should be provided to prevent the accumulation of hazardous concentrations of ethanol fumes in the working environment.

After opening, avoid exposure to atmospheric moisture to prevent gelation.

Storage

Product should be stored at or below 25°C (77°F) in original, unopened containers.

Limitations

This product is neither tested nor represented as suitable for medical or pharmaceutical uses.

UNRESTRICTED – May be shared with anyone

®™ Trademark of The Dow Chemical Company ("Dow") or an affiliated company of Dow

XIAMETER™ OFS-6011 Silane

© 2017 The Dow Chemical Company. All rights reserved.

Health And Environmental Information

To support customers in their product safety needs, Dow has an extensive Product Stewardship organization and a team of product safety and regulatory compliance specialists available in each area.

For further information, please see our website, www.consumer.dow.com or consult your local Dow representative.

<http://www.xiameter.com>

LIMITED WARRANTY INFORMATION – PLEASE READ CAREFULLY

The information contained herein is offered in good faith and is believed to be accurate. However, because conditions and methods of use of our products are beyond our control, this information should not be used in substitution for customer's tests to ensure that our products are safe, effective, and fully satisfactory for the intended end use. Suggestions of use shall not be taken as inducements to infringe any patent.

Dow's sole warranty is that our products will meet the sales specifications in effect at the time of shipment.

Your exclusive remedy for breach of such warranty is limited to refund of purchase price or replacement of any product shown to be other than as warranted.

TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, DOW SPECIFICALLY DISCLAIMS ANY OTHER EXPRESS OR IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE OR MERCHANTABILITY.

DOW DISCLAIMS LIABILITY FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES.

