

XIAMETER[®] OFS-6011 Silane

Amino functional alkoxy silane

FEATURES

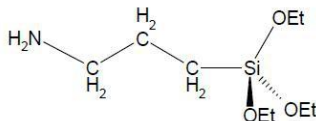
- High purity
- Amino reactive group
- Triethoxy functional

BENEFITS

- 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. Please contact your local XIAMETER[®] sales representative prior to writing specifications on this product.

CTM ¹	ASTM ²	Test	Unit	Value
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
0917		Flash Point, Setaflash closed cup	°C (°F)	96 (205)
0053		Purity by GC	%	>98.5
		Molecular weight	g/mol	221.37
		CAS#		919-30-2

¹CTM: Corporate Test Method, copies of CTM's are available on request.

²ASTM: ASTM International, www.astm.org

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[®] brand 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.

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.

PRODUCT SAFETY INFORMATION

PRODUCT SAFETY INFORMATION REQUIRED FOR SAFE USE IS NOT INCLUDED IN THIS DOCUMENT. BEFORE HANDLING, READ PRODUCT AND MATERIAL SAFETY DATA SHEETS AND CONTAINER LABELS FOR SAFE USE, PHYSICAL, ENVIRONMENTAL, AND HEALTH HAZARD INFORMATION. THE MATERIAL SAFETY DATA SHEET IS AVAILABLE ON THE XIAMETER WEB SITE AT WWW.XIAMETER.COM.

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. The most up-to-date shelf life information can be found on the XIAMETER Web site in the Product Detail page under Sales Specification.

LIMITATIONS

This product is neither tested nor represented as suitable for medical or pharmaceutical uses. Not intended for human injection. Not intended for food use.

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.

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