Gelest Glassclad®18

Hydrophobic Water-Dispersible Coatings For Glass and Ceramics

Features: Provides water-repellency, lubricity, surface resistivity to glass and vitreous surfaces.

Applications:

laboratory glassware - improves drainage, reduces breakage.
optical fibers - provides lubricity and reduces breakage during fabrication and operational flexing.
clinical analysis - decreases protein adsorption of analytical and diagnostic equipment, decreases hemolysis and increases clotting time of blood. Glassclad®18 is not for food or drug use.
fluorescent light bulbs - increases scratch resistance, reducing breakage, increases surface resistivity.
porcelain ware - provides a glide surface and reduces adhesion to other porcelain ware.

Capsular Description:	Thickness	Cure	Hardness	Type
				
	molecular	air/moisture	low	solvent-borne 1-part

Glassclad®18 Hydrophobic Coating

Description
Glassclad®18 is a monomeric octadecylsilane derivative in a mixture of t-butanol and diacetone alcohol that reacts with water to form a silanol-rich prepolymer. The silanol-rich prepolymer condenses with available hydroxyl groups of siliceous substrates to form a chemically bound alkylsilicone.

Properties of Treated Surfaces
Values reported are for glass slides dipped in 1% solutions of Glassclad®18 and cured 5 minutes at 100°C.

Critical Surface Tension

untreated	γc = 78 dynes/cm
treated (hydrophobic)	γc = 31 dynes/cm

Surface Resistivity

untreated	1 x 10^{12} ohms
treated	1.2 x 10^{13} ohms

Coefficient of Friction, Static (glass slide on glass slide)

untreated	0.9-1.0
treated	0.2-0.3

Blood Protein Adsorption
(comparative 100 hour adsorption value for whole human blood on borosilicate glass surfaces)

untreated	0.13mg/mm^2
treated	0.01-0.02mg/mm^2

Solution Properties of Glassclad®18

solids	20%
color, gardner scale	8
specific gravity	0.88
flashpoint	10°C
viscosity	8-20 cSt.

Reference:
B. Arkles et al in "Silanes, Surfaces, Interfaces" D. Leyden ed, Gorden & Breach, 1986, p91.

Shelf Life of Glassclad®18
The shelf life of Glassclad®18 is six months in sealed containers. The product is normally hazy. A small amount of precipitate does not affect the performance of the solution.

Standard Packaging

PPI-GC18 Glassclad®18
100g/$19.00
1.5kg/$148.00
15kg/commercial package
180kg/commercial package

Application Methods
Glassclad®18 is most frequently used as a dilute aqueous dispersion containing 0.1-1.0% of reactive silane. A 0.2% solution of active chemical can be easily prepared by adding one part by weight of the product as supplied to 99 parts of water while stirring. The following treatment method is frequently employed.
1. Thoroughly clean objects with an alkaline detergent. Used or old glass surfaces may require immersion in 2-3% sodium hydroxide. All detergent and alkali should be removed with a final rinse.
2. Prepare a 1% solution of Glassclad®18 in water. Ordinary tap water is acceptable. "Hard water" or "fluoridated water," is not acceptable.
3. Immerse the glass or vitreous surface in the solution for 5-10 seconds, ensuring that all surfaces are wetted by the solution. Agitation of the solution or the object generally results in more uniform deposition. After immersion, remove the part and gently but thoroughly rinse with water to remove excess Glassclad®18 from the surface.
4. Cure Glassclad®18 by bringing surface temperature to 100°C for 3-5 minutes. Room temperature cure may be accomplished by air drying for 24 hours if relative humidity is 65% or less.

Each liter of solution will coat approximately 80 one liter beakers, 600 15cm test tubes, or approximately 250 m^2 of surface.

Stability of Glassclad®18 Solutions
Aqueous solutions are not stable and will turn cloudy and precipitate after standing for several days. The solution stability can be optimized by adjusting pH to 4.5-5.