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*Silicones Simplified*  
[www.xiameter.com](http://www.xiameter.com)



*A Guide to Silane Solutions*

# Water Repellents and Surface Protection

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## General Construction Applications

**S**ilanes can be chosen to impart hydrophobic (water repellent) and/or oleophobic (oil and stain repellent) characteristics to surfaces. Silanes with alkyl groups (such as butyl and octyl) and aromatic groups (such as phenyl) and even some organofunctional groups (such as chloropropyl and methacrylate) are hydrophobic. Similarly, silanes containing fluoroalkyl groups are oleophobic (oil repellent). Alkoxysilyl groups attached to these silanes allow them to actually penetrate, cure in and even bond to many inorganic substrates. These unique properties allow for versatile and durable formulating solutions for protection against harmful water- and oil-borne elements.

XIAMETER® brand water and stain repellent materials can be used in solvent- or water-based systems to provide the formulating flexibility needed to meet VOC and ease-of-use requirements. These silane-based water and stain repellents are available for use in formulations that penetrate a broad range of substrates, including:

- Poured-in-place or pre-cast concrete
- Concrete block
- Sandstone/granite
- Brick/tile/grout
- Wood
- Gypsum/perlite
- Limestone/marble

Silane-based water repellents create an envelope of protection that extends the life of substrates for years in challenging environments. Potential benefits include:

- Excellent water repellency
- Long-term durability
- UV stability
- Depth of penetration
- Water vapor permeability
- High dilution capability and stability
- Clear, uniform, neutral appearance

Benefits of protection include:

- Reduced efflorescence
- Reduced freeze-thaw damage
- Chloride ion resistance to deter corrosion of reinforcing steel in concrete structures
- Preservation of aesthetics

### Other Surface Protection Applications

The XIAMETER® brand product line also includes silicates and siliconates for use in formulating pore-blocking sealers and consolidators. These silicates and siliconates are alkali metal salts of hydrophobic silane oligomers. They adhere tenaciously to inorganic substrates and surfaces in much the same way as simple alkoxysilanes do. Applications for these materials fall into two groups: sealers and consolidators.

**Sealers** fall into two sub-groups:

- **Pore blockers** provide little penetration and, instead, form a *resin barrier* on the concrete's surface. Pore blockers are further distinguished by their ability to partially or fully *fill the surface pores*, a capability not shared by hydrophobing agents.
- **Hydrophobing agents**, on the other hand, penetrate the material deeply. They allow the concrete to breathe and *do not interfere with concrete cure*.

**Consolidators** can extend the life of stone and concrete because they penetrate and cure in and through these materials to help bind them together. They are used in a variety of restoration and flooring applications.

### Product Information

A complete list of XIAMETER® brand silanes for water repellents and surface protection is available at [xiameter.com](http://xiameter.com).

In addition, Dow Corning Corporation also offers a wide variety of *Dow Corning®* brand specialty silicone material and service options as well as other silicon-based materials available to help you keep your innovative edge in the marketplace. Visit [dowcorning.com](http://dowcorning.com) to learn more about the many additional silicone and silicon-based options available to you from Dow Corning.



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