Si
siloxene

ARA

# XenCure™ XenLink™ XenSlick™ XenBlu™

Product Guide

2025

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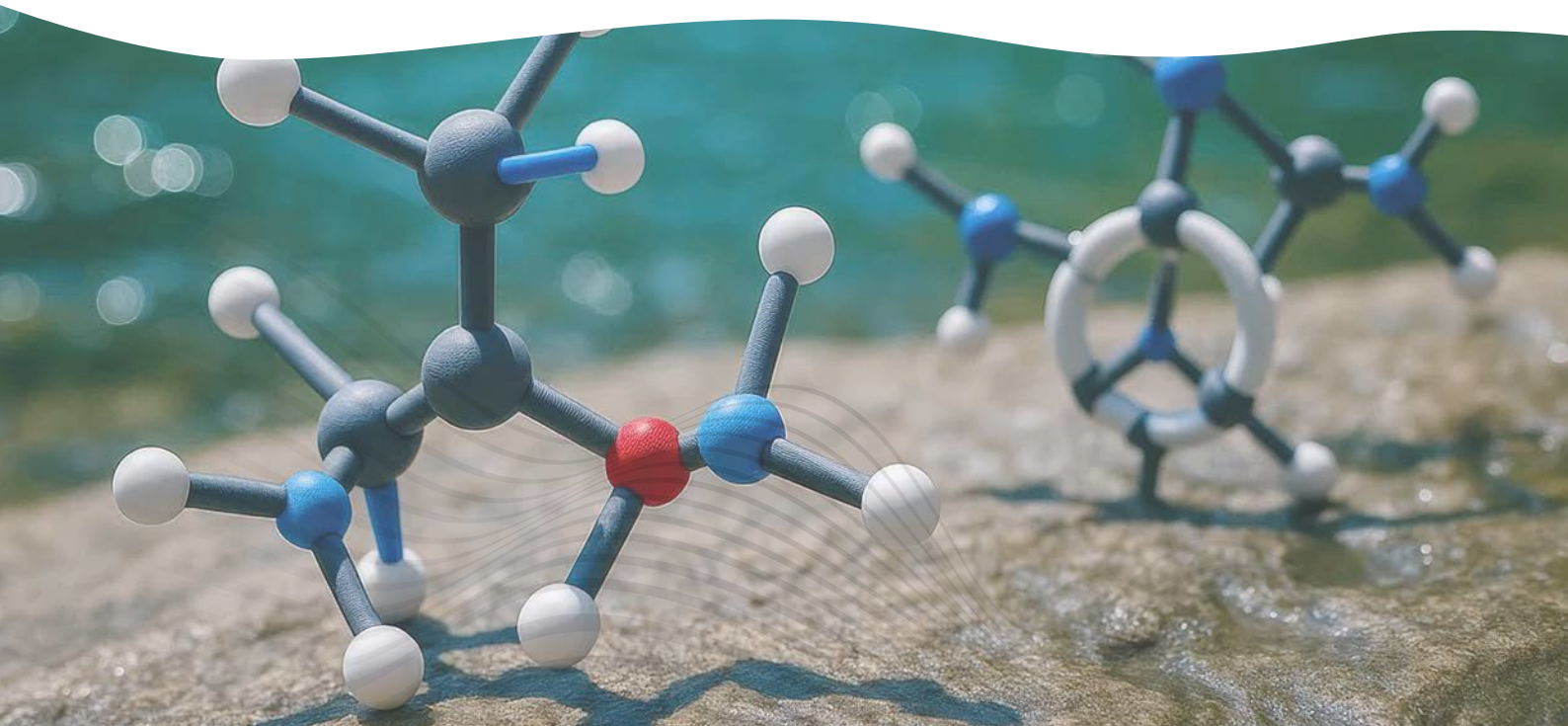
WE BUILD
**MOLECULES**
SO YOU CAN
BUILD THE
**FUTURE**
DISCOVER
SILOXENE'S
SILANE-HYBRID
TECHNOLOGY

# CONTENTS





# Siloxene Product Benefits

*Description of generic benefits of the siloxene technology*

## SILOXENE MATERIALS ARE

- SOLVENT FREE
- NON-FLAMMABLE
- LABEL FREE
- TRANSITION METAL FREE
- NANO MATERIALS FREE
- USABLE IN BOTH AQUEOUS AND ORGANIC FORMULATIONS

## SILOXENE MATERIALS OFFER

- IMPROVED PROCESS SAFETY
- ENHANCED PRODUCT PROPERTIES
- TIME AND ENERGY SAVINGS
- CIRCULAR ECONOMY BENEFITS
- TAILORABLE PRODUCT FEATURES
- SIMPLIFIED TRANSPORTATION AND LOGISTICS

Functional silanes are well known to offer various advantages in organic-inorganic interface compatibilization across a wide range of applications. Siloxene products represent **the next evolution step in functional silane technology**, offering tailorable products, lower cost of solution to reach the same or better overall performance while simplifying production and logistic processes. Most importantly, the siloxene technology offers **numerous possibilities** for product improvements and **new solutions** not accessible with standard silanes.

In **adhesives and sealants**, siloxene materials allow for customized control over adhesion and crosslinking reactivity. This enhances performance and durability in both dry and wet environments.

In **glass fiber composites**, siloxene products serve as next-generation formulation ingredients. They enhance mechanical strength and resilience, while also supporting innovative sizing and finishing solutions compatible with multiple resin systems.

In **coatings**, siloxene products offer tailored adhesion to substrates, faster curing, enhanced resistance to weathering and chemicals and improved surface qualities such as gloss, scratch resistance and reduced friction.

In **textile applications**, siloxene products enhance fabric feel, improve dye adhesion and durability and allow customized modifications for compatibility with all common polymers and resins.

In **surface treatment** and modifications, siloxene products enhance adhesion aspects between various interfaces and can adapt to each one separately (e.g. polymer-metal and biopolymer-mineral filler) thus extending the standard silane functionality profiles.

# Discover our Products

*Functional Q-T polysiloxane materials*

## XenCure™ Products

**XenCure™** products consist of Q-T polysiloxanes containing **reactive functional groups**. These products make for outstanding additives in reactive curing systems.

## XenSlick™ Products

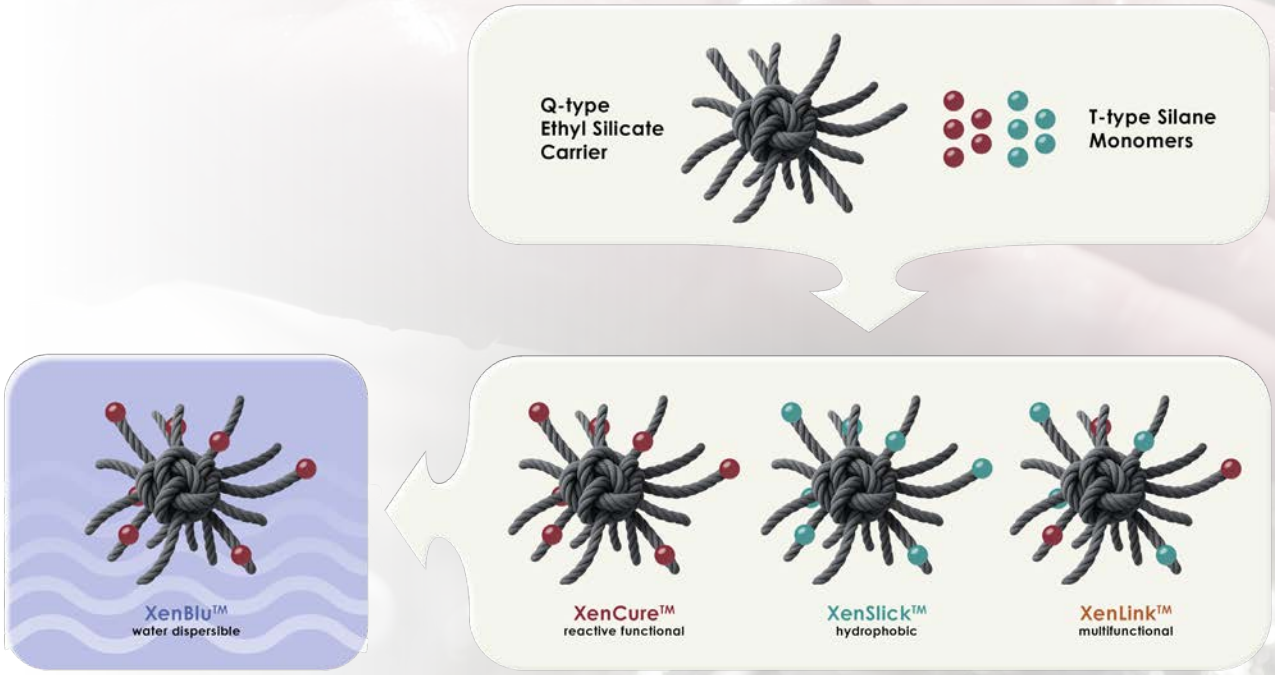
**XenSlick™** products consist of Q-T polysiloxanes containing **alkyl or other hydrophobic functional groups**. These products display excellent hydrophobic and emulsifying properties.

## XenBlu™ Products

**XenBlu™** products consist of Q-T polysiloxanes engineered with modified reactive functional groups, designed for **water-based product formulations** with superior performance.

## XenLink™ Products

**XenLink™** products consist of Q-T polysiloxanes combining **reactive functional groups and non-reactive (hydrophobic) functional groups**



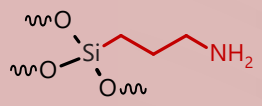

## INTRINSIC ADVANTAGE OF Q-T POLYSILOXANES

Our technology uses Q-T polysiloxane dendrimers, which combine active, organofunctional T-silanes with a nonfunctional ethylsilicate (Q-silane) carrier. This allows precise placement of functional groups where needed. Thanks to their "core-shell" structure, the T-type functional groups on the Q-carrier's surface are highly accessible, offering a major advantage over conventional silanes.

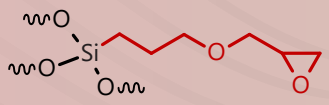
As polymeric materials, siloxene products have fewer hydrolysable groups, resulting in lower VOC emissions. Additionally, our Q-T resins are non-flammable and are exempt from dangerous goods classifications, simplifying handling and transport.

# Q-T Polysiloxane Chemical

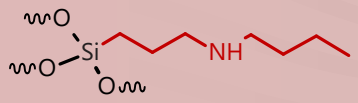
The following " ● " functional groups are available for XenCure™ materials:



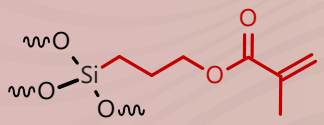

**XenCure™ A**



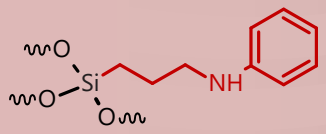

**XenCure™ G**



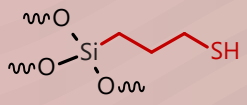

**XenCure™ A2**



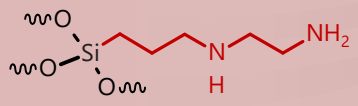

**XenCure™ U**



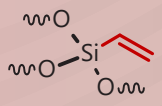

**XenCure™ A1**



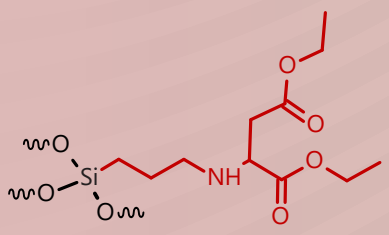

**XenCure™ S**




**XenCure™ 2A**




**XenCure™ V**

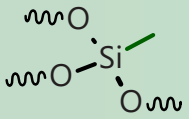



**XenCure™ A9**

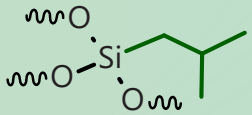
Functional groups and their loading can be combined in almost any combination, offering hundreds of fully tailored options. Can't find what you're looking for in our standard product range? Please contact our Sales Team for inquiries about custom-made products.

# Functional Group Diversity

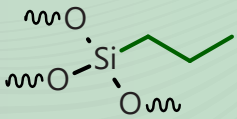
The following " " functional groups are available for XenSlick™ materials:



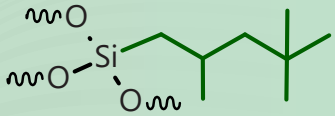
**XenSlick™ M**



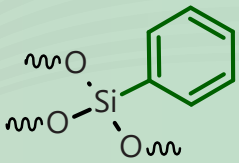
**XenSlick™ iB**



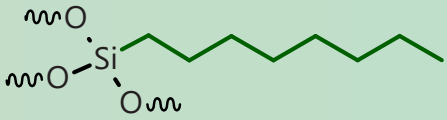
**XenSlick™ P**



**XenSlick™ iO**



**XenSlick™ R**



**XenSlick™ O**

# Multifunctional Products

*Mixed functionality Q-T polysiloxane materials*

## EXPANDING YOUR PRODUCT OPTIONS

Our unique materials platform offers the advantage of coupling multiple functional silane constituents in one and the same product. In this way, the properties of our materials can be fine tuned to your exact application needs.

**There are three types of multifunctional product options:**

- Multifunctional XenCure™ products, comprising multiple, non-identical reactive functional groups
- Multifunctional XenSlick™ products, comprising multiple, non-identical hydrophobic functional groups
- XenLink™ products, combining at least one hydrophobic and one reactive functional group


## CUSTOMIZABLE REACTIVITY AND FORMULATION COMPATIBILITY PROFILES

Multifunctional product options offer the ability to tune reactivity, compatibilization of constituents as well as controlling wetting and adhesion profiles in any given product formulation.

### *Example:* XenCure™ VS

Multifunctional **XenCure™** products are typically used in reactive multi-resin crosslinking systems – both functional groups present create **chemical linkages to two different types of polymer systems** (for example, epoxy and acrylate). Alternatively, one functionality acts as crosslinking site and another one as adhesion promoter.

### *Example:* XenLink™ AO

Multifunctional **XenLink™** products feature a combination of reactive and hydrophobic groups. The **reactive functionality takes part in a curing step** or serves as adhesion promoter, while a **non-reactive group** allows for total **control of the hydrophobicity** and surface texture or toughness. XenLink™ products can also improve the compatibility of XenCure™ products in a formulation by adjusting the polarity/solubility profile of the material.

### *Example:* XenSlick™ MR

Multifunctional **XenSlick™** products feature at least two hydrophobic functionalities which provide additional options for increased performance. These products offer **improved hydrophobicity or surface properties**. They alter the emulsification, defoaming or rheological behavior as well as reduce the overall organic carbon content and thus maximize eco-benefits of a given product or solution.

# Nomenclature of Product Codes

*For XenCure™, XenSlick™ and XenLink™*

XenCure™ **AU338**

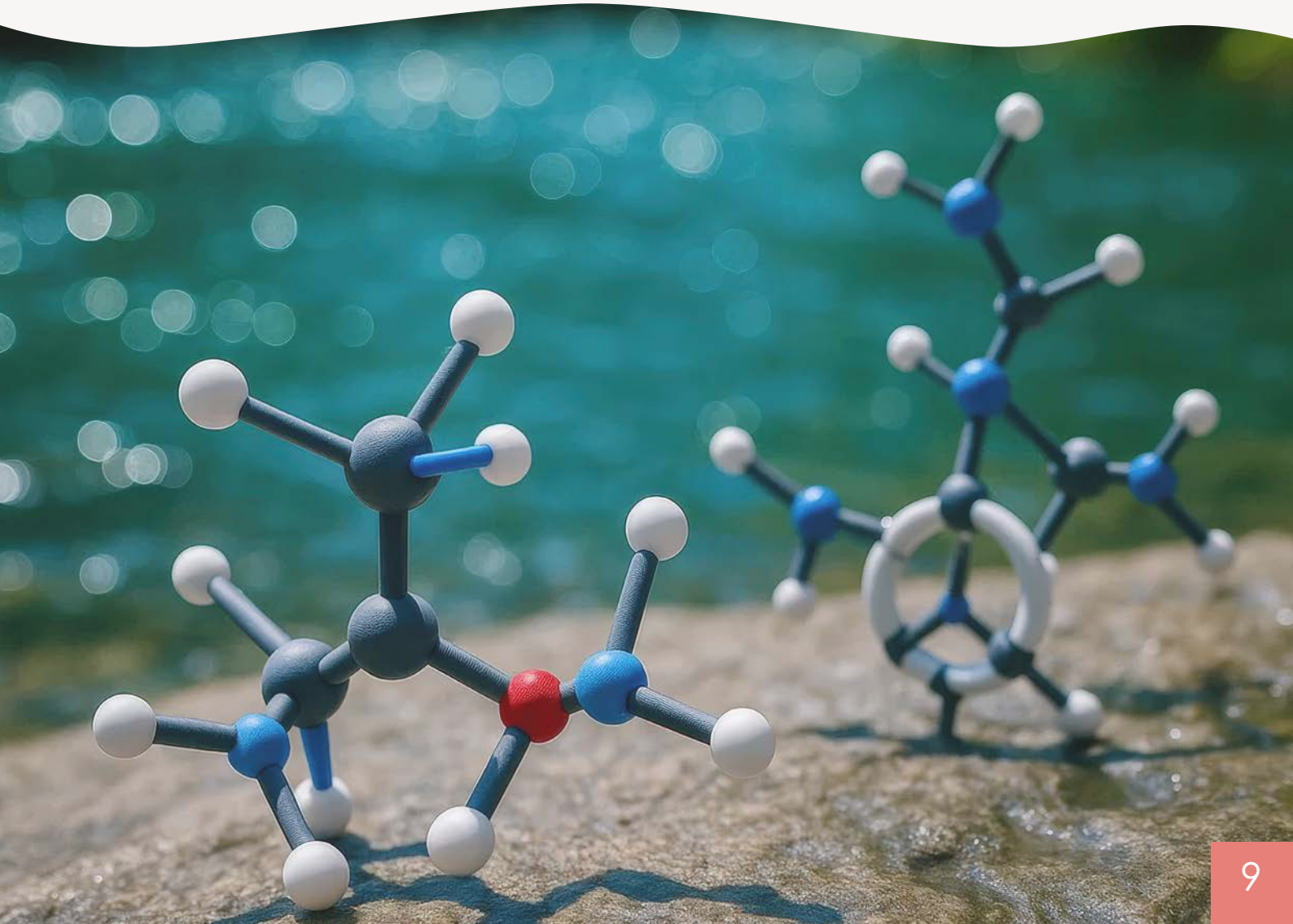
Amino-Methacrylate functional Q-T polysiloxane

**Q-type "core" size**

**2**: "small" (MW 2500-2900)
**3**: "medium" (MW 3000-3500)
**4**: "large" (MW 3600-4000)

**T-silane functionality**

**1**: ~0.15 mmol/g
**2**: ~0.30 mmol/g
**3**: ~0.55 mmol/g
**4**: ~0.80 mmol/g
**5**: ~1.00 mmol/g
**6**: ~1.20 mmol/g
**7**: ~1.50 mmol/g
**8**: ~1.70 mmol/g



# Crosslinking and Curing Acceleration

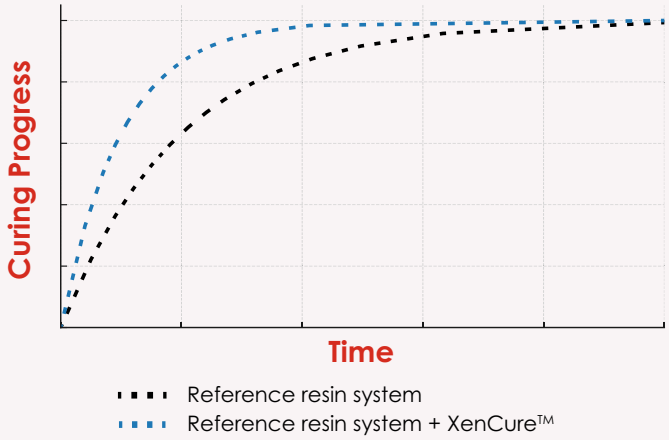
*Q-T polysiloxanes are efficient crosslinkers and multiresin compatibilizers*

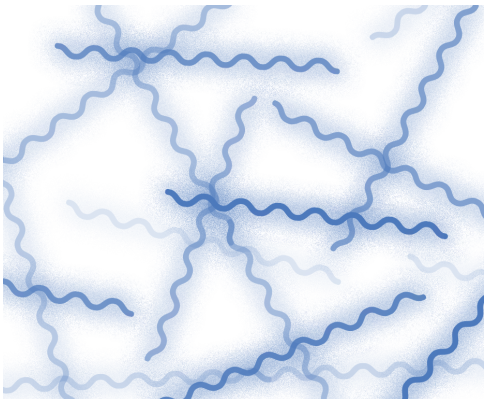
## INNOVATIVE CROSSLINKING SOLUTIONS

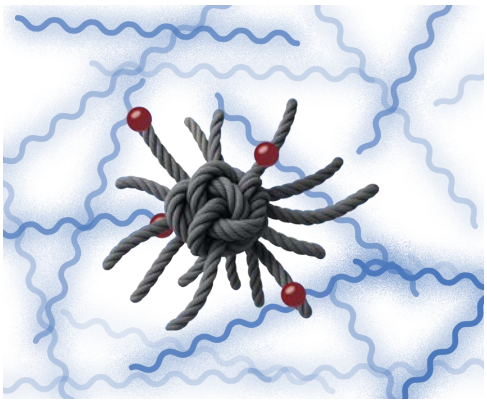
Monomeric silanes can take part in a polymerization reactions through their " " reactive groups. When alkoxysilane monomers are integrated into the polymer network, no noticeable change in curing characteristics is observed and the system becomes sensitive to moisture induced post-curing. For many applications, this may not be desirable.

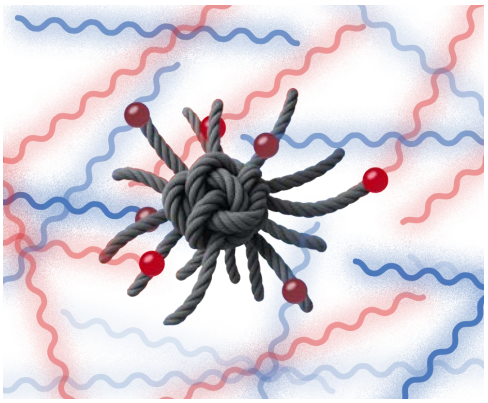
The dendritic hyperbranched structures of XenCure™ and XenLink™ products **combine multiple " " reactive groups on a single macromolecule**, making them very efficient crosslinkers. By controlling the size of the ethyl silicate backbone (or "core") and the loading of grafted reactive functional group, the functionality and thus the crosslinking characteristics of the material can be controlled over a wide range.

The crosslinking characteristics (**speed increase**) as a function of structural parameters when employing XenCure™ as a crosslinker is shown below for a single mode mechanism resin curing system.







## MULTI-MODE CURING

For dual- or multi-mode curing, where the polymerization of a reactive polymer system comprises more than one type of polymerization chemistry, multifunctional XenCure™ and XenLink™ products offer the ability to bear two or more suitable " " and " " reactive groups (symbolized by bright red and dark red color). In such an example, the polysiloxane crosslinker is able to **interlink both types of polymer networks simultaneously**. Multimode curing is a cost-effective way to combine multiple standard resin components into a **single reactive resin or binder system** without having to opt for customized and costly specialty resins which feature two types of chemistries in one product. Our product portfolio offers a simple and universal toolkit to combine different reactive binder chemistries into many product formulations.

# Molecular Level Control of Interfaces

*Q-T polysiloxanes are customizable adhesion promoters with next level performance*

## PROVIDING INTERFACE SOLUTIONS

Due to their unique structural nature and composition, our products excel in the following aspects:

- Compatibility with various surfaces achieved by tailoring functionality (e.g. multiunctional product options and tunable properties)
- Molecular level control of wetting
- Maximized adhesion / compatibility advantages
- Simple integration into formulations
- Processing benefits

Due to the high surface availability of hydrolysable alkoxy groups, Q-T polysiloxane materials demonstrate **excellent wetting properties** on many mineral surfaces. Simultaneously, the tunable functional group loading allows independent control of surface compatibility with polymers or with other materials through coordinating groups, enabling a wide range of material combinations. The type of chemical functionality as well as functional group loading and extent of modification of XenCure™ and XenLink™ products can all be individualized to meet your specific needs.

Siloxene Q–T molecules land on the mineral surface, then unfurl and bind through multiple hydrolysable alkoxy “arms” (red tips). This creates an ultrathin, highly wetting interphase (blue halo) that maximizes compatibility and locks the coating/adhesive in place for durable adhesion.

## PROCESSING BENEFITS

XenCure™, XenLink™ and XenSlick™ are **compatible with commercial silane solutions** and therefore no additional process upgrades/changes are necessary when siloxene products are used as a replacement or as an additive. Furthermore, these products are **label-free** and do not come with hazards commonly associated with standard silanes such as flammability or skin irritation. Due to the oily nature of the products, they furthermore have a **lubricating effect** and can therefore improve processing aspects such as in compounding and extruding, while reducing energy consumption.

# Eco-Benefits of Siloxene Materials

*Q-T polysiloxanes are non-toxic and label-free performance chemicals*

## NON-HAZARDOUS BY NATURE

XenCure™, XenLink™, XenSlick™ and XenBlu™ materials are GHS label free products that **do not contain any of the following toxic/hazardous components**:

- Persistent bioaccumulative and toxic (PBT) components
- Very persistent and very bioaccumulative (vPvB) components
- Organotin
- Other organometallic constituents
- Endocrine disruptors
- Biocides
- Silicones (PDMS)
- Surfactants
- Carcinogens and mutagens

XenCure™, XenLink™, XenSlick™ and XenBlu™ products are **solvent free, non-flammable and transition metal free**. Given their low viscosity, there is no need for solvent-based formulations, which makes their use, storage and transportation simpler and safer. Q-T polysiloxane products can therefore **minimize ecological footprint** of many formulations, products and solutions. This combination of properties makes Q-T polysiloxanes a key enabler technology for replacement of regulated substances and for sustainable materials development.

## HIGH PERFORMANCE BASED ON SAND AND ALCOHOL

When XenCure™, XenLink™ and XenSlick™ products come into **contact with water**, they undergo hydrolysis, forming functionalized **colloidal silica or glassy solids**. These products are known for their benign ecological properties and **do not cause pollution concerns**. The ethyl silicate carrier which makes up > 80% of typical Q-T polysiloxanes, forms silica and alcohol as a byproduct of the hydrolysis, effectively forming nothing other than sand and alcohol. In comparison with standard functional silanes the fraction of "T-type" organofunctional silane moieties is 4-6 times lower, which results in a **significantly reduced ecotoxicity potential**. Furthermore, due to their highly polymerized structure, there is significantly less alcohol released from our products during use compared to their standard monomeric analogues. To further reduce the eco-impact, products made from ethylsilicate derived from bio-sourced alcohol are available on demand.

# Product Guide by Application: XenCure™

| | Product Line | A | 2A | S | A1/A2/A9 | V | G | U |
|---|---|---|---|---|---|---|---|---|
| | **Application** | | | | | | | |
| Case | Coating additive | ◐ | ◐ | ◐ | ◐ | ○ | ◐ | ◐ |
| | Adhesion promoter | ● | ● | ◐ | ● | ◐ | ● | ◐ |
| | Crosslinker | ● | ● | ◐ | ● | ◐ | ○ | ◐ |
| | Elastomer/rubber coupling agent | ◐ | ◐ | ● | ◐ | ● | ○ | ○ |
| | Co-hardener | ● | ● | ● | ● | ◐ | ◐ | ◐ |
| | Curing accelerator | ● | ● | ◐ | ● | ◐ | ◐ | ● |
| | Surface modifier | ◐ | ◐ | ◐ | ◐ | ◐ | ◐ | ◐ |
| Glass fiber / composites | Fiber sizing | ● | ● | ○ | ● | ◐ | ● | ● |
| | Finishing | ● | ● | ◐ | ● | ◐ | ● | ● |
| | Resin co-Hardener | ● | ● | ● | ● | ○ | ◐ | ● |
| Sustainable materials & solutions | Hydrophobe | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | Defoamer | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | Emulsifier | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | Dispersing agent | ● | ● | ○ | ● | ○ | ◐ | ○ |
| Polymer additive | Processing aid | ◐ | ● | ● | ◐ | ◐ | ◐ | ● |
| | Crosslinker | ● | ● | ● | ● | ◐ | ◐ | ● |
| | Filler coupling | ◐ | ◐ | ● | ◐ | ● | ● | ● |
| | Reactive diluent | ○ | ○ | ○ | ○ | ◐ | ○ | ◐ |

● very effective ◐ effective ○ not relevant

# Product Guide by Chemistry: XenCure™

| | Product Line | A | 2A | S | A1/A2/A9 | V | G | U |
|---|---|---|---|---|---|---|---|---|
| | **Compatible chemistry** | | | | | | | |
| Thermosetting resin | Melamine | ◐ | ◐ | ○ | ◐ | ○ | ◐ | ○ |
| | Phenolic | ● | ● | ◐ | ● | ○ | ◐ | ○ |
| | Epoxy | ● | ● | ◐ | ● | ○ | ◐ | ○ |
| | Urethane | ◐ | ◐ | ◐ | ◐ | ○ | ◐ | ○ |
| | Polyimide | ◐ | ● | ○ | ◐ | ○ | ◐ | ○ |
| | Polyester | ○ | ○ | ○ | ○ | ◐ | ◐ | ● |
| | Furan | ● | ● | ○ | ● | ○ | ◐ | ○ |
| Thermoplastic resin | Polyethylene | ◐ | ● | ◐ | ◐ | ○ | ◐ | ● |
| | Polypropylene | ◐ | ◐ | ◐ | ◐ | ○ | ◐ | ● |
| | Polystyrene | ● | ● | ◐ | ● | ○ | ◐ | ● |
| | Acrylic | ● | ● | ○ | ● | ○ | ◐ | ◐ |
| | PVC | ● | ● | ◐ | ● | ○ | ◐ | ○ |
| | Polycarbonate | ◐ | ◐ | ○ | ◐ | ○ | ◐ | ◐ |
| | Polyamide | ● | ● | ○ | ● | ○ | ◐ | ○ |
| | Urethane | ◐ | ◐ | ◐ | ◐ | ○ | ◐ | ◐ |
| | PBT-PET | ◐ | ◐ | ○ | ◐ | ○ | ◐ | ○ |
| | ABS | ◐ | ◐ | ◐ | ◐ | ○ | ◐ | ● |
| Elastomer, rubber | Polybutadiene rubber | ○ | ○ | ◐ | ○ | ○ | ○ | ○ |
| | Polyisoprene rubber | ○ | ○ | ◐ | ○ | ○ | ○ | ○ |
| | Sulfur cross-linked EPDM | ◐ | ◐ | ● | ◐ | ◐ | ○ | ◐ |
| | Peroxide cross-linked EPDM | ◐ | ◐ | ◐ | ◐ | ◐ | ○ | ● |
| | Styrene-butadiene rubber | ○ | ○ | ◐ | ○ | ○ | ◐ | ○ |
| | Nitrile rubber | ◐ | ◐ | ◐ | ◐ | ○ | ◐ | ○ |
| | Epichlorohydrin rubber | ○ | ○ | ◐ | ○ | ○ | ◐ | ○ |
| | Neoprene rubber | ◐ | ◐ | ◐ | ◐ | ○ | ◐ | ○ |
| | Butyl rubber | ◐ | ◐ | ○ | ◐ | ○ | ◐ | ○ |
| | Polysulfide | ◐ | ◐ | ● | ◐ | ○ | ◐ | ○ |
| | Urethane rubber | ◐ | ◐ | ● | ◐ | ○ | ◐ | ○ |

● very effective ◐ effective ○ not relevant

# Product Guide by Application: XenSlick™

| | Product Line | M | P | iB | O | iO | R |
|---|---|---|---|---|---|---|---|
| | **Application** | | | | | | |
| Case | Coating additive | ◐ | ● | ● | ● | ◐ | ● |
| | Adhesion promoter | ○ | ○ | ○ | ○ | ○ | ○ |
| | Crosslinker | ○ | ○ | ○ | ○ | ○ | ○ |
| | Elastomer/rubber coupling agent | ○ | ○ | ○ | ○ | ○ | ○ |
| | Co-hardener | ○ | ○ | ○ | ○ | ○ | ○ |
| | Curing accelerator | ○ | ○ | ○ | ○ | ○ | ○ |
| | Surface modifier | ◐ | ● | ● | ● | ◐ | ◐ |
| Glass fiber / composites | Fiber sizing | ◐ | ◐ | ● | ● | ● | ◐ |
| | Finishing | ○ | ○ | ○ | ○ | ○ | ○ |
| | Co-Hardener | ○ | ○ | ○ | ○ | ○ | ○ |
| Sustainable materials & solutions | Hydrophobe | ● | ● | ● | ● | ● | ◐ |
| | Defoamer | ● | ● | ● | ● | ● | ◐ |
| | Emulsifier | ● | ● | ● | ● | ● | ◐ |
| | Dispersing agent | ○ | ◐ | ◐ | ◐ | ◐ | ○ |
| Polymer additive | Processing aid | ◐ | ◐ | ◐ | ◐ | ◐ | ◐ |
| | Crosslinker | ○ | ○ | ○ | ○ | ○ | ○ |
| | Filler coupling | ○ | ○ | ○ | ○ | ○ | ○ |
| | Reactive diluent | ○ | ○ | ○ | ○ | ○ | ○ |

● very effective ◐ effective ○ not relevant

# Product Specifications

## XenCure™ Family

### XenCure™ A

| Properties | A21 | A23 | A33 | A35 | A45 | A48 |
|---|---|---|---|---|---|---|
| Functional group loading: amine [mmol/g] | 0.15 | 0.54 | 0.57 | 0.98 | 1.03 | 1.73 |
| Density [g/cm³] | 1.054 | 1.065 | 1.084 | 1.115 | 1.075 | 1.140 |
| $SiO_2$ content [%] | 40.0 | 41.4 | 43.1 | 40.9 | 42.1 | 40.0 |
| Refractive index | 1.406 | 1.408 | 1.408 | 1.411 | 1.412 | 1.414 |
| Gardner color | < 3 | < 3 | < 3 | < 3 | < 3 | < 3 |

### XenCure™ 2A

| Properties | 2A21 | 2A23 | 2A33 | 2A35 | 2A45 | 2A48 |
|---|---|---|---|---|---|---|
| Functional group loading: amine [mmol/g] | 0.14 | 0.53 | 0.55 | 0.94 | 0.98 | 1.61 |
| Density [g/cm³] | 1.031 | 1.017 | 1.031 | 1.120 | 1.070 | 1.130 |
| $SiO_2$ content [%] | 37.9 | 40.0 | 40.9 | 38.1 | 39.1 | 36.8 |
| Refractive index | 1.408 | 1.411 | 1.412 | 1.414 | 1.414 | 1.415 |
| Gardner color | < 3 | < 3 | < 3 | < 3 | < 3 | < 3 |

# XenCure™ Family

## XenCure™ A1/A2/A9

| Properties | A121<br>A221<br>A921 | A123<br>A223<br>A923 | A133<br>A233<br>A933 | A135<br>A235<br>A935 | A145<br>A245<br>A945 | A148<br>A248<br>A948 |
|---|---|---|---|---|---|---|
| Functional group loading: amine [mmol/g] | ~ 0.14 | ~ 0.52 | ~ 0.54 | ~ 0.91 | ~ 0.95 | ~ 1.53 |
| Density [g/cm³] | 1.063 | 1.074 | 1.068 | 1.082 | 1.075 | 1.081 |
| $SiO_2$ content [%] | ~ 37.7 | ~ 39.3 | ~ 41.2 | ~ 38.3 | ~ 38.8 | ~ 36.1 |
| Refractive index | 1.408 | 1.409 | 1.411 | 1.412 | 1.413 | 1.415 |
| Gardner color | < 6 | < 6 | < 6 | < 6 | < 6 | < 6 |

## XenCure™ G

| Properties | G21 | G23 | G33 | G35 | G45 | G48 |
|---|---|---|---|---|---|---|
| Functional group loading: glycidoxy [mmol/g] | 0.14 | 0.52 | 0.55 | 0.93 | 0.98 | 1.58 |
| Density [g/cm³] | 1.063 | 1.074 | 1.068 | 1.082 | 1.075 | 1.081 |
| $SiO_2$ content [%] | 37.9 | 39.5 | 41.5 | 38.4 | 39.0 | 36.3 |
| Refractive index | 1.408 | 1.409 | 1.411 | 1.412 | 1.413 | 1.415 |
| Gardner color | < 4 | < 4 | < 4 | < 4 | < 4 | < 4 |

# XenCure™ Family

## XenCure™ U

| Properties | U21 | U23 | U33 | U35 | S45 | U48 |
|---|---|---|---|---|---|---|
| Functional group loading: methacrylate [mmol/g] | 0.14 | 0.52 | 0.55 | 0.92 | 0.96 | 1.55 |
| Density [g/cm³] | 1.068 | 1.073 | 1.059 | 1.065 | 1.069 | 1.073 |
| $SiO_2$ content [%] | 38.5 | 39.5 | 42.0 | 38.7 | 39.7 | 38.5 |
| Refractive index | 1.408 | 1.408 | 1.410 | 1.413 | 1.415 | 1.417 |
| Gardner color | < 3 | < 3 | < 3 | < 3 | < 3 | < 3 |

## XenCure™ V

| Properties | V21 | V23 | V33 | V35 | V45 | V48 |
|---|---|---|---|---|---|---|
| Functional group loading: vinyl [mmol/g] | 0.15 | 0.55 | 0.58 | 1.01 | 1.06 | 1.83 |
| Density [g/cm³] | 1.032 | 1.043 | 1.054 | 1.067 | 1.075 | 1.086 |
| $SiO_2$ content [%] | 41.4 | 42.1 | 44.6 | 43.1 | 44.7 | 41.4 |
| Refractive index | 1.403 | 1.405 | 1.407 | 1.410 | 1.412 | 1.415 |
| Gardner color | < 3 | < 3 | < 3 | < 3 | < 3 | < 3 |

## XenCure™ S

| Properties | S21 | S23 | S33 | S35 | S45 | S48 |
|---|---|---|---|---|---|---|
| Functional group loading: mercapto [mmol/g] | 0.15 | 0.53 | 0.56 | 0.96 | 1.01 | 1.68 |
| Density [g/cm³] | 1.050 | 1.078 | 1.093 | 1.109 | 1.121 | 1.127 |
| $SiO_2$ content [%] | 39.5 | 40.9 | 42.5 | 39.9 | 41.1 | 39.5 |
| Refractive index | 1.407 | 1.408 | 1.411 | 1.415 | 1.415 | 1.416 |
| Gardner color | < 3 | < 3 | < 3 | < 3 | < 3 | < 3 |

# XenSlick™ Family

## XenSlick™ M

| Properties | M21 | M23 | M33 | M35 | M45 | M48 |
|---|---|---|---|---|---|---|
| Functional group loading: methyl [mmol/g] | 0.15 | 0.54 | 0.57 | 0.98 | 1.03 | 1.74 |
| Density [g/cm³] | 1.015 | 1.028 | 1.039 | 1.006 | 1.043 | 1.056 |
| $SiO_2$ content [%] | 43.0 | 42.6 | 44.3 | 43.5 | 45.6 | 43.0 |
| Refractive index | 1.402 | 1.403 | 1.405 | 1.402 | 1.405 | 1.407 |
| Gardner color | < 2 | < 2 | < 2 | < 2 | < 2 | < 2 |

## XenSlick™ P

| Properties | P21 | P23 | P33 | P35 | P45 | P48 |
|---|---|---|---|---|---|---|
| Functional group loading: propyl [mmol/g] | 0.15 | 0.53 | 0.56 | 0.95 | 1.00 | 1.66 |
| Density [g/cm³] | 1.005 | 1.063 | 1.080 | 1.107 | 1.0439 | 0.980 |
| $SiO_2$ content [%] | 40.5 | 41.3 | 42.3 | 40.9 | 42.5 | 40.5 |
| Refractive index | 1.406 | 1.406 | 1.404 | 1.404 | 1.408 | 1.412 |
| Gardner color | < 2 | < 2 | < 2 | < 2 | < 2 | < 2 |

## XenSlick™ iB

| Properties | iB21 | iB23 | iB33 | iB35 | iB45 | iB48 |
|---|---|---|---|---|---|---|
| Functional group loading: isobutyl [mmol/g] | 0.14 | 0.53 | 0.56 | 0.94 | 0.99 | 1.62 |
| Density [g/cm³] | 1.055 | 1.040 | 1.032 | 0.998 | 1.050 | 1.062 |
| $SiO_2$ content [%] | 38.5 | 40.2 | 41.2 | 39.1 | 39.7 | 38.5 |
| Refractive index | 1.403 | 1.403 | 1.404 | 1.405 | 1.407 | 1.408 |
| Gardner color | < 2 | < 2 | < 2 | < 2 | < 2 | < 2 |

# XenSlick™ Family

## XenSlick™ O

| Properties | O21 | O23 | O33 | O35 | O45 | O48 |
|---|---|---|---|---|---|---|
| Functional group loading: octyl [mmol/g] | 0.14 | 0.51 | 0.54 | 0.89 | 0.93 | 1.48 |
| Density [g/cm³] | 1.027 | 1.011 | 1.004 | 0.972 | 1.013 | 1.024 |
| $SiO_2$ content [%] | 37.0 | 39.1 | 40.0 | 37.4 | 38.2 | 37.0 |
| Refractive index | 1.408 | 1.408 | 1.410 | 1.411 | 1.410 | 1.412 |
| Gardner color | < 2 | < 2 | < 2 | < 2 | < 2 | < 2 |

## XenSlick™ iO

| Properties | iO21 | iO23 | iO33 | iO35 | iO45 | iO48 |
|---|---|---|---|---|---|---|
| Functional group loading: isooctyl [mmol/g] | 0.14 | 0.53 | 0.54 | 0.89 | 0.93 | 1.48 |
| Density [g/cm³] | 1.054 | 1.039 | 1.027 | 0.972 | 1.031 | 1.061 |
| $SiO_2$ content [%] | 37.0 | 39.1 | 40.0 | 37.4 | 38.2 | 37.0 |
| Refractive index | 1.408 | 1.408 | 1.409 | 1.410 | 1.410 | 1.412 |
| Gardner color | < 2 | < 2 | < 2 | < 2 | < 2 | < 2 |

## XenSlick™ R

| Properties | R21 | R23 | R33 | R35 | R45 | R48 |
|---|---|---|---|---|---|---|
| Functional group loading: phenyl [mmol/g] | 0.15 | 0.53 | 0.56 | 0.96 | 1.01 | 1.68 |
| Density [g/cm³] | 1.062 | 1.048 | 1.040 | 1.035 | 1.082 | 1.102 |
| $SiO_2$ content [%] | 39.0 | 40.6 | 41.7 | 39.5 | 40.7 | 39.0 |
| Refractive index | 1.413 | 1.417 | 1.419 | 1.424 | 1.424 | 1.425 |
| Gardner color | < 2 | < 2 | < 2 | < 2 | < 2 | < 2 |

# Multifunctional Product Examples

## XenCure™ VS

| Properties | VS231 | VS213 | VS335 | VS353 | VS458 | VS485 |
|---|---|---|---|---|---|---|
| Functional group loading: vinyl [mmol/g] | 0.53 | 0.15 | 0.47 | 0.88 | 0.75 | 1.55 |
| Functional group loading: mercapto [mmol/g] | 0.13 | 0.56 | 0.88 | 0.46 | 1.50 | 0.78 |
| Density [g/cm³] | 1.022 | 1.010 | 1.011 | 1.015 | 1.013 | 1.021 |
| $SiO_2$ content [%] | 39.9 | 40.0 | 41.0 | 41.0 | 39.9 | 40.0 |
| Refractive index | 1.409 | 1.408 | 1.410 | 1.410 | 1.410 | 1.412 |
| Gardner color | < 3 | < 3 | < 3 | < 3 | < 3 | < 3 |

## XenSlick™ MR

| Properties | MR231 | MR213 | MR353 | MR35 | MR458 | MR485 |
|---|---|---|---|---|---|---|
| Functional group loading: methyl [mmol/g] | 0.54 | 0.13 | 0.48 | 0.92 | 0.75 | 1.58 |
| Functional group loading: phenyl [mmol/g] | 0.13 | 0.52 | 0.89 | 0.49 | 1.51 | 0.79 |
| Density [g/cm³] | 1.028 | 1.026 | 1.020 | 1.001 | 1.011 | 1.021 |
| $SiO_2$ content [%] | 38.4 | 38.4 | 39.5 | 39.5 | 36.5 | 36.5 |
| Refractive index | 1.409 | 1.408 | 1.409 | 1.411 | 1.410 | 1.411 |
| Gardner color | < 3 | < 3 | < 3 | < 3 | < 3 | < 3 |

## XenLink™ AO

| Properties | AO231 | AO213 | AO335 | AO353 | AO458 | AO485 |
|---|---|---|---|---|---|---|
| Functional group loading: amino [mmol/g] | 0.52 | 0.13 | 0.44 | 0.85 | 0.65 | 1.40 |
| Functional group loading: octyl [mmol/g] | 0.13 | 0.50 | 0.82 | 0.46 | 1.31 | 0.70 |
| Density [g/cm³] | 1.052 | 1.038 | 1.040 | 1.035 | 1.082 | 1.022 |
| $SiO_2$ content [%] | 35.8 | 35.8 | 36.6 | 36.0 | 35.2 | 35.2 |
| Refractive index | 1.413 | 1.411 | 1.410 | 1.414 | 1.414 | 1.415 |
| Gardner color | < 3 | < 3 | < 3 | < 3 | < 3 | < 3 |

# XenBlu™ Family

| Properties | CDC100 | CD120 | EDC200 | ED200 |
|---|---|---|---|---|
| $SiO_2$ content [%] | 41 | 4 | 37 | 9 |
| Particle size [nm] | - | 30 - 80 | - | 30 - 80 |
| Density [g/cm³] | 1.1 | 1.0 | 1.1 | 1.0 |
| Appearance | transparent bright yellow | translucent blue hue | transparent bright yellow | translucent blue hue |
| Cationic / anionic nature | cationic | cationic | cationic | cationic |
| pH | - | ~ 4 | - | ~ 4 |

# Notes

## Contact

**ARA KİMYA LTD.**
ARSLAN İŞ MERKEZİ NO:1
AKYAZI CAD. KAYIŞDAĞI ATAŞEHİR İSTANBUL TÜRKİYE

Ph#: +90 532 289 80 90
Ph#: +90 533 725 00 45
info@arakem.com
https://arakimya.com.tr