



A Subsidiary of PETRONAS Chemicals Group

SILOEN[®] Silicones for Construction, Coatings & Inks

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Silicones for Building Protection



Why building materials are in need for a protective agent?

Typical damages caused by water that affect building materials and their aesthetics include:

- Chemical corrosion (such as acid rain attacking the material)
- Frost and freeze/thaw damage by road salts (causing cracks)
- Efflorescence and salt stains
- Fungal and lichens growth
- Dirty pick-up
- Rust stain (in reinforced concrete)

Repairing damage is typically more expensive than preventing it

Why building materials are in need for a protective agent?



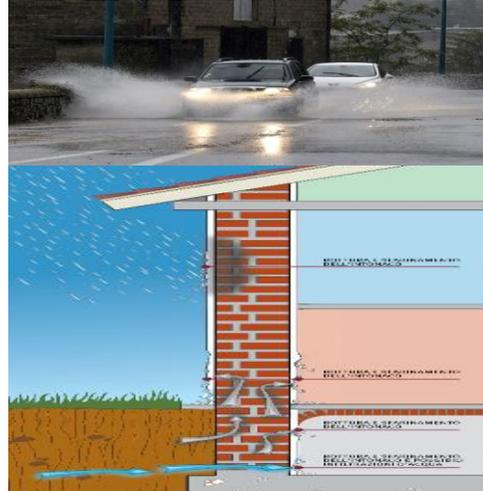
New



Life cycle



Aged unprotected



Rain & raising damp



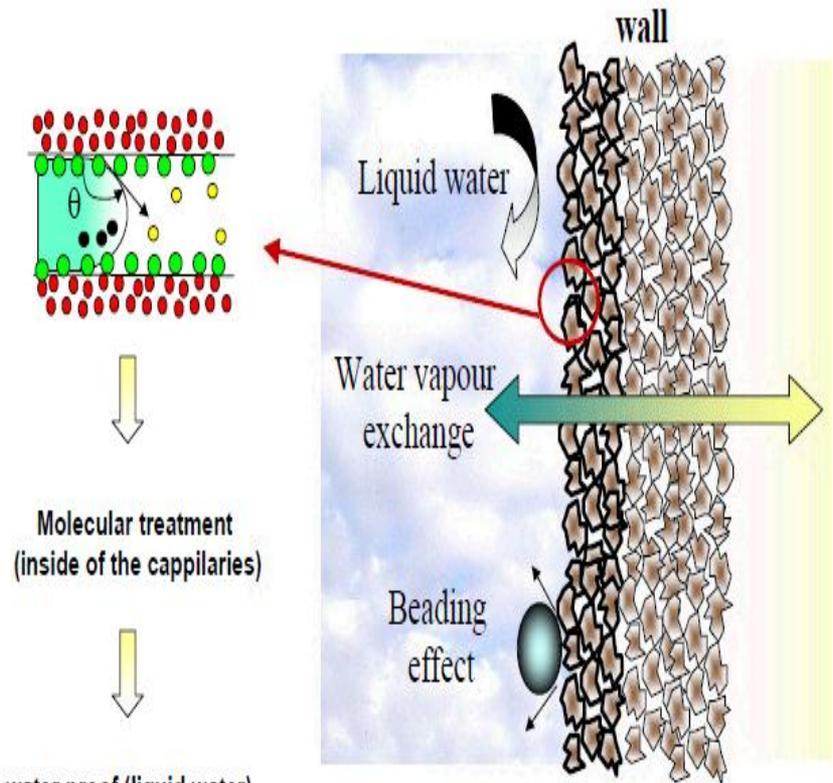
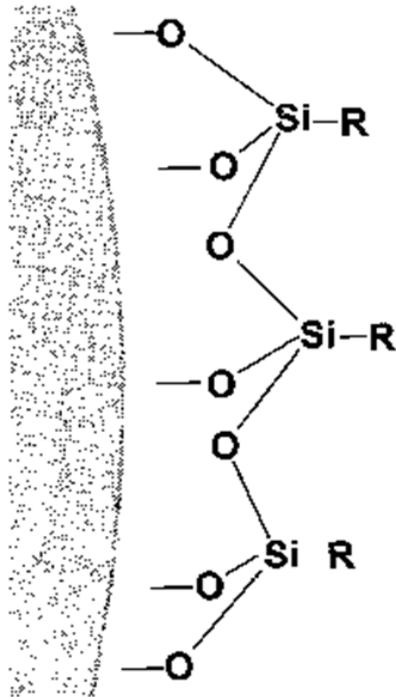
Why choose silicone impregnating agents?

- Silicone-based water repellents are among the most effective protective agents for building materials
- Form strong chemical bonds with mineral surfaces
- Create a long-lasting resin network that repels liquid water but permeable to the water vapor
- Do not form a film, keeping the pores open so the material can “breathe”
- Are UV resistant ensuring the longevity of the protective treatment

Why choose silicone impregnating agents?

Principle of Water Repellency

The alkyl groups act like umbrellas, protecting the substrate.



- water proof (liquid water)
- water vapour permeability (open pores)
- No surface modification

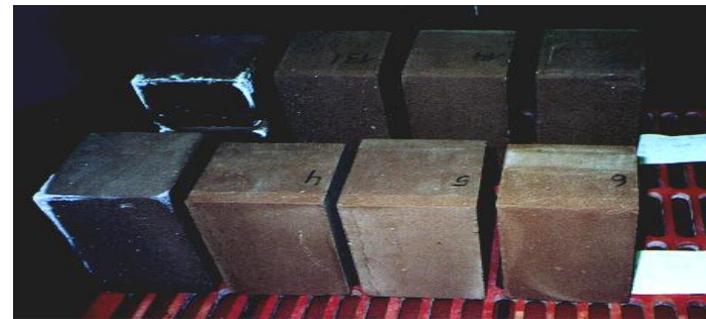
Why choose silicone impregnating agents?

Properties:

- Good water repellency
- Excellent water vapor permeability
- Good resistance to alkalis
- Good penetration depth and long-lasting durability
- Unchanged appearance of the substrate
- Prevents the growth of microroganism (left) and efflorescence (right)



untreated treated
Exposure: 3 months under tree



untreated treated
Exposure: 9 months in dry condition

BRB Siloen® Water Repellents Product Range

Product	Type	Application
Siloen® SR 619	Silane/Siloxane Concentrate	<ul style="list-style-type: none"> HQ general purpose solvent-dilutable water repellent, fast beading; highly suitable for concrete, tin catalyst free Compliant with AASHTO Product Evaluation & Audit Solutions Program
Siloen® SR 608	Silane/Siloxane Concentrate	<ul style="list-style-type: none"> HQ general purpose solvent-dilutable water repellent. Suitable for use on porous materials
Siloen® 694	Silane-Based Impregnating Agent	<ul style="list-style-type: none"> For concrete and reinforced concrete Compliant with AASHTO Product Evaluation & Audit Solutions Program
Siloen® 882	Siloxane Oligomer	<ul style="list-style-type: none"> Integral water repellent additive designed for fibre-reinforced cement products and ALC
Siloen® WRC4	Silane-Based Thixotropic Cream	<ul style="list-style-type: none"> Improved penetration on porous material Suitable for damp-proof barriers
Siloen® WRC8	Silane-Based Thixotropic Cream	<ul style="list-style-type: none"> For concrete and reinforced concrete Suitable for overhead application
Siloen® MXP 5	Silane-Based Powder	<ul style="list-style-type: none"> High-efficiency dry mix water repellent additive
Siloen® WRP	Silane-Based Powder	<ul style="list-style-type: none"> Cementitious dry mix water repellent additive

BRB Siloen® Water Repellents Product Range

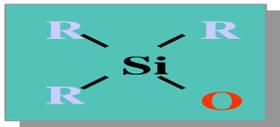
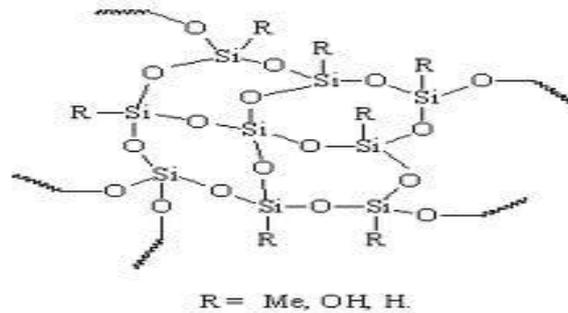
Product	Type	Application
Siloen® 696	Alkyl Silane Emulsion	<ul style="list-style-type: none"> • Use undiluted: impregnating agent for concrete • Use diluted: WR admixture for non-load-bearing concrete, cementitious-based mortar, and plaster
Siloen® SR 349	Potassium Methyl Siliconate	<ul style="list-style-type: none"> • In-plant WR impregnation of terracotta tiles, bricks, perlite vermiculite • Damp-proof chemical barriers
Siloen® SR 403	Reactive Silicone Fluid Emulsion	<ul style="list-style-type: none"> • Admixture for cement-based mortars • WR additive for paints, plasters, renders
Siloen® HPA 406	Modified Siloxane Resin Emulsion	<ul style="list-style-type: none"> • High-performance WR/beading additive with minimal dirt pick-up for silicones, silicates, and WB dispersion masonry paints
Siloen® HPA 415	Methyl Siliconate	<ul style="list-style-type: none"> • VOC-free pH adjuster • Long-lasting pH stability • Improves water and wet scrub resistance • Odor-free alternative to pH adjuster amino alcohol
HY 43	Polymethylhydrogen Siloxane	<ul style="list-style-type: none"> • Water repellent additive for gypsum
Sempure 379	Polymethylhydrogen Siloxane Emulsion	<ul style="list-style-type: none"> • Water repellent additive for gypsum

Silicone Resins for High Temperature Application

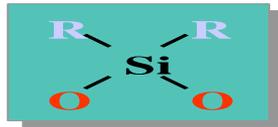


Silicone Resins Chemistry

Branched, linked, caged structures made of D-, T- or Q-functional units



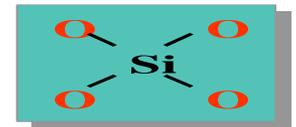
M



D



T



Q

For the most common silicone resins, **R** might be methyl or phenyl group.

- Methyl Groups (Me) provide water repellency, release properties, incompatibility with organic products, hardness, but also fragility
- Phenyl Groups (ϕ) provide thermal resistance, thermoplasticity, flexibility, compatibility with organic products, and chemical resistance

A resin contains reactive functions (such as silanol or alkoxy groups) that interact to form the network and increase molecular weight.

Siloen[®] Resins Range in Aromatic Solvent

Product	Type	% solid	Max. temp (°C)	Application	Resin hardness
Siloen[®] SR 379	Me	50	600	<ul style="list-style-type: none"> • Anti-corrosion • Heat resistant 	Hard
Siloen[®] SR 379 N	Me	50	600	<ul style="list-style-type: none"> • Anti-corrosion • Heat resistant • Low viscosity 	Hard
Siloen[®] SR 383	Me, Phe.	50	650	<ul style="list-style-type: none"> • Anti-corrosion • Heat resistant 	Medium
Siloen[®] SR 313	Me, Phe.	80	650	<ul style="list-style-type: none"> • Anti-corrosion • High solids • Heat resistant • Low VOC 	Medium

Silicone Methyl Alkoxy Oligomer

Product	Type	% solid	Application
Siloen® SR 833	Methyl Alkoxy	100%	Room temperature moisture-curing coatings (need a catalyst/curing agent) offer short tack-free dry times, high hardness, excellent water-repellency, and high-temperature resistance up to 600-650°C. They are ideal for applications such as auto body coatings, floor coatings, and more.

Food Release Application



Siloen[®] Resin in Aromatic Solvent Food Release Application

Product	Type	% solid	Max. temp (°C)	Application	Resin hardness
Siloen [®] SR 385 FD	Me, Ph	50%	300	Nonstick coatings (for bakery pans, toaster, BBQs)	Medium

- Silicone resins are easier to coat (one-step cycle) compared to silicone elastomers and PTFE (which requires a multi-step process)
- The number of baking cycles can be extended with proper pre-treatment
- Re-coating is also less expensive than with other technologies



Paint Additives



BRB Paint Additive Range

Main Function: Substrate Wetting	Type	Benefits
BRB Siloen® WA 261	Trisiloxane Polyether	<ul style="list-style-type: none"> • Lowest surface tension in the range • Substrate wetting, air release, levelling flow • For waterborne, solvent-borne, UV/EB
BRB Siloen® WA 263	Silicone Polyether	<ul style="list-style-type: none"> • Substrate wetting, levelling, flow • Hydrolytically stable in a pH range of 4 to 10 • Low foam stabilisation, does not increase slip • Waterborne, solvent-borne, UV/EB
BRB Siloen® WA 264	Silicone Polyether	<ul style="list-style-type: none"> • Substrate wetting, levelling, flow • Hydrolytically stable in a pH range of 4 to 10 • Low foam stabilisation, does not increase slip • Waterborne, solvent-borne, UV/EB • Best suited for systems without co-solvents
BRB Siloen® WA 265	Trisiloxane Polyether	<ul style="list-style-type: none"> • Low surface tension • Suitable for difficult substrates (plastic, wood) • Substrate wetting, air release, levelling, flow • Waterborne, UV/EB
BRB Siloen® WA 266	Silicone Polyether	<ul style="list-style-type: none"> • Low surface tension • Improve levelling and wetting • Low foam stabilisation, does not increase slip • Suitable for systems with no or low co-solvent • Suitable for WB Acrylic, Styrene-Acrylate, WB PU

BRB Paint Additive Range

Main Function: Levelling Flow	Type	Benefits
BRB Siloen® LA 270	Silicone Polyether in Solvent Solution	<ul style="list-style-type: none"> • Promotes levelling flow and anti-cratering • Moderate slip • Universal for solvent-borne coatings
BRB Siloen® LA 271	Silicone Polyether	<ul style="list-style-type: none"> • Highly efficient levelling, flow • Provides slip, gloss, anti-blocking, mar resistance • Recoatable • Waterborne, solvent-borne, UV/EB • Printing inks, leather topcoats
BRB Siloen® LA 274	Alkyl-Aryl Modified Polydimethylsiloxane	<ul style="list-style-type: none"> • Solvent-borne coatings • Does not stabilise foam, but provides some defoaming effect • Good levelling effect • Does not impact intercoat adhesion

BRB Paint Additive Range

Main Function: Slip & Mar	Type	Benefits
BRB Siloen® SMA 280	Silicone Polyether	<ul style="list-style-type: none"> The highest slip in the range Promote flow levelling and anti-blocking
BRB Siloen® SMA 281	Ultra High MW Silicone Emulsion	<ul style="list-style-type: none"> Low visco ultra high MW silicone emulsion (65% solid) Slip, anti-blocking, CoF reduction, mar resistance Good compatibility with WB Acrylic, PU, Alkyd, and more Wood coatings, leather topcoats (abrasion resistance)
BRB Siloen® SMA 283	Silicone Polyether	<ul style="list-style-type: none"> Excellent slip and fast levelling, good tape release, gloss, anti-cratering Helps substrate wetting; recoatable Waterborne, solvent-borne, UV
BRB Siloen® SMA 284	Ultra High MW Silicone Emulsion	<ul style="list-style-type: none"> Ultra high MW silicone emulsion (tin-free, 80% solid) Mar & scratch resistance, CoF reduction, anti-blocking PU and acrylic leather topcoats
BRB Siloen® SMA 286	Silicone Acrylate	<ul style="list-style-type: none"> UV crosslinkable (non-migrating) slip and mar additive CoF reduction (0.2 to 1.5%), release (2.0 to 3.0%) UV overprinting varnishes, inks, wood coatings
BRB Siloen® SMA 287	Alkyl-Aryl Modified Silicone Fluid Emulsion	<ul style="list-style-type: none"> Anti-blocking additive for water-based wood coatings Improve mar resistance Good compatibility Does not impact intercoat adhesion
BRB Siloen® SMA 288	Ultra High MW PDMS Emulsion	<ul style="list-style-type: none"> Low viscosity anionic emulsion of ultra high MW PDMS Excellent slip and surface smoothness Suitable as an anti-blocking additive in WB PU and WB acrylic wood coatings

BRB Paint Additive Range

Main Function: Diver	Type	Benefits
BRB Siloen® DA 290	Fluorosilicone Solvent Dilution	<ul style="list-style-type: none"> • High-efficiency defoamer, especially in high-solid paints • Air release (PU & epoxy-based ambient curing plastics) • For solvent and solvent-free systems
BRB Siloen® DA 293	PDMS Emulsion	<ul style="list-style-type: none"> • Suitable for high PVC (60 to 85) WB dispersion paints • Compatible with all types of WB adhesives • Cost-effective alternative to mineral oil-based defoamers
BRB Siloen® TA 394	High MW Silicone Solvent Solution	<ul style="list-style-type: none"> • Hammertone effect additive • Solvent-based metallic pigment coatings • Possible application in some waterborne systems
BRB Siloen® PDA 222	Alkyl-Modified Silicone	<ul style="list-style-type: none"> • Surface treatment of mineral fillers (e.g., TiO₂), organic & inorganic pigments, flame retardants (e.g., ATH) • Improves compatibility with polymer matrix • Allows higher pigment load • Mostly suitable for plastic applications

BRB Silanes for Paint & Coatings

Main Function: Adhesion Promoter	Type
BRB Silanil [®] 919	3-Amino Propyl Triethoxy Silane
BRB Silanil [®] 581	3-Amino Propyl Triethoxy Silane Aqueous Solution
BRB Silanil [®] 176	Amino Ethyl Amino Propyl Trimethoxy Silane
BRB Silanil [®] 276	Vinyl Trimethoxy Silane
BRB Silanil [®] 258	3-Glycidoxypropyl Trimethoxy Silane
BRB Silanil [®] 533 ESO	3-Glycidoxypropyl Oligomer

BRB Silicones for Insulation



BRB Siloen[®] Emulsions

Products	Type	% solid	Binder type	Application
BRB Siloen[®] SW4 BRB Siloen[®] HJS	OH NH ₂	40% 60%	PF Dextrose	Hydrophobic additive for fibre rolls & batts
BRB Siloen[®] BW5	Reactive	50%		Hydrophobic treatment for blowing wool

Silicone emulsions confer a powerful hydrophobising effect to oven-cured binder chemistries utilized in glass wool and stone wool insulation.

The emulsions feature optimised dispersion characteristics, offering enhanced binder compatibility.



BRB Silanil[®] for Powerful Coupling

Product	Type	% solid	Nature	Application
BRB Silanil[®] 919 BRB Silanil[®] 581	Amino	100% 50%	Non-Aqueous Prehydrolysed	Coupling agent for organic binders and mineral fibres

BRB Silanil[®] coupling agents are cost-effective solutions that ensure the strongest chemical bond between formulated binders and insulation fibres.

BRB offers a wide range of silanes to meet your cost and performance demands.



Akasil[®] Antifoam eliminates foam issues

Product	Type	% solid	Binder type	Application
Akasil[®] Antifoam TG 10	Me	10%	PF Dextrose	Eliminates unwanted foam in wash-water loops and binder make-up

Akasil[®] Antifoam TG 10 is a versatile, water-based defoamer that can be easily dosed at low application rates into all susceptible water loops, helping to keep your plant and equipment in optimal working condition.





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