Silane Impregnation & Hydrophobic Durability Solutions

Deep Penetration Silane Systems for Concrete Durability and Waterproofing

ZRETE’s silane impregnation solutions create a deep, breathable hydrophobic layer within concrete to prevent water and chloride ingress. They enhance durability in bridges, marine structures, tunnels, and industrial floors, offering long-term protection without altering the surface appearance.

Summary

Silane impregnation forms an internal hydrophobic barrier that repels moisture and chloride ions while allowing vapor diffusion. ZRETE’s high-purity silanes provide deep penetration (up to 8 mm), high water repellency, UV stability, and protection lasting over 10 years in exposed environments.

1. International Practice

Silane impregnation is a proven method for extending the service life of reinforced concrete structures. Unlike film-forming coatings, silane reacts inside the pore structure to create an invisible, breathable barrier that blocks liquid water and chlorides.

2. Application Challenges

Water and chloride ingress leads to rebar corrosion, cracking, and spalling. Durable protection requires deep penetration, UV and alkali resistance, vapor permeability, and long-term performance even in marine or freeze–thaw conditions.

3. Product Performance

ZRETE's T80 and T99 silane impregnating agents are high-reactivity organosilanes that ensure deep penetration and enduring protection:

- Active content ≥80–99% enabling penetration depth up to 8 mm.
- Water repellency ≥90% significantly reducing water absorption and chloride diffusion.
- Breathable, non-film-forming protection with natural appearance.
- UV, alkali, and chemical resistance for harsh environments.
- Expected service life over 10 years with a single application.

Product Matrix

Product	Description
T80A Silane Impregnating Agent (Isooctyltriethoxysilane)	Paste-type silane for vertical or overhead concrete. Provides deep penetration and long-lasting waterproofing.
T80 Silane Impregnating Agent (N-Octyltriethoxysilane)	Liquid silane sealer for bridge decks and tunnel walls with high UV stability and chloride resistance.
T99A Silane Impregnating Agent (Isobutyltriethoxysilane)	High-reactivity silane ideal for marine, freeze–thaw, and coastal structures; excellent permeability control.
T99 Silane Impregnating Agent (N-Butyltriethoxysilane)	Deep-penetrating silane for chloride and carbonation protection with breathable finish.

Application Scenarios

Bridge Deck Protection

Silane sealing on bridge decks prevents chloride ingress and freeze–thaw damage, preserving rebar and extending deck life.

Water Treatment & Industrial Facilities

In treatment plants and tanks, silane impregnation blocks chemical attack and moisture ingress, ensuring long-term watertightness.

Marine & Coastal Concrete

High-reactivity silanes protect seawalls, piers, and breakwaters against saltwater, splash zones, and carbonation in aggressive marine environments.