

Project Case Study

Optimum Performance Home

Located in Sonoma County, along the northern coast of California, The Sea Ranch is a 43-year old residential development celebrated worldwide for placing environmental awareness and preservation at the forefront of design and construction. Spanning 5,000 acres, the development's building principles are to create structures that merge with the existing landscape and co-exist with nature. With this in mind, the formidable community approaches a new milestone this May with the completion of a new type of home – the world's first Optimum Performance Home®.

The Optimum Performance Home is a new single-family, three-building, 3,272 square foot home (4,441-square-foot total building "footprint," including garages, covered walkways, courtyard, and decks) that reduces its environmental impact by effectively using responsible and sustainable building materials and processes. Exceeding California's building code requirements, and with the goal of achieving a platinum-level Leadership in Energy & Environmental Design (LEED) certification, it showcases the "green" movement. It is designed without physical barriers, allowing residents to age-in-place. It is also constructed with stronger materials and higher quality building techniques to withstand natural disasters.

The development's proximity to the Pacific Ocean posed a unique challenge for the development team. Naturally-occurring subgrade water in the area causes the clay soil to become overly saturated. As a result, the team turned to Kryton to help ensure water remained outside of the building envelope, while also abiding by the strictest environmental standards for construction.

Kryton's concrete waterproofing admixture, KIM, was selected for its environmental attributes. KIM is a chemical admixture in dry powdered form that is part of Kryton's

Integral Crystalline Waterproofing System. When combined with water and concrete, it reacts with un-hydrated cement particles to form millions of needle-like crystals. Over a period of time, these crystals grow and fill the naturally occurring pores and voids in concrete, providing permanent waterproof protection. Using KIM eliminates the need to use conventional waterproofing membranes by protecting the concrete from the inside out.



Three concrete mixes have been created to date for the Optimum Performance Home: a specifically engineered Controlled Density Fill (CDF), a standard foundation footing and mix for the Amciv ICF's, as well as a suspended slab-on-grade. KIM has been used in every mix except for the engineered CDF.

The KIM-treated mixes combined Portland cement, KIM admixture, Euclid Eucon A+ admixture and 40 per cent fly ash. In both mixes, 11 pounds per yard of KIM was used.

While KIM is only one part of an extensive waterproofing system, it helped in solving a design challenge that may have otherwise prevented the site from being developed to a LEED platinum standard. It is now part of a legendary development destined to change the face of green development and building practices across the globe.

Contact Us

Contact us at info@kryton.com to find a distributor near your jobsite—we're here to help.

Technical Headquarters and Kryton Canada Corporation

1645 East Kent Avenue
Vancouver BC,
Canada V5P 2S8

Phone: (604) 324-8280
Fax: (604) 324-8899
Toll Free: 1-800-267-8280
E-mail: info@kryton.com

www.kryton.com



Kryton offers Solutions to the Demand for Green

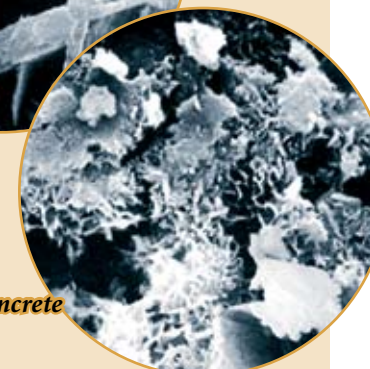
It used to be that "green concrete" meant concrete that had set but not hardened. Today those two words mean so much more.



Today's "green concrete" earns its name from a combination of sustainability of raw materials, energy efficiency of concrete buildings, recyclability of concrete and more. There is no doubt that concrete is a building material in high demand to satisfy growing global pressures to go green.



Regular concrete



Krytolized concrete

Environmentally responsible waterproof concrete

While concrete on its own has huge advantages as a green building material, waterproofing it using old-fashioned, petroleum-based external membranes is becoming less acceptable in today's green environment.

Kryton products are one solution to today's pressure to change the way we build. Kryton can help you go green—with environmentally responsible building practices. As concerned developers, architects and engineers have discovered, Kryton's Krystol Internal Membrane™ (or KIM®) transforms concrete into a waterproof barrier—without membranes that leach oil into the surrounding ground and potentially contaminate our drinking water.

Kryton's crystalline technology permanently seals concrete by plugging its natural pores and capillaries and blocking the movement of water. It reacts with incoming water to self-seal the cracks that inevitably develop in concrete, protecting structures against water and contaminants that can weaken or destroy concrete and corrode steel reinforcements.

Kryton's integral crystalline admixture creates strong, waterproof, environmentally-safe concrete—good for life!

It's predicted that half of North America's existing infrastructure will need replacing in the next 20 years. Kryton is working toward



ensuring that sustainability plays a big part in the billions of dollars that will be spent to rebuild North America. Strong, waterproof concrete—waterproof from the inside out—is key to tomorrow's environmental sustainability.

KIM is the world's first crystalline waterproofing admixture—and it's making a difference. Kryton concrete waterproofing was named one of the top trends to watch for in 2006 by Concrete Construction magazine. Krystol Internal Membrane (KIM) is the recipient of the Most Innovative Product award given out annually at the World of Concrete tradeshow. KIM is also the first concrete admixture to be certified by the International Code Council - Evaluation Service (ICC-ES).

Kryton – providing sustainable systems and assisting people with building sustainable structures

Krystolize your Concrete!

Waterproofing Admixtures for New Construction

KIM is the world's leading and original integral crystalline concrete waterproofing admixture. KIM eliminates the need for conventional external waterproofing membranes, which rely on an additional hurdle to shield the concrete from moisture.

Now available in environmentally-friendly pulpable bags for easy addition to the concrete mixer, KIM is the world's only permanent, self-sealing, corrosion-free, concrete waterproofer. KIM protects against water intrusion, leakage, cracking, chemical attack and corrosion of reinforcing steel.



Surface-applied Systems for New and Existing Structures

Krystol T1&T2 Waterproofing System is a cementitious, brush or spray-applied treatment. Krystol T1&T2 reacts chemically within the concrete to form billions of needle-like crystals that block the pores, voids and microcracks in concrete. Or, use Krystol Broadcast, a crystalline waterproofing treatment for concrete flatwork, which is applied dry to fresh concrete surfaces and troweled into the concrete during final finishing.



Repair and Maintenance for Existing Structures

The Krystol crack repair system is a straightforward process using crystalline-based cementitious dry-packs for permanently repairing cracks in concrete, even under extreme water pressure. The efficient application method requires no specialized tools such as injection guns and ports. When applied in accordance with manufacturer's specifications, the Krystol system is warranted for use in place of conventional waterproofing systems.



How Integral Crystalline Waterproofing Works

Kryton's Integral Crystalline Waterproofing uses a chemical reaction to turn concrete into a permanent, waterproof barrier.

When added or applied to concrete, crystalline chemicals create a reaction that causes long, narrow crystals to form, filling the pores, capillaries and hairline cracks of concrete. As long as moisture remains present, crystals continue to grow throughout the concrete, reaching lengths of many inches over time.



Microscopic, needle-like crystals fill the naturally occurring pores and capillary tracts of concrete for guaranteed waterproof structures.

Unlike environmentally-degradable, externally-applied membranes, which are best on the day they are applied, crystalline applications become even more effective with time. The crystalline chemicals sit dormant until cracks form in the concrete due to curing shrinkage, settling or seismic activity. Then any water entering through cracks causes new crystals to form and grow, blocking and filling those cracks. Crystalline-treated concrete's ability to self-seal cracks is a unique and highly useful feature, and can help to dramatically reduce the long-term maintenance and repair costs of a concrete structure.

Krystol Benefits Sustainability

Hot weather can dramatically shorten concrete's setting time. The result is weaker concrete and more shrinkage and cracking. Adding KIM to the concrete mix reduces premature moisture loss, creating a more durable structure and reducing shrinkage and cracking. Unlike membrane systems that become brittle and deteriorate when exposed to prolonged heat, Krystol waterproofing is unaffected by climate—good for the life of the structure.

Krystol® and LEED Certification

Kryton products can help buildings earn valuable LEED points.

LEED – Leadership in Energy and Environmental Design – certification measures a building's impact on the environment. It is one of the most widely used project rating systems for new construction and major renovation. The program is regulated by the US Green Building Council.

Although only buildings can be certified and not materials, Kryton products may contribute to achieving valuable LEED points for your building. Here are just a few ways we can help:

Sustainable Sites (14 possible pts)

- Kryton can help reduce site disturbance (2 points). Less excavation is required because KIM waterproofing is added directly to the concrete mix. No need to excavate to accommodate space for workers applying physical membranes.
- Kryton can waterproof roofing, adding to a building's "green roof" (1 point).
- Construction waste management earns 1 point. While membrane-coated concrete goes straight to the landfill, KIM concrete can be recycled post demolition, eliminating waste.

Materials and Resources (13 possible pts)

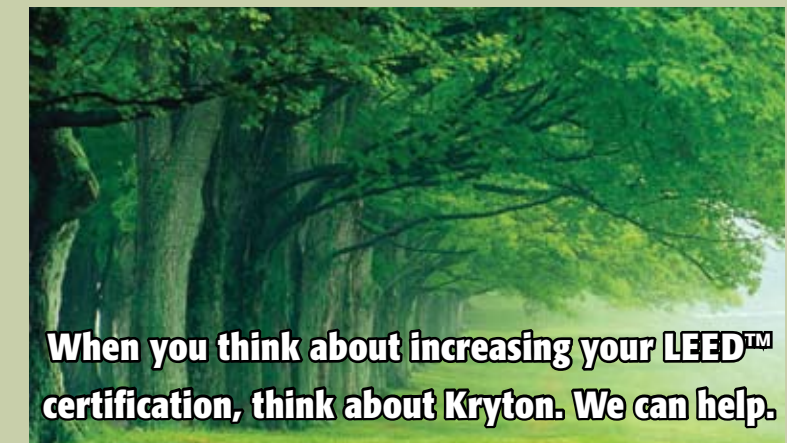
Concrete is produced locally and most ingredients are produced regionally. Using regional materials and products that are manufactured and transported within 500 miles of the jobsite earns 2 points. Kryton's manufacturing headquarters are based in Vancouver, Canada, with distributors throughout the USA. Contact info@kryton.com to find a distributor near you.

Indoor Environmental Quality (15 possible pts)

Krystol contains no volatile organic compounds, and does not affect air quality. Low-emitting materials earn 1 point.

Innovation and Design Process (5 possible pts)

KIM and Krystol contribute to the overall durability and life expectancy of a building by stopping corrosion, increasing freeze / thaw durability, and protecting against chemical attack, carbonation and other detrimental effects. Enhanced durability earns 1 point.



When you think about increasing your LEED™ certification, think about Kryton. We can help.

