

# B2B Purchase

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*For projects, process & products*

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# New trends in construction waterproofing

Partha Basistha

*In recent times the Indian construction market is witnessing spurt in newer products and solutions in waterproofing to provide longer longevity to construction rehabilitation and retro-fitment.*

The increasing cost of construction rehabilitation, led by escalating raw materials and labour costs, is making project developers and owners (both belonging to high-end, real estate and individual residential construction) increasingly opt for effective and advanced waterproofing products and solutions.

The newer valued products are sought so as to have sustained support to their waterproofing rehabilitation initiatives to increase the shelf life of concrete, thereby to have honest returns on investments. In accordance with the same, producers are providing assorted range of waterproofing products and solutions placement with competitive characteristics -- both on quality and pricing for range of applications. According to various market estimates, the Indian waterproofing market is valued in-between Rs 500-700 crore.



According to Akhil Kakkar, General Manager, South Asia, Kryton Buildmat Company Pvt. Ltd, for producers of a wide range of waterproofing chemicals for

construction applications, there is an increasing perception among project developers and owners to have long lasting quality concrete construction structures, not to mention synthesized with aesthetics. This is making them increasingly opt for waterproofing chemicals with advanced characteristics. Kakkar adds, "The increased demand for the products is also being led by more awareness to have a better quality living, arising out of the fact that



water contains certain contaminant characteristics involving chlorine and sulphur which can contaminate and corrode concrete reinforcement by prolonged leakage. This can have adverse consequences on health."

### Water leakage hazards

There are multiple hazards that could be posed by water leakage in various facilities. Drinking water facilities, wastewater treatment plants and water reservoirs are vital to communities they serve. The migration of water or contaminants in or out of these structures can have a significant impact on a community. Waterborne chemicals can contaminate a town's entire water supply. Leakage from a wastewater treatment plant can pose an environmental risk, particularly if the tank is below ground where cracks can be difficult to detect. In areas facing water shortage, even a small amount

of leakage from a reservoir can be costly. For specialized concrete tank structures like these, reliable waterproofing is quite imperative.

In below-grade tanked structures such as elevator pits, basements and foundations, the sight of cracked concrete is common. While the impact of leaks in these structures is not as dramatic as leaks in water containment structures, repairs are no less time consuming and costly. These leaks are not only aesthetically displeasing, but also allow corrosion of the reinforcing steel and eventual deterioration of the structure's integrity.

### Newer emerging products & trends

Acknowledged by hazards posed by water leakage, there has been growth in demand for quality products that would provide longer shelf life to the structure, and would be also less on economics. This has led to departure from traditional

waterproofing products and methods to apply the same. As per the earlier and conventional practice goes, the trend was creating a layer of Kota stone slab which was put on the concrete surface to restrict water leakage. However, the pitfall of the product application was that it was expensive, and Kota stone owed its limitations as it could not cover the full surface area. To cover the surface, the stone had to be separated, leaving the room for increased water leakage. The other conventional products and practices had been to apply bitumen oil products and polymer film membrane waterproofing products.

Bitumen and polymer products have their positive characteristics for being more adhesive and for having a long shelf life. However, the products are known to have toxic characteristics. This makes them less eco-friendly. The other traditional waterproofing products

as per earlier trends has been to use some integral waterproofing compound in the concrete during pouring and bitumen coating or brick bat coba on the roof or other surface area.

### Innovative products

However, with globalization and increase in demand for quality products, it has led to innovative solutions such as durable membranes based on APP/SBS, EPDM, crystalline waterproofing, polyurethane coatings and lastly, acrylic polymer-based cementitious coatings. Plasticizers used in concrete make the concrete dense, thus it contributes in making the concrete impervious.



According to Supradip Das, General Manager-Marketing, Buildtech Products India Pvt. Ltd, "Earlier, the concept of waterproofing was not taken seriously by both

the contractor and client. However, with emergence of innovative and quality products, in present-day it practically costs less than 1 per cent of the value to waterproof a building."

Buildtech manufactures and markets a wide variety of construction chemicals and markets a range of waterproofing and construction chemical products.

Highlighting on the range of waterproofing products offered by the company and their application areas, Das informs, " Our product range is quite wide. This includes integral waterproofing compound (Buildtite) conforming to IS: 2645, acrylic (Buildcrete) and polyurethane coatings, chemicals for grouting, crystalline waterproofing, water reactive grouting materials and many others.

Besides these products, Buidtech also markets fourth generation waterproofing



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materials which are not being manufactured in India. "Our global partners are marketing their products through us. Buildthene IC – based on polyurethane is specified with NTPC, EIL IOCL and many others. This product conforms to ASTM and being used in many projects such as NTPC, Sipat, Kahalgaon, Amarkantak, IOCL Panipat and many others," said Das. An innovative product line is also offered by Kryton Buildmat.

While mentioning the advanced characteristics of the products, Kakkar informs, "Our Krystol Internal Membrane is much advanced and innovative product as compared to other contemporary products based on the fact that it has a unique composition. This is because as long as moisture remains present in the concrete, KIM™ crystals continues to grow throughout the concrete, reaching lengths of many inches over days, weeks or months. Once the concrete dries, Krystol™ technology sits dormant until the next dose of water causes the chemical reaction to begin again. The ability to remain dormant and reactivate in the presence of water gives KIM™-treated concrete the ability to self-seal."

Kakkar continued, "Waterproofing products using external membrane methods present a number of challenges. They are expensive and time-consuming to install, increasing construction time and labour costs. Some membranes are painstakingly difficult to apply which can result in an inconsistent (and less reliable)



application. Even when properly applied, membrane systems have a finite useful life. They eventually dry, crack, peel or otherwise deteriorate as a result of ultra-violet exposure or other attack, leaving structures vulnerable to water leakage and or contamination. When an externally applied membrane is compromised, water becomes trapped between the concrete and the membrane and leaks will occur at the path of least resistance in the concrete. Once the crack is repaired, trapped moisture will then find the next path of least resistance and a new leak will appear. However, with Krystol Internal Membrane, the leakage is prevented to an optimum level."

Krystol™ Internal Membrane (KIM™) is a crystalline waterproofing product that utilizes Kryton's proprietary Krystol™ technology to transform porous concrete into an impermeable barrier. When added to a concrete mixture, KIM™ creates a chemical reaction that causes long, narrow crystals to form, filling pores, capillaries and hairline cracks in concrete. By blocking passageways within concrete, these crystals permanently prevent the movement of water in all directions.

On application areas Kakkar remarks, "Krystol Internal Membrane is ideal for preventing leakage for concrete tanked structures. KIM™ possesses a number of unique benefits that make it a superior waterproofing solution for concrete tanked structures." He adds, "The benefits of using KIM to prevent leakage in concrete tank structures is that by permanently blocking water penetration from all directions, KIM™ halts the migration of waterborne contaminants such as chemicals, chlorides, sulphates and silt, protecting construction joints. Moreover, KIM™ is ideal for use in concrete tanked structures because of its convenience, easy application, affordability and superior performance."

Advanced waterproofing products are also claimed to be produced by Asian Laboratories. It produces integral water-proofer for concrete mortar, integral waterproofing polymer-based compound, heavy duty water-repellent compound, waterproofing and anti-

corrosion coating system, polymer-based waterproofing coating.

The characteristics of the products for concrete mortar, as per Asian Laboratories, do not entertain air, increase final strength, reduce w/c ratio by 10-15 per cent at constant workability, reduce permeability, increase cohesion, decrease segregation/bleeding. While its integral polymer-based compound product is chloride-free powder polymer based effective compound. The characteristics of other products comprise easy application, high water-repellant, high durability in continuous wetting condition, free from tar and bitumen, non-toxic, etc.

The Asian Laboratories' other waterproofing products include chemical injection systems of waterproofing, with viscosity of chemical like water that can travel deep into the leakage stratum and fast setting ready-to-use leak stop compound for early strength, ready-to-use repair material. While mentioning properties of the products, M. K. Rawal, Director-Technical, Asian Laboratories, says, "The composition of our products makes them penetrate finer zones, enabling the structure to have a longer shelf life. Besides the products are price competitive."



Advanced waterproofing products are also provided by Apaar Enterprises which markets Xypex waterproofing solutions in India. The Xypex waterproofing solutions possess crystalline technology that according to Apaar makes Xypex so uniquely to restrict waterproofing, protecting and enhancing concrete.

Apaar makes Xypex products available under the brand names, Xypex Concentrate, Xypex Admix C2000, Xypex Patch-n-Plug, Xypex FCM 60 and Xypex Xycrylic admix. According to Ashwini Kumar, Managing Partner, Apaar Enterprises, "The Xypex products can be applied fast compared to other products, which makes construction schedule economical."