



# Construction Chemicals Introduction and Applications

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📍 All 📅 December 14, 2021 ⌚ 4:31 am 📁 Introductions

Maimaar Construction Chemicals Division deals in industry-standard chemicals and grouting materials. We are the proud partners of world renowned construction chemical manufacturing companies including Sika and BASF. Construction chemicals are chemical formulations used with cement, concrete or other construction materials at the time of construction to hold the construction material together. Construction chemicals have become one of the important components of the chemical industry playing an important role in global infrastructure development. Construction chemicals are widely used in the construction of residential, industrial, commercial and infrastructure projects. Residential building has the major market share for construction chemicals followed by commercial buildings. The residential building is expected to maintain its dominance in the global construction chemical market because of the increasing number of residential projects.



Increasing demand for public, commercial and residential buildings combined with increasing urban population is driving the global construction chemical market. Additionally, the increasing disposable income of individuals has created a demand for better-quality residential buildings, acting as a growth driver for the global construction chemical market. Demand for buildings, roads, bridges, tunnels and dams is further driving the market. Improved growth prospects in the construction industry mean that many multinational companies have started investing to develop advanced construction chemical products. In 2012, globally construction chemical industries total investment in research and development of new products and applications was about 3% of total sales. Some of the major companies operating in the global

construction chemical market are Ardex Endura, Axim Italcementi Group, The Dow Chemical Company, CICO Technologies Ltd, Ashland Inc., BASF, SIKA, and RPM InternationalArdex endura

Quality services and customer satisfaction is our primary motive. With a progressive experience of over 7 years in the industry, we have served several big names like:

- Nishat
- DHA – Defence Housing Authority Lahore
- Colgate Palmolive Pakistan
- University of Management and Technology Lahore.
- Zameen.com and many more.

We have an extensively experienced staff with expertise in:

- Coatings (Cementitious and Crystalline)
- Bonding Agents
- Grouts
- Sealants
- Water Repellents
- Plasticizers
- Mortars
- Concrete Admixtures

## What we do

### Cementitious Water Proofing

Water is one of the most damaging and destructive weathering elements that can harm any structure or building. While there are many waterproofing materials in Pakistan, cementitious waterproofing material by far is the most reliable on concrete surfaces and for areas that are prone to water infiltration and seepage problems. Cementitious membranes have been used to protect areas that are exposed to long-term wetting and low hydrostatic pressure. These waterproofing membranes are used to waterproof water tank surfaces, bathrooms, swimming pools, basement walls and flooring of wet rooms such as bathrooms. Moreover, a subtype of cementitious waterproofing known as flexible waterproofing cementitious membranes is used as a protective coating on concrete surfaces in buildings to make the building safer from harmful chemicals used during the construction process.

Some of the advantages of using cementitious waterproofing membranes are are resistant to water, even if it is exposed permanently, just like in a bathroom where the flooring is wet all the time. Their unbeaten ability to withstand long-term weathering, bear heavy loads and resist scratches is what sets it apart from other waterproofing materials. While a simple cement solution can significantly protect a building from weathering, it doesn't provide enough protection against water penetration. In order to improve its capacity and increase flexibility, a polymer must be added to the system, along with water-retaining agents, thickeners and additives that create the perfect waterproofing cementitious membrane.



### Chemical Injection Water Proofing

This is mostly used in home renovation projects. It is a viscous injection resin filled in cracks and gaps that keeps the waterproofing integrity of your concrete structure. Through polymer injection, the waterproofing material is forced into the cracks. This is also effective in areas like basements where you do not have access to the exterior walls. The part where polymer injection was induced becomes sturdier than its adjacent wall, which restores the structural integrity of the entire wall.

There is also chemical grout injection, which is applicable when there are a lot of cracks and it is not possible to fill out cracks individually. An expanding waterproofing grout is injected through a wall to the back side of the surface. When the chemical grout faces moisture, it expands to many times its original size, or otherwise the grout will remain inactive until it encounters water.

### Bonding Agents

Concrete bonding agents are natural or synthetic materials used to join the old and new concrete surfaces. This agent can also be used to join the successive concrete layers. This chemical helps to allow different concrete surfaces to behave like a single unit.

The cement present in a concrete mix does not have any bonding agent within it. When a layer of fresh concrete is added over an existing or old concrete layer, they exist as two separate layers without any bond. So a bonding agent must be introduced between the layers.

The use of a bonding agent helps the different concrete layers to behave like a single unit, thus increasing the strength and performance of the structure.

The bonding agent is applied over the existing surface of the concrete so that the new layer of fresh concrete successfully adheres to the old layer. The two main factors that affect the bonding between old and new concrete are:

1. Surface preparation and cleanliness of the existing surface
2. Strength and integrity of the old surface



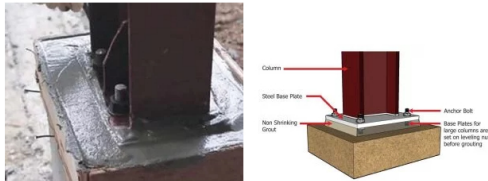


## Grouting

Grout is usually a mixture of cement, sand, and water or chemicals that are used to fill gaps. They are used in repairing concrete cracks, filling seams and gaps in tiles, gaps for sealing and waterproofing, and for soil stabilization.

It is also used to give additional strength to the foundations of load-bearing structures. Grating is basically the process of injecting a pumpable material into a structure to change its physical properties.

There are different types of grouting, cement grouting, chemical grouting, and bituminous grouting, depending on the material used.



## Sealants

Sealants are used in construction to prevent fluids and other substances from passing through material surfaces, joints, or openings. They can also prevent the passage of air, sound, dust, insects, and so on, as well as acting as a fire-stopping component.

Sealants are typically used to close openings between spaces that are too small for other materials such as concrete, timber or mortar to be used. They have a wide range of properties in terms of strength, flexibility, appearance permanence, solubility, corrosion resistance, and so on.

While some sealants have adhesive qualities, they differ from conventional adhesives in that they tend to have lower strength and higher elongation. This means that they can be used more flexibly between substrates with different properties.

Historically, materials such as plant resins, mud, grass and reeds were used as sealants. Glazing putty was first used in the 17th century as a means of sealing window glass into the panes. Sealants were first chemically manufactured in the 1920s, in the form of acrylic, butyl and silicone polymers. Synthetic-polymer-based sealants became widely available for use in construction by the 1960s.

The three basic functions of a sealant are as follows:

- Fill a gap between two or more substrates.
- Form a barrier through which other substances cannot pass.
- Maintain sealing properties for the anticipated lifetime.



## Concrete Repairing

Concrete repair is the process of fixing a hardened concrete surface that over time has lost the ability to hold the binding concrete materials together due to damage or environmental exposure. Concrete repair is appropriate for cracks, physical impacts, chipped out surfaces or surface scaling.

There are various ways to repair a concrete surface, which require some specific procedural steps, such as:

- Clean the concrete surface to ensure that no loose material such as chipped out concrete flakes or granules, oil, grease or dirt exist. A chisel or a sledgehammer can be used if required.
- Use a bristle brush and broom to clean and scrub the area to be repaired.
- Flush the area with water to ensure no loose material is left behind.
- Use one of the various cement repair solutions available in the market such as a vinyl-patching compound that can be mixed with water or any sort of bonding agent. Usually a bonding agent is preferred.
- Trowel the mixture into the cracks and broken areas, and tap properly to remove air gaps. Level the surface and make it smooth.
- Allow the surface to dry.



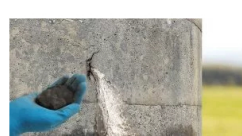


## Concrete Admixtures

One of the most important ingredients in high performance, long-lasting, durable and beautiful concrete produced today are concrete admixtures. Concrete admixtures are natural or manufactured chemicals or additives added during concrete mixing to enhance specific properties of the fresh or hardened concrete, such as workability, durability, or early and final strength.

Concrete, the single most widely-used building material in the world, has a history dating back to the Romans and ancient Egyptians. Given that concrete is used twice as much in construction over all other building materials, emphasis on quality, performance and sustainability is essential for the industry to grow and thrive.

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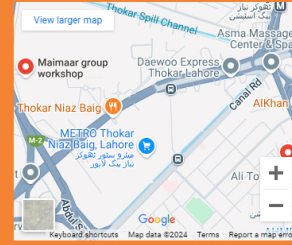


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