



BROCHURE

ChemConcrete^{-WP}

New Generation of Concrete Waterproofing Admixtures

“Highly Reliable & Cost-Effective”

Developed by a team of well-known professors &
PhD holders at Chem Concrete (Patent No. 2023902368).

Chem Concrete Pty Ltd (www.chemconcrete.com.au)

Chem Concrete is an Australian-owned company comprising a team of well-known professors, PhD holders, and engineers specialising in developing, manufacturing, and supplying a new generation of concrete waterproofing admixtures (called ‘hybrid’ admixture) – highly reliable, cost-effective, and environmentally-friendly.

Some “Expert Team” members of Chem Concrete



Prof. Zhong Tao



Dr. Sam Soheil Jahandari



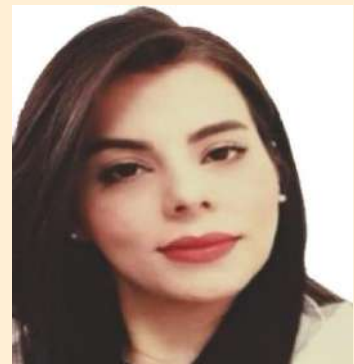
Prof. Adam AhmadDalvand



Prof. Bijan Samali



Prof. Mahdi Shariati



Dr. Aida Rahmani



Dr. Mehrtash Soltani



Dr. Md Abdul Alim



Eng. Salman Jahandari



Dr. Daniel Jahedarmaghani



Dr. Farid F. Mojtahedi



Dr. Hamid Khalajhedayati



Dr. Alex PooriaGhadir

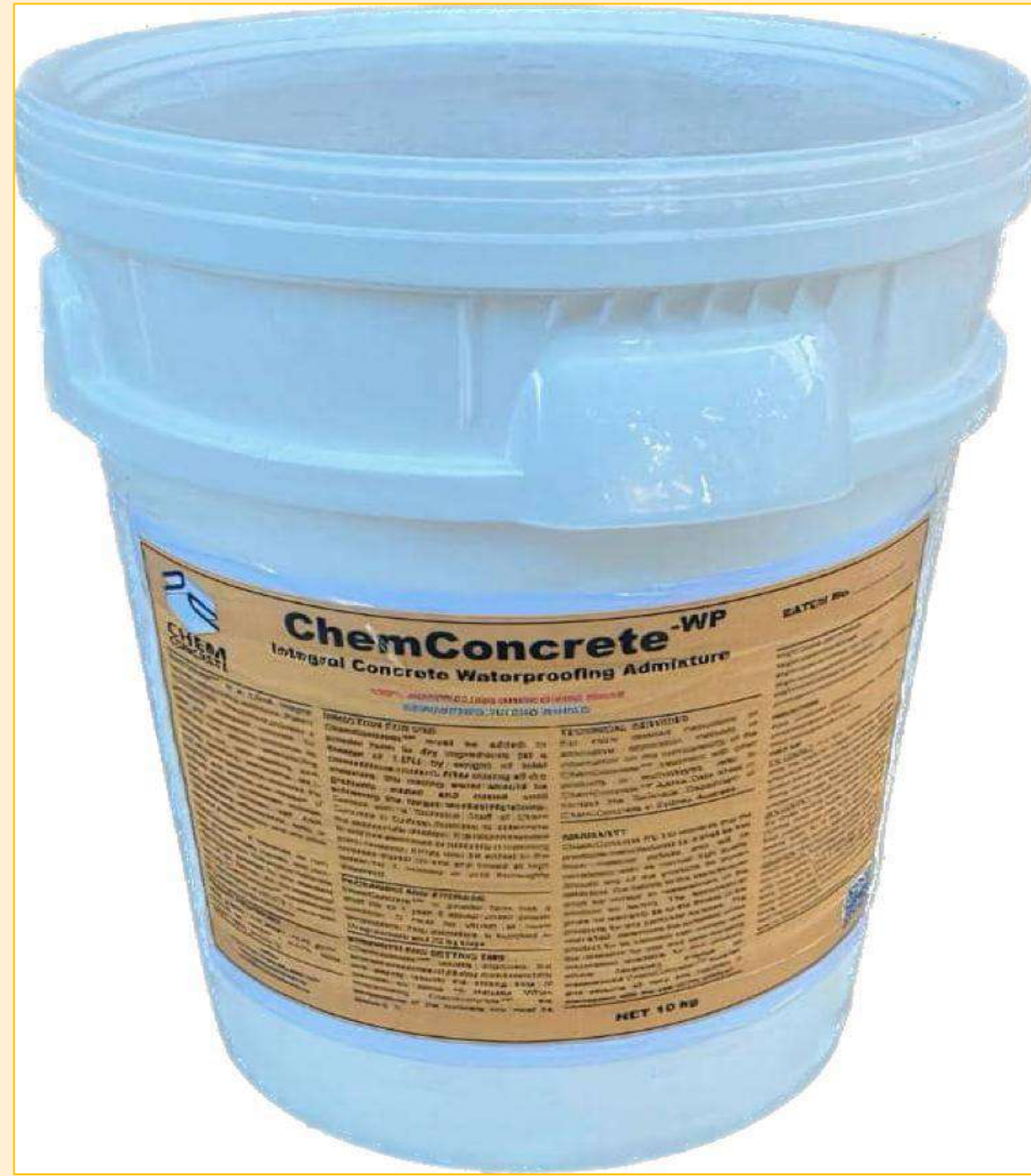


Dr. Mara Samadi



Dr. Hardy Fatehi



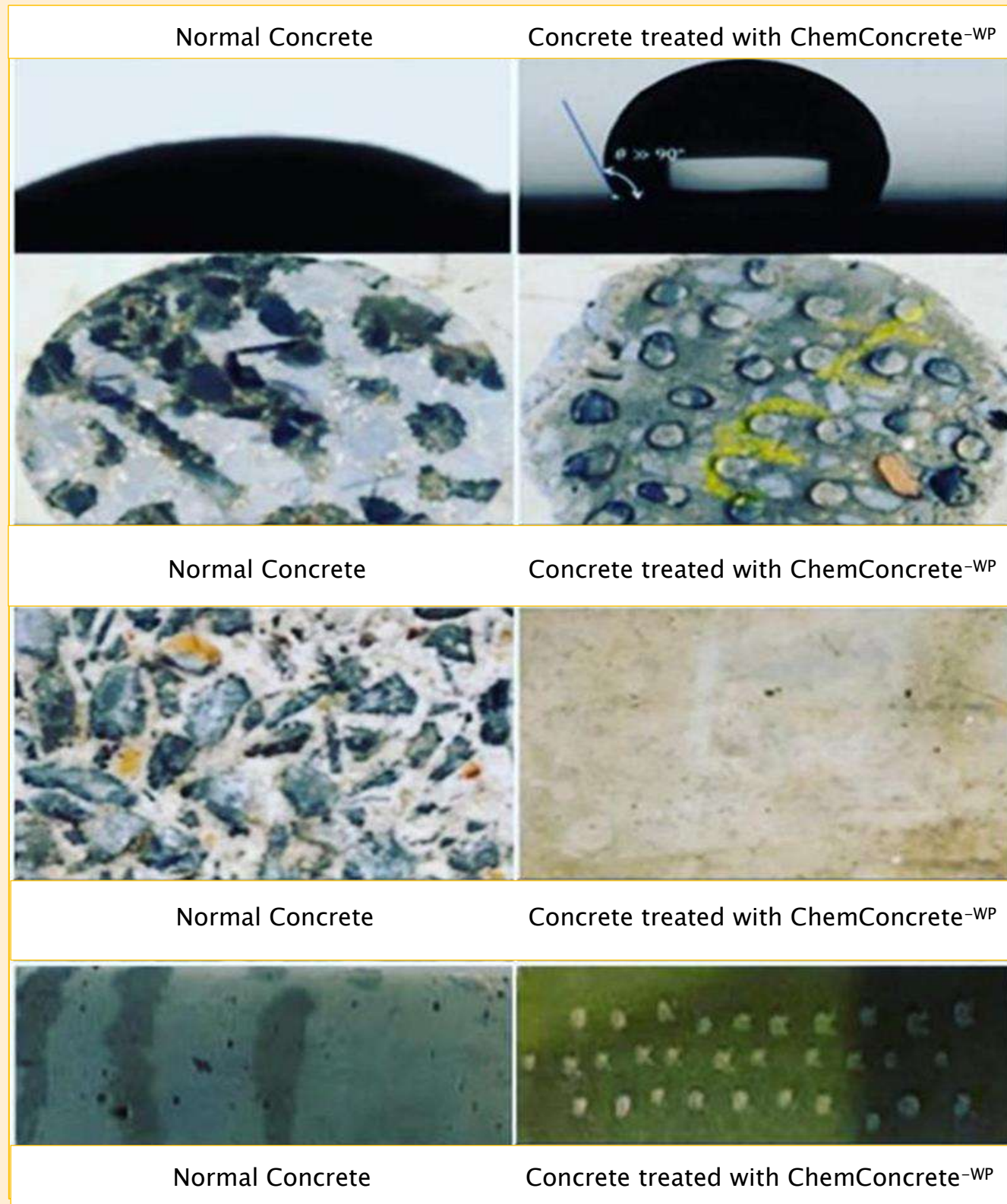


**ARE YOU TIRED OF DEALING WITH
THE CONSTANT MAINTENANCE AND
REPAIR OF YOUR CONCRETE
STRUCTURES DUE TO WATER DAMAGE?**

Look no further than “ChemConcrete^{WP} Admix”

**This is your ultimate solution
for waterproofing!**

What is ChemConcrete^{-WP} Admix?

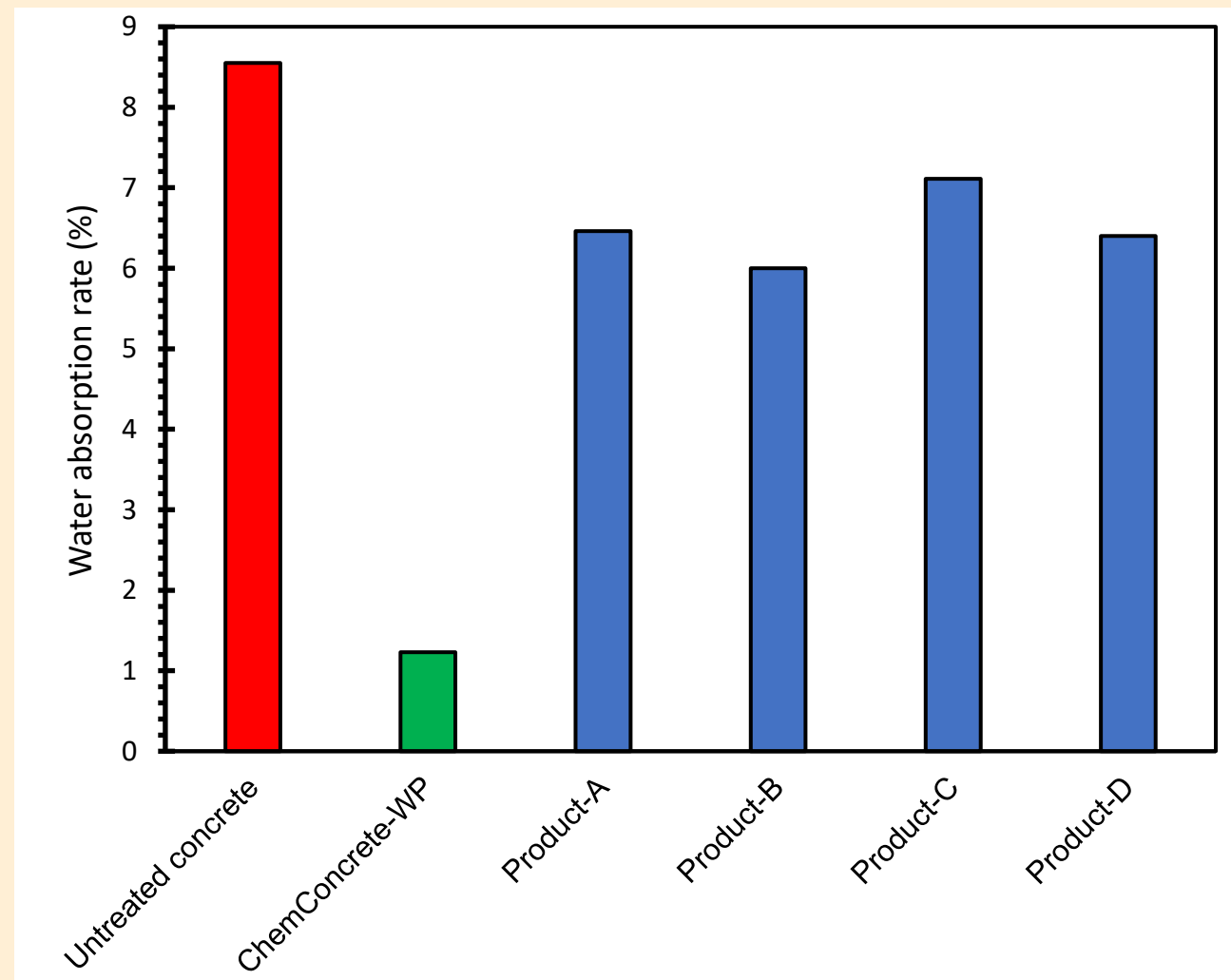


- ChemConcrete^{-WP} is a new generation of integral concrete waterproofing admixtures (called **'hybrid'** admixture) - more reliable, cost-effective and environmentally-friendly compared to traditional products.
- ChemConcrete^{-WP} is used to improve the durability and water resistance of concrete infrastructure and pavements. It is added to the concrete mix to provide superior protection against water penetration and minimise the risk of damage caused by water and waterborne contaminants.
- The application of ChemConcrete^{-WP} is very simple and straightforward. This admixture is added to the concrete mix during the batching process or to concrete trucks on site following the manufacturer's instructions. It does not require any special equipment or training and can be used in both precast and cast-in-place concrete.
- ChemConcrete^{-WP} has several benefits over surface protection methods and coatings. For example, concrete treated with ChemConcrete^{-WP} does not require regular maintenance, is not vulnerable to deterioration, can be used where it is too complex or impossible to apply a layer of protection, and does not include labor work. As an admixture added to concrete during the batching process, this product saves time and cost and eliminates the ongoing maintenance expenses.
- Once the concrete has been mixed and poured, it should be cured according to standard industry practices. The result is a high-quality, durable, maintenance-free, and permanently waterproof concrete that will provide reliable performance for years to come.

Why ChemConcrete^{-WP} is a “Hybrid” Waterproofing Admix?

How Does It Work?

Current waterproofing admixtures in the market normally use only one waterproofing mechanism or agent (i.e., crystalline, hydrophobic, or pore blocking agents). But in ChemConcrete^{-WP} Admix, different waterproofing agents such as hydrophobing, pore blocking, crystalline or self-healing, and densifying nano-sized chemicals are used to provide a highly reliable ‘hybrid’ waterproofing admixture and increase the confidence of the construction industry in these products.



Why we need ChemConcrete^{-WP} Admix

Ingress of water and waterborne contaminants is the main reason responsible for almost all the major physical and chemical degradations of concrete structures and pavements. In general, there is a direct relationship between the durability of concrete and its water absorption rate and permeability. The reduced water absorption and permeability of concrete containing ChemConcrete^{-WP} drastically slows down the diffusion of aggressive chemicals into concrete and significantly improves protection against reinforcement corrosion and alkali-silica reaction (ASR). Moreover, ChemConcrete^{-WP} significantly improves the durability and service life of concrete in exposure to seawater, chloride, acid, sulfate, rainwater, salt, freezing-thawing, efflorescence, and any other corrosive environments.



Corrosion Resistance

The chloride ion content of ChemConcrete^{-WP} is below 0.01%. It complies with the corrosion behaviour requirements given in BS EN 934-1- 2008, Clause 5.1, by testing to BS EN 480-14-2006. This product is effective under both static and hydrostatic water pressure. Cracks in concrete are a common phenomenon due to its relatively low tensile strength. However, the self-healing ability of concrete treated by ChemConcrete^{-WP} assists in repairing its microcracks autogenously.

This admixture significantly increases the freeze-thaw resistance and reduces the ASR of concrete. After 300 freeze-thaw cycles, the concrete samples treated with ChemConcrete^{-WP} indicated 97% relative durability.

ChemConcrete^{-WP} Admix maintains excellent cohesion within the concrete matrix and eliminates excessive bleeding or segregation.



**After 8 hours of
immersion in water**



Untreated concrete

**After 8 hours of
immersion in water**



Concrete treated with ChemConcrete^{-WP}

In a very simple experiment, both untreated concrete and concrete treated with ChemConcrete^{-WP} Admix were immersed in water. **After 8 hours of immersion in water, samples were exposed to air dry for 1 min. It was noticed that the untreated concrete was completely wet, while the concrete treated with ChemConcrete^{-WP} remained almost dry.**

Generating Positive Impact on Our Environment!

- ❖ Water damage is one of the main causes of concrete degradation and can result in the need for costly repairs or even the complete replacement of structures. By using ChemConcrete^{-WP} Admix, concrete structures are protected against damage caused by water and corrosive chemicals, leading to longer-lasting and more durable structures that require no maintenance and replacement over time. Consequently, there will be a much less demand for cement production and less construction works, which directly results in less CO2 emissions and a better environment!
- ❖ Unlike several admixtures in the market that contain harmful volatile organic compounds (VOC) and Xylene, ChemConcrete^{-WP} Admix is classified as non-toxic, environmentally-friendly, and non-hazardous material with no VOC or Xylene.
- ❖ Based on Australian Industrial Chemicals Scheme (AICS), all the ingredients used in the manufacture of ChemConcrete^{-WP} are non-toxic, environmentally-friendly, and non-hazardous with no or very low concern to human and environment. The manufacturing process of this product is also environmentally-friendly with 0% greenhouse gas emissions to the environment.

Independent Testing of ChemConcrete^{-WP}?

Independent laboratory tests results.

Designation		Mass loss (%)	Compressive strength reduction (%)
H₂SO₄	Control concrete	6.89	58
	ChemConcrete ^{-WP}	2.34	22
Na₂SO₄	Control concrete	0.51	11
	ChemConcrete ^{-WP}	0.08	3
NaCl	Control concrete	0.48	13
	ChemConcrete ^{-WP}	0.08	3

Property	Untreated Concrete	Treated with ChemConcrete ^{-WP}	Reference
Water absorption			ASTM C 642
30 min	2.01 %	0.16 %	
12 h	5.89 %	0.67 %	
24 h	8.63 %	0.98 %	
Water Penetration (mm)	13	3	DIN 1048
Initial surface absorption test (ISAT) (ml·m ⁻² ·s ⁻¹)			BS 1881: 2008
10 min	0.51	0.01	
30 min	0.27	0.005	
Compressive strength	42.50 MPa	47.50 MPa	ASTM C39
Flexural strength	5.65 MPa	6.25 MPa	ASTM C78
Slump	150 mm	160 mm	ASTM C143

* For particular concrete mixes and site conditions, it is suggested to evaluate the specific effect of ChemConcrete^{-WP} on the properties of concrete through site trials prior to the application.

ChemConcrete^{-WP} has been independently tested by several ready-mix concrete suppliers (both in Australia and overseas), private laboratories and companies (both in Australia and overseas), and universities and academics (e.g., Laval University in Canada, University College London in the UK, New Mexico Institute of Mining and Technology in the USA, Concordia University in Canada, etc.). Some test results have been published or are under review in international journals and conferences, such as the 9th International Congress on Civil Engineering, Architecture and Urban Development. Some major findings of the independent tests are summarised here.

In brief, independent testing results show that ChemConcrete^{-WP} Admix provides permanently waterproof concrete with significantly improved fresh, mechanical and durability properties compared to the untreated concrete and concrete treated with a few other commercial waterproofing admixtures.



Countless Benefits

- ❖ Protection against water damage
- ❖ Protection against waterborne contaminants
- ❖ Protection against corrosive chemicals
- ❖ Improved strength
- ❖ Enhanced cohesion
- ❖ Improved workability
- ❖ Reduced bleeding or segregation
- ❖ Reduced maintenance
- ❖ Ease of application
- ❖ Cost-effectiveness
- ❖ Eliminated application cost & no labor work
- ❖ Environmental friendliness
- ❖ Elimination of excessive excavation to install a membrane
- ❖ Absence of the necessity for drainage-related cavity walls
- ❖ Reduced backfill
- ❖ No weather-related delays

Applications

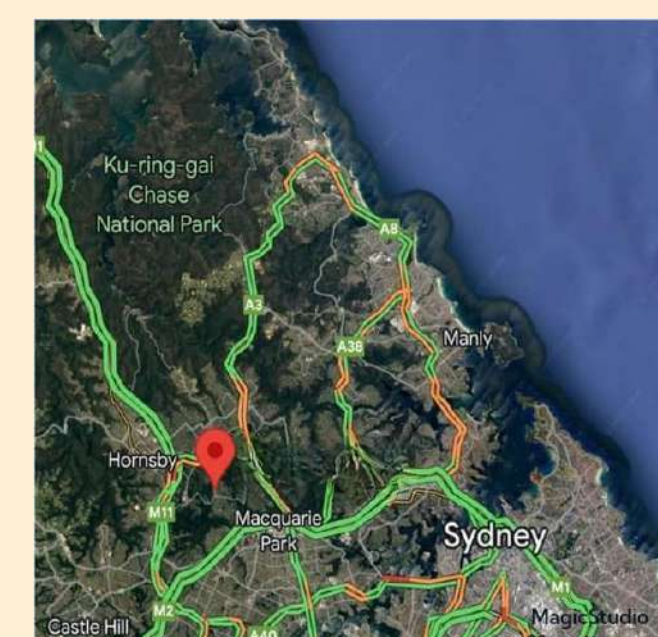
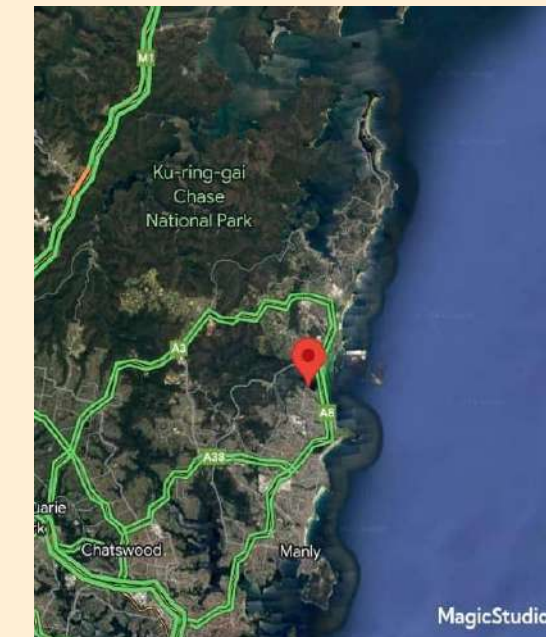
Basements	Bridge decks	Concrete piles	Wharves
Concrete pipelines	Foundations	Parking lots	Roofs
Concrete waterways	Swimming pools	Reclaimed land	Tunnels
Concrete pavements	Water & OSD tanks	Concrete blocks	Dams
Sewer pipes	Podium decks	Road barriers	Boat ramps
Service environments	Trafficable concrete	Landscaped concrete	Jetties
Mining structures	Concrete kerbs	Warehouse slabs

ChemConcrete^{-WP} Admix can also be used in any situation that is damp or wet and where the transfer of moisture, the intake or absorption of water, and the presence of salts, acids, or other corrosive chemicals is unpleasant. This product provides a permanently waterproof concrete under both static and hydrostatic water pressure.

Use of ChemConcrete^{-WP} has several benefits over traditional surface protection methods because it does not require regular maintenance, is not vulnerable to deterioration, can be used where it is too complex or impossible to apply surface coatings or membranes, and does not include labour work. As an admixture added to concrete at batching plants or to concrete trucks on site, this product saves time and cost and eliminates the ongoing maintenance expenses as well.

Durability Monitoring and on Site Testing:

ChemConcrete^{WP} Waterproofing Admix has been successfully used in different types of projects (e.g., basements, water tanks, foundations, swimming pools, warehouse slabs, concrete pavements, driveways, roof slabs, etc.), both in Australia and overseas. Many field and laboratory tests were performed on the fresh and hardened concrete. Many experiments were conducted on core drilled specimens at different time intervals, and long-term durability monitoring is being conducted. Excellent test results have been received as a result of ChemConcrete^{WP} applications. The test results will be published by our Chem Concrete Team in international journals and conferences in the near future. Stay tuned!



Why Choose ChemConcrete^{-WP}?

ChemConcrete^{-WP} Admix is the result of years of research and heavy investment in our R&D. This admixture already has a proven track record of success in protecting concrete structures against water and corrosive chemicals. Chem Concrete Pty Ltd is a team of globally-renowned Professors and PhD holders in Australia who are specialised in the area of concrete waterproofing and durability with a combined experience of over 160 years in both industry and research. So, everyone can rely on ChemConcrete^{-WP}.

Mix and Dosage

ChemConcrete^{-WP} Admix is added at a dosage of 2 -3% of cementitious materials by weight. This admixture is in liquid form and must be used as water replacement in the mix. Consult with a Technical Staff of Chem Concrete in Sydney office, Australia, to determine the appropriate dosage. Before using in concrete, it should be diluted by adding a portion of the mixing water into the admixture. It is recommended to add this admixture to concrete in batching plant; however, it may also be added to the concrete trucks on site and mixed at a high speed for 5 minutes or until thoroughly dispersed. This admixture in liquid form improves the workability/slump of concrete; therefore, account for the added water in the mix design and slump.

Packaging and Storage

ChemConcrete^{-WP} in liquid form has a shelf life of 12 months. It should be stored at a temperature between 10 to 25 °C. This admixture is supplied in 15 L buckets and 1000 L drums.

Our Commitment to Quality

At ChemConcrete, we are dedicated to delivering high-quality products and exceptional customer services. We use the best raw materials in our manufacturing process, and our product is tested rigorously to ensure it meets our strict quality standards. We also offer technical support and advice to our customers, providing assistance with product's application methods and troubleshooting.

Contact Us Today

Please contact us today if you are interested in:

- **Learning more about ChemConcrete^{-WP} Admix**
- **Placing an order,**
- **Being a reseller or distributor in your region**
- **Requesting a sample for testing**

Our friendly and knowledgeable Team of Expert is always available to answer your questions and provide you with the information you need to make the right decision for your concrete waterproofing needs. We are more than happy to work with you to address the issues that our community and industry are facing. We have the knowledge, experience and an exceptional product to protect our concrete structures and keep them looking great for years to come.

Legal Disclaimer

The information provided in this document, and, in particular, the recommendations related to the application and end-use of ChemConcrete^{-WP} Admix, are given in good faith based on Chem Concrete team's current knowledge and experience on the product when properly stored, handled, and used in normal conditions in conventional Portland cement concrete in accordance with recommendations provided by Chem Concrete team. In practice, the user of the product must investigate the product's suitability for the intended application and purpose, and Chem Concrete reserves the right to regularly change the properties of its products and update the related technical information. All orders are accepted subject to our current terms of sale and delivery.

***Under some specific conditions, Chem Concrete may provide long-term performance-based warranties sometimes up to the design life of the projects when ChemConcrete^{-WP} Admix is used. Please consult this with a technical team member of Chem Concrete in Sydney office, Australia.**



Contact Info



Office: 16 Caird Place, Seven Hills, NSW 2147, Australia.

Warehouse: 589 Withers Road, Rouse Hill, NSW 2155, Australia.



www.chemconcrete.com.au



+61-4-23881091

+61-4-11229278

+61-4-81691552

sales@chemconcrete.com.au

Follow us on Social Media

