



# ADMIX C-5000

07160 CEMENTITIOUS CRYSTALLINE

Concrete Waterproofing

## Description

XYPEX ADMIX C-5000 is a unique chemical treatment that has been specially formulated to enhance the durability of reinforced concrete exposed to aggressive conditions. Xypex Admix C-5000 is added to the concrete mix at the time of batching.

## Features and Benefits

Xypex Admix C-5000 is a powdered additive consisting of Portland cement and various active proprietary chemicals. These active chemicals react with the moisture in fresh concrete and the by-products of cement hydration to cause a catalytic reaction which generates a non-soluble crystalline formation throughout the pores and capillary tracts of the concrete. The reaction products of Xypex Admix C-5000 are in mineral crystal form and prevent the penetration of deleterious ions into ordinary Portland cement concrete, fly ash concrete and slag cement concrete with equal effect. Research work in Australia, Canada and Japan has demonstrated that the Xypex C-Series Admix enhances the ability of concrete to resist sulphate attack, limits chloride ion penetration, improves the chemical resistance of reinforced concrete and accelerates autogenous healing of cracks.

**NOTE:** The Xypex Admix C-Series has been specially formulated to meet varying project and temperature conditions (see Setting Time and Strength). Consult with a Xypex Technical Representative to determine the most appropriate Xypex Admix and to obtain technical support literature for your project.

## Compliance

Xypex Admix C-5000 complies with the requirements of AS 1478.1, as a type SN Special Purpose Admixture.

## Recommended For:

Reinforced concrete (whether poured-in-place, pre-cast, pre-stressed, post-tensioned or shotcrete) that is subjected to aggressive environments.

## Advantages

- Ease of application
- Becomes an integral part of the concrete
- Highly resistant to sulphates and chlorides

- Addresses a wide range of environmental issues
- Concrete protection from aggressive chemicals with a pH range of 3-11 in constant contact
- Can seal hairline cracks up to 0.4 mm
- Allows concrete to breathe
- Non-toxic
- Cost efficient
- Permanent
- Added to the concrete at time of batching and is therefore not subject to climatic restraints
- Increases flexibility in construction scheduling

## Packaging

Xypex Admix C-5000 is available in 15 kg pails. Each pail contains 6 x 2.5 kg soluble bags. For large projects, customised packaging is available.

## Storage

Xypex products must be stored dry at a minimum temperature of 7°C. Shelf life is one year when stored under proper conditions.

## Dosage Rates

Xypex Admix C-5000: 0.5% - 0.6% by weight of cementitious content. Consult with Xypex Australia's Technical Department or your local Xypex Representative for assistance in determining the appropriate dosage rate and for further information regarding enhanced chemical resistance, optimum concrete performance, or meeting the specific requirements and conditions of your project.

## Test Data

### COMPRESSIVE STRENGTH

**AS 1012.9, "Compressive Strength of Cylindrical Concrete Specimens", Australia Centre of Construction and Innovation, University of New South Wales, Sydney, Australia**

Type-GB blend cements containing Xypex Admix at various dose rates (0.8% and 1.2%) recorded significant strength increase at early age (3 - 28 days) by up to 31% compared to control samples.

## DRYING SHRINKAGE

**AS 1012.13, "Determination of Drying Shrinkage of Concrete", Australia Centre of Construction and Innovation, University of New South Wales, Sydney, Australia**

Xypex Admix modified concrete mixes were found to have significant lower drying shrinkage by up to 25% compared to the control mixes using Type-GB cement.

## PERMEABILITY

**ACCI Water Permeability Test, "Water Permeability of Concrete", Australia Centre of Construction and Innovation, University of New South Wales, Sydney, Australia**

Concrete samples containing Xypex Admix C-5000 were tested for water permeability against control samples. All the samples were subjected to a pressure of 10 bars (100 meters water-head) for 2 weeks. Water permeability coefficients were calculated and the Xypex Admix modified concrete showed significant reduction in water permeability by up to 81%.

## CHEMICAL RESISTANCE

**AS2350.14, "Length Change in Sulphate Solution", Australia Centre of Construction and Innovation, University of New South Wales, Sydney, Australia**

Potential expansion of concrete in sulphate environments was assessed in accordance with AS2350.14 by immersing samples in a sulphate solution over 16 weeks. Concrete samples containing Xypex Admix C-5000 were tested against untreated control samples for sulphate resistance. The test data showed the use of Xypex Admix demonstrated significant improvements in sulphate resistance (low expansion) by up to 26%.

**NT BUILD 443, ACCI Modified Test, "Chloride Diffusion by NordTest with 3% NaCl solution", Australia Centre of Construction and Innovation, University of New South Wales, Sydney, Australia**

Xypex Admix modified concretes were immersed in a 3.0% sodium chloride solution for at least 35 days. The chloride diffusion coefficients were calculated according to Fick's Second Law based on the chloride content profile in the concrete samples after immersion. Significant reductions in the chloride diffusion coefficients were found with all the Xypex Admix modified concretes by up to 50% compared to control concretes. The concretes modified with Xypex Admix C-5000 demonstrated the highest level of protection against chloride ingress in the testing.

## POTABLE WATER EXPOSURE

**AS/NZS 4020 "Products for Use in Contact with Drinking Water", Australian Water Quality Centre, Adelaide, South Australia**

Exposure testing of potable water in contact with Xypex-treated samples indicated no harmful effects.

## Directions for Use

Xypex Admix C-5000 must be added to the concrete at the time of batching. The sequence of procedures for addition will vary according to the type of batch plant operation and equipment.

**1. READY MIX PLANT - DRY BATCH OPERATION** Prior to concrete being batched, add Xypex Admix in powder form to the drum of the ready-mix truck. Mix the materials thoroughly to ensure that the Admix is distributed evenly throughout the batch. A minimum of 10 minutes must elapse before discharge of the concrete. A further 1 minute of mixing at high speed immediately prior to discharge is recommended.

**2. READY MIX PLANT - CENTRAL MIX OPERATION** Add the required amount of Xypex Admix material either into the drum or onto the raw materials in the ready-mix plant. The aggregate, cement and water should be batched and mixed in the plant in accordance with standard practices. Pour the concrete into the truck and mix for at least 5 minutes to ensure even distribution of the Xypex Admix throughout the concrete.

**NOTE:** It is important to obtain a homogeneous mixture of Xypex Admix with the concrete. Therefore, do not add dry Admix powder directly to wet concrete as this may cause clumping and thorough dispersion will not occur.

For further information regarding the proper use of Xypex Admix for a specific project, consult with a Xypex Technical Representative.

## Setting Time and Strength

The setting time of concrete is affected by the chemical and physical composition of ingredients, temperature of the concrete and climatic conditions. Extension of set time may occur when using Xypex Admix C-5000. The amount of extended set will depend upon the concrete mix design and the dosage rate of the Admix. Concrete containing Xypex Admix may develop higher ultimate strengths than plain concrete.

Trial mixes should be carried out under project conditions to determine setting time and strength of the concrete.

## Limitations

When incorporating Xypex Admix, the temperature of the concrete mix should be above 4°C.

## Technical Services

For more instructions, alternative application methods, or information concerning the compatibility of the Xypex treatment with other products or technologies, contact the Technical Department of Xypex Australia or your local Xypex representative.

## Safe Handling Information

Xypex is alkaline. As a cementitious powder or mixture, Xypex may cause significant skin and eye irritation. Directions for treating these problems are clearly detailed on all Xypex buckets and packaging. The Manufacturer also maintains comprehensive and up-to-date Material Safety Data Sheets on all its products. Each sheet contains health and safety information for the protection of your employees and customers. Contact Xypex Australia or your local Xypex representative to obtain copies of Material Safety Data Sheets prior to product storage or use.

## Warranty

Concrete Waterproofing Manufacturing Pty Ltd (trading as Xypex Australia) (the “Manufacturer”) warrants that the products manufactured by it shall be free from material defects and be of a consistent quality. Should any of the products be proven defective, the liability of the Manufacturer shall be limited to replacement of the product ex-factory. The Manufacturer gives no warranty as to fitness of the products for any particular purpose. The user shall: determine the suitability of the product for its intended use; comply with the directions for use and safe handling information available from Xypex; and assume all risks and liabilities in connection with the use of this product.

## Sustainability

Both GreenTag LCARate and GreenRate are recognised third party certification schemes for Green Star® in Australia and NZ and can certify in a single certificate all Materials Calculators, VOCs, Formaldehyde Reduction, Best Practice PVC and Post Consumer Recycled Content credits. GreenTag is a unique Australian Competition and Consumer Commission (ACCC) approved National Certification Mark and is also registered as a Certification Mark in the EU and UK and is also the Preferred Certifier for the EarthCheck Eco-hospitality certification program.



See website for more information and disclaimers.

Sustainability Assessment Category – AVERAGE SCORES	
Building Synergy	0
Health & Ecotoxicity	0.25
Biodiversity	0
LCA Score	0.03
GHG = 0.327kgCO <sub>2</sub> e/m <sup>2</sup>	0.25
Social Responsibility	0.65

Low Score = Better Performance (Score Range -1 to +1)

Company	Xypex Australia
Product	Xypex Admix C-5000
Licence No.	XYPCT001-B-2012
Product Category	Building Product

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Comments:  
GHG figure based on cradle to gate LCA, calculated in accordance with ISO14064. The LCA study was conducted in accordance with the ISO 14040/44 standard.



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