



# OXTEK SOLUTIONS - AUS PROTECT CRETE - NZ

## Colloidal Silicate Technology Product Performance

An Overview of Material Characterisation & Performance



**THE NAME  
SAYS IT ALL**



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# PROTECTCRETE - NZ OXTEK SOLUTIONS PTY LTD - AU

- Established 1998 Protect Crete / Oxtek Solutions Pty Ltd
  - Australian owned and manufactured
  - Specialists in concrete protection
  - Sole providers of unique tested technology
- Premium proven & tested propriety colloidal sillicate products
  - Environmentally friendly- LOW VOC- HACCP certified
- Over 100 years experience in the concrete, flooring & protective coating industries
  - Antimicrobial range
  - Supply Australia, New Zealand & Malaysia



**Master Builders Association**  
New South Wales



CONCRETE INSTITUTE  
of AUSTRALIA  
BRONZE MEMBER



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# Colloidal Silicate Technology

The pore-filling ability of the colloidal silicate technology contained within the Oxtek Solutions range improves the hardened mechanical properties of concrete. By contributing to a denser, less permeable and less porous structure. Concrete containing colloidal silicate demonstrates an increased compressive strength, decreased chloride diffusion, increased resistance to fire, decreased drying shrinkage, and an increased ability to withstand chemical attack.

It is well accepted that filling the voids and capillaries within the concrete will improve durability. Pores provide the primary transport routes of sources of attack in cement-based materials. It follows that to reduce the diameter of the pores reduces the access of these agents to the concrete's internal structure, thereby increasing durability

## NZS 3101-1 Section 3.5

Minimum Concrete Curing Requirements-  
"Note 3: Alternative curing methods may be used, provided a special study proves that the alternative method provides concrete durability performance equivalent to that provided by direct water application.

Please see the following independent test results in relation to Drying Shrinkage, Compressive Strength and Abrasion Resistance highlighting the performance characteristics of our product and its ability to meet exceed the results expected by water- based curing regime.



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## Curing – Make the Right Choice

Curing is designed primarily to keep the concrete moist, by preventing the loss of moisture from the concrete during the period in which it is gaining strength.

Concrete that is allowed to dry out quickly will not achieve its desired strength and may undergo considerable early age drying shrinkage. Inadequate or insufficient curing is one of main factors contributing to weak, powdery surfaces with low abrasion resistance

Curing of concrete may be undertaken in a number of ways, water ponding, membrane forming compounds or by chemical means, however, the most appropriate means of curing is often dictated by the site or the construction methodology.

Water pond curing is widely regarded as the best curing method available. However, it is often replaced with less effective membrane-forming methods in deference to the logistical and economic difficulties associated with water ponding.

It is extremely important to check the subsequent floor finish as most membrane forming curing compounds require to be removed before the application of any applied floor finishes such as direct stick carpet and vinyl, epoxy or polyurethane coatings and ceramic tile adhesives.

These membrane forming compounds may affect the bond between concrete and subsequent surface treatments. Special care in the choice of a suitable curing regime needs to be exercised in such circumstances. The residue from some products may prevent the adhesion of flooring products and tiles onto the concrete surface.

The Oxtek Solutions curing range of products are a colloidal silicate proprietary solution that is proven to be equal to that of water ponding and has exhibited significant improvements in the desired properties of hardened concrete to which it is introduced.

Although topically applied following the finishing phase, the Oxtek Solutions curing range of products penetrates the concrete leaving no film or residue on the surface of the concrete, therefore having no adverse affect on the resultant floor finishes or coverings, providing improved flexibility and efficiencies to the project.

Oxtek Solutions curing range of products achieves the cure requirements of NZS 3109:1997 & NZS 3101:part 1 2006 & conforms to the moisture suppressant requirements as per NZAS1884-2013.



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# PRODUCT PERFORMANCE TESTING

Oxtek Solutions is dedicated to the regular in-field and laboratory testing of our products, ensuring their quality and consistent performance. Our testing processes involve NATA approved laboratories and Australian University Research Departments, adhering to both Australian and International Standards. Independent consultants review and verify the results before publication.

The VOC Testing of the entire Oxtek Solutions range, following ASTM D3690-05, aligns with the requirements specified in the Green Building Council of Australia's Green Star Design & As Built V1.3-13.1.1B and Green Star Interiors V1.3-12.1.1B.

The entire Oxtek Solutions product range hold certification from HACCP International Certification Food Safety System, confirming their suitability for use in food and beverage facilities.

Slip rate testing was conducted by ISTS (Independent Slip Testing Services) in accordance with AS 4586:2013, Slip resistance classification of new pedestrian surface materials. The results achieved in the testing undertaken on samples treated by Oxtek Solutions X200 Densi-Proof, X230 Densi-Proof Repeller, X550 Carpark Warehouse & X300 Repeller confirmed that the slip rates remain unaffected when compared against the control sample in all instances.



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# PRODUCT PERFORMANCE TESTING

The table below provides a comprehensive summary of the performance enhancing characteristics in both the mechanical properties and durability when concrete is treated by Oxtek Solutions colloidal silicate technology.

Testing was undertaken on our X200 Densi-Proof product which contains the core technology that is incorporated across our product range to provide an indication of the expected performance that can be achieved when our products are introduced into concrete.

Table 1 – Summary of Testing : X200 Densi-Proof

Tests Undertaken		Control Sample*	X200 Densi-Proof Treated Samples	Results Comparison
Standard	Property			
AS 1012.9	Compressive Strength (28 Days)	39.6 MPa	41.7Mpa	5.30%
AS1012.11	Flexural Strength (28 Days)	6.0 MPa	6.3MPa	5%
AS1012.8.4	Drying Shrinkage (56 Days)	670µε	600µε	-11.50%
AS1012.13	Mass Loss (56 Days)	102.5g	45.6g	-55.50%
ASTM 1202	Chloride Ion Penetration (RCPT - Coulombs)	5971 C	4019 C	-32.71%
Accelerated Carbonation Test (Depth mm)		8.73mm	4.76mm	-45.50%
AS 1012.21	AVPV%	13.3	12.02	-9.60%
BS EN 12390-9	Depth of Penetration Water Under Pressure	75mm	62mm	-17.30%
ASTM 1202 C1353M-15	Abrasion Resistance	55.2Ha	65.3Ha	18.10%

\*All Control Samples were 40 MPa Concrete and wet cured for 28 days.



# ANTIMICROBIAL PROTECTION RANGE

## Did you know...we don't use nano-silver

Nor do we use organic microbial additives which have health or environmental concerns. The ionic silver additives which are used in the majority of our products are non leaching and non-sensitising.

The antimicrobial performance of the end product is confirmed by independent lab testing to the international standard (JISand ISO)

- 99.99% effective against: E.Coli and MRSA (Methicillin-resistant Staphylococcus aureus)

### MRSA (Methicillin Resistant Staphylococcus aureus)

Tested at 35°C

Sample		Number of live organisms (Colony Forming Units)		% reduction of Colony Forming Units, expressed as comparison with control	
		0 hours	24 Hours		
Control		140000	220000	N/A	
53050-A	X260 MediVet	140000	<10	>99.995% Reduction	EXCELLENT
53050-B	X260 MediVet	140000	<10	>99.995% Reduction	EXCELLENT
53050-C	X260 MediVet	140000	<10	>99.995% Reduction	EXCELLENT

### Escherichia coli

Tested at 35°C

Sample		Number of live organisms (Colony Forming Units)		% reduction of Colony Forming Units, expressed as comparison with control	
		0 hours	24 Hours		
Control		110000	1200000	N/A	
53050-A	X260 MediVet	110000	<10	>99.99991% Reduction	EXCELLENT
53050-B	X260 MediVet	110000	<10	>99.99991% Reduction	EXCELLENT
53050-C	X260 MediVet	110000	<10	>99.99991% Reduction	EXCELLENT



# 15 YEAR WARRANTY - MOISTURE SUPPRESSANT

## DRAFT WARRANTY I-36 (Example) X260 Medi-Vet (15 Year)

1.1 Oxtex Solutions Pty Ltd warrants and represents to -----  
----- and -----

-----that, the preparation of the slab and application of X260 Medi-Vet Anti-Microbial to the slab will conform with Oxtex Solution's project specification, recommended installation procedure and current published Technical Data Sheets.

1.1.1 X260 Medi-Vet Anti-Microbial will be new, free from any defects, and of best material, design and workmanship;

1.1.2 X260 Medi-Vet Anti-Microbial will be fit for purpose, that is to prevent existing moisture in the concrete from rising, or causing any failure to subsequent floor coverings and will not diminish normal adherence of the subsequent floor coverings installed to the surface;

1.1.3 Oxtex Solutions warrants that X260 Medi-Vet Anti-Microbial is compatible with, and will not detrimentally affect the performance of, the products, chemicals and adhesives to be used in the subsequent installation of floor coverings on the slab;

1.1.4 The application of X260 Medi-Vet Anti-Microbial will perform for a period of 15 years from the time of application and Oxtex Solutions hereby provides a written warranty as to this performance period upon completion of application, and the submission of completed satisfactory warranty form to [reception@oxtek.com.au](mailto:reception@oxtek.com.au) within seven days of the application.

When Oxtex Solutions are notified, in writing of a warranty claim, they will take prompt and effective action to investigate the possible defect or failure. If found that X260 Medi-Vet Anti-Microbial has failed, Oxtex Solutions will at its cost, reinstate the affected area.





# PRODUCT CATEGORIES

## MOISTURE CONTROL & CURE

X200 Densi-Proof  
X220 Moisture Fix  
X260 Medi--Vet  
X280 Densi-Proof REO Protect

## SEAL

X300 Repeller  
X310 Repeller PLUS +

## CURE & SEAL

X230 Densi-Proof Repeller  
X263 Medi-Vet Repeller  
X550 Carpark Warehouse

## CIVIL ENGINEERING - DURABILITY

X200 Densi-Proof  
X220 Moisture Fix  
X230 Densi-Proof Repeller  
X280 Densi-Proof REO Protect

## ANTIMICROBIAL

X260 Medi--Vet  
X310 Repeller PLUS +  
X263 Medi-Vet Repeller

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# PROJECT SERVICES & SUPPORT

- Technical specifications tailored for each project
  - 15 Year Warranty- Project & Product Specific
    - On-Site consultations FOC
    - Application training FOC
  - Technical support from start to completion



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