

# MasterSeal<sup>®</sup> 501

Surface applied capillary waterproofing system for concrete and block work

## DESCRIPTION

The **MasterSeal 501** waterproofing system ensures a total and permanent solution to water leakage, ingress, or seepage in concrete structures or any cementitious substrate. The formation and development of insoluble crystals into water bearing capillaries and interstices effectively blocks the further passage of water.

Supplied as a powder and mixed to a slurry consistency with potable water. **MasterSeal 501** is applied directly to concrete, blockwork or cement renders in areas where general waterproofing is required. In powder form, the product may be used as a dry shake on horizontal construction joints.

**MasterSeal 501** consists of a blend of moisture activated chemicals, high grade silica aggregates and selected cements.

Premixed powders consisting of selected Portland cement blended with an activating chemical and high-grade quartz.

## TYPICAL APPLICATIONS

### WATER RETAINING

- Water tanks / towers
- Reservoirs
- Water treatment work
- Dams
- Canals
- Harbours
- Concrete pipes

### WATER EXCLUDING

- Basements
- Tunnels
- Inspection pits
- Foundations
- Retaining walls
- Lift shafts
- Construction joints
- Sea defence walls
- Bridge decks
- Jetties
- Pontoons

## ADVANTAGES

- Provides total and permanent waterproofing properties by becoming an integral part of the structure to which it is applied. Active ingredients will not delaminate, peel off or wear away
- Protects concrete and reinforcement against corrosive waterborne substances

- Crystalline action is reactivated by contact with water providing permanent and continuous protection
- Effective against both positive and negative water pressure

## PACKAGING AND COLORS

**MasterSeal 501** is supplied in 25 kg bags and available in powder – grey.

## APPLICATION GUIDELINES

### New Construction

The vast majority of leaking water retaining (or excluding) structures constructed of sound dense concrete, leak only at construction or day work joints. Costly remedial work can be avoided by the use of **MasterSeal 501** as a dry shake onto the horizontal surfaces of joints or as a slurry application on vertical surfaces.

In conditions of high-water table **MasterSeal 501** may be applied as a slurry or dry shake over blinding concrete immediately prior to casting the slab. This sandwich system will prevent ingress of ground water preventing deterioration, and dampness or flooding. Foundations should be treated on the external face wherever possible, as should the face of construction joints.

**MasterSeal 501** can be applied immediately after the formwork has been removed, as the water curing process required for **MasterSeal 501** will also ensure full hydration of the concrete.

If the treatment is to be exposed and an aesthetically pleasing finish is required, the **MasterSeal 501** after curing, should receive a sand/cement render on which to apply the desired finish.

### Existing structures

Structures subject to water leakage or ingress, must be carefully inspected to determine the cause. Any water present should be cleared away so that a thorough survey can be conducted. Static cracks over 1mm must be chased out, dampened down and repaired with **MasterSeal 590**. Dynamic cracks should be sealed by injection with **MasterSeal 901** or **MasterInject 1320**.

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## SURFACE PREPARATION

In common with all surface treatments to concrete, the quality of substrate preparation directly affects the performance system. Surfaces to be treated must be free from dust, oil, grease, paint, residual curing compound, mould oil or any previous surface treatment that will impair adhesion of the **MasterSeal 501** treatment or inhibit penetration of the chemicals or water into the surface. These include polymer modified renders and those substrates treated with silicon or silane water repellents. Remove any laitance and provide an open pored, slightly rough surface sufficient to act as a mechanical key, essential for adequate adhesion of the **MasterSeal 501** treatment. Light sand / grit blasting of the concrete surface is the preferred method of surface preparation.

Areas of weak or honeycombed concrete must be repaired. Hollow, debonding renders must be removed and made good.

Surfaces to be treated if not already wet, should be saturated for a period of 24 hours before first applications. **MasterSeal 501** system technology requires the presence of water for the active chemicals to migrate into the concrete. Crystalline development will usually extend to the depth of water penetration.

### Action

Moisture and free lime present in the substrate react with the active chemicals in **MasterSeal 501** to create a continuous barrier of insoluble crystals. The crystal formation will penetrate deep into the capillary structure of the concrete, blocking capillaries and interstices from the passage of water, whilst permitting the transmission of air and water vapour, enabling the structure to breathe. Rate and penetration of crystalline development varies with the density and surface absorption of the concrete, but the crystals will penetrate to the depth to which water is present.

**MasterSeal 501** is equally effective against both negative and positive water or osmotic pressure and can be applied to the internal or external surface. Wherever possible however, **MasterSeal 501** should be applied to the surface with which the water is in direct contact. This will result in an accelerated rate of penetration and crystallisation into the concrete structure. After the

crystallisation process has successfully waterproofed the structure, the **MasterSeal 501** active chemicals remain dormant in the concrete. Any later contact with water will reactivate the sealing process.

## MIXING

Always add water to **MasterSeal 501** – not in reverse order.

Mix 1 part of water to 2.25 – 2.5 parts of **MasterSeal 501** powder by volume.

Mix only sufficient **MasterSeal 501** that can be used in 20 minutes.

## PLACING / APPLICATION

**MasterSeal 501** mixes are applied by brush or spray onto the dampened substrate. Apply the material in 2 coats at right angles, the second coat whilst the first is firm, but 'green' – usually 3-4 hours after first coat (dependant on temperature).

### Plugging leaks

Leaks and holes drilled to relieve water pressure may be sealed permanently using **MasterSeal 590**. To plug leaks under pressure, chase out the area of the leak until water flow is free and insert a length of plastic hose. Seal around the plastic hose with plugging compound as above. Clean the cavity with mortar and allow to cure. When surrounding waterproofing is complete, withdraw the hose and plug the hole with plugging compound as above, using a gloved thumb to hold it in place until set (approximately 1 minute). When the mortar has set, complete the waterproofing, lapping slurry coats of **MasterSeal 501** onto the concrete surrounding the hole. Holes under low pressure can be similarly sealed, but pipe insertion and **MasterSeal 590** technical datasheet prior to use.

### Specification clause

#### MasterSeal 501 System Crystalline Waterproofing

All areas indicated shall be waterproofed by the **MasterSeal 501** system as manufactured by Master Builders Solutions or similar approved, to the following specification:

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## CURING

The **MasterSeal 501** must be prevented from drying out too rapidly and should be kept continuously damp for 5-7 days. Mist spraying with water and covering with polythene is effective when drying out would otherwise take place. Curing compounds are unsuitable for use with **MasterSeal 501** system technology.

Protect from weathering, sun, frost and wind for a similar minimum period.

Tanks and other water retaining structures may be filled 24 hours after final **MasterSeal 501** application as crystal growth is accelerated by water pressure.

## CLEANING

Clean tools and equipment immediately after use. Use of plastic or rubber containers is recommended.

## COVERAGE / YIELD

Two coat slurry application:

**MasterSeal 501**: 1 kg / m<sup>2</sup> / coat.

Dry shake application:

UNMIXED **MasterSeal 501**: 1kg / m<sup>2</sup>.

## STORAGE AND SHELF LIFE

Store out of direct sunlight, clear of the ground on pallets protected from rainfall. Avoid excessive compaction.

The shelf life is 12 months when stored as above.

Failure to comply with the recommended storage conditions may result in premature deterioration of the product or packaging. For specific storage advice consult Master Builders Solutions Technical Services Department.

## HEALTH AND SAFETY

As with all chemical products, care should be taken during use and storage to avoid contact with eyes, mouth, skin and foodstuffs. Treat splashes to eyes and skin immediately. If accidentally ingested, seek immediate medical attention. Reseal containers after use.

**MasterSeal 501** should be handled to minimise dust formation during mixing. Use a light mask if excessive dust is unavoidable. For further information refer to the material safety datasheet.

## QUALITY AND CARE

All products originating from Master Builders Solutions Dubai, UAE facility are manufactured under a management system independently certified to conform to the requirements of the quality, environmental and occupational health & safety standards ISO 9001 and ISO 14001.

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## STATEMENT OF RESPONSIBILITY

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## NOTE

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