

# MasterSeal 501

## Surface applied capillary waterproofing system for concrete and block work

### MATERIAL 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.

### 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.

### TYPICAL APPLICATIONS

Water Retaining	Water Excluding
<ul style="list-style-type: none"> <li>• Water tanks/towers</li> <li>• Reservoirs</li> <li>• Water Treatment Work</li> <li>• Dams</li> <li>• Canals</li> <li>• Harbours</li> <li>• Concrete Pipes</li> </ul>	<ul style="list-style-type: none"> <li>• Basements</li> <li>• Tunnels</li> <li>• Foundations</li> <li>• Retaining walls</li> <li>• Lift shafts</li> <li>• Construction joints</li> <li>• Inspection pits</li> <li>• Sea defence walls</li> <li>• Bridge decks</li> <li>• Jetties</li> <li>• Pontoons</li> </ul>

### COMPOSITION

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

### 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, **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.

### PACKAGING

MasterSeal 501 is supplied in 25kg bags.

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### DIRECTIONS FOR USE

#### 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 using **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 **MasterSeal 920**.

### 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.

### MIXING

Always add water to **MasterSeal 501** – not in reverse order. Mix 1 part of water to 2.25–2.5 parts of MasterSeal powder by volume. Mix only sufficient MasterSeal that can be used in 20 minutes.

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### 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 (+/- 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.

### CURING

**MasterSeal 501** must be prevented from drying out too rapidly and 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.

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

### COVERAGE

Two-coat slurry application:

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

Dry shake application:

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

### EQUIPMENT CARE

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

### 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.

### COMPOSITION

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

### COLOUR

Powder – Grey

### STORAGE

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

### SAFETY PRECAUTIONS

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.

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### NOTE

Technical support, where provided, does not constitute supervisory responsibility. For additional information contact your local MB Construction Chemicals Solutions South Africa (Pty) Ltd representative. MB Construction Chemicals Solutions South Africa (Pty) Ltd shall not be liable for technical advice provided.

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\* Properties listed are based on laboratory controlled tests.

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