

**PROBLEM:**

**Hardening and Sealing Concrete Surfaces**

**REQUIREMENT:**

? Treatment to impart greater concrete surface density which, in turn, provides increased durability, resistance to abrasion, and increased resistance to penetration by oil and grease.

**SOLUTION:**

✓ MASTERSEAL 333 is a deep-penetrating silicate solution which converts available free lime into more cementitious binder, thereby hardening and sealing the floor in the process.

CONCRESEIVE 2525 is a low viscosity, two-pack, solvent-free epoxy resin coating which can be applied to both dry and damp surfaces and, following proper preparation, will adhere to most substrates.

**PROBLEM:**

**Removing Concrete Surface Stains**

**REQUIREMENT:**

? Heavy duty cleaner capable of dissolving or bringing into suspension oil, grease, clear or coloured solvent-based coatings, curing compounds and various other contaminants, thereby allowing them to be readily scrub-rinsed away with clean water.

**SOLUTION:**

✓ FLOORKLEEN is a ready-to-use, low viscosity, heavy duty, emulsifiable cleaner capable of removing a wide range of stains from concrete. Detailed information and assistance with concrete stain removal is available from BASF technical staff.

**PROBLEM:**

**Sealing Masonry and Concrete Surfaces**

**REQUIREMENT:**

? Clear sealer for beautifying, sealing and protecting exposed aggregate, paving, slate, marble, quarry tiles and paving bricks.

**SOLUTION:**

✓ MASTERSEAL 1120 is a premium grade solvent-based, non-yellowing acrylic sealer for beautifying, sealing and protecting slate, marble, quarry tiles, paving bricks, terrazzo and exposed aggregate panels and/or paving.



**BASF Construction Chemicals Australia Pty Ltd**

Sydney  
Head Office & Export  
Ph: (02) 8811 4200  
Fax: (02) 8811 3299

Melbourne  
Ph: (03) 9567 7300  
Fax: (03) 9567 7399

Canberra (agent)  
Ph: (02) 6280 6010  
Fax: (02) 6280 7220

Newcastle  
Ph: (02) 4961 3819  
Fax: (02) 4940 8762

Adelaide  
Ph: (08) 8139 7500  
Fax: (08) 8139 7599

Perth  
Ph: (08) 9366 2600  
Fax: (08) 9366 2699

Brisbane  
Ph: (07) 3633 9900  
Fax: (07) 3633 9999

Darwin (agent)  
Ph: (08) 8984 3269  
Fax: (08) 8947 0504

Mackay  
Ph: (0418) 991 567  
Fax: (07) 4959 8420

Kalgoorlie  
Ph: (0417) 772 355  
Fax: (08) 9022 2120

Townsville  
Ph: (07) 4774 7344  
Fax: (07) 4774 7355

[www.basf-cc.com.au](http://www.basf-cc.com.au)

**BASF Construction Chemicals New Zealand Ltd**

Auckland  
Ph: (09) 414 7233  
Fax: (09) 414 7244

Wellington  
Ph: (04) 568 4401  
Fax: (04) 568 4423

[www.basf-cc.co.nz](http://www.basf-cc.co.nz)



**The Concrete Rescue Pack**



**Practical Solutions and Preventative Measures for Common Concrete Problems**





#### PROBLEM:

### Plastic Shrinkage Cracking

#### CAUSE:

⚡ Plastic shrinkage cracking generally occurs in conditions favourable to high evaporation of the surface moisture present in plastic concrete, including high winds, high temperatures and low humidity. If concrete could shrink evenly over its entire surface area there would be no cracking. However, due to the fact that in its plastic (wet/soft) state, concrete is unevenly restrained by edge formwork, ground friction, reinforcement and other penetrations, the volume change caused by the loss of water results in cracks in the weaker points of the concrete's micro structure.

#### PREVENTION:

⊕ Plastic shrinkage cracking can be reduced - particularly during extremely hot and/or windy conditions - through the application of an evaporative retardant such as MASTERKURE 111CF, which when sprayed onto wet concrete surfaces, creates a protective film that helps to reduce surface moisture evaporation. Exposed concrete surfaces should be cured using a curing agent such as MASTERKURE 250XDS immediately following final trowelling, thereby further reducing the loss of moisture.

The ability of concrete to resist plastic shrinkage cracking can also be significantly improved through the addition of MASTERFIBRE polypropylene fibres. MASTERFIBRE fibres will also deliver significant improvements in the performance of both plastic and hardened concrete.

#### REPAIR:

🩹 In situations where cracks have appeared, these can be repaired using a specialist repair system such as BARRA 80, CONGRESIVE 1444 or CONGRESIVE 2530.

#### PROBLEM:

### Drying Shrinkage Cracking

#### CAUSE:

⚡ The need for adequate workability for placement and consolidation of concrete often necessitates the use of a greater amount of mixing water than is needed for the hydration process (the reaction with Portland cement). The loss of some of this excess 'water of convenience' from the concrete matrix as it hardens, results in a volume reduction - commonly referred to as shrinkage. The volume reduction that occurs primarily due to moisture loss after the concrete has hardened is referred to as drying shrinkage. If the forces within the concrete caused by the drying shrinkage exceed the tensile capacity of the concrete, drying shrinkage cracking is likely to occur.

#### PREVENTION:

⊕ The Potential for drying shrinkage cracking can be reduced through the use of RHEOBUILD superplasticisers and TETRAGUARD AS21 shrinkage reducing agent.

RHEOBUILD can reduce the amount of 'water of convenience' by reducing the total water content of the concrete mix by up to 35%. This reduction in water content dramatically reduces the amount of drying shrinkage that occurs.

TETRAGUARD AS21 reduces drying shrinkage and associated cracking by lowering the surface tension of the pore water present in the hardened concrete. Tests have shown that TETRAGUARD AS21 can reduce drying shrinkage in concrete by up to 50%. Both RHEOBUILD and TETRAGUARD AS21 are dosed directly into the concrete mix, either at the batch plant or during on-site mixing.

#### REPAIR:

🩹 In situations where cracks have appeared, these can be repaired using a specialist repair system such as BARRA 80, CONGRESIVE 1444 or CONGRESIVE 2530.

#### PROBLEM:

### Repairing Damaged Surfaces

#### REQUIREMENT:

❓ Quick setting repair mortar for concrete with damaged edges or corners, and/or for filling honeycombs, cracks, bug holes and gouges. The mortar must be fine enough to enable thin-layer patching, whilst also having the ability to be feather-edged.

#### SOLUTION:

✔️ BARRAFILL is a ready-to-use, quick setting repair and anchoring mortar, based on selected cements, high-grade quartz sands and synthetic resins. BARRAFILL contains no chlorides or other salts that may cause corrosion or efflorescence (blooming).

#### OTHER RELATED PRODUCTS

MASTERTOP P-15 - cementitious self-levelling mortar  
EMACO S88C - high strength repair mortar  
BARRA 80 - polymer modified fairing mortar  
EMACO T920 - shrinkage compensated repair mortar

#### PROBLEM:

### Rain Damaged Surfaces

#### REQUIREMENT:

❓ Easily applied cementitious repair topping to restore the finish of a damaged slab surface

#### SOLUTIONS:

✔️ **Internal Floors** - MASTERTOP P-15 is an economical self-levelling, poured-in-place, cementitious, non-structural floor topping, which has been specifically developed for use of poured insitu or precast concrete floors which will be subsequently covered by a suitable floor covering. MASTERTOP P-15 delivers a fast-setting level and flat surface, whilst still providing maximum available flow time.

✔️ **Garage Floors, Driveways and Patios** - BARRA 80 is a polymer modified fairing mortar, which develops high early and ultimate strengths. BARRA 80 is chloride-free, shrinkage compensated, and supplied ready-to-use.

✔️ **Further Options** - Lightly grind the concrete with a grinder, and apply a MASTERTOP EPOXY SYSTEM such as MASTERTOP 1080.

#### PROBLEM:

### Adhesion of Toppings

#### CAUSE:

⚡ For two surfaces to bond together, the conditions for adhesion must be right. Generally speaking, the joint should be stronger than the surrounding area, however, under certain conditions, the reverse can happen - resulting in a weak bond that allows the two surfaces to separate.

#### PREVENTION:

⊕ These problems can be overcome in internal areas through the use of a wet to dry bonding agent such as BARRA EMULSION AC - an acrylic-latex bonding agent additive that allows the application of a bonding slurry to a previously wetted surface. Alternately, CONGRESIVE 2525 permits application to both wet and dry surfaces - thereby achieving a high joint strength in all circumstances.

#### REPAIR:

🩹 For existing poorly bonded or 'drummy' concrete - where the work cannot be removed - repairs may be possible through crack injection with CONGRESIVE 2530.

#### PROBLEM:

### Bug Holes in Off-Form Concrete

#### CAUSE:

⚡ Entrapped air bubbles which fail to rise to the surface - particularly in low water:cement ratio concretes - will appear as 'bug holes' on the surface of the off-form concrete.

#### PREVENTION:

⊕ Surface imperfections in precast, prestressed and/or poured insitu concrete can be significantly reduced or eliminated through the use of RHEOFINISH 211, a ready-to-use, water-based, non-toxic surface consolidation agent. RHEOFINISH 211 provides easy and complete release when applied to most types of form and/or form liner.

#### REPAIR:

🩹 Surface repairs can be made with BARRA 80, a concrete-grey, ready-to-use mortar, based on hydraulic binders and high-grade quartz sands, modified with synthetic polymers. BARRA 80 contains no chlorides or other salts that may cause corrosion or efflorescence (blooming).

#### PROBLEM:

### Concrete Surface Dusting

#### CAUSE:

⚡ Concrete surface dusting is generally a result of weak cement hydration caused by too much surface water (eg. rain induced or over-trowelling) and exposure to high evaporative conditions where not enough moisture is retained at the surface due to poor curing practices.

#### PREVENTION:

⊕ Concrete surface dusting can be prevented in both internal and external works by ensuring good curing practices, including the use of MASTERKURE curing compounds, wet hessian or plastic. MASTERKURE 111CF will also assist in reducing evaporation and preventing rapid moisture loss during finishing.

#### REPAIR:

🩹 Repairs can be made using MASTERSEAL 333, a deep-penetrating silicate solution which has been specifically developed for sealing and dust-proofing powdery and/or friable concrete and masonry surfaces.

#### PROBLEM:

### Exposed Aggregate Problems

#### CAUSE:

⚡ Problems associated with exposed aggregate are generally caused by uncontrolled concrete setting times, which can lead to poorly exposed aggregate, insecure exposed aggregate and inconsistency of texture.

#### PREVENTION:

⊕ These issues can be prevented through the use of a water-based chemical retarder such as MBT EXPOSE.

Specifically developed to overcome the issues that can be associated with uncontrolled concrete setting times, MBT EXPOSE delays the setting of the mortar paste on the surface to a controlled depth, without adversely affecting the setting of the main concrete.

The chemically retarded mortar paste may be removed by washing or brushing within a 24 hour period after the set of the concrete to expose the aggregate.

