Application Guide for MasterProtect® 355 MasterProtect® H 1100 MasterProtect® H 1150 MasterProtect® 8000CI

MasterProtect 355 is a Silane/Siloxane based hydrophobic impregnant
MasterProtect H 1100 Hydrophobic impregnant based on isobutyltriethoxysilane
MasterProtect H 1150 Silane based thixotropic paste hydrophobic impregnant
MasterProtect 8000CI Organofunctional silane based corrosion inhibitor

PACKAGING

MasterProtect 355	Silane/Siloxane based hydrophobic impregnant	20L
MasterProtect H 1100	Hydrophobic impregnant based on isobutyltriethoxysilane	20L, 200L
MasterProtect H 1150	Silane based thixotropic paste hydrophobic impregnant	20L
MasterProtect 8000CI	Advanced organofunctional silane based corrosion inhibitor	20L 200L

SURFACE PREPARATION (Concrete substrate requiring additional concrete repairs)

Preparation of the concrete substrate for the **MasterProtect** impregnants may involve concrete repairs and generally involves a couple of steps. The removal of the cracked and affected concrete to create a suitable profile and the cleaning of the reinforcing steel.

- For the best results a CSP profile of 5 or greater is required and to achieve this you need an aggressive surface preparation technique.
- The choice of technique will be determined by the size and depth of the patch.
  - Suitable techniques
    - Hammer and cold chisel
    - Kango style impact hammer
    - Machine mounted impact hammer
    - Hydro demolition
- All loose material should be removed and the reinforcing steel exposed to the point where there is no visible rust and it has a grey surface colour.
- This indicates that the steel at this point is still passivated and thus you are out of the current corrosion zone.
- The reinforcing steel should be exposed on all sides so that you are able to fit a gloved finger behind the bar.
- In the event that the reinforcing steel has lost a significant amount of its cross-sectional area (approximately 20% is seen as significant) it may need to be replaced or additional steel installed.
- The replacement should be determined by the engineer especially in structural applications.
- The steel should be cleaned to an SA 2.5 grade and all rust removed.
- For small patches this can be done by wire brush and on larger jobs a needle gun or captive grit blasting will be effective.
- The action of the hydro demolition will clean the steel well and no further preparation would be necessary.
- The edges of the patch should be square cut to a depth of 10-20mm or as specified in the individual product datasheet to prevent any of the repair mortar from being feather edged.
- Patches should be regular in shape and it may be necessary to join a number of small irregular patches to make a single regular patch.
- This will reduce the risk of cracking in the patch and the premature failure of the patch.

Priming

Steel

- Once the steel has been cleaned it may be necessary to prime the steel. This is to stop the flash rusting resulting from the contact with the moisture in the air.
- The **MasterEmaco P 5000AP** is an acrylic modified cementitious coating with active corrosion inhibition which is mixed with water. It can be used to coat the reinforcing steel prior to application of the repair mortar and as the bonding primer for the repair mortar.
- It is an orange colour to make a simple visual evaluation of the steel that has been coated. This should be allowed to dry for a few hours before application of repair mortars or shotcrete.
- If application of shotcrete was to proceed directly after the hydro demolition preparation of the substrate the need for the **MasterEmaco P 5000AP** is reduced and could be eliminated without creating any issues with the longevity of the repair.
- Note: although BASF does not sell a zinc rich steel primer the use of one is entirely compatible with any of the **MasterEmaco** repair mortars. A caution on the use of the Zinc rich primers is that they will impair adhesion of the repair mortar if it contaminates the prepared substrate.

Concrete

- The concrete substrate should be at least saturated surface dry to take the repair mortars as a dry substrate will pull the moisture out of the repair mortar which can lead to surface cracking and poor bond to the substrate. Most hand applied mortars benefit from bonding of the repair mortars to the concrete with additional bonding agents.
- **MasterEmaco P 5000AP** can be used as a bonding agent for the repair mortar to the concrete.
  - The repair mortar should be applied whilst the **MasterEmaco P 5000AP** is still wet and if it dries out should be reapplied.
- **MasterEmaco P 157** this SBR bonding agent can be used when wetting is impractical and should be diluted 1:1 with water and applied generously by brush to the concrete.
  - Apply the repair mortar whilst the MasterEmaco P 157 is still tacky.
- Slurry coat of the repair mortar is another technique to provide a bonding bridge for the repair mortar.
  - This is achieved by making a slurry coat of the repair mortar being used and often a mix of one-part water and one-part mixed repair mortar (this can be adjusted to give the consistency required).
  - Apply this to a wetted substrate with a brush and apply the repair mortar whilst slurry coat is still wet.
  - The benefit of this is that the materials are all on site and more can be simply made up as required.
- Allow the repair to cure for 2-3 days before starting the application of the **MasterProtect** impregnants
- Final surface finish should be as determined by the engineer and a final profile from a steel trowel finish to a CSP 3 would be expected.

SURFACE PREPARATION (Concrete substrate requiring minimal concrete repairs)

In many cases the substrate will be in a suitable condition to receive the MasterProtect impregnants directly.

- Remove oils, grease, curing compounds and laitance to give a CSP profile of 2-3. This may be achieved using grinders or needle guns.
- Blow holes, bug holes, erosion etc should be repaired using **MasterEmaco N 5100**, **N 5200CI** or **S 5300CI** depending on the size of defects and roughness of the surface.
- Allow the repair to cure for 2-3 days before starting the application of the **MasterProtect** impregnants
- Final surface finish should be as determined by the engineer and a final profile from a steel trowel finish to a CSP 3 would be expected.

Surface Preparation (concrete or masonry where no repairs are required)

In many cases the substrate will be in a suitable condition to receive the **MasterProtect** impregnants directly.

- Remove dirt, paints, coatings, bird faeces etc with high pressure water blasting to give a clean surface
- Allow to dry for 24-48 hours depending on the ambient conditions before application of the **MasterProtect** impregnants

Special notes:

- **MasterProtect H 1100**, **H 1150** and **8000CI** should not be used on brick or fired paver surfaces as they will not absorb and will give the surface a milky appearance that cannot be removed
- **MasterProtect 355** can be used on bricks, fired pavers, rendered block walls etc
- Allow at least one month before applying MasterProtect 355 to new concrete or masonry surfaces.
- **MasterProtect** impregnants will etch glass so all glass surfaces should be protected from drips, overspray etc

MIXING

MasterProtect impregnants are applied direct from the container and require no dilution, mixing or addition of solvents

SUBSTRATE CONDITION

- Surfaces should be dry and free from dirt, grit, dust, grease etc.
- Application to wet substrate will prevent penetration and result in poor or reduced penetration.
- Paints, form release agents, curing compounds, moss, laitance, algae, etc. must be removed.
- Repair all cracks and repoint faulty mortar joints prior to application.
- Mask glass, asphalt, bitumen and oil painted surfaces.
- Remove splashes promptly with mineral turpentine.

Application rates	
MasterProtect 355	2-4 m^2 per litre depending on porosity of the surface
MasterProtect H 1100	150 - 300 ml/m^2 (0.13 - 0.26 kg/m^2) per coat depending on porosity of the substrate.
MasterProtect H 1150	200 – 400ml/m^2 are recommended. Up to 400ml/m^2 may be applied in one operation to vertical surfaces and overhead
MasterProtect 8000CI	180-230 ml/m^2 in per application minimum 2 coats approximate total application 600ml/m^2

APPLICATION

MasterProtect 355

- Apply direct from container and do not dilute.
- Wear impervious gloves and goggles during application.
- Apply by brush or low pressure (approx. 40-70kPa) spray equipment.
- Flood the surface, don't brush out like paint (causes bubbles or incomplete penetration).
- Apply evenly with steady strokes over the entire surface.
- One coat is normally required if application is liberal and thorough and surface is sufficiently porous.
- On very porous material, it may be necessary to apply a second coat or treat porous surfaces with a cement based paint prior to application of **MasterProtect 355**.

- When applying two coats of **MasterProtect 355**, apply wet-on-wet.
- Do not apply **MasterProtect 355** to concrete surfaces subject to vehicular traffic.
- **MasterProtect 355** is not recommended for application to below ground surfaces subject to hydrostatic pressure.
- **MasterProtect 355** is NOT a cure for rising damp or "salt damp" and other dampcourse treatments must be employed for this.

APPLICATION

MasterProtect H 1100

- Apply direct from container and do not dilute.
- Wear impervious gloves and goggles during application.
- **MasterProtect H 1100** may be applied to damp surfaces although dry surfaces are preferred for optimum penetration of the substrate.
- Apply **MasterProtect H 1100** in two coats with about two hours interval between coats.
- Avoid application on a windy or a rainy day and start after at least a couple of hours of clear sunshine following rains.
- For best results on vertical surfaces, starting at the bottom of the structure and working up, apply a flood coat of **MasterProtect H 1100** by a low pressure air-less spray equipment (knapsack sprayer), so as to produce 150-200 mm run off on the surface below the contact point of the spray pattern.
- It can also be applied using a wide short nap roller or brush, in which case, it should be applied repeatedly until the surface remains moist for a few seconds.
- On horizontal surfaces, apply sufficient material so that it stands for a few seconds before penetration.

APPLICATION

MasterProtect H 1150

- Apply direct from container and do not dilute.
- Wear impervious gloves and goggles during application.
- **MasterProtect H 1150** is best applied to the concrete undiluted and in the desired thickness by brush or roller (can't spray as the material is a crème like consistency)
- If the substrate is of low porosity and thus not very absorbent, do not apply more than 200ml/m^2 in one operation, as it may take several hours to penetrate completely.
- **MasterProtect H 1150** forms a creamy layer initially, but this then disappears completely.
- The silane active ingredient penetrates the substrate within 30 minutes to several hours, the exact time depending on the porosity and thus quality of the concrete.
- At higher application rates, the impregnating film will liquefy because of the concrete's alkalinity and it will to run off.
- A second coat of **MasterProtect H 1150** may be applied at any time, to achieve the desired coverage rate.
- Only impregnate concrete that has a uniformly dry surface.
- Protect the newly applied crème from rain until the emulsion has broken and the surface has returned to its concrete colour.

APPLICATION

MasterProtect 8000CI

- Apply **MasterProtect 8000CI** to the entire surface to be protected, including any repaired areas, using low-pressure spray equipment with a suitable fan nozzle.
- A total application of 600ml/m^2 is usually required applied in two or three separate applications(e.g. horizontal applications 2 x 300m while vertical and overhead 3 x 200ml
- Allow a minimum of 15 minutes between coats (or until visibly dry).
- Do not apply at temperatures below 5°C or over 35°C.
- Allow concrete surfaces to dry for between 24 and 72 hours after heavy rain or cleaning with water before applying **MasterProtect 8000CI**.
- Do not apply if rain is expected within 4 hours.

CURING

No specific curing is required for any of these impregnations.

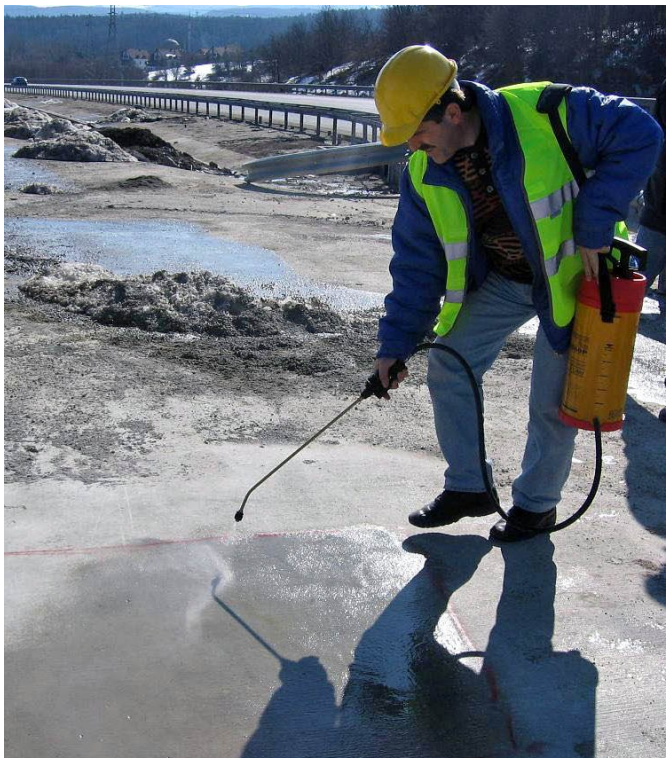

Figure 1 - Applying with low pressure spray

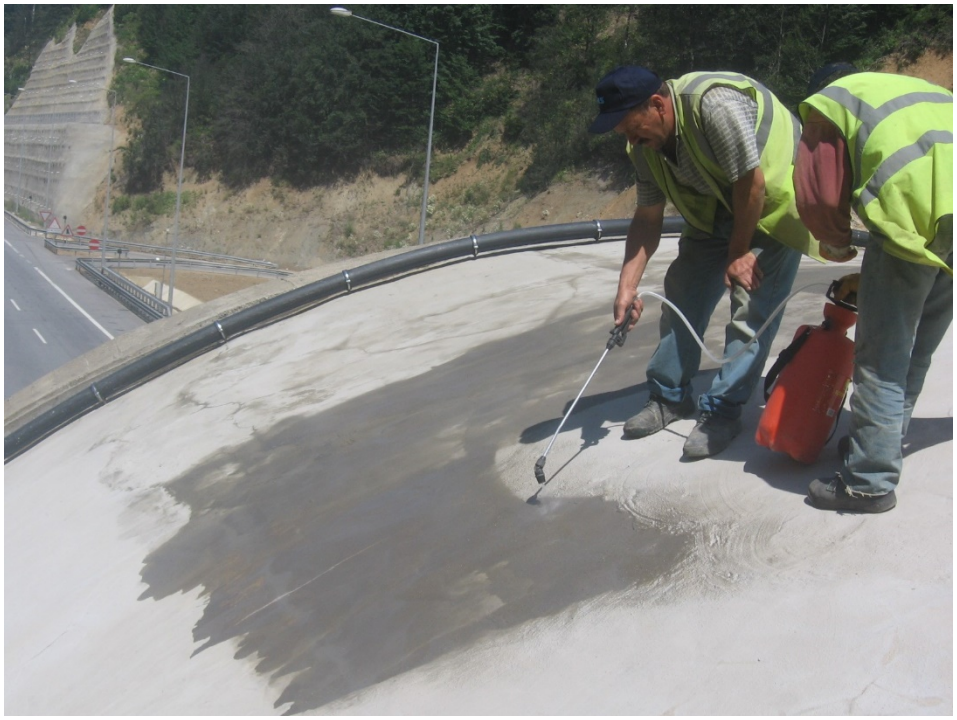

Figure 2 - Application until the material runs

Figure 3 - This shows the MasterProtect 8000CI with a dye added which was done to ensure the treated panels were obvious the building was subsequently painted to even the colour of the repairs and original façade. Generally, the temporary “wet look” is enough for good onsite QA.

Figure 4 - Spraying large areas with a boom spray for highways or runways.

Caution

For information on personnel protective equipment, first aid and emergency procedures, and water disposal methods, refer to the product bag or Safety Data.

STATEMENT OF RESPONSIBILITY	The technical information and application advice given in this BASF publication are based on the present state of our best scientific and practical knowledge. As the information herein is of a general nature, no assumption can be made as to a product's suitability for a particular use or application and no warranty as to its accuracy, reliability or completeness either expressed or implied is given other than those required by law. The user is responsible for checking the suitability of products for their intended use.
NOTE	Field service where provided does not constitute supervisory responsibility. Suggestions made by BASF either orally or in writing may be followed, modified or rejected by the owner, engineer or contractor since they, and not BASF, are responsible for carrying out procedures appropriate to a specific application.

BASF Australia Ltd ABN 62008437867 Level 12 28 Freshwater Place Southbank VIC 3006 **Freecall: 1300 227 300** www.master-builders-solutions.basf.com.au	**BASF New Zealand Ltd** Level 4, 4 Leonard Isitt Drive Auckland Airport 2022 Auckland, New Zealand **Freecall: 0800 334 877** www.master-builders-solutions.basf.co.nz	**BASF Emergency Advice:** 1800 803 440 within Australia (24hr) 0800 944 955 within New Zealand