

Application Guide
for
MasterSeal[®] Traffic 2000HD
(MasterSeal M 210SL/TIX Membrane)
Heavy duty traffic deck crack-bridging waterproofing membrane

1. Uses

- 1.1 **MasterSeal Traffic 2000HD** is intended for use on exposed decks and ramps where maximum crack bridging and wear resistance are required
- 1.2 **MasterSeal Traffic 2000HD** is suitable for shopping centre car parks or public parking areas with high traffic densities.
- 1.3 **MasterSeal Traffic 2000HD** can be made very fast return to service by choosing different components.
- 1.4 **MasterSeal Traffic 2000HD** is also used on intermediate decks underneath which are offices, sales rooms, storerooms etc.

2. Surface Preparation

- 2.1 Ensure the substrate has properly cured and the concrete is profile free, no ridges or troughs, etc. Mechanically remove efflorescence before proceeding.
- 2.2 The substrates shall be free of laitance, loose or friable materials, debris and all contaminants by mechanical means preferably by captive shot blasting with hand held diamond grinders for edge work to achieve CSP 3 finish.
- 2.3 Bag up blowholes, especially on vertical surfaces, and carry out any necessary repairs in good time prior to priming. "Bagging up" should be carried out using a suitable **MasterEmaco** repair mortar.
- 2.4 To vertical surfaces, all form release agent must be removed prior to applying any primer.
- 2.5 Ensure adequate masking off of adjacent areas has been completed and all detailing is in accordance with the project drawing.

3. Priming

- 3.1 Prime surface by applying **MasterEmaco 2525**.
- 3.2 Before mixing, pre-condition both A and B components to a temperature of approximately 15 to 25°C. Pour the entire contents of Part B into the container of Part A. Do not mix by hand. Mix with a mechanical drill and paddle at a very low speed (ca. 300rpm) for at least 3 minutes. Scrape the sides and the bottom of the container several times to ensure complete mixing. Keep the mixer blades submerged in the coating to avoid introducing air bubbles. Do not work out of the original container. After proper mixing to a homogeneous consistency pour the mixed Parts A and B into a fresh container and mix for another minute.
- 3.3 Apply a thin coat of **MasterEmaco 2525** to the prepared substrate by spreading with a squeegee at the minimum rate of 0.3 – 0.5 L/m² and finished with a roller.
- 3.4 Porous substrates may require a second coat to ensure the surface is fully sealed.
- 3.5 Broadcast **MasterTop Filler F5** at a rate of 0.8 – 1.0kg/m² into the still-wet primer to produce a light, even cover. Allow to cure overnight before removing all excess sand with a stiff broom and vacuum.

Note:

- 1. *MasterEmaco 2525 shall be applied when the ambient temperature is constant or falling, as this will decrease the risk of bubble formation due to expansion of air that is enclosed in the concrete.*
- 2. *MasterEmaco 2525 shall be applied when the substrate temperature is 8-30°C.*
- 3. *The Tensile Strength of the concrete shall not be less than 1.5MPa and the concrete should be surface dry.*
- 4. *Membrane application onto primer:*

Application	at 10°C at 20°C at 30°C at 30°C & > 80% RH	minimum. 24 hour minimum 12 hour minimum 6 hour* minimum 6 hour*
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* When primer is tack free subsequent coat can be applied.

4. Priming (fast return to service)

- 4.1 This primer can be used to shorten the application time of the installation to allow priming and membrane application, wearcoat and topcoat in a 24 hour period for faster return to service.
- 4.2 Prime surface by applying **MasterTop P 688**.
- 4.3 Before mixing, pre-condition both A and B components to a temperature of approximately 15 to 25°C. Pour the entire contents of Part B into the container of Part A. Do not mix by hand. Mix with a mechanical drill and paddle at a very low speed (ca. 300rpm) for at least 3 minutes. Scrape the sides and the bottom of the container several times to ensure complete mixing. Keep the mixer blades submerged in the coating to avoid introducing air bubbles. Do not work out of original container. After proper mixing to a homogeneous consistency pour the mixed Parts A and B into a fresh container and mix for another minute.
- 4.4 Apply a thin coat of **MasterTop P 688** to the prepared substrate by spreading with a squeegee at the minimum rate of 0.3 – 0.5 L/m² and finished with a roller.
- 4.5 Porous substrates may require a second coat to ensure the surface is fully sealed.
- 4.6 Broadcast **MasterTop Filler F5** at a rate of 0.8 – 1.0kg/m² into the still-wet primer to produce a light, even cover. Allow to cure for at least 24 hours before removing all excess sand with a stiff broom and vacuum.

Note:

- 1. *MasterTop P 688 shall be applied when the ambient temperature is constant or falling, as this will decrease the risk of bubble formation due to expansion of air that is enclosed in the concrete.*
- 2. *MasterTop P 688 shall be applied when the substrate temperature is 8-300 C.*
- 3. *The Tensile Strength of the concrete shall not be less than 1.5MPa and the surface should be surface dry..*
- 4. *Membrane application onto primer:*

<i>Application</i>	<i>at 10°C at 20°C at 30°C at 30°C & > 80% RH</i>	<i>minimum. 8 hours minimum 2 hours* minimum 2 hours* minimum 2 hours*</i>
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** When primer is tack free subsequent coat can be applied.*

5. Priming metal surfaces

- 5.1 Remove dust, debris, and other contaminants from vent, drain pipe, and post penetrations; reglets; and other metal surfaces. Clean surfaces to bright metal and prime with **MasterSeal P 692** without delay
- 5.2 Provide cant with deep joint sealant to eliminate 90-degree angles and allow sealant to fully cure.
- 5.3 Detail cant with primer and base coat in accordance with manufacturer’s instructions before application of deck coating system.

6. Surface pre-stripping and detailing

- 6.1 Where joints, connections between old and new applications and for repair work pre-stripe with **MasterEmaco 2525** 25 mm beyond surfaces that require pre-application of basecoat.
- 6.2 For non-moving joints and cracks less than 1.5mm wide, apply 0.5mm pre-stripping of base coat over cured primer. Apply base coat to fill and overlap joint or crack 75mm on each side. Feather the edges.

- 6.3 Dynamic cracks and joints over 1.5mm wide shall be routed to a minimum of 6 mm by 6 mm and cleaned. Install bond breaker tape to prevent adhesion to bottom of joint. Prime joint faces only with sealant primer and fill with sealant. Fill joints deeper than 6 mm with backer rod and deep joint sealant. For cracks, sealant shall be flush with adjacent surface. For expansion joints, sealant shall be slightly concave.
- 6.4 Sealed joints 12mm or less shall be coated over with deck coating system.
- 6.5 Expansion joints exceeding 12mm wide, including primary wide expansion-joint system, shall not be coated. Joints should be reflected through the coating and suitable protection provided as required by the architect.
- 6.6 Where coating system will be terminated and no wall, joint, or other break exists, cut 6mm by 6mm keyway into concrete. Fill and coat keyway as application of base coat progresses.

7. Adhesion promoter

7.1 MasterSeal P 692

- 7.1.1 Before application, pre-condition the product to a temperature of approximately 15 to 29°C. Pour the amount required from the original container into an application container and apply a thin coat by spreading with a squeegee at the minimum rate of 0.05 – 0.1 kg/m² and finished by back rolling with a roller.

Note:

- 1. *MasterSeal P 692 is moisture curing and will foam if applied too thickly and this will cause de-bonding between primer and subsequent coats*
- 2. *MasterSeal P 692 is an adhesion promoter and is necessary in all cases if the MasterSeal M 210SL/TIX membrane has been left for more than 8 hours or overnight and the next coat is the wear-coat. It is optional between primer and membrane unless the primer has been left for more than 3 days exposed or the finished area will have constant turning traffic on it.(for instance at entries to carparks, ramps and pick up and drop off points)*
- 3. *Coating interval: MasterSeal P 692 should be still tacky (the solvent will have evaporated and the surface will not be marked by a lightly applied finger but will create some resistance) before application of subsequent coats.*

Application of Membrane (to primer), wear coat (to Membrane), top coat (to old topcoat)	at 10°C	minimum. 4 hours maximum. 6 hours
	at 20°C	minimum.. 2 hours maximum 5 hours
	at 30°C & >80% RH	minimum.. 1 hours maximum. 3 hours

8. Membrane: MasterSeal M 210SL/TIX

- 8.1 Ensure surface for application is dry, free from dust, debris and all other contaminants which may inhibit adhesion between the membrane and concrete.
- 8.2 **MasterSeal M 210SL/TIX** is supplied in working packs. Before mixing, pre-condition to a temperature of approximately 15 to 25°C.
- 8.3 Empty material in the bladder into the empty drum and mix with a mechanical drill and paddle at a low speed (approx. 300 rpm) for at least 2 minutes or until the colour is homogeneous.
- 8.4 The **MasterSeal M 210SL** can be applied directly from the bladder after agitation
- 8.5 Or **MasterSeal M 210SL** is poured onto the prepared substrate and spread with a notched trowel or spreader (rubber or steel) over the “tack free” primer at a coverage of 1.5-2.2kg/m² to achieve a 1.5-2mm thick uniform grey membrane.
- 8.6 **MasterSeal M 210TIX** has a higher viscosity so should be placed in a roller tray for application by roller for vertical surfaces. A notched trowel can be used on horizontal surfaces.

- 8.7 Allow the membrane to cure for at least 24 hour or until tack free prior to subsequent topping.
- 8.8 The curing time of the material is influenced by the ambient, material and substrate temperatures. At low temperatures, the chemical reactions are slowed down, this lengthens the pot-life, open time and curing times.
- 8.9 High temperatures speed up the chemical reactions thus the time frames mentioned above are shortened accordingly. To fully cure, the material, substrate and application temperatures should not fall below the minimum.

Note:

- 1. *MasterSeal M 210SL/TIX must be applied within the recommended temperature and relative humidity limits.*
- 2. *The temperature of the substrate must be at least 3 0c above the dew point during the application*

9. On-site QA

- 9.1 On-site QA is important to ensure that both the substrate and application are within the correct limits. There are three key QA tests: adhesion to the substrate, thickness of application and holiday testing.
- 9.2 Adhesion to the substrate:
- 9.3 Prior to application the substrate should be checked for soundness with a number of direct tensile strengths to ensure the substrate is suitable. Minimum direct tensile strength of the concrete substrate should be 1.0MPa.
- 9.4 Substrates other than concrete (block work, brick etc) should be tested for soundness and integrity.
- 9.5 During the application and whilst the MasterSeal is still wet (alternatively the dolly can be applied to the membrane with **MasterBrace 1444** epoxy adhesive) place a dolly at 3 metre intervals or as agreed by the supervising engineer into the membrane and allow to cure overnight.
- 9.6 Once cured using a sharp knife cut through the membrane to the primer and then do a direct tensile test using a suitable tester.
- 9.7 Record the results and repeat if the direct tensile strength is less than 1.0MPa (As we have done a test on the substrate we will know that the concrete substrate is more than 1.0MPa)



Figure 1 - Adhesion testing dolly adhered to membrane



Figure 2 - Adhesion testing of membrane

9.8 Thickness testing

- 9.8.1 The thickness of the material can be easily checked during application through the use of a wet film thickness gauge.
- 9.8.2 The gauge is placed into the wet material and the thickness can be determined by the last point that has wet material on it
- 9.8.3 Record the results for instance do this 3 times in the first 50m² and once every 50m² after that or as specified by the engineer.

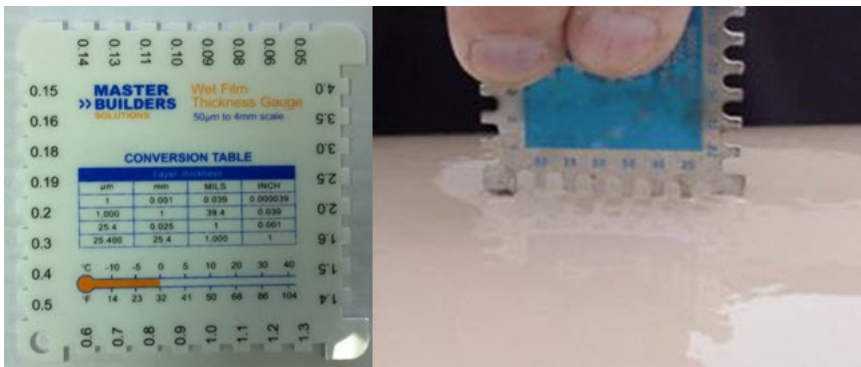


Figure 3 - Thickness check of wet membrane

9.9 Holiday testing

- 9.9.1 Ensuring that the membrane is pin hole free is important for the longevity of the installation and the water-tightness of the structure
- 9.9.2 Electronic holiday testers are available that test for changes in resistance between an earth point and the machine.
- 9.9.3 These spark testers use a wand with fine metal filaments that is drawn across the surface and a spark forms and an audible alarm sounds when a pin hole (void or thin section as well) is found.
- 9.9.4 Once a pin hole is found it can be repaired and the process repeated to ensure a complete lining is in place.



Figure 4 - Holiday testing of membrane

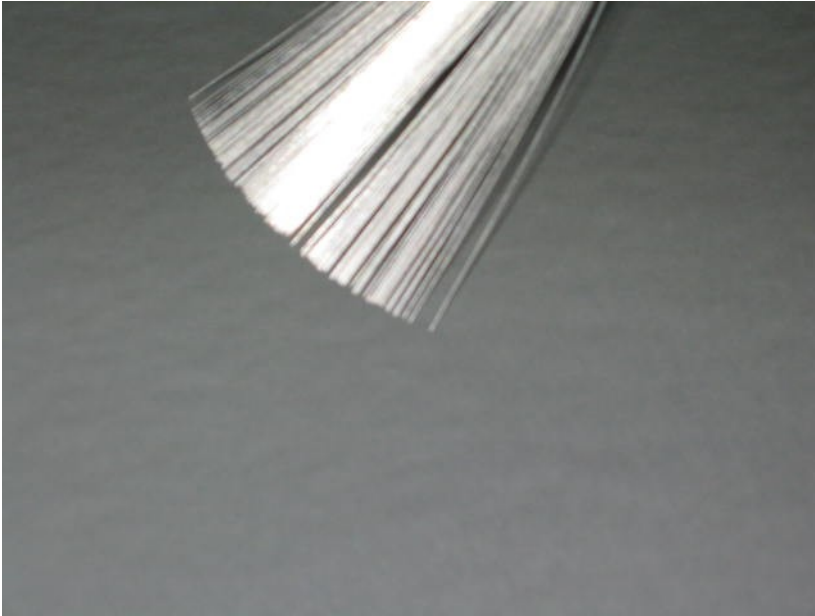


Figure 5 - Wand of Holiday tester that finds pin holes

10. Wear Coat: MasterSeal M 882

- 10.1 Ensure surface for application is dry, free from dust, debris and all other contaminants.
- 10.2 **If the MasterSeal Membrane has been curing for more than 48 hours or the membrane has had a heavy dew or rain on it the membrane should be coated with MasterSeal P 692 and allowed to tack off before applying the MasterSeal M 882.**
- 10.3 The use of MasterSeal P 692 is also recommended when the system will be subject to heavy traffic or turning areas.
- 10.4 Before mixing, pre-condition both A, B and C components to a temperature of approximately 15 to 25°C. Pour the entire contents of Part A into a clean container of at least 20L in capacity. Add part B and immediately add part C (**MasterTop F 11 Filler**) in the volume required (a range of 6-10L per 8L kit will give you the consistency to apply to large level areas and to cope with slopes to drains and ramps). Mix with a mechanical drill and paddle at a very low speed (ca. 300rpm) for at least 2 minutes or until homogeneous. Scrape the sides and the bottom of the container several times to ensure complete mixing. Keep the mixer blades submerged in the coating to avoid introducing air bubbles. Apply immediately to the substrate.
- 10.5 Apply **MasterSeal M 882** over the **MasterSeal M 210SL/TIX** with a notched squeegee or pin rake at the minimum rate of 0.4 – 0.7 L/m².
- 10.6 Fully broadcast with **MasterTop Filler F10** into the still wet wear coat at the rate of 2.0 – 4.0 kg/m². Allow to cure for at least 3 hours before removing all excess aggregate with a stiff broom and vacuum. The total achieved thickness shall be 2-3mm.

Note:

1. *In tropical climates it is important that MasterSeal M 882 is applied over MasterSeal M 210SL/TIX, 12-36 hours after the application of the membrane to ensure good bonding.*
2. *Wear coat application times onto MasterSeal M 210SL/TIX:*

Wear Coat Application MasterSeal 882	at 10°C	minimum. 36 hours maximum. 48 hours
	at 20°C	minimum 12 hours maximum 36 hours
	at 30°C	minimum 8 hours maximum 24 hours
	at 30°C and >80% RH humidity	minimum 8 hours maximum 24 hours

3. Should the coating of MasterSeal M 882 over MasterSeal M 210SL/TIX exceeds 48 hours or exposed to rain or heavy dew, apply 1 thin coat of MasterTop P 692 (observe re-coating intervals of MasterTop P 692) to the clean and dry MasterSeal M 210SL/TIX. For application to membrane exposed for more than 7 days, lightly abrade the surface to remove any contaminants and wipe with rags wetted with Xylene before applying the MasterTop P 692
4. It is important that MasterSeal M 882 is applied over clean and dry MasterSeal M 210SL/TIX

11. Topcoat : MasterSeal TC 465

- 11.1 Ensure surface for application is dry, free from dust, debris and all other contaminants.
- 11.2 Prior to application, **MasterSeal TC 465** shall be preconditioned to a temperature of between 15 and 25°C.
- 11.3 Mix with a mechanical drill and paddle at a low speed (approx. 300 rpm) until product is homogeneous.
- 11.4 Apply **MasterSeal TC 465** polyurethane sealer at least 6 hours after the application of the **MasterSeal M 882** broadcast surface with a squeegee and followed by back rolling with 12-14mm nap roller at a rate of 0.4 – 0.65 L/m² in one coat to achieve a dry film thickness of 0.3 – 0.5mm. Multiple coats may be necessary depending on colour and expected aesthetics
- 11.5 Protect from foot traffic for at least 24 hours.

Note:

1. The temperature of the substrate must be at least 3 °C above the dew point before application and must remain so until the topcoat has cured.
2. Topcoat MasterSeal TC 465 application times onto MasterSeal M 882 intervals as below or until tack free.

Top Coat Application	at 10°C	minimum 24* hours
	at 20°C	minimum 12* hours
	at 30°C	minimum 6* hours
	at 30°C & > 80% RH	minimum 6* hours

12. Topcoat: for fast return to service

12.1 MasterTop 1260

- 12.1.1 Ensure surface for application is dry, free from dust, debris and all other contaminants.
- 12.1.2 Prior to application, MasterTop 1260 shall be preconditioned to a temperature of between 15 and 25 °C.
- 12.1.3 Mix with a mechanical drill and paddle at a low speed (approx. 300 rpm) until product is homogeneous.
- 12.1.4 **Apply MasterTop 1260** polyaspartic at least 6 hours after the application over the **MasterSeal M 882** broadcast surface with a squeegee and followed by back rolling with 12-14mm nap roller at a rate of 0.15 – 0.20 L/m² in one coat to achieve a dry film thickness of 0.15 – 0.2mm. Multiple coats may be necessary depending on colour and aesthetics
- 12.1.5 Two coats may necessary depending on the colour chosen and final aesthetics.
- 12.1.6 Protect from foot traffic for at least 4 hours.

Note:

1. The temperature of the substrate must be at least 3 °C above the dew point before application and must remain so until the topcoat has cured.
2. Topcoat MasterTop 1260 application times onto MasterSeal M 882 intervals as below or until tack free.

Top Coat Application	at 10°C at 20°C at 30°C at 30°C & > 80% RH	minimum 6* hours minimum 4* hours minimum 2* hours minimum 2* hours
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Note: using the fast return to service components will reduce the time to completion but the MasterSeal M 210 will need the same cure time regardless of the addition of the fast return to service components. For a true 24 hour turn around apply MasterSeal Traffic 2500HD with the fast return to service components.

13. Protection of work

- 13.1 The deck must not be used as a working platform by other trades unless fully protected to the satisfaction of the Contract Administrator and deck installer.
- 13.2 No harmful substances should come into contact with the new system.
- 13.3 No building materials, scaffolding, plant machinery etc should be stored on the deck.
- 13.4 Finished works must be protected from damage by subsequent building operations.

Appendix 1

Dew Point is the temperature at which condensations forms.

To determine the Dew Point from the chart below, find the temperature of the air on the left side of the table. Next, locate the relative humidity of the air across the top of the table. The intersection of these two numbers in the matrix identifies the temperature at which Dew Point is reached. When air comes in contact with a surface that is at or below its Dew Point temperature, condensation will form on that surface.

Example: If the temperature in a facility is 24°C and the relative humidity is 35%, the intersection of the two shows that the Dew Point is reached at a temperature of 7°C, or below. This means that moisture vapour in the 24°C / 35% RH air will condense on any surface that is at or below the Dew Point temperature of 7°C.

Air Temperature [C]	Relative Humidity								
	100	90	80	70	60	50	40	30	20
-10	-10,0	-11,3	-12,8	-14,4	-16,3	-18,4	-21,0	-24,3	-28,7
-8	-8,0	-9,3	-10,8	-12,5	-14,4	-16,6	-19,2	-22,5	-27,0
-6	-6,0	-7,4	-8,9	-10,6	-12,5	-14,7	-17,4	-20,7	-25,3
-4	-4,0	-5,4	-6,9	-8,7	-10,6	-12,9	-15,6	-19,0	-23,6
-2	-2,0	-3,4	-5,0	-6,7	-8,7	-11,0	-13,8	-17,2	-21,9
0	0,0	-1,4	-3,0	-4,8	-6,8	-9,2	-12,0	-15,5	-20,3
2	2,0	0,5	-1,1	-2,9	-4,9	-7,3	-10,2	-13,7	-18,6
4	4,0	2,5	0,9	-1,0	-3,1	-5,5	-8,4	-12,0	-16,9
6	6,0	4,5	2,8	0,9	-1,2	-3,6	-6,6	-10,3	-15,3
8	8,0	6,5	4,8	2,9	0,7	-1,8	-4,8	-8,5	-13,6
10	10,0	8,4	6,7	4,8	2,6	0,1	-3,0	-6,8	-11,9
12	12,0	10,4	8,7	6,7	4,5	1,9	-1,2	-5,0	-10,3
14	14,0	12,4	10,6	8,6	6,4	3,7	0,6	-3,3	-8,6
16	16,0	14,4	12,5	10,5	8,2	5,6	2,4	-1,6	-7,0
18	18,0	16,3	14,5	12,4	10,1	7,4	4,2	0,2	-5,3
20	20,0	18,3	16,4	14,4	12,0	9,3	6,0	1,9	-3,6
22	22,0	20,3	18,4	16,3	13,9	11,1	7,8	3,6	-2,0
24	24,0	22,3	20,3	18,2	15,7	12,9	9,6	5,3	-0,4
26	26,0	24,2	22,3	20,1	17,6	14,8	11,3	7,1	1,3
28	28,0	26,2	24,2	22,0	19,5	16,6	13,1	8,8	2,9
30	30,0	28,2	26,2	23,9	21,4	18,4	14,9	10,5	4,6
32	32,0	30,1	28,1	25,8	23,2	20,3	16,7	12,2	6,2
34	34,0	32,1	30,0	27,7	25,1	22,1	18,5	13,9	7,8
36	36,0	34,1	32,0	29,6	27,0	23,9	20,2	15,7	9,5
38	38,0	36,1	33,9	31,6	28,9	25,7	22,0	17,4	11,1
40	40,0	38,0	35,9	33,5	30,7	27,6	23,8	19,1	12,7
42	42,0	40,0	37,8	35,4	32,6	29,4	25,6	20,8	14,4
44	44,0	42,0	39,8	37,3	34,5	31,2	27,3	22,5	16,0

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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

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