

MasterSeal M 690

Aliphatic, high elastic, fast curing, spray applied pure polyurea membrane for use in waterproofing applications

MATERIAL DESCRIPTION

MasterSeal M 690 is a solvent free, two component, high performance elastomeric waterproofing membrane. It is highly reactive and can only be applied by special two component hot spray equipment.

MasterSeal M 690 is specifically formulated UV and colour stable applications where the highest physical performance is required along with colour fastness to ensure functionality and aesthetics.

Suitable for trafficable areas can be installed with slip resistant surface profile options.

FIELD OF APPLICATION

MasterSeal M 690 is a single product, one application, UV and colour stable, seamless waterproof membrane for pools, resort lagoons artificial beaches and all marine applications or exposed roofs.

FEATURES AND BENEFITS

- **Spray delivered and ultra fast curing:**
 - Enables easy application to form a monolithic waterproofing membrane on simple and complex surfaces.
 - Application to vertical surface without runs.
 - Easy application to complicated details.
- **Rapid curing:**
 - Rain resistance after only 30 seconds.
 - Allows early serviceability.
 - Fully trafficable after only 12 hours.
- **Continuous membrane:**
 - monolithic – no laps, welds or seams.
- **Excellent chemical resistance.**
- **Waterproof and resistant to standing water.**
- **Fully bonded to substrate:**
 - can be applied to a wide range of substrates with the appropriate primer.
- **High water vapour permeability:** low risk of blistering.
- **High resistance to carbon dioxide diffusion:** Protects concrete from rebar corrosion.

- **High abrasion and impact resistance:** Withstand mechanical traffic.
- **High elasticity and crack bridging capability:**
 - remains elastic at low temperatures; To approx. – 45 °C.
 - High durability and protection with reduced cracking due to embrittlement.
- **Thermoset** – does not soften at high temperature.
- **Extremely fast spray applied installation speed:** Enables easy application to form a monolithic waterproofing membrane on simple and complex surface, vertical or horizontal.

PACKAGING

MasterSeal M 690 is supplied in 425kg sets.

APPLICATION METHOD

Surface Preparation:

- The preparation of the substrate and the use of the appropriate primer are of paramount importance. All surfaces to which **MasterSeal M 690** is applied should be sound, clean and dry and free from oil or grease, loose particles and any other substances which may impair adhesion. For substrate pre-treatment prior to the primer application see primer technical data sheet.
- **Concrete and cementitious screed**
Concrete and other cementitious substrates must have a minimum pull off strength of 1.5 N/mm². Any laitance pre-sent on the surface must be removed mechanically. Shot blasting is the preferred method. Release oil and other contaminants which may impair adhesion must be removed prior to the application of the primer.
- **Iron / steel**
Should be sand blasted to an Sa 2 ½ finish prior to application of the primer.

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Primer:

Use the following guide to select the appropriate primer:

Substrate	Primer
Concrete	MasterTop P 617 or MasterTop P 621
Humid mineral substrates	MasterSeal P 385
Plywood	MasterTop P 660 or MasterSeal P 691
GRP	MasterSeal P 691
Iron / steel (not stainless)	MasterSeal P 681
Non-ferrous metals (e.g. aluminium, zinc)	MasterSeal P 684
Aged MasterSeal (PU) waterproofing membranes	MasterSeal P 691

In some circumstances, other primers may be more appropriate. For further details, please consult your local sales office.

Mixing:

Dose and mix with suitable air driven or electrical two-part hot spray equipment. The accuracy of mixing and dosage must be controlled regularly with the equipment.

Stir well Part A drums before use to homogenize the content. Precondition the membrane components to the correct temperature 65 – 75 °C prior to application.

Check mix ratios are correct at the start of spraying and regularly throughout the spraying procedure.

- In ambient temperatures below 15°C chemical drums should be pre-heated using band heaters to 30 – 40°C.
- The B-side component should be thoroughly power stirred prior to the commencement of spraying and periodically during the spraying process to ensure there is no settling out of the B-side chemical components.
- The Pigment is always mixed into the B-side using a power stirrer.
- Both the A-side and B-side drums should be fitted with desiccant dryers.
- Compressed air supply should be supplied via an air dryer.
- Hose heaters should be set at 70°C. Adjustments can be made on-site based on environmental conditions, mixing module size and application circumstances.

Application:

- **MasterSeal M 690** can only be applied by means of a suitable two component heated, high pressure, proportioning spray equipment (e.g. Graco® GlasCraft® Gusmer, Wiwa®, Gama® or any other suitable). The choice of machine depends to a large extent on the type and size of work contemplated. For advice, please contact MB Construction Chemicals.
- **MasterSeal M 690** should only be applied to properly prepared substrates. For best results substrate and air temperature should be in a range 5 – 35 °C. However, in very cold conditions the use of barrel heaters may be required to ensure the optimal operation of barrels pumps.
- **MasterSeal M 690** should be applied within the recommended temperature and relative humidity limits. The temperature of the substrate should be min. 3 K above the dew point. Due to the fast reaction, it is possible to rapidly build thicknesses from 1.5 to > 6 mm.
- Surrounding areas should be protected from overspray by masking off. Care should be taken to prevent spray mist being carried by wind by erecting suitable barrier

COVERAGE

MasterSeal M 690 is normally applied at 2.2 – 2.5 kg/m². This corresponds to a thickness of approx. 2,0 – 2,3 mm. Details require a higher coverage rate up to 4.0 kg/m² or more.

The above consumption figures are intended as a guide only and may be higher on very rough or porous substrates.

SAFETY AND HANDLING

- All applicators of **MasterSeal M 690** should be trained and approved by the manufacturer.
- Spray applicators should wear appropriate PPE including approved breathing equipment, eye wear, Nyllex or similar light weight spray suit and appropriate covered footwear.
- Avoid breathing in vapours during spraying or when handling chemicals.
- Avoid eye and skin contact.
- Store chemical drums in a cool dry environment. Avoid storing chemicals for long periods in direct sunlight.
- Do not store chemicals next to food stuffs.
- Ensure chemical drums are kept tightly sealed and avoid ingress of air and moisture.

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STORAGE AND SHELF LIFE

Store in original containers under dry conditions at a temperature between 15° – 25° C. Do not expose to direct sunlight. For maximum shelf life under these conditions see "Best before....." label.

TECHNICAL SERVICES

Detailed technical assistance and further information regarding this system and its relevant application specifications are available from Master Builders Solutions Technical Services.

HANDLING AND PRECAUTIONS

In its cured state, **MasterSeal M 689** is physiologically non-hazardous. The following protective measures should be taken when working with this material:

Wear safety gloves, goggles and protective clothing. Avoid contact with the skin and eyes. In case of eye contact, seek medical attention. Avoid inhalation of the fumes. Respiratory protection must be worn when spraying or when in the vicinity of the spraying operation.

When working in well ventilated areas, a combined charcoal filter and particle filter mask (A-P2) should be worn. When working in less well ventilated and in confined spaces, air-fed helmets are to be worn by sprayer and assistant(s). When working with the product do not eat, smoke or work near a naked flame.

For additional references to safety-hazard warnings, regulations regarding transport and waste management please refer to the relevant Material Safety Data Sheet.

The regulations of the local trade association and/or other authorities, regulating safety and hygiene of workers handling polyurethane and isocyanates must be followed.

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.

MB Construction Chemicals Solutions South Africa (Pty) Ltd reserves the right to have the true cause of any difficulty determined by accepted test methods. Undertaking such tests is not, and shall not be deemed to be, an admission of liability or an assumption of any risk, loss, damage or liability.

QUALITY AND RESPONSIBLE CARE

All products originating from MB Construction Chemicals Solutions South Africa (Pty) Ltd are manufactured under a management system independently certified to conform to the requirements of the quality standards ISO 9001, environmental and occupational health and safety standards.

* Properties listed are based on laboratory controlled tests.

DISCLAIMER

The technical information and application advice given in this MB Construction Chemicals Solutions South Africa (Pty) Ltd 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.

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PRODUCT INFORMATION*

PROCESSING PROPERTIES	DATA
Mixing ratio of Comp. A to Comp. B	1 : 1 by volume
Dry film thickness range [mm] (For project specific DFT recommendations consult with manufacturer)	Steel Minimum: 1 Maximum: indefinite Concrete Minimum: 2 Maximum: indefinite
Tack Free-Time at 20°C [sec.]	10 - 20
Over coat cycle [h]	0 – 12 (without any pre-treatment)
Curing/loading after [h]	Walkable:1 Mechanical:2 Chemical: 12 - 24
Temperature range for application (ambient) [°C]	-10 - +50° C
Temperature range for application (substrate) [°C]	-10 - +50° C
Material Temperature (Preconditioning) [°C]	25 - 30° C
Material Temperature (Spraying) [°C]	65 - 75° C
Maximal relative air humidity for application [%]	98%
Pay attention to the dew point limit	Substrate should be 3C greater than DP (dew point)

PHYSICAL PROPERTIES	STANDARDS	DATA
VOC-content	DIN EN ISO 11890-1 / ASTM D-1259	0%
Solids content	DIN EN 827 / ASTM D-2697	100%
Viscosity [mPa*s] @ 25°C	DIN EN ISO 2884-2 / ASTM D-4878	Comp. A: 600 - 1.000 Comp B: 500 – 900
Density [g/cm³] @ 20°C	DIN EN ISO 2811-1 / ASTM D-1217	Comp. A: 1,09 ± 1,13 Comp. B: 1,00 ± 1,04
Density [g/cm³]	EN ISO 1183 / ASTM D-792	1,01 ± 1,05
Tensile strength [MPa]	ISO 37-2005 / ASTM D-638	≥ 22
Modul [MPa]	IISO 37-2005 / ASTM D-638	100% Elongation: ≥ 10 300% Elongation: 20
Elongation at break [%]	ISO 37-2005 / ASTM D-638	≥ 350 - 400
Hardness [Shore D]	ISO 868-2003 / ASTM D-2240	45 ± 5

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PHYSICAL PROPERTIES	STANDARDS	DATA
Rebound resilience [%]	ISO 4662 / ASTM	≥ 32
Tear growth resistance[N/mm]	ISO 34-1 method A	≥ 45
Volume abrasion [mm ³]	DIN ISO 4649	≤ 130
Taber Abrasion [mg]	ASTM D-4060	< 6 (Wheel CS17 / 1.000g / 1000 Cycles) < 125 (Wheel H18 / 1.000g / 1000 Cycles)
Pull off strength [N/mm ²]	DIN EN ISO 4624 / ASTM D-4541	Concrete: ≥ 1,5 Steel: ≥ 6
Water vapor transmission rate [g/m ² *d]	ISO 15106-3	6,1 (at 23° C a. 85% relative humidity) 17,5 (at 38° C a. 90% relative humidity)
Permeation coefficient [g*mm/m ² *d]	ISO 15106-3	17,3 (at 23° C a. 85% relative humidity) 51,0 (at 38° C a. 90% relative humidity)
Methane transmission rate [cm ³ /m ² *d*bar]	ISO 15105-1	91,5 (at 23° C a. 0% relative humidity)
Resistance to Root Penetration	EN 14416	Passed
Crack bridging abilities [mm] (thickness of the sample 2-3 mm)	DIN EN 1062-7 Procedure C.2	+23° C : > 15,5 -10° C : > 6,8 -20° C : > 6,4
Coefficient of sliding friction	DIN 51131	Dry (leather): 0,78 Wet (SBR-rubber): 0,04
Sound absorption	-	Approx. 5 dB / mm DFT
Storage conditions [°C]	DIN EN 12701	10 – 30 (in closed original drums, stored at dry and well-ventilated place; beware of freezing)
Shelf life	-	Approximately 12 months unopened and stored correctly