

## MasterSeal® M 790

Two-component highly chemical resistant, crack-bridging protective coating based on Xolutec for waterproofing and protection of concrete structures in harsh conditions

### DESCRIPTION

MasterSeal M 790 is a two-component crack-bridging membrane based on Xolutec providing high chemical and mechanical resistance. This is the body-coat of the **MasterSeal 7000CR** biogenic sulphuric acid resistant coating.

### Xolutec™ - a new dimension in durability

Xolutec is an innovative and smart way of combining complementary chemistries. When the material is mixed on site a cross linked interpenetrating network (IPN) is formed enhancing the overall material properties. By controlling the cross-linking density, the properties of Xolutec can be adjusted depending on the product performance required, e.g. this allows the formulation of materials with varying degrees of toughness and flexibility. Xolutec is very low in volatile organic components (VOC), is quick and easy to apply with both spray and hand application depending on requirements. It cures rapidly even at low temperature, reducing application time thus enabling fast return to service and minimizing downtime.

This technology is not sensitive to moisture and tolerates a wide variety of different site conditions, greatly expanding the application window and reducing the potential for delays and failures. Long maintenance cycles and lower life cycle costs significantly reduce total cost of ownership.

### RECOMMENDED USES

**MasterSeal M 790** is used in waterproofing applications where a high level of chemical resistance is required.

This includes:

- Waste water treatment plants both in the inflow and outflow areas
- Sewage effluent pipelines
- Biogas plants
- Secondary containment

**MasterSeal M 790** can be applied on:

- Horizontal and vertical substrates also with rubber wheel traffic.
- Internal and external areas
- Concrete, cementitious mortar or steel substrates
- Reinforced concrete to protect it against carbonation or chloride induced corrosion and for protection against chemical attack in secondary containment bunds in chemical and petrochemical industries.

Contact BASF for any other applications not listed here.

### FEATURES AND BENEFITS

- **Easy hand application** - by roller or trowel
- **Continuous protective coating** - monolithic no laps, welds or seams
- **Excellent chemical resistance** – including high concentrations of biogenic sulphuric acid
- **Waterproof** - resistant to standing water
- **Fully bonded to substrate** - can be applied to a wide range of substrates with the appropriate primer
- **Moisture tolerant** - can be applied on substrates with high residual humidity
- **High water vapour permeability** - low risk of blistering
- **High resistance to carbon dioxide diffusion** - protects concrete from reinforcing steel corrosion
- **High tear, abrasion and impact resistance** - withstands traffic and use in areas exposed to mechanical damages
- **Crack bridging** - tough but flexible
- **High durability** - reduced cracking tendency due to no long-term embrittlement
- **Thermoset** - does not soften at high temperatures
- **Excellent adhesion** - on different substrates (concrete, steel)
- **Weatherproof** - proven thundershower and freeze / thaw resistance, can be applied outdoors without additional top coating

# MasterSeal<sup>®</sup> M 790

- **Can be spray-applied** - with selected 2-component spray machines (please contact our technical service for details)

## APPROVALS

- Proven long-term resistance to biogenic sulfuric acid corrosion resistance (Fraunhofer Institute)
- CE Certification according to EN 1504-2
- Chemical Resistance according to EN 13529

## APPLICATION

### Surface Preparation

All substrates (new and old) must be structurally sound, dry, free of laitance and loose particles and clean of oil, grease, rubber skid marks, paint stains and other adhesion impairing contaminants.

**Concrete:** The surface should be prepared by shot blasting, high-pressure water jetting or other suitable mechanical method. After preparation, concrete and other cementitious substrates must have a minimum pull off strength of 1 N/mm<sup>2</sup>. Substrate temperature must be minimum +5 °C and maximum +30 °C. Wall/Floor connections must be rounded by using suitable products e.g. **MasterEmaco N 5200CI**.

Iron / steel: Should be sand blasted to a SA 2½ finish prior to application of the product. No primer coat is needed for application of MasterSeal M 790 on steel. The temperature of the contact surfaces must be at least 3 C above the ambient dew point temperature.

### Primer coat

A primer coat will improve the adhesion and prevent the appearance of pinholes or bubbles in the hardened coating. The recommended primer for **MasterSeal M 790** is **MasterSeal P 770\***. The substrate should be visibly dry - there is no limit to residual humidity. The temperature of the contact surfaces must be at least 3 C above the ambient dew point temperature.

**MasterSeal P 770** can be applied by roller in one layer and its consumption is approx. 0.25 - 0.3 kg/m<sup>2</sup>.

Wait for at least 12 hours (@ 20° C) before applying **MasterSeal M 790**.

*\* Please refer to relevant product data sheet for details.*

### Mixing

**MasterSeal M 790** is supplied in working kits which are pre-packaged in the exact mixing ratio.

Pour the entire content of Part A into the container of Part B and mix with a mechanical drill and paddle at low speed (max. 400 rpm) 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 mix part packs and do not mix by hand!**

### Application

**MasterSeal M 790** can be applied by brush or roller. It is always recommended to complete the application in a minimum of two layers.

Approximately 20 minutes at 20 °C ambient and substrate temperature.

Minimum waiting time before application of second coat is 4 hours (overnight) at 20 °C ambient and substrate temperature.

Tools can be cleaned with solvent-based cleaner while still wet. Once cured, the material can only be removed mechanically.

## ESTIMATING DATA

The consumption of **MasterSeal M 790** is approximately 0.4 kg/m<sup>2</sup>(330microns) per coat. A minimum of two coats is required, depending on the condition and porosity of the substrate and requested film thickness. A two coat application with a total consumption of approximately 0.8 kg/m<sup>2</sup>(660microns) will provide a dry film thickness of approx. 0.66 mm.

In high chemically demanding environments (e.g. waste water treatment plants) and/or in harsh, abrasive conditions, a dry film thickness of 0.9-1.0 mm is recommended. Therefore a minimum consumption of 1.1-1.2 kg /m<sup>2</sup> in two or three layers has to be applied.



We create chemistry

## MasterSeal<sup>®</sup> M 790

---

These consumptions are theoretical and can vary according to the absorption and roughness of the substrate. It is essential to carry out representative trials on site to evaluate the exact consumption.

MasterSeal M 790 Wet Film thickness				
L	Thickness in mm /m <sup>2</sup>	m <sup>3</sup>	pails /m <sup>3</sup>	m <sup>2</sup> /mm thickness
4.15	4.15mm	(0.00415)	241	4.15 m <sup>2</sup>
40.25	40.25mm	(.04025)	24.8	40.25m <sup>2</sup>

### PACKAGING

MasterSeal M 790 is available in

- 5 kg Kits consisting of 1.5kg Part A and 3.5 kg Part B
- 48.3 kg Kits consisting of 14.5kg Part A and 33.8 kg Part B

### SHELF LIFE

**MasterSeal M 790** has a shelf life of 12 months. Store out of direct sunlight, clear of the ground on pallets protected from rainfall.

### PRECAUTIONS

For the full health and safety hazard information and how to safely handle and use this product, please make sure that you obtain a copy of the BASF Safety Data Sheet (SDS) from our office or our website.

# MasterSeal<sup>®</sup> M 790

Product Data			
Property	Standard	Unit	Data
Density of mixed material	EN ISO 2811-1	g/cm <sup>3</sup>	approx. 1.2
Viscosity of mixed material	EN ISO 3219	mPas	approx. 2800
Application temperature (substrate and material)	-	°C	from +5 to +30
Maximum substrate moisture (during application)	-	-	not restricted, but surface must be visibly dry
Maximum relative humidity (during the application)	not restricted, but no condensation of water on the surface		
Pot-life (5 kg kit)	at +20° C at +10° C at +30° C	minutes	approx. 20 approx. 25 approx. 15
Re-coating interval	at +20° C	hours	approx. 12
Exposure to water pressure after	at +20° C	days	3
Fully cured after	at +20° C	days	7
Service temperature (dry)	-	°C	- 20 to +80
Service temperature (wet)	-	°C	up to +60
Adhesion to concrete (dry) after 28 d	EN 1542	N/mm <sup>2</sup>	2.9
Adhesion to concrete (wet) after 28 d	EN 13578	N/mm <sup>2</sup>	2.2
Adhesion to steel	EN 12188	N/mm <sup>2</sup>	> 7.0
Adhesion strength after freeze-thaw cycles	EN 13687-1	N/mm <sup>2</sup>	2.7
CO <sub>2</sub> permeability S <sub>D</sub>	EN 1062-6	m	206 (required > 50)
Water vapour permeability S <sub>D</sub>	EN ISO 7783	m	126 (class III S <sub>D</sub> > 50)
Capillary water absorption	EN 1062-3	kg/m <sup>2</sup> ·h <sup>0.5</sup>	0.0005 (required < 0.1)
Behaviour after artificial weathering (2000 h)	EN 1062-11	-	no blistering, cracking or flaking; colour change
Tensile strength	EN ISO 527-1/-2	N/mm <sup>2</sup>	> 20
Abrasion resistance - Taber test (mass loss)	EN ISO 5470 -1	mg	194 (required < 3000)
Abrasion resistance - BCA test (thickness loss)	EN 13894-2	µm	< 10 (= class AR 0,5)
Dynamic friction 20,000 cycles dry (test for rubber wheel traffic) 20.000 cycles wet	"Stuttgarter Gerät"	-	no abrasion of material no abrasion of material
Impact resistance	EN ISO 6272/2	Nm	24.5 (class III > 20)
Shore D hardness after 7 d	EN ISO 868/07	-	80
Reaction to Fire	EN 13501-1	-	Class E

# MasterSeal® M 790

Product Data (continued)			
Static crack bridging	EN 1062-7	Class	A3 (+ 23 °C)
			A2 (+70°C, dry), A2 (-10°C)
Dynamic crack bridging	EN 1062-7	Class	B3.1 (23° C)
			B2 (-10° C)
Elongation at break	DIN 53504	%	20
Resistance to positive water pressure	UNE-EN 12390-8	bar	5
Resistance to negative water pressure	based on UNI 8298-8	bar	2.5

**Note:** Hardening times are measured at 21°C ± 2°C and 60% ± 10% relative humidity. Higher temperatures and/or higher relative humidity can shorten these times, and vice versa. Technical data shown are statistical results and do not correspond to guaranteed minima. Tolerances are those described in appropriate performance.

Chemical resistance (according EN 13529)			
Group	Description	Test Liquid	Result*
DF 1	Gasoline	47.5% toluene + 30.4% isooctane + 17.1% n-heptane + 3% methanol + 2% 2-methyl-propanol-(2)	Class III (8%)
DF 2	Aviation fuels	50% toluene + 50% isooctane Aviation fuel 100 LL NATO code F18 Turbo fuel A1 NATO Code F34/F35	Class III (9%)
DF 3	Fuel oil, Diesel fuel and other unused combustion motor oils	80 % n-paraffin (C12 to C18) + 20 % methylnaphthalene	Class III (8%)
DF 4	All hydrocarbons as well as mixtures containing benzene with max. 5 Vol. %	60% toluene + 30% xylene + 10% methylnaphthalene	Class III (19%)
DF 4a	Benzene and benzene containing mixtures (incl.4)	30% benzene + 30% toluene + 30% xylene + 10% methylnaphthalene	Class III (25%)**
DF 5	Mono- and polyvalent alcohols (up to a max. 48 vol.-% methanol), glycol ethers	48 Vol.-% methanol + 48 Vol.-% IPA + 4% water	Class III (35%)
DF 5a	All alcohols and glycol ethers (incl. 5 and 5b)	methanol	Class III (48%)
DF 6	Halogen hydrocarbons ≥ C2 (incl. 6b)	trichloroethylene	Class III (18%)
DF 6a	All halogen hydrocarbons (incl. 6 and 6b)	Dichloromethane (methylene chloride)	Class I
DF 6b	Aromatic halogen hydrocarbons	monochlorobenzene	Class III (20%)
DF 7	All organic esters and ketones (including. 7a)	50 % ethyl acetate + 50 % methyl isobutyl ketone	Class II (43%)
DF 9	Aqueous solutions of organic acids (carboxylic) up to 10 % as well their salts	10 % aqueous acetic acid	Class III (8%)**
DF 9a	Organic acids (carboxylic, apart from formic acids) as well as their salts	50% acetic acid + 50% propionic acid	Class I
DF 10	Mineral acids (non oxidizing) up to 20% and inorganic salts in aqueous solution (pH<6) except HF	Sulphuric acid (20%)	Class III (10%)
DF 11	Inorganic lye (except oxidizing) and inorganic salts in aqueous solution (pH>8)	Sodium hydroxide solution (20%)	Class III (11%)

# MasterSeal® M 790

Group	Description	Test Liquid	Result*
DF 12	Aqueous solutions of inorganic non-oxidizing salts with a pH value between 6 and 8	Aqueous sodium chloride solution (20%)	Class III (13%)
DF 13	Amines as well as their salts (in aqueous solution)	35 % triethanolamine + 30 % n-butylamine + 35 % N,N-dimethylaniline	Class I
DF 14	Aqueous solutions of organic surfactants	1) 3 % Protectol KLC 50 + 2 % Marlophen NP 9,5 + 95 % water 2) 3 % Texapon N 28 + 2 % Marlipal O 13/80 + 95 % water	Class III (10%)
DF 15	Cyclic and acyclic ethers (including 15a)	Tetrahydrofurane (THF)	Class I
DF 15a	Non-cyclic ethers	Diethyl ether	Class III (19%)

Class I: 3 d without pressure	Reduction in hardness of less than 50% when measured according to Buchholz method, EN ISO 2815, or Shore method EN ISO 868 24 h after the coating is removed from immersion in the test liquid.
Class II: 28 d without pressure	
Class III: 28 d with pressure	

\* values in brackets are Reduction of shore A hardness

\*\* colour change

Chemical Resistance - additional media			
Media	Temperature	Duration of impact	Resistance*
<b>Acids</b>			
Sulphuric acid 50%	50° C	170 h	++
Sulphuric acid 30%	50° C	500 h	++
Phosphoric acid 85%	20 °C	500 h	++**
Nitric acid 30%	20 °C	500 h	+**
Acetic acid 20%	20° C	310 h	++
Lactic acid 30%	20° C	170 h	++
Lactic acid 25%	50° C	500 h	+
Sulphuric acid 20% + lactic acid 5%	50° C	170 h	++
Formic acid 5%	20° C	500 h	++
Formic acid 40%	20° C	500 h	+
<b>Alkalis</b>			
Sodium hydroxide 50%	20° C	500 h	++
Sodium hydroxide 50%	50° C	500 h	++
Potassium hydroxide 50%	20° C	500 h	+
Ammonia 25%	20° C	310 h	-
<b>Organic chemicals</b>			
Ethanol 50%	20° C	310 h	0
Toluene	20 °C	500 h	0
Gasoline acc. to EN 228 and DIN 51626-1	20 °C	500 h	++
<b>Specific solutions</b>			
Silage water (3% milk + 1.5% vinegar +0.5% butyric acid)	40 °C	500 h	++
Liquid manure (7% ammonium hydrogen phosphate)	40 °C	500 h	++
Distilled water	40 °C	500 h	++
Chlorine bleaching	50 °C	170 h	++



We create chemistry

# MasterSeal® M 790

Chlorinated water	20 °C	500 h	++
Hydrogen peroxide 30%	20 °C	500 h	++
Ammonium hydroxide 28%	20 °C	500 h	++

**\* Tensile Strength development in comparison to untreated sample:**

++	100 – 80%	→ resistant without any changes
+	79 -55%	→ medium resistant
o	54 -45%	→ short term resistant (occasional contact or splashing mode)
-	< 45%	→ not resistant

**\*\* Colour change**

MasterSeal-M-790 ANZ-V3-1017

**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](http://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](http://www.master-builders-solutions.basf.co.nz)

**BASF Emergency Advice:**  
1800 803 440 within Australia (24hr)  
0800 944 955 within New Zealand