# MasterSeal M 391

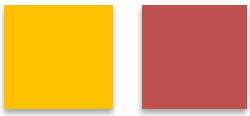
## Glossy epoxy coating suitable for contact with foodstuff and potable water, according to regulation EU 10/2011

### MATERIAL DESCRIPTION

MasterSeal M 391 is a glossy epoxy coating, suitble for contact with drinking water and certified for contact with foodstuff according to regulation EU10/2011.

MasterSeal M 391 is available in the following versions:

- **Yellow,** specific for contact with white wine,
- **Red,** specific for contact with red wine,



**Light blue** and White, specific for contact with oil, cereals, potable water and other foodstuff



CE

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**00271 - 0099/CPD/B15/0044**

**EN 1504 - 2**

**Surface protection product for the principles and methods 1.3/2.2/5.1/6.1/8.2 defined in EN 1504-9**

| | |
|---|---|
| **Capillary absorption** | ≤ 0.1Kg/m$^2$·h$^{0.5}$ |
| **Water vapour permeability** | **Class III** |
| **Permeability to $CO_2$** | **Sd > 500 m** |
| **Adhesion strength by pull-off test** | **> 3 N/mm$^2$** |
| **Abrasion resistance (Taber)** | **Mass loss < 100 mg** |
| **Resistance to severe chemical attack: reduction in hardness < 50%** | **Group 4: Class II<br>Group 5a: Class II<br>Group 9: Class II<br>Group 10: Class II<br>Group 11: Class II<br>Group 12: Class II<br>Group 13: Class I** |
| **Impact Resistance** | **Class II** |
| **Reaction to fire** | **Class F** |
| **Dangerous substances** | **Comply with 5.3 of EN 1504-2** |

### FIELDS OF APPLICATION

MasterSeal M 391 is mainly recommended for waterproofing of wine vessels and tanks for the containment of vegetable oil and cereal bins and potable water reservoirs.

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Contact your local Master Builders Solutions representative regarding any application required not mentioned here.

## FEATURES AND BENEFITS

- 100% solids content
- formulated according to the limit and restriction of the CE regulation n.1895/2005 about NOGE, and BADGE (epoxy derivatives);
- certified according to EN 1504-2 (concrete protection)
- does not contain aromatic amines, phthalates or ben-zyl alcohol.
- certified for contact with potable water according to the Italian Ministerial Decree DM 174;
- certified according to regulation EU 10/2011 (European Commission 14/1/2011) for the migration test with following simulants:

| Simulant | Type | MasterSeal M 391 color |
|---|---|---|
| Ethanol 10 % | A | Yellow and Red |
| Acetic acid 3 % | B | Yellow and Red |
| Ethanol 20 % | C | Yellow and Red |
| Vegetable oil | D2 | Light blue and White |
| Potable water | -- | Light blue and White |

## APPLICATION METHOD

### a) Surface Preparation

Prior to applying the primer MasterSeal P 385 it is indispensable to check the concrete surfaces for damage or contamination by oils, grease or other substances. Any loose, damaged or contaminated concrete must be removed and repaired using products from the MasterEmaco range. MasterSeal P 385 must be applied on sandblasted surfaces (this does not apply to areas repaired with MasterEmaco products), which have been cleaned and freed of dust using compressed air.
MasterSeal M 391 needs no primer for application on steel. Steel surfaces must be sandblasted to grade SIS Sa 3 (SSPC - SP 5) with profile equal to grade 11 of Rugotest No. 3.
The application should take place at a temperature between +5°C and +40°C.

### b) Application of Primer MasterSeal P 385

The product should be applied onto saturated substrates with a dry surface. Strong absorbent surfaces should therefore be soaked with water prior to application of Mas-terSeal P 385 and any excess water removed with cloths or air jet.
Pour Part B (hardener) into Part A (base) and mix them thoroughly together until a smooth mix is obtained.
Then add Part C (aggregate) mixing all the time with a mechanical mixer. Continue mixing until a smooth, lump-free mix is obtained.
MasterSeal P 385 may be applied as it is with a sleeker for shallow filling work or diluted with 10-20% water when applying with a brush, roller or spray. Always apply the material in two coats at an interval of 1624 hours one from the other.
MasterSeal P 385 is abrasive, and it is therefore advisable to use airless membrane equipment. Immediately after use, thoroughly clean the working tools with water and detergent.
The film formed by this product requires 7 days at 20°C and 65% r.h. to terminate the hydration process and become suitable for use in the considered conditions. It may, however, be coated with MasterSeal M 391 already after (but not before) 48 hours in a well-ventilated environment. In each specific case check that the surface humidity is not higher than 4%.

| Technical Data MasterSeal P 385 | |
|---|---|
| Open pot life | 1 hour at + 20° C |
| Mixing ratios | 21%A, 21%B, 58%C |
| Recoating time with resinous coatings at 20°C (min/max after cleaning) | 48 hours |
| Working temperature | - 20° C – +80°C |
| Hard dry | 7 days (at + 20° C) |

### c) Temperature and humidity

The fact that MasterSeal M 391 does not contain aromatic amines nor bisphenol F, makes the formulation compliant with the European regulations regarding materials in contact with food. At the same time these restrictions also

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necessarily lead to the need of paying greater attention to the application stage in order to meet the requirements of food safety and durability of the intervention.

MasterSeal M 391 has certain sensitivity to atmospheric moisture, especially at low temperatures. Therefore, it is important to provide air circulation on the jobsite in order to maintain relative humidity below 50%.
In the presence of high humidity phenomena like light bleaching and sweating can occur. Such defects, purely superficial, must always be removed through a washing procedure, before the tanks are filled.
The product must NOT be diluted.

### d) Application of MasterSeal M 391 Yellow and Red

Mix the two components prior to use, using a drill with whisk attachment.
The product has a limited open pot life. For these reasons it may be applied by roller (only for small surface areas and therefore for small quantities) or by spray, but only using airless equipment with bi-mixer like WIWA Duomix Series 230, WIWA FlexiMix II or equivalent. Two coats are always recommended for a total of 0,6 kg/m$^2$.

| Airless pump | |
|---|---|
| Nozzle equivalent diameter | 0.026 - 0.030 in |
| Spraying angle | 50 - 80 ° |
| Nozzle pressure | 200 - 250 bar |
| Minimum flow rate | 10 litres/minute |
| Hose diameter | 3/8 in |
| Maximum hose length | 10 m |
| Filter | 60 Mesh (equal to 250µ opening and 590 mesh/cm$^2$) |

### e) Application of MasterSeal M 391 Light blue and White

Mix the two components prior to use, using a drill with whisk attachment. The product may be applied by roller or by airless spray. Two coats are always recommended for a total of 0,6 kg/m$^2$.
It is advisable to prepare only the quantity of product each time that can be applied during its open pot life. High temperatures accelerate hardening and reduce the workability time of the prepared material.

| Airless pump | |
|---|---|
| Nozzle equivalent diameter | 0.018 - 0.023 in |
| Nozzle pressure | 180 – 220 bar |
| Compression ratio | 60 / 1 |

### CLEANING OF TOOLS

Thoroughly clean the working tools with epoxy thinner E100.

### CLEANING PROCEDURE OF THE SURFACES BEFORE FILLING THE TANKS

Wait at least 2 weeks after the application of MasterSeal M 391 before the tanks are returned into operation. During winter, persistent low temperature conditions can lengthen the curing time.
Before filling the tanks with the any foodstuff, it is essential to wash them with a 10% aqueous solution of soda to disinfect surfaces and remove any salts present. Then proceed with a thorough rinsing with hot water. This process may cause a slight loss of gloss of the film which, does not affect the performance of the coating.

### COVERAGE

A total of approx. 0,6kg per square meter are required for two coats.

### PACKAGING

MasterSeal M 391 yellow/red is available in 75 kg Kits (2x 25 kg Part A and 1x 25 kg Part B).
MasterSeal M 391 light blue/white is available in 20.2 kg Kits (16 kg Part A and 4.2 kg Part B).

### STORAGE

MasterSeal M 391 should be stored under cover and clear off the ground. Protect the materials from all sources of moisture and do not store at temperatures over +30° C.

### SHELF LIFE

12 months in unopened original containers, if stored at above mentioned storage conditions.

### WATCH POINTS

- Do not apply at temperatures below +5 ºC nor above 40 °C
- Solvents, sand or other products that could affect the product properties must not be added.

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| Product Data MasterSeal M 391 Red/Yellow | | |
|---|---|---|
| **Property** | **Unit** | **Data** |
| Density | g/cm³ | A: 1,5 ± 0,02<br>B: 1,5 ± 0,02<br>A+B: 1,5 ± 0,02 |
| Solid content by volume | % | 100 |
| Pot life | minutes | 20 |
| Mixing ratio by weight<br>Mixing ratio by volume | | 2A / 1 B<br>2.00 : 1 |
| Tack free (20° C) | hours | 4 - 8 |
| Dry in depth (20° C) | hours | 18 - 48 |
| Recoating time (20° C) | hours | 18 - 36 |
| Complete hard (20° C) | days | 7 |
| Service temperature (air) | °C | - 20 to +80 |

| Product Data MasterSeal M 391 Light Blue /White | | |
|---|---|---|
| **Property** | **Unit** | **Data** |
| Density | g/cm³ | A: 1.43 ± 0.02<br>B: 1.00 ± 0.02<br>A+B: 1.34 ± 0.02 |
| Solid content by volume | % | 100 |
| Pot life | minutes | 60 |
| Mixing ratio by weight<br>Mixing ratio by volume | | 4 A /1 B<br>2.76 : 1 |
| Tack free (20° C) | hours | 6 - 8 |
| Dry in depth (20° C) | hours | 24 - 36 |
| Recoating time (20° C) | hours | 24 - 48 |
| Complete hard (20° C) | days | 7 |
| Service temperature (air) | °C | - 20 to +80 |

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| Product Data | | | |
|---|---|---|---|
| **Property** | **Standard** | **Unit** | **Data** |
| Adhesion to the concrete substrate MC (0.40) to EN 1766 | EN 1542 | MPa | > 3 (cracking of sub-strate) |
| Coefficient of water absorption | EN 1062-3 | $kg \cdot m^{-2} \cdot h^{-0,5}$ | < 0.1 |
| Abrasion resistance (load 1000 g grinding wheel H22/1000 cycles) | EN ISO 5470-1 | mg | Weight loss < 100 |
| Impact resistance (Class I : 4 Nm, Class II: 10 Nm, Class III: 20 Nm) | EN ISO 6272 | - | Class II |
| Permeability to water vapour measured as air equivalent thickness Sd<br>Class I : Sd < 5 m, (Permeable),<br>Class II : Sd □ 5 and □ 50 m,<br>Class III : Sd > 50 (Not Permeable) | EN ISO 7783-1 | - | Class III |
| Permeability to $CO_2$ measured as air equivalent thickness Sd | EN 1062-6 | m | Sd > 50 |
| Resistance to artificial weathering (2000 hours of UV radiation and condensation) | EN 1062-11 | | No blistering, cracking or flaking (yellowing) |
| Resistance of positive pressure | EN 12390-8 | bar | 5 |
| Resistance of negative pressure with MasterSeal P 385 | 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 R.H. 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

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