MasterSeal M 452

Water-based epoxy-bitumen waterproofing coating, class A3 crack bridging with high chemical resistance for the treatment of tanks containing aggressive substances.

MATERIAL DESCRIPTION

Two-component water-based epoxy-bituminous waterproofer with crack bridging characteristics. Applied by roller, spatula or spray directly on the structure to be treated, MasterSeal M 452 creates a waterproofing and protective coating against specific aggressive reinforced concrete and at the same time permeable to water vapor.

FIELDS OF APPLICATION

MasterSeal M 452 is suitable for waterproofing reinforced concrete structures subject to severe environmental aggressions such as sewage collectors, purification plants (settling and aeration tanks), bridge decks.

FEATURES AND BENEFITS

MasterSeal M 452 is characterized by:

- water formulation: it can also be applied indoors;
- does not need a primer;
- permeable to vapor;
- crack bridging: covers cracks up to 1.25 mm;
- adheres well to the substrate;
- protects against chemical and physical aggression;
- high chemical resistance compared to a multitude of aggressive substances;
- complies with the principles defined in UNI EN 1504/2 ("Concrete surface protection systems") and the relative acceptance limits also with regard to severe chemical attack.

In compliance with the European Regulation (EU No 305/2011 and EU No. 574/2014) the product is provided with the CE marking according to UNI EN 1504-2 and the relative DoP (Declaration of Performance).

CE
1305
EN 1504-2
Surface protection system for concrete

PACKAGING

Component	Pack	Kg
A	Tin	19,38
B	Tin	0,62
Kit		20

STORAGE

Store the product in a sheltered, dry place at a temperature anywhere between +5°C and +30°C.

Technical Information	
Density	c.a 1 kg/l
Solids by weight	c.a 42%
Mixing ratios	97% A / 3% B
Pot ilfe	90 minutes at + 20° C
Recoating time 10°C 20°C 30°C	 5 h 3 h 2 h
Touch dry	1 h (a + 20°C)
Complete hardening	• 24 h (+ 20°C)
Operating temperature	• - 20°C ÷ 80°C

MasterSeal M 452

Water-based epoxy-bitumen waterproofing coating class A3 crack bridging with high chemical resistance for the treatment of tanks containing aggressive substances.

COVERAGE			
System	**Tecnhique**	**Product**	**kg/m²**
System Build Up 1: thickness 350 µm.	Saturation primer	MasterSeal M 452	0,25
	First coat waterproofing	MasterSeal M 452	0,25
	Second coat waterproofing	MasterSeal M 452	0,25
System Build Up 2 1.5 mm thick (areas also subject to abrasion).	Saturation primer	MasterSeal M 452	0,25
	First coat waterproofing loaded with filler	MasterSeal M 452	0,6
		MasterTop F1	1
	Second coat waterproofing loaded with filler	MasterSeal M 452	0,6
		MasterTop F1	1
System Build Up 3 1.2 mm thick (areas also subject to abrasion).	Saturation primer	MasterSeal M 452	0,25
	First coat waterproofing loaded with filler	MasterSeal M 452	0,6
		MasterTop F1	1
	Second coat waterproofing	MasterSeal M 452	0,25

Essential characteristic in accordance to UNI EN 1504/2 (2 mm)				**Limits and class**	**Performances**
Adhesion	In the absence of thermal cycles		UNI EN 1542 on substrate MC (0,40) EN 1766	> 0.8 MPa	> 1.5 MPa
	After 50 freeze / thaw cycles with UNI EN 13687/1 de-icing salts			> 0.8 MPa	> 1.5 MPa
	After storm cycles UNI EN 13687/2			> 0.8 MPa	> 1.5 MPa
Crack bridging ability a 23°C, UNI EN 1062/7			Static	Class A_1; A_2; A_3; A_4; A_5	A_3 (0,5-1,25 mm)
Permeability	To Water vapor	UNI EN ISO 7783/1. Equivalent air thickness Sd, Sd = µ s, µ = coefficient Vapor diff., S = thickness		Class I: Sd < 5 m (Permeable), Class II: Sd ≥ 5 e ≤ 50 m, Class III: Sd > 50 m (Non Perm.)	Classe I
	to CO_2	UNI EN 1062/6. Equivalent thickness of air Sd, Sd = µ · s, µ = coeff. Diff. CO_2, s = thickness		Sd > 50 m	Sd > 50 m
	To water	For capillary absorption EN 1062/3		< 0,1 $kg \cdot m^{-2} \cdot h^{-0,5}$	< 0,1 $kg \cdot m^{-2} \cdot h^{-0,5}$
	Abrasion	UNI EN ISO 5470/1 (1000 g grindstone H22/1000 cycles)		Weight loss < 3000 mg	< 3000 mg

Essential characteristic in accordance to hydraulic pressure	**Limits and class**	**Performances**
Positive hydraulic pressure resistance, UNI EN 12390/8 (5 bar)	Guidelines Cons. Sup. LLPP Average penetration <20 mm Penetration. maximum <50 mm	 < 20 mm < 50 mm
Resistance to negative hydraulic pressure, UNI 8298/8	0 to 2,5 bar	2,5 bar

MasterSeal M 452

Water-based epoxy-bitumen waterproofing coating class A3 crack bridging with high chemical resistance for the treatment of tanks containing aggressive substances.

CHEMICAL TABLE: CHEMICAL AGGRESSIVE AND RELATIVE GROUP UNI EN 13529

Aggressive chemical	liquid group UNI EN 13529	Aggressive chemical	liquid group UNI EN 13529
1,2-dichloroethane	6	Acetic anhydride	7
Acetaldehyde	7	Maleic anhydride	7
Amyl acetate	7	Aniline	13
Ethyl acetate	7	Antifreeze (ethylene glycol)	5
Acetophenone	7a	Benzene	4a
Acetone	7	Petrol, diesel and hydrocarbons	4
Acetic acid	9	Biodiesel (transesterified lipids)	7b
Acrylic acid	9a	Butanol	5
Adipic acid	9a	Caprolactam (amide)	7
Benzoic acid	9a	Jet fuel	2
Boric acid	10	Kerosene	2
Citric acid	9a	Cyclohexane	4
Hydrochloric acid	10	Chloroform	6a
Chloroacetic acid	9	Benzoyl chloride	6b
Chromic acid	10	Calcium chloride	12
Decanoic acid (capric)	9a	Sodium chloride	12
Heptanoic acid	9a	Cresoli	9
Aluminum sulphate	10	Detergents (acids)	10
Fumaric acid	9a	Phosphoric acid	10
Gallic acid	9a	Dichloromethane(methylenchloride)	6a
Glycolic acid	9a	Dimethylformamide	7
Lactic acid	9	Hexane	4
Lauric acid	9a	Ethanol	5
Maleic acid	9a	Phenol	9
Malic acid	9a	Formaldehyde (formalin)	8
Methacrylic acid	9a	Ethyl acetate glycol	7
Nitric acid	10	Diethylene glycol	5
Oleic acid	9a	Ethylene glycol	5
Oxalic acid	9	Propylene glycol	5
Picric acid	9	Fat	4b
Salicylic acid	9a	Calcium hydroxide	11
Sulfuric acid	10	Potassium hydroxide	11
Stearic acid	9a	Sodium hydroxide	11
Tartaric acid	9	Isopropanol (2-propanol)	5
Thioglycolic acid	9a	Milk	9
Trichloroacetic acid	9a	Brake fluid (polyglycols)	5
Aqua regia	10	Methyl methacrylate	7
Denatured alcohol	4	Methanol	5a
Monochlorobenzene	6b	Methylethylketone	7
N, N-dimethylacetamide	7	Ammonium sulfate	10
Ammonium nitrate	12	Copper (II) sulphate	12
Magnesium nitrate	12	Carbon sulfide	15 a
N-methyl-2-pyrrolidone	13	Styrene	4
Oleum (fuming sulfuric acid)	10	Tetrachlorethylen (perchlorethylene)	6
Mineral oils	3	Carbon tetrachloride	6a
Vegetable oils	4	Tetrahydrofuran	15
Raw oil	4b	Toluene	4
Tar oil	4	Toluene sulfonic	9a
Castor oil (fatty acids)	9a	Turpentine	4

MasterSeal M 452

Water-based epoxy-bitumen waterproofing coating class A3 crack bridging with high chemical resistance for the treatment of tanks containing aggressive substances.

Aggressive chemical	liquid group UNI EN 13529	Aggressive chemical	liquid group UNI EN 13529
Motor oil	3	Trichlorobenzene	6b
Paraffin	4	Trichlorethylene	6
Phenil Sulfuric Acid	9	Urea	12
Brine (sodium chloride)	12	White spirit (solvent)	4
Methyl salicylate	7a	Xylene	4
Detergents (alkaline)	11	Chlorinated water	12

CHEMICAL PERFORMANCE UNI EN 1504/2.
Class I: after 3 days of contact Shore reduction < 50%;
Class II 28 days of contact Shore reduction < 50%;
Class III 28 days of contact under pressure, Shore reduction < 50%

Chemical aggressive groups UNI EN 13529		Test liquid	Performance Shore D
1	Petrol	47.5% by volume of toluene 30.4% by volume of isooctane 17.1% by volume of n-heptane 3% by volume of methanol 2% by volume of tertiary butanol	---
2	Aviation fuel	1. 50.0% by volume of isooctane, 50.0% by volume of toluene 2. Aviation petrol 100 LL NATO Code F-18 3. Turbo fuel A-1 NATO code F-34 / F-35	---
3	Unused heating and diesel oil and engine and gear oils	80% by volume of n-paraffin (C12 - C18) 20% by volume of methylnaphthalene	---
4	All hydrocarbons including groups 2 and 3 except: 4 a) and 4 b) and engine and gear oils used	60% by volume of toluene 30% by volume of xylene 10% by volume of methylnaphthalene	---
4a	Benzene and benzene-containing blends (including 2 - 4 b)	30% by volume of benzene 30% by volume of toluene 30% by volume of xylene 10% by volume of methylnaphthalene	---
4b	Crude oil	10% by mass of isooctane 10% by mass of toluene 20% by mass of heating oil 10% by mass of 1-methylnaphthalene (95% min.) 47.7% by mass of heavy oil 0.2% by mass of thiophene (99%) 0.3% by mass of dibenzyldisulfide 0.5% by mass of dibutyldisulfide (97%) 1.0% by mass of mixture of naphthenic acids (acid value 230) 0.1% by mass of phenol 0.2% by mass of pyridine mixed with 2% by mass of water	---
5	Mono and polyalcohols (up to 48% by volume of methanol), glycol ethers	48% by volume of methanol 48% by volume of isopropanol 4% by volume of water	---
5a	All alcohols and glycol ethers (including 5)	Methanol	Classe I

MasterSeal M 452

Water-based epoxy-bitumen waterproofing coating class A3 crack bridging with high chemical resistance for the treatment of tanks containing aggressive substances.

Chemical aggressive groups UNI EN 13529		Test liquid	Performance Shore D
6	Halogenated hydrocarbons [including 6 b)]	Trichlorethylene	---
6a	All aliphatic halogenated hydrocarbons (including 6 and 6 b)	Dichloromethane	---
6b	Aromatic halogenated hydrocarbons	Monochlorobenzene	---
7	All organic esters and ketones (including 7 a)	50% by volume of ethyl acetate 50% by volume of methyl isobutyl ketone	---
7a	Aromatic esters and ketones	50% by volume of salicylic acid methyl ester salicylate 50% by volume of acetophenone	---
7b	Biodiesel	Biodiesel	---
8	Aliphatic aldehydes	35% - 40% of formaldehyde solution	--- ---
9	Aqueous solutions of organic acids up to 10%	10% aqueous acetic acid	Classe II
9a	Organic acids (except formic acid) and their salts (in aqueous solution)	50% by volume of acetic acid 50% by volume of propionic acid	---
10	Inorganic acids up to 20% and acid hydrolysis salts in aqueous solution (pH <6) except hydrofluoric acid and oxidizing acids and their salts	Sulfuric acid 20%	Classe I
11	Inorganic bases and their salts with alkaline hydrolysis in aqueous solution (pH> 8) except ammonium solutions and oxidizing solutions of salts (for example hypochlorite)	Sodium hydroxide 20%	Classe II
12	Solutions of inorganic non-oxidizing salts with pH = 6 - 8	Aqueous solution of sodium chloride 20%	Classe II
13	Amines and their salts (in aqueous solution)	35% by volume of triethanolamine 30% by volume of n-butylamine 35% by volume of N, N-dimethylaniline	_____
14	Aqueous solutions of organic surfactants	1) 3% of Protectol KLC 50; 2% of Marlophen NP 9.5; 95% water 2) 3% of Texapon N 28, 2% Marlipal O 13/80, 95% water	---
15	Cyclic and acyclic ethers	Tetrahydrofuran (THF)	---
15a	Acyclic ethers	Ethyl ether	---

MasterSeal M 452

Water-based epoxy-bitumen waterproofing coating, class A3 crack bridging with high chemical resistance for the treatment of tanks containing aggressive substances.

APPLICATION SHEET

PREPARATION OF THE SUPPORT

Degraded concrete: repair with quick-drying mortar

Remove the incoherent and degraded concrete layer or contaminated by oils, greases or other substances and then restore it to quick drying with MasterSeal P 385 Comp. D mixed with water only.

If rapid drying is not a fundamental requirement, mortars from the MasterEmaco line can be used for repairs.

Non-degraded concrete

The surface must be prepared by sandblasting or sanding. Other specific techniques can also be used in specific cases (the choice of the same is to be evaluated following a site visit).

Expansion and construction joints must be respected and sealed with MasterSeal NP 474, MasterSeal CR 170/171 or MasterSeal 930 sealants

Resinous or ceramic substrates

The surface must be prepared by sandblasting or sanding. Only MasterSeal P 385 Kit “AB2D” or MasterSeal P 385 Kit “ABC” can be applied to this type of media.

SUPPORT SATURATION

Before proceeding with the application of MasterSeal P 385, wet the highly absorbent surfaces with water, then remove any excess water with rags or air jets.

The substrate must be saturated with a dry surface.

APPLICATION MasterSeal P 385 D + water

Add the mixing water indicated in the table to MasterSeal P 385 D. Mix with a whisk drill at low rotation speed (400-600 rpm) until a homogeneous mixture is obtained.

Apply the material with a spatula.

Technical information	
Density of the mixture	about 2 kg / liter
Mixing water	17.5% (4.3 -4.4 liters per bag)
Workability time	20 minutes at 20°C
Setting times at 20°C	Start 45 minutes End 70 minutes
Operating temperature (air)	- 20°C - + 80°C
Complete hardening at 20°C	28 days

Apply the material with a spatula.

TEMPERATURE

The application can take place when the ambient temperature is between + 5°C and + 40°C and always higher than 3°C with respect to the dew point.

APPLICATION OF MasterSeal M 452

Mix component A, then pour component B into component A, homogenizing well with a low-speed mechanical mixer. In the primer coat and in the primer coat alone, add a quantity of water not exceeding 25% to the mix.

The product can be applied by roller or spray and also by trowel if it is loaded with MasterTop F1 (refer to the System Build Up tables).

Airless spray instrument	
NozzleEquivalent nozzle diameter	0.023 - 0.029 in
Spray angle	50 - 80°
pressure at the nozzle	180 - 240 bar

SAFETY INSTRUCTION

For information on the correct and safe use, transport, storage and disposal of the product, consult the most recent Safety Data Sheet.

MasterSeal M 452

Water-based epoxy-bitumen waterproofing coating class A3 crack bridging with high chemical resistance for the treatment of tanks containing aggressive substances.

OTHER SERVICES

For price analysis, specifications, supplementary brochures, references, reports and technical assistance, visit the website www.master-builders-solutions.com/it-it or contact infomac@mbcc-group.com.

Scan the QR code to visit the product page and download the latest version of this datasheet.

Since 16/12/1992, Master Builders Solutions Italia Spa has been operating under a Certified Quality System compliant with the UNI EN ISO 9001 Standard. Furthermore, the Environmental Management System is certified according to the UNI EN ISO 14001 Standard and the Safety Management System is certified according to the UNI ISO 45001 Standard.

Master Builders Solutions Italia Spa
Via Vicinale delle Corti, 21 – 31100 Treviso – Italia
T +39 0422 429200 F +39 0422 421802
www.master-builders-solutions.com/it-it
e-mail: infomac@mbcc-group.com