

# MasterSeal<sup>®</sup> M 649

## High performance protective waterproofing polyurea system

### DESCRIPTION

**MasterSeal M 649** is a solvent free, two-component waterproofing membrane. It is highly reactive and can only be applied by special two-component hot spray equipment. The product reacts within seconds and once cured, leaves a flexible, durable, tough surface. It is extremely effective when used as a protective and waterproof coating.

### TYPICAL APPLICATIONS

For the external and internal protection of concrete structures, or other substrates, to prevent the ingress of water and attack by various chemicals. Contact your Master Builders Solutions representative for further advice.

- Industrial & manufacturing facilities, storage, load and high traffic areas in the Food-Industry.
- Potable water reservoirs, rain storage tanks, clean water tanks.
- Pools indoor-outdoor, reservoirs, recreation areas, slip-hazard areas.
- Biotope, fishponds, playgrounds.
- Filtration systems, oxygen-tanks, sedimentation-tanks.
- Drinkwater and wastewater infrastructure, pipeline coating.
- Cold storage, loading docks, ramps.
- Laboratories, refrigerating warehousing.
- Flat and architectural roofs.
- Substructure waterproofing and protection.
- Podium and landscaping.

### ADVANTAGES

- Fast reactivity and cure times from 5 seconds up
- Fast return to service time > long life cycle, almost maintenance free > significant savings
- Anti-corrosive & waterproofing
- Excellent adhesion on concrete, steel, aluminum, plastics, fibers, wood, foam etc.
- Resistant to most aggressive chemicals, solvents, acids and caustics
- High impact & abrasion resistance, maintains flexibility

- Seamless and joint-less coating and lining, solid, high application thickness possible
- Allows accurate reproduction of surface detail
- High elongation at break
- Very good tensile and structural strength
- 100% solids, VOC-free, no solvents
- UV, chlorine and saltwater resistant
- High abrasion resistance

### APPEARANCE AND FINISH

The two-component system is low gloss, heavy bodied and has a dense surface.

**MasterSeal M 649** is hygienic and easily cleaned.

### PACKAGING AND COLORS

**MasterSeal M 649** is supplied in PTA 225 kg and PTB 200 kg in 200 L drums.

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## TYPICAL PROPERTIES\*

Properties	Result		
Mixing ration of Comp. A to Comp. B	100 : 100 per volume		
Gelification time at 20°C (dependent on the temperature of the substrate)	5 – 15 sec		
Tack free time at 20°C (dependent on the temperature of the ambient)	15 – 30 sec		
Over coat cycle (without any pre-treatment)	0 – 12 h		
Curing/loading after	Walkable: 1 h	Mechanical: 2 h	Chemical: 12 h
Temperature range for application (ambience)	-10 to +50°C		
Temperature range for application (substrate)	-10 to +50°C		
Material Temperature (Preconditioning)	25 - 30°C		
Material Temperature (Spraying)	70 - 80°C		
Maximal relative air humidity for application	90%		
Chemical base	Comp. A: MDI-Prepolymer Comp. B: Polyetheramine-Mixture		
Viscosity @ 25°C DIN EN ISO 2884-2 / ASTM D-4878	Comp. A: 500 – 900 mPa*s	Comp B: 500 – 900 mPa*s	
Density @ 20°C DIN EN ISO 2811-2 / ASTM D-1217	Comp. A: 1.11 ± 0.02 g/cm <sup>3</sup>	Comp. B: 1.02 ± 0.02 g/cm <sup>3</sup>	

## Typical properties after curing\*

Properties	Result
VOC content DIN EN ISO 11890-1 / ASTM D-1259	0%
Solids content DIN EN 827 / ASTM D-2697	100%
Density EN ISO 1183 / ASTM D-792	1.03 ± 0.02 g/cm <sup>3</sup>
Tensile strength ISO 37-2005 / ASTM D-638	≥ 23 MPa
Elongation at break ISO 37-2005 / ASTM D-638	≥ 380%
Shore D-hardness ISO 868-2003 / ASTM D-2240	45 ± 5
Pull off strength DIN EN ISO 4624 / ASTM D 4541	>1.5 MPa
Tear resistance ISO 34-1 method A	≥ 40 N/mm
Taber Abrasion ASTM D-4060	< 10 mg (Wheel CS17 / 1.000g / 1000 Cycles) < 120 mg (Wheel H18 / 1.000g / 1000 Cycles)
Potable water approval BS 6920	Nontoxic

\*) All datas measured at 25°C @ 50%rH. Meanderings at different ambience- and processing parameters have to be taken into account.

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## APPLICATION GUIDELINES

### SURFACE PREPARATION

The preparation of the substrate and the use of the appropriate primer are of paramount importance. All surfaces to which **MasterSeal M 649** 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 screeds

Concrete and other cementitious substrates must have a minimum pull off strength of 1.5 N/mm<sup>2</sup>. Any laitance present on the surface must be removed mechanically by means of grinding, jet washing or grit blasting. Release oil and other contaminants which may impair adhesion must be removed prior to the application of the primer.

#### Metal substrate

Should be sand blasted to a Sa 2 ½ finish prior to application of the primer.

### PRIMING

Use the following guide to select the appropriate primer:

<i>Substrate</i>	<i>Primer</i>
Concrete	<b>MasterTop P 650</b>
Metal	<b>MasterSeal P 616</b>
Aged <b>MasterSeal</b> (PU) waterproofing membranes	<b>MasterSeal P 691</b>

In some circumstances, other primers may be more appropriate. For further details, please consult your local Technical Services Department.

### PLACING / APPLICATION

**MasterSeal M 649** is designed to be commercially applied using a good quality high pressure, plural component spray machine spray with a 1:1 ratio pump such as those available from GRACO, or another suitable machine.

The proportioner unit must be capable of providing the correct pressure and heat commensurate with the hose length to be used. The hose temperatures should be maintained within the range of 60 - 70°C. The base and reactor heaters should be capable of maintaining a block temperature of 70°C. Application pressure should be varied by the operator to compensate for the tip size of the spray gun being used but is normally within the range of 2000 to 3000psi.

The **MasterSeal M 649** should be spray-applied in a cross-directional method and the recommended system DFT should be built up in 2 or more layers to reduce the possibility of pinholes occurring.

In the event that the over-coat window is exceeded between layers, the first layer should be mechanically abraded to provide a suitable mechanical key and solvent wiped immediately prior to applying any subsequent **MasterSeal M 649**.

Existing expansion joints etc should be reflected through the applied **MasterSeal M 649**.

The drying times depend naturally on the climate and environmental influences, e.g. ambient temperature, relative humidity of air and ventilation etc.

Therefore, the times specified can only be used as guidelines. The exact times have to be determined by testing on site. Please contact Master Builders Solutions Technical Department for advice on how to treat existing joints.

### TOP COATS

**MasterSeal M 649** can be used directly in exposed applications as the mechanical properties are not affected but has limited aesthetical UV resistance.

Do not topcoat **MasterSeal M 649** in case of application exposed to harsh chemical environments.

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The use of pigmented **MasterSeal M 649** can avoid the application of topcoat but not avoid the surface yellowing of the membrane.

For color stability, UV resistant topcoats can be used i.e. **MasterSeal TC 256**, **MasterSeal TC 257** and **MasterSeal TC 258**, consult your local Technical Services office for further details.

## CLEANING

All equipment must be cleaned immediately after use with suitable cleaning solvent.

## COVERAGE / YIELD

The material consumption is 1.05 kg/m<sup>2</sup> @ 1mm thickness.

## STORAGE AND SHELF LIFE

Store under cover, out of direct sunlight and protect from extremes of temperature. In tropical climates the product must be stored in an air-conditioned environment. The shelf life is 18 months in unopened containers, when stored as above.

Failure to comply with the recommended storage conditions may result in premature deterioration of the product or packaging. For specific storage advice, consult Master Builders Solutions Technical Department.

## HEALTH AND SAFETY

As with all chemical products, care should be taken during use and storage to avoid contact with eyes mouth, skin and foodstuffs. Proper respiratory protection should be used when spraying such materials. Treat splashes to eyes and skin immediately.

If accidentally ingested, seek immediate medical attention. Keep away from children & animals. Reseal containers after use. For further information, refer to material safety data sheet.

## QUALITY AND CARE

All products originating from Master Builders Solutions Dubai, UAE facility are manufactured under a management system independently certified to conform to the requirements of the quality, environmental and occupational health & safety standards ISO 9001 and ISO 14001.

\* Properties listed are based on laboratory controlled tests.

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## STATEMENT OF RESPONSIBILITY

The technical information and application advice given in this Master Builders Solutions 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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