Maris Polymers®
POLYURETHANE SYSTEMS

CONSTRUCTION

Method Statement
MARISEAL® SYSTEM

Heavy Pedestrian Traffic Waterproofing System

Scope:

Method statement for the application of the MARISEAL® SYSTEM, the liquid-applied polyurethane waterproofing system, for use on surfaces expected to host heavy pedestrian traffic.

TÜVRheinland® CERT ISO 9001

TÜVRheinland® CERT ISO 14001

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1. Products and Description

1.1 Primers

MARISEAL 710:
MARISEAL® 710 is a transparent, rigid, deep penetrating, one component, quick drying polyurethane primer. Solvent-based.
Used as a primer in waterproofing and sealing applications on absorbent surfaces like Concrete, Mortar, Plaster, Wood, etc. Cures by reaction with ground and air moisture.

MARISEAL AQUA PRIMER:
MARISEAL® AQUA PRIMER is a transparent, rigid, two component epoxy primer. Water-based.
Used as a universal primer in waterproofing, sealing and floor coating applications on absorbent and non-absorbent surfaces like Concrete, various Metals, Asphalt, Ceramic Tiles, Stone, old coatings. Cures by reaction (cross linking) of the two components.

MARISEAL 750:
MARISEAL® 750 is a transparent, rigid, two component epoxy primer. Solvent free.
Used as a universal primer in waterproofing, sealing and floor coating applications on absorbent and non-absorbent surfaces like Concrete, various Metals, Asphalt, Ceramic Tiles, Stone, old coatings. Cures by reaction (cross linking) of the two components.
Additional advantage is that it can be used in combination with Silica Sand or Silica Powder to produce resin mortar or resin slurry for levelling or filling applications as a scratch coat.

1.2 Liquid Waterproofing Membrane

MARISEAL 250:
MARISEAL® 250 is a premium, liquid-applied, highly permanent elastic, cold applied and cold curing, one component polyurethane membrane used for long-lasting waterproofing.
The MARISEAL® 250 is based on pure elastomeric hydrophobic polyurethane resins, which result in excellent mechanical, chemical, thermal, UV and natural element resistance properties. Cures by reaction with ground and air moisture.

1.3 Silica Sand

The cornsize of the oven-dried Silica Sand to be used with the MARISEAL SYSTEM is recommended to be 0,1-0,3mm. Other cornsizes can be used depending on the final desired optic of the surface.

1.4 Heavy Duty Top-Coat

MARISEAL 420:
The MARISEAL® 420 is a pigmented, wear resistant, semi-rigid, color- and UV-stable, weather-stable, cold applied and cold curing, one component aliphatic polyurethane coating used as a top-coat for protection over exposed waterproofing coatings, subject to high wear conditions. Cures by reaction with ground and air moisture over a unique moisture triggered chemical reaction.

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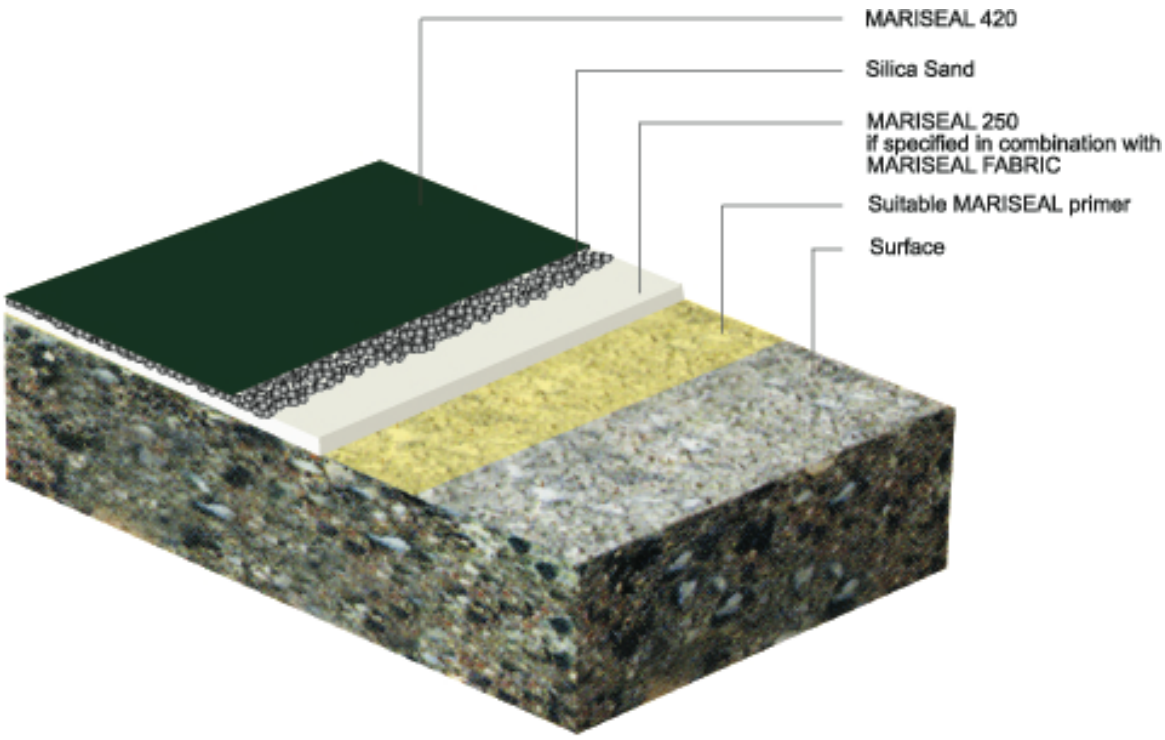
2. System Build-Up

MARISEAL SYSTEM
Liquid polyurethane waterproofing system, for use on surfaces expected to host heavy pedestrian traffic.



Coating Stage	Product	Consumption
Primer	MARISEAL 710 or MARISEAL AQUA-PRIMER or MARISEAL 750	0,2 - 0,4 kg/m2 depending on surface porosity and/or surface irregularities
Waterproofing Membrane	MARISEAL 250 reinforced locally with the MARISEAL FABRIC on details like flashings, wall-floor connections, pipe outlets, waterspouts, etc.	2,0 kg/m2
Silica Sand	Silica Sand 0,1-0,3mm	2,5-3,5 kg/m2 (full saturation)
Top Coat	MARISEAL 420	0,4-0,5 kg/m2

3. Substrate Requirements

3.1 Pull off and compressive strength

Careful surface preparation is essential for optimum finish and durability.
The surface needs to be clean, dry and sound, free of any contamination, which may harmfully affect the adhesion of the membrane.
Maximum moisture content should not exceed 5%. Substrate compressive strength should be at least 25MPa, cohesive bond strength at least 1.5MPa. New concrete structures need to dry for at least 28 days.

If in doubt, apply a test area first.

3.2 Moisture content

Prior to application, confirm substrate moisture content, relative humidity and dew point. Use Tramex moisture meter. There must be no rising moisture according to ASTM D 4263 (Polyethylene sheet test)

3.3 Ambient and surface temperature

Ambient and Surface temperature:
- Min. +10°C
- Max. +30°C

Beware of condensation! The substrate must be at least 3°C above dew point.

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4. Substrate Preparation

Careful surface preparation is essential for optimum finish and durability.
The surface needs to be clean, dry and sound, free of any contamination, which may harmfully affect the adhesion of the membrane.
Old, loose coatings, dirt, fats, oils, organic substances and dust need to be removed using abrasive cleaning (grinding or blast cleaning). Possible surface irregularities and/or high spots need to be smoothened. Any loose surface pieces and grinding dust need to be thoroughly removed, preferably by brush and/or vacuum.
Surface defects such as blowholes and voids must be filled/prepared prior to application.

Substrates, especially concrete substartes must be prepared mechanically using abrasive equipment to remove cement laitance and achieve a profiled open-pores surface

Substrate defects, such as cracks, blow holes and voids must be repaired prior to application using suitable products.

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5. Primer:

Select primer according to Substrate from the MARISEAL product list.
Make sure that a continuous, pore free coat covers the substrate. If necessary, apply two priming coats.

If the surface is full of cracks, blow holes, voids that need to filled prior to application, we recommend to apply a scratch coat.
If the surface need to leveled prior to application, we again recommend the application of a scratch coat produce with the MARISEAL 750 and silica.

5.1. Mixing of primer:

The MARISEAL 710 as it is a one component product, does not need mixing.

The MARISEAL® AQUA-PRIMER Component A and Component B should be mixed by low speed mechanical stirrer, according to the stipulated mixing ratio, for about 3-5 min. Leave mixed product for 10 minutes to rest. Then dilute mixture with 15-25% of clean water, to regulate viscosity.

The MARISEAL® 750 Component A and Component B should be mixed by low speed mechanical stirrer, according to the stipulated mixing ratio, for about 3-5 min. Leave mixed product for another 5 minutes to rest before application.

ATTENTION: The mixing of the components in two component products has to be effected very thoroughly, especially on the walls and bottom of the pail until the mixture becomes fully homogeneous.

5.2. Application of primer:

Make sure, that all substrate requirements are met, such as temperature, moisture content of the prepared substrate etc.
Apply the MARISEAL 710, MARISEAL AQUA-PRIMER or MARISEAL 750 by roller, taking care to ensure good wetting of the substrate but avoiding puddles on the surface.

Clean all tools and application equipment with MARISOLV 9000 immediately after use. Hardened and / or cured material can only be removed mechanically.

5.3. Application of scratch coat:

The product to be used as a scratch coat is the the MARISEAL 750 mixed with silica sand (M32) or silica powder (M300) at a mixing ratio of 1:1 to 1:2 pbw, depending on the substrate to be filled / leveled.
Pour the mixture onto the floor and then spread it evenly using a flat blade trowel or a rubber squeegee.
Clean all tools and application equipment with MARISOLV 9000 immediately after use. Hardened and / or cured material can only be removed mechanically.

The total consumption of the scratch coat depends on the substrate to be filled / leveled.

Apply the suitable MARISEAL primer by roller

6. Repair of Cracks and Joints:

The careful sealing of existing cracks and joints before the application is extremely important for long lasting waterproofing results.

• Clean concrete cracks and hairline cracks, of dust, residue or other contamination. Prime locally with the MARISEAL® 710 Primer and allow 2-3 hours to dry. Fill all prepared cracks with MARIFLEX® PU 30 sealant. Then apply a layer of MARISEAL® 250, 200mm wide centered over all cracks and while wet, cover with a correct cut stripe of the MARISEAL® Fabric. Press it to soak. Then saturate the MARISEAL® Fabric with enough MARISEAL® 250, until it is fully covered. Allow 12 hours to cure.

• Clean concrete expansion joints and control joints of dust, residue or other contamination. Widen and deepen joints (cut open) if necessary. The prepared movement joint should have a depth of 10-15 mm. The width:depth ratio of the movement joint should be at a rate of approx. 2:1. Apply some MARIFLEX® PU 30 Joint-Sealant on the bottom of the joint only. Then with a brush, apply a stripe layer of MARISEAL® 250, 200mm wide centered over and inside the joint. Place the MARISEAL® Fabric over the wet coating and with a suitable tool, press it deep inside the joint, until it is soaked and the joint is fully covered from the inside. Then fully saturate the fabric with enough MARISEAL® 250. Then place a polyethylene cord of the correct dimensions inside the joint and press it deep inside onto the saturated fabric. Fill the remaining free space of the joint with MARIFLEX® PU 30 sealant. Do not cover. Allow 12-18 hours to cure.

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7. Waterproofing of Details:

At difficult details and problem areas, like wall-floor connections, 90º angles, chimneys, pipes, waterspouts (siphon), etc reinforce the MARISEAL® 250 always with the MARISEAL® Fabric.
In order to do that, apply on the still wet MARISEAL® 250 a correct cut piece of MARISEAL® Fabric, press it to soak, and saturate again with enough MARISEAL® 250. For detailed application instructions with the MARISEAL® Fabric, contact our R+D department.

Wall-floor connection (flashing) waterproofing by reinforcing the MARISEAL 250 with MARISEAL FABRIC

Waterspout (siphon) waterproofing by reinforcing the MARISEAL 250 with MARISEAL FABRIC

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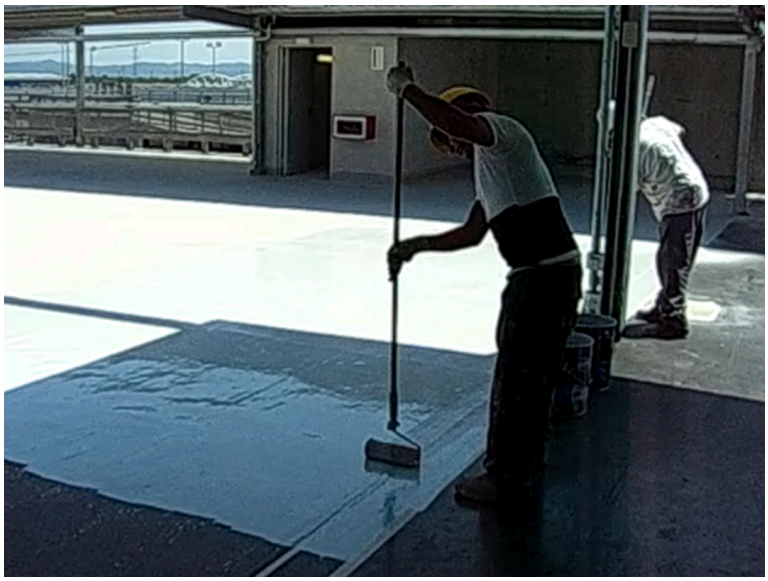
8. Application of Liquid Waterproofing Membrane:

Stir the MARISEAL® 250 well before application.
- Poor the MARISEAL® 250 onto the primed surface and lay it out by roller or brush, at a consumption of 0,8 kg/m2.
- After 12-18 hours (not later than 48 hours) apply another layer of the MARISEAL® 250, by roller or brush, at a consumption of 0,8 kg/m2.
- After 12-18 hours (not later than 48 hours) apply another layer of the MARISEAL® 250, by roller or brush, at a consumption of 0,4 kg/m2 and while still wet, broadcast enough oven-dry Silica Sand (cornsize 0,1-0,3mm) until full saturation.

RECOMMENDATION: For surfaces with lots of cracks we recommend reinforcement of the entire surface, with the MARISEAL® Fabric. Use 5-10cm stripe overlapping.
ATTENTION: Do not apply the MARISEAL® 250 over 0.6 mm thickness (dry film) per layer. For best results, the temperature during application and cure should be between 5ºC and 35ºC. Low temperatures retard cure while high temperature speed up curing. High humidity may affect the final finish.



Application of the MARISEAL 250 on the main surface to be waterproofed.

Broadcasting of oven-dry Silica Sand (cornsize 0,1-0,3mm) on the still wet MARISEAL 250 until full saturation.

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9. Application of Heavy Duty Top-Coat:

Before the application of the top-coat, remove all excessive and non-sticked Silica Sand away. Use Blower / Vacuum for best results. Smoothen surface locally if necessary.

Stir MARISEAL® 420 well before using.
-Apply the MARISEAL® 420 by roller at a consumption of 0,2-0,3 kg/m2.
-After 3-6 hours (not more than 36 hours), apply the MARISEAL® 420 by roller at a consumption of 0,2 kg/m2.

Removing of all excessive and non-sticked Silica Sand from waterproofed surface. Use Blower and then Vacuum equipment

Application of the MARISEAL 420 top-coat in two layers.

Final Result

10. Maintenance

To ensure that your MARISEAL SYSTEM waterproofing/flooring system stays in the best of shape and gives you years of satisfaction the correct cleaning and maintenance schedule should be used.

When first installed and fully cured your floor should be cleaned with an appropriate floor cleaner using the most suitable equipment for the area concerned.

Looking After Your Floor:
If the correct cleaning and maintenance schedule is used the appearance of your floor can be easily maintained.
The floor will require regular cleaning with either a neutral or mildly alkaline floor cleaner depending upon the type and level of soiling encountered.

Spillages:
Spillages of any liquid should be wiped up or absorbed and removed as soon as possible. Not only is this a responsible action as far as Health and Safety is concerned, it will also help you to keep your floor in good condition. Once the spillage is removed the area should be cleaned as usual with your standard floor cleaner.

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11. Additional Recommendation
Read the Products Technical Data Sheets(TDS) carefully.

12. Health and Safety Recommendations
Ensure sufficient ventilation during application. Wear proper safety equipment (gloves, eye goggles, safety boots and protective clothes) during application.
For more details, refer to Material Safety Data Sheets (available upon request).

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