

# MARISEAL® 650

Liquid-applied  
Polyurethane  
Bitumen-extended  
Waterproofing Membrane

TECHNICAL DATA SHEET  
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## Product Description

MARISEAL® 650 is a liquid-applied, highly permanent elastic, bitumen extended, polyurethane membrane used for long-lasting waterproofing.

MARISEAL® 650 is based on pure elastomeric hydrophobic polyurethane resins, and is extended with chemically polymerized virgin bitumen, which result in excellent mechanical, chemical, thermal and natural element resistance properties.

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### Product Information

- One-component, solvent-based air & ground moisture-cured, cold applied cold curing bitumen extended polyurethane

### Packaging

- 1/4/20 kg metal pails

### Color

- Black

### Shelf Life

- 9 months from date of production

### Storage Conditions

- Pails should be stored in dry and cool rooms. Protect the material against moisture and direct sunlight. Storage temperature: 5°-35°C. Products should remain in their original, unopened containers, bearing the manufacturers name, product designation, batch number and application precaution labels.

### Advantages

- Simple application
- When applied forms seamless membrane without joints
- Resistant to water
- Resistant to frost
- Provides excellent crack-bridging properties
- Provides excellent thermal resistance, it never turns soft.
- Maintains its mechanical properties over a temperature span of -30°C to +90°C
- Provides excellent adhesion to almost any type of surface.
- Resistant to domestic chemicals
- Even if the membrane gets mechanically damaged, it can be easily repaired locally within minutes
- Does not need the use of open flames (torch) during application

### ■ Uses

- Foundations
- Retaining Walls
- Roofs with inverted insulation
- Asphalt- and Bitumen-felts, etc.

### ■ Consumption

- 1,2-2,0 kg/m<sup>2</sup> applied in more than two layers. This coverage is based on application by roller onto a smooth surface in optimum conditions. Factors like surface porosity, temperature and application method can alter consumption. In case of MARISEAL® FABRIC reinforcement, consumption increases.

### ■ Certifications



**EN 14891:** Liquid applied water impermeable products for use beneath ceramic tiling bonded with adhesives: 1,20 kg/m<sup>2</sup>

| PROPERTY  | PERFORMANCE             |
|---|-------------------------|
| Initial tensile adhesion strength                       | ≥ 0,5 N/mm <sup>2</sup> |
| Waterproofing   | No penetration          |
| Crack bridging ability under standard conditions        | ≥ 0,75 mm               |
| Tensile adhesion strength after heat ageing             | ≥ 0,5 N/mm <sup>2</sup> |
| Tensile adhesion strength after water contact           | ≥ 0,5 N/mm <sup>2</sup> |
| Tensile adhesion strength after contact with lime water | ≥ 0,5 N/mm <sup>2</sup> |
| Tensile adhesion strength after freeze-thaw cycles      | ≥ 0,5 N/mm <sup>2</sup> |



**EN 1504-2:** Surface protection product for concrete (Coating): 1,40 kg/m<sup>2</sup>

| PROPERTY                                       | PERFORMANCE                                 |
|--|---|
| Permeability to CO <sub>2</sub>                | S <sub>D</sub> > 50 m                       |
| Water vapour permeability                      | Class I: S <sub>D</sub> < 5 m               |
| Capillary absorption and permeability to water | ω < 0,1 kg/m <sup>2</sup> ·h <sup>0,5</sup> |
| Adhesion strength by pull-off test             | ≥ 0,8 N/mm <sup>2</sup>                     |



**EPD verified**



Compliant with **ASTM C836** specification




**Technical Data\***

| PROPERTY   | RESULTS  | TEST METHOD              |
|--|--|--------------------------|
| <b>Elongation at Break</b>                       | 800%   | ASTM D 412               |
| <b>Tensile Strength</b>                          | > 4,5 N/mm <sup>2</sup>  | ASTM D 412               |
| <b>E-Modulus</b>                                 | 0,6 N/mm <sup>2</sup>  | ASTM D 412               |
| <b>Tear Resistance</b>                           | 14,1 N/mm  | ASTM D 624               |
| <b>Puncture Resistance</b>                       | 150 N  | ASTM E 154 (1 mm film)   |
| <b>Resistance to Hydrostatic pressure</b>        | No Leak @ 3 bar (30 m water column)  | DIN 16726                |
| <b>Adhesion to concrete</b>                      | > 1,0 N/mm <sup>2</sup>  | EN 1542                  |
| <b>Hardness (Shore A Scale)</b>                  | 35   | ASTM D 2240-15           |
| <b>Thermal Resistance (80°C for 100 days)</b>    | Passed - No significant changes  | EOTA TR-011              |
| <b>Hydrolysis (5% KOH, 7days cycle)</b>          | No significant elastomeric change  | Inhouse Lab              |
| <b>Service Temperature</b>                       | -40°C to +90°C   | Inhouse Lab              |
| <b>Max. Temperature short time (15min shock)</b> | 250°C  | Inhouse Lab              |
| <b>Tack Free Time</b>                            | 5 hours  | Conditions: 20°C, 50% RH |
| <b>Light Pedestrian Traffic Time</b>             | 24-48 hours  | Conditions: 20°C, 50% RH |
| <b>Final Curing time</b>                         | 7 days   | Conditions: 20°C, 50% RH |
| <b>Chemical Properties</b>                       | Good resistance against acidic and alkali solutions (5%), detergents, seawater and oils. |                          |

## Application

### Surface 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. Maximum moisture content should not exceed 5%. Substrate compressive strength should be at least 25 MPa, cohesive bond strength at least 1,5 MPa. New concrete structures need to dry for at least 28 days. Old loose coatings, dirt, fats, oils, organic substances and dust need to be removed by a grinding machine. Possible surface irregularities need to be smoothed. Any loose surface pieces and grinding dust need to be thoroughly removed.

**WARNING: Do not wash surface with water!**

### 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 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® 650, 200 mm wide centered over all cracks and while wet, cover with a correct cut stripe of MARISEAL® FABRIC. Press it to soak. Then saturate MARISEAL® FABRIC with enough MARISEAL® 650, 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® 650, 200 mm wide centered over and inside the joint. Place 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® 650. 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. The careful sealing of existing cracks and joints before the application is extremely important for long lasting waterproofing results.

**Priming**

On sound, high quality concrete surfaces no primer is necessary. Prime very absorbent and brittle concrete or brittle cement screed surfaces with MARISEAL® 710 or with MARISEAL® AQUA PRIMER. Prime non-absorbent surfaces like metal, ceramic tiles and old coatings with MARISEAL® AQUA PRIMER. Allow the primer to cure according to its technical instruction

**Waterproofing membrane**

Stir well before using for at least 2-3 min. Apply MARISEAL® 650 onto the surface by roller or brush, until all surface is covered. Reinforce always with MARISEAL® FABRIC at problem areas, like wall-floor connections, 90° angles, chimneys, pipes, waterspouts (siphon), etc. In order to do that, apply on the still wet MARISEAL® 650 a correct cut piece of MARISEAL® FABRIC, press it to soak, and saturate again with enough MARISEAL® 650. For detailed instructions with MARISEAL® FABRIC, contact our technical department. We recommend reinforcement of the entire surface, with MARISEAL® FABRIC. Use 5-10 cm stripe overlapping.

After 10-12 hours (at temperature 35°C & relative humidity 50%) or 18-24 hours (at temperature 20°C & relative humidity 50%) apply another layer of MARISEAL® 650. For demanding applications, apply a third layer of MARISEAL® 650.

ATTENTION: Do not apply MARISEAL® 650 over 0,6 mm thickness (dry film) per layer.

For best results, the temperature during application and cure should be between 5°C and 35°C. Low temperatures retard cure while high temperature speeds up curing. High humidity may affect the final finish.

WARNING: MARISEAL® 650 and/or MARISEAL SYSTEM is slippery when wet. In order to avoid slipperiness, sprinkle suitable aggregates onto the still wet coating to create an anti-slip surface. Please contact our technical dept. for more information

**Protection/Thermoinsulation on Foundations/Retaining Walls**

Protect cured MARISEAL® 650, with a drainage board before backfilling.

If an additional (optional) thermal insulation is required, stick an insulation board (XPS, EPS, PUR, PIR, etc.) on the cured MARISEAL®650. Use MARIFLEX® PU40 as adhesive. Protect with a suitable drainage membrane / board.

**■ Safety measures**

MARISEAL® 650 contains isocyanates. See information supplied by the manufacturer. Please study the Safety Data Sheet.

PROFESSIONAL USE ONLY

Our technical advice for use, whether verbal or written, is given in good faith and reflect the current level of knowledge and experience with our products. When using our products, a detailed object-related and qualified inspection is required in each individual case in order to determine whether the product and /or application technology in question meets the specific requirements and purposes. We may guarantee only that our products are compliant with their technical specification; correct application of our products therefore falls entirely within your scope of liability and Users are responsible, in any case, for complying with local legislation and for obtaining any required approvals or authorizations, when necessary, either for their purchase and/or for their use. Values in this technical data sheet are given as examples and may not be regarded as specifications. For product specifications contact our technical department. The new edition of the technical data sheet supersedes the previous technical information and renders it invalid. It is therefore necessary that you always have to hand the current code of practice.

\* All values represent typical values and are not part of the product specification. In sample preparation MARISEAL KATALYSATOR was used as an acceleration additive. The applied coating might fade upon UV exposure.

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