Marin&Teknik 2993

Moisture curing medium to high modulus elastic sealant and a tough adhesive especially intended for outdoor and indoor use in boats, cars, caravans and in houses.

Paintable general outdoor adhesive and sealant.

Suitable for seaming of boat decks.

<table>
<thead>
<tr>
<th>Product</th>
<th>Product No.</th>
<th>Colour</th>
<th>NCS-S No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marin&amp;Teknik</td>
<td>2993</td>
<td>Black</td>
<td>S 8505-R80B</td>
</tr>
<tr>
<td>Marin&amp;Teknik</td>
<td>2994</td>
<td>White</td>
<td>S 0502-Y</td>
</tr>
</tbody>
</table>

It is strongly recommended to use cartridges/sausages with the same batch number, since slightly colour variations may occur from different production batches.

**TECHNICAL DATA**

- **Basis:** Silyl Modified Polyether (SMP)
- **Curing system:** Alcohol releasing moisture cure
- **Solvent:** none
- **Consistency:** Gun-grade thixotropic
- **Density:** Approx. 1400-1450 kg/m³
- **Solid content:** Approx. 100 %
- **Volume shrinkage:** Approx. 2 %
- **Hardness:** Approx. 45 Shore A
- **Joint movement capability:** Total 25 % (+/- 12.5 %)
- **Service temperature:** -40°C to +90°C
- **100 % Modulus RT ASTM D 412:** 0.9 MPa
- **Tensile strength ASTM D 412:** 2 MPa
- **Elongation ASTM D 412:** 500 %
- **Tear strength ASTM D 624:** 14 N/mm
- **Standards:**
  - EN 15651-1; 2012, F EXT-INT CC
  - EN 15651-4; 2012, PW EXT-INT CC
  - Class 20HM

**APPLICATION DATA**

- **Application temperature:** +5°C - +40°C

**Humidity limits:** Minimum 30 % RH

- **Tools:** Sealant gun
- **Tooling agent:** Water
- **Joint width:** 5-30 mm
- **Skin formation time:** Approx. 30 minutes (23°C/50%RH)
- **Curing time:** 2-3 mm the first 24 h. Approx. 8 mm after 7 days.
- **Storage life:** One year for cartridges, 18 months for aluminium sausages.

**PAINTABILITY**

It is not recommended to over-paint an elastic sealant since it reduces the joint movement capability. Marin&Teknik is however compatible with most floor materials, oils, lacquers or paints. The drying time for alkyd or oil based paints might be extended. Also, a thin layer of paint can prolong the drying time. It is recommended to always let the joint cure 1-3 days before painting. Pre-testing is always recommended.

**SURFACE PREPARATION**

Joint interface must be clean, dry and free from oils, loose aggregates, laitance, release agents, waterproofing and other contaminants.
A thorough wire brushing, grinding, sand blasting or solvent cleaning may be required to expose clean, sound surfaces. Apply a joint backing rod of foamed polyethylene that is approx. 25 % wider than the joint. If the available space does not allow a backing rod, prevent adhesion to the bottom of the joint by other means, e.g. with polyethylene tape.

**JOINT DESIGN AND QUANTITY ESTIMATION**

There are local standards in each Nordic country for floor joints for building constructions, e.g. in Sweden Hus AMA 98 chapter ZSB stipulates a horizontal joint should be formed like the following figure and the width (w) be minimum 8 mm and the depth \( d = w \), maximum up to 15 mm.

Note

In Denmark sand is recommended especially for deeper joints in wood floors instead of backing of closed polyethylene.

<table>
<thead>
<tr>
<th>Width [mm]</th>
<th>8</th>
<th>10</th>
<th>15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depth [mm]</td>
<td>8</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>Meter/300ml</td>
<td>4.2*</td>
<td>2.7</td>
<td>1.2</td>
</tr>
</tbody>
</table>

**DIRECTIONS FOR USE**

Both curing and adhesion is dependent on sufficient amount of moisture. If Marin&Teknik is applied under dry conditions or between watertight materials, extra time or moisture might be necessary to obtain optimum cure and adhesion. We always recommend pre-test if you are doing jobs in big scale to ensure best adhesion results.

For concrete façade expansion joints, more elastic and low modulus, Casco Multiseal Byggfog is recommended.

See below table for recommendation of pre-treatment on different materials.

| METAL | The adhesion to most metals is excellent. Raw aluminium might give adhesion loss after exposure to corrosive environment. Marin&Teknik does not bond to lead. |
| WOOD | The adhesion to dry wood is generally very good. The adhesion to dry teak is very good without primer. |
| GLASS | Marin&Teknik bonds to glass without primer. For glass constructions with high UV-exposure on the bond line, Marin&Teknik is not recommended. |
| PLASTICS | Marin&Teknik bonds to un-plasticised PVC, polyester, epoxy, polyurethane, melamine, etc. Pre-testing is recommended on acrylic, ABS, styrene, polycarbonate and plasticised PVC. The adhesion to polyethylene or polypropylene is low. |
| POROUS SUBSTRATES | If the surface strength is good enough, the adhesion of Marin&Teknik is very good to most porous substrates. For granite marble, natural stones it is recommended to use 3978 Primer 21. |
| CONCRETE | The adhesion to fresh or wet concrete is weak. For this application it is recommended to use 3978 Primer 21. |

* It is recommended to make pre-tests.

**APPLICATION**

After the joint is properly prepared, apply the sealant using a caulking gun. Cut the nozzle at an angle and less than the width of the seam. Material must be pressed firmly into the joint to assure complete wetting of the bonding surface. Immediately after application tooling is recommended to ensure firm, full contact with joint sides. The surface can be smoothened with a wet sealant tooling stick or/and sponge.

Take care not to contaminate open joint with water. Use pure water or water with a small amount of soap/detergent. Too much soap can affect the tack free time.

**DIRECTIONS FOR USE AS AN ADHESIVE APPLICATION**

Adhesions, pre-treatment and cleaning, see the previous page. Apply Marin&Teknik in strings or dots.
Make sure that moisture has free access to the adhesive. Marin&Teknik will allow many materials to be fixed immediately without any extra fixation. If necessary, support the material to be glued until the adhesive has started to cure.

**JOINT FILLING PROPERTIES**
The excellent joint filling properties of Marin&Teknik give a combination of water- and air tight seal, if applied continuously. A nice seal is obtained if a small surplus is squeezed out of the joint and wiped smooth with a rag or spatula. The joint filling properties also allow uneven surfaces to be glued. It should however be noted that a very uneven joint reduces the strength, since the thinnest part will take most part of the load.

**ELASTIC PROPERTIES**
The joint filling and elastic properties of Marin&Teknik allows vibration reducing joints. This often makes Marin&Teknik Fog&Lim a superior alternative to much higher strength adhesives, which can suffer from fatigue due to vibration. However, if such a joint is load bearing it should be carefully designed. The construction has to be tested to verify that failure occurs at a vibration intensity (max. strain and frequency of movement over the joint) of a sufficient safety factor above the intended vibration intensity. Intensity of vibration cannot be replaced by prolonged test time, because it is the strain, not the number of vibrations that gives failure. Important factors in design is surface area and thickness of the joint. Higher thickness gives better ability to withstand high strain over the joint, hence larger energy absorption.

**MOISTURE CURE**
If water impermeable surfaces should be glued, precautions have to be taken if the width of the joint is more than 5-10 mm. The strings or dots can be applied in a pattern that allows moisture to migrate into the joint. The cure can be accelerated by spraying water on the surfaces to be glued, immediately before applying Marin&Teknik. Maintaining a high RH and temperature will also give a faster and safer cure. **Large impermeable surfaces are always hard to glue with 1 K products!**

Mixing Marin&Teknik with moisture containing solvents as e.g. technical ethanol can give a through cure within an hour. Pre-testing is necessary for individual applications.

**PAINTABILITY**
In industrial applications, a great number of paints and lacquers are used in very different processes. In all such cases, all aspects of paintability must be verified. Adhesion of the paint, cracking of the paint because of joint movement and curing of the paint at different speeds of the lacquering line are examples of items that have to be checked depending on the customer’s process.

**SEAMING OF WOODEN BOAT DECKS**
The work must always start with pre trials with the intended surface treatment. Start the trials in good time before the seaming work. The main reason for making pre trials is to check that the lacquer or oil used, dries in reasonable time when applied on the surface of Marin&Teknik. Remaining oil is probably easy to remove after the polishing operation.

Sometimes it is necessary to cut the seam according to the table below.

<table>
<thead>
<tr>
<th>Width of board (mm)</th>
<th>Seam width (mm)</th>
<th>Seam depth (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>35</td>
<td>5</td>
<td>5 - 6</td>
</tr>
<tr>
<td>45</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>50</td>
<td>6 - 7</td>
<td>6</td>
</tr>
<tr>
<td>75</td>
<td>10</td>
<td>7</td>
</tr>
</tbody>
</table>

**PRE-TREATMENT**
The joint surfaces should be freshly cut, grinded or sandpapered before starting the work. Remove all dust and wipe the surfaces clean.

**PRIMING**
The adhesion to dry wood, even to dry teak, is very good. We do not recommend use of any primer.

**APPLICATION OF TAPE**
To ensure best movement capability performance it is necessary to prevent adhesion to the bottom of the seam. Apply joint tape or joint backing rods (or the like). The depth of the seam can be adjusted to comply with above table if a backing rod of closed cell polyethylene foam or tarred rope is used. Take care not to damage the rod. Gas from damaged foam could cause blistering of the sealant.
APPLICATION OF SEALANT
When tape/backing rod is applied the application of the sealant can start. When the floor is not going to be grinded masking tape could make the seaming job much easier. Cut the nozzle 1-2 mm less than the width of the seam. Fill the seam from the bottom and up to avoid bubbles. Pull the sealant gun along the seam which will be filled behind the nozzle. Fill the seam with some excess of sealant firmly into the seam using a joint tool. This is done to ensure complete wetting of the bonding surfaces. The sealant is normally cured within 2-5 days depending of temperature and humidity.
Recommendation: Seal separately one piece of floor and check the curing.

GRINDING
After curing, large excess of sealant is to be removed with a wood chisel or knife. This is done to avoid tensile stress of the sealant edges. Grind in the direction of the seam with an industrial machine with a dust collector. Grinding paper as recommended for the surface treatment. Normally start with 80 and finish with 120.
There are many surfaces after treatment products on the market. Marin&Teknik is compatible with most of these products. Alkyd and urethane alkyd lacquers and paints can in some cases dry slower on the sealant. Since it is not possible to test all products in the market it is highly recommended to perform a pre-test some days before starting. Consult Casco service department for further information.

HANDLING AND CLEANING INSTRUCTIONS
Remove all excess sealant adjacent to joint and on equipment prior to cure with a rag. White spirit or technical ethanol is used if necessary. Seal Remover 3987 is recommended if the sealant has cured, otherwise cured sealant is removed mechanically. On skin, uncured sealant is wiped off with a rag, then wash with soap and water.
Keep out of reach of children.
Do not empty into drains.

MAINTENANCE
If the joint has been discoloured or a mildew attack has occurred, it might be necessary to clean the joint by using a detergent e.g. Chlorine or with a mildew cleaner.

If a severe mildew attack is present cut out the damaged area and re-caulk. Avoid cutting through the water sealing membrane beneath.

LIMITATIONS
Marin&Teknik is not recommended for:
Structural or butt glazing, or similar applications with high UV light exposure and high movements which can affect the adhesion.
Joints less than 5 mm in width or depth.
Swimming pools and the like with water containing chlorine based disinfectants.

ENVIRONMENTAL ASPECTS
For additional health and safety information consult the Safety Data Sheet.
Marin&Teknik has M1 classification.