



SABA, a strong bond

**System description SBS-5
Sealing teak wood ship decks
using SABA Seal One HM**



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1. Introduction

SABA offers a wide range of excellent products for bonding and sealing in the ship building industry. Refer to the general system description SBS-1 "Bonding and sealing on yachts".

SABA Seal One HM is a 1-component, MSP-based (Modified Silane Polymer) sealant for sealing joints between teak wood parts on ship decks. For further technical details and safety information, please refer to the Product Data Sheet and the Material Safety Data Sheet.

SABA Seal One HM gives your teak deck a lasting and aesthetic finish, that is resistant to fresh water and sea water.

This system description explains the application of SABA Seal One HM.

2. Dimensions of seams

The dimensions of the seam between the teak planks is important. As a rule of thumb, the seam width and depth must be approximately 10% of the plank width, with a minimum of 5 mm.

The table below shows the relationship between the width of the teak planks, the seam width and the seam depth.

Teak plank width (mm)	Minimum seam width (mm)	Minimum seam depth (mm)
35	5	5
45	5	5
50	6	6
75	8	8
100	10	10

Seams may never be wider than 10 mm, because of the risk of mechanical damage of the seam.

3. Which parts should be sealed

All joints between the teak planks as well as the connections with the deck should be sealed with SABA Seal One HM.

These are:

- Parallel joints between the teak planks
- Joints between the teak planks on ends
- Joints of teak planks with other materials

4. Application of primer and sealant

Herewith explanation of how primer and sealant should be applied

A. Preparation and checking application conditions

- A deck that has been bonded with Sabaplast 5503, SABA Deckfast MS or SABA Bedding Compound ML must be left to cure for at least one week (at 23 °C and 75% relative air humidity), before sealing it with SABA Seal One HM. This is necessary to prevent the formation of bubbles in the sealant.
- In the case of renewing existing joints, the old joint filler has to be removed completely. Clean the bonding surface with a fraise, so that the new sealant can be applied on clean teakwood.
- Remove all dust from the seams.
- Degrease the seams, using SABA Cleaner 21. Make sure all Cleaner has evaporated before applying the primer.
- Make sure that the teakwood is dry, the humidity content of the wood should be below 14%.

B. Application of SABA Primer Marine

- Measure the humidity content of the bonding surfaces. The humidity content may not exceed 15 % during application of the primer.
- Measure the temperature of the bonding surfaces. This temperature should be at least 3 °C above the dew point (the method for determining the dew point is explained in Appendix 3).
- Measure the air temperature. Air temperature should be between 5 °C and 40 °C during application.
- Write down the measured values on the Work Sheet (Appendix 2).
- Apply SABA Primer Marine using a brush.
- Leave SABA Primer Marine to dry for at least 30 minutes before applying the sealant. But apply the sealant within 20 hours after applying the primer.

C. Application of separation tape

- Apply separation tape to the bottom of the seam to avoid '3-sides bonding' (in case of 3-sides bonding the sealant sticks to the sides as well as the bottom of the seam, strongly reducing the freedom of movement of the seam).

D. Application of SABA Seal One HM

- Measure the humidity content of the bonding surfaces. The humidity content may not exceed 15 % during application of SABA Seal One HM.
- Measure the temperature of the bonding surfaces. This temperature should be at least 3 °C above the dew point (the method for determining the dew point is explained in Appendix 3).
- Measure the air temperature. Air temperature should be between 5 °C and 40 °C during application.
- Write down the measured values on the Work Sheet (Appendix 2).
- Use sealing gun HKK 310 or air pressure sealing gun LKK 310 for processing 290 ml cartridges.
Use sealing gun HKW 600 or air pressure sealing gun LKW 600 for processing 600 ml sausages.

- Cut off the nozzle below an angle of 45° and at a width that makes it fit exactly in the seam.
- Apply the sealant from the bottom up to the top of the seam to avoid enclosure of air bubbles
- Fill the joints excessively, approximately 2 mm above the teak surface.
- Use a spatula to slightly smoothen the seam. Do not apply any pressure to the sealant while smoothening!
- When you have to restart applying sealant after a break, spray 'sealant into sealant' to prevent air bubbles getting locked into the sealant.
- Fill in the Work Sheet completely (Appendix 2). The Work Sheet also contains a section to fit a sketch showing on what part of the deck the sealant was applied.
- The deck can be walked on after approximately 2-3 days, depending on temperature and relative air humidity.

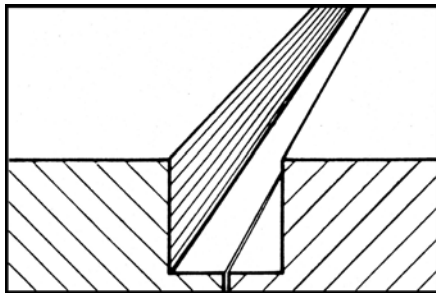
E. Removing excess material and sanding

- Leave the sealant to cure for at least 7 days (at 23°C and a relative air humidity of 75%) before removing excess material and sanding. At lower temperatures or lower air humidity the curing may take longer.
- Cut away excess material using a sharp spatula or chisel.
- Sand the deck using an oscillating sanding machine. Move the sanding machine in a direction lengthwise to the teak planks, up to a maximum of 45° to the longitudinal axis of the planks. Never move the sanding machine square to the planks!

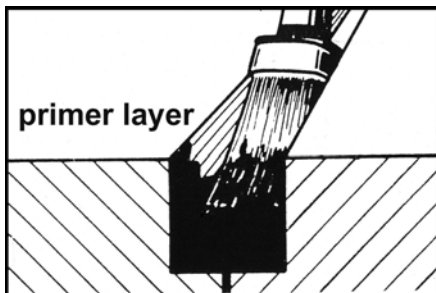
5. Maintenance recommendations

Clean the teak deck using fresh or sea water. If necessary, a neutral soap may be added to the water. It is recommended to use a hand brush or a 'long-handled scrubbing brush' to avoid mechanical damage to the deck. Do not use high-pressure cleaning devices or rotating brushes.

Appendix 1: Drawing of application of SABA Seal One HM

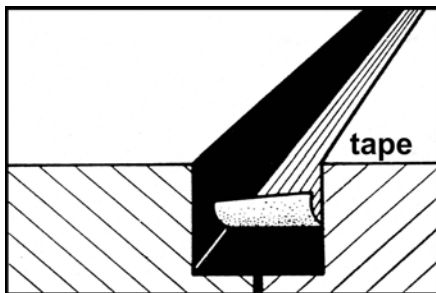


Empty seam



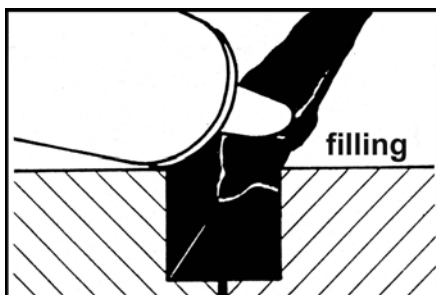
primer layer

Apply the primer on the bonding surfaces.



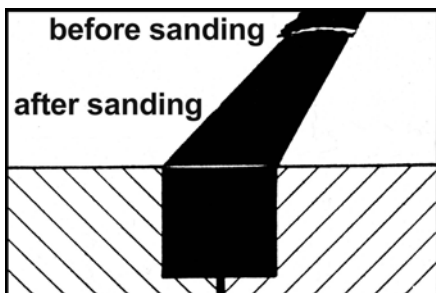
tape

Apply separation tape at the bottom of the joint to avoid 3-side bonding.



filling

Fill the joints excessively with SABA Seal One HM. Fill the joint from the bottom up to avoid locking in air bubbles. Use a spatula to slightly smoothen the sealant. Do not apply any pressure to the sealant while smoothening!



before sanding

after sanding

After curing: cut away excess material using a sharp spatula or chisel and then sand the deck using an oscillating sanding machine

Appendix 2: Work Sheet Shipbuilding

A. Project data:

Work conducted by:

Date: ___ / ___ / ___. Location: _____.

Project name: _____ Project nr: _____.

Previous sealing system (only applicable when replacing old seams):

MSP Polysulphide PU Caulking Silicone Other

Work situation: open air conditioned (in door)

B. Products applied:

Product	Packing	Amount	batchnumber(s)
SABA Bedding Compound ML			
SABA Deckfast MS			
Sabaplast 5503			
SABA Primer Marine			
SABA Sealer 211C			
SABA Seal One HM			
SABA Sealtack 780			
SABA Cleaner 48			
SABA Cleaner 21			

C. Measured Values Application Conditions:

Activity	Bonding	Priming	Sealing
Time			
Air Temperature (°C)			
Relative Air Humidity (%)			
Dew Point (°C) from table			
Temperature bonding surfaces (°C)			
Moisture Content bonding surfaces (%)			

D. Situation Sketch / Remarks:

Appendix 3: Measuring air temperature and air humidity prior to the application of primer or sealant (determination of dew point)

To ensure an optimum bond between substrate and primer or sealant, it is necessary that air temperature, relative air humidity, temperature of the bonding surfaces and humidity content of the bonding surfaces are within certain limits.

Therefore several measurements have to be undertaken before application to ensure that application is technically safe.

The following measurements have to be carried out:

- Air temperature: should be between 5 °C and 40 °C during application
- Relative air humidity: should be between 50% and 90% during application
- Temperature of bonding surfaces: should be at least 3 °C above the dew point during application, see also Appendix 3
- Moisture content of bonding surfaces: should be below 15% during application. The bonding surfaces may be moist due to moisture in the wood, dew or precipitation.
- Moisture content of the wood: should be below 14 % during application.

Summarised:

	Minimum	Maximum
Air temperature	5 °C	40 °C
Relative air humidity	50 %	90 %
Temperature of bonding surfaces	dew point + 3 °C	-
Moisture content of bonding surfaces	-	15 %
Moisture content of the wood	-	14 %

The dew point is the temperature at which moisture in the air starts to condense. The resulting moisture on the bonding surfaces has a negative effect on the bonding of primer and sealant.

The dew point is determined by air temperature and relative air humidity and can be looked up in the table in Appendix 4.

During the application of SABA Bedding Compound ML, SABA Deckfast ML, Sabaplast 5503, SABA Primer Marine, SABA Sealer 211C or SABA Seal One HM, the temperature of the bonding surfaces has to be at least 3 °C above the dew point.

Registration of the measured values

We strongly advise to record the measurements on the Work Sheet (Appendix 2) and save this sheet for at least 5 years.

In the Work Sheet also the batch numbers of the products used are recorded, as well as other project information. The Work Sheet also contains a section to fit a sketch showing on what part of the deck the products were applied.

Appendix 4: Table for determining the dew point, using relative air humidity and air temperature.

From the table below you can observe the dew point on the crossing of relative air humidity and air temperature.

air-temp. (°C)	relative air humidity								
	50 %	55 %	60 %	65 %	70 %	75 %	80 %	85 %	90 %
5	- 4,1	- 2,9	- 1,8	- 0,9	0,0	0,9	1,8	2,7	3,6
6	- 3,2	- 2,1	- 1,0	- 0,1	0,9	1,8	2,8	3,7	4,5
7	- 2,4	- 1,3	- 0,2	0,8	1,8	2,8	3,7	4,6	5,5
8	- 1,6	- 0,4	0,8	1,8	2,8	3,8	4,7	5,6	6,5
9	- 0,8	0,4	1,7	2,7	3,8	4,7	5,7	6,6	7,5
10	0,1	1,3	2,6	3,7	4,7	5,7	6,7	7,6	8,4
11	1,0	2,3	3,5	4,6	5,6	6,7	7,6	8,6	9,4
12	1,9	3,2	4,5	5,6	6,6	7,7	8,6	9,6	10,4
13	2,8	4,2	5,4	6,6	7,6	8,6	9,6	10,6	11,4
14	3,7	5,1	6,4	7,5	8,6	9,6	10,6	11,5	12,4
15	4,7	6,1	7,3	8,5	9,5	10,6	11,5	12,5	13,4
16	5,6	7,0	8,3	9,5	10,5	11,6	12,5	13,5	14,4
17	6,5	7,9	9,2	10,4	11,5	12,5	13,5	14,5	15,3
18	7,4	8,8	10,2	11,4	12,4	13,5	14,5	15,4	16,3
19	8,3	9,7	11,1	12,3	13,4	14,5	15,5	16,4	17,3
20	9,3	10,7	12,0	13,3	14,4	15,4	16,4	17,4	18,3
21	10,2	11,6	12,9	14,2	15,3	16,4	17,4	18,4	19,3
22	11,1	12,5	13,8	15,2	16,3	17,4	18,4	19,4	20,3
23	12,0	13,5	14,8	16,1	17,2	18,4	19,4	20,3	21,3
24	12,9	14,4	15,7	17,0	18,2	19,3	20,3	21,3	22,3
25	13,8	15,3	16,7	17,9	19,1	20,3	21,3	22,3	23,2
26	14,8	16,2	17,6	18,8	20,1	21,2	22,3	23,3	24,2
27	15,7	17,2	18,6	19,8	21,1	22,2	23,2	24,3	25,2
28	16,6	18,1	19,5	20,8	22,0	23,2	24,2	25,2	26,2
29	17,5	19,1	20,5	21,7	22,9	24,1	25,2	26,2	27,2
30	18,4	20,0	21,4	22,7	23,9	25,1	26,2	27,2	28,2