



Teak Caulk Update 2007

The seven teak caulks being tested are holding their own so far. Despite being subjected to chemical dousing, summer and winter weather, and the loaded-bucket test, no caulk seam has failed, or even wavered.

PS takes a look at seven caulks eight months after application.

In June of 2006, we began our evaluation of seven caulks advertised for use in teak deck seams: Simson MSR (Marine Special Range) Deck Caulk Plus, Maritime Teak Deck Caulking, Teakdecking Systems SIS 440 Teak Deck Caulking, West Marine's Multi Caulk Sealant, and three from BoatLIFE (Life-Caulk, Teak Deck Sealant, and Life-Calk Type P). The test group was a mix of polysulfide-, polyether-, Silyl Modified Polymer- (SMP), and silicone-based products, as well as both one- and two-part products.

TESTING

Tests were designed to comparatively evaluate each caulk's ease of application, durability, adhesiveness, and resistance to chemicals. We discussed the products' ease of application in the September 2006 issue, so this and future updates will deal with durability,

chemical resistance, and adhesion test results.

DURABILITY

To compare durability, we applied the products, following manufacturers' instructions, to seven 9-inch-long, 2-inch-wide, half-inch-thick teak planks that each contained a single square seam ¼-inch-wide and ¼-inch-deep running the length of the plank. After 14 days cure time, the panels were placed outdoors and fully exposed to the weather. We inspected them in January, eight months after placing them outside, to see how well each product was

holding up.

Results: Each of the seven products appears to be holding its own with no signs of deterioration or seam failure.

While all of the products have held up equally well so far, we did notice some differences. Some of the caulks seem more pliable than the others. Our softest caulk, the West Marine Multi-Caulk, had the resilience of a neoprene wetsuit, while our hardest caulk, the BoatLIFE Life Caulk, was slightly firmer than a pencil eraser. However, all had more than enough



The teak caulks are: from left, BoatLIFE Life-Caulk Type P, BoatLIFE Teak Deck Sealant, BoatLIFE Life-Caulk, Teakdecking Systems SIS 440, Maritime Teak Deck Caulk, West Marine Multi-Caulk, and Simson MSR Deck Caulk Plus.

PS VALUE GUIDE		TEAK CAULKS					
CAULK	TDS	MARITIME TDC	WEST MARINE MULTI-CAULK	BOATLIFE LIFE CAULK	BOATLIFE TEAK DECK SEALANT	BOATLIFE TYPE P	BOSTIK/SIMSON
TYPE	Silicone based	Silicone based	Polyether based	Polysulfide based	Polysulfide based	Polysulfide based	Silyl Modified Polymer
PRICE*	\$11	\$9.50 (Only by the case: 12 for \$114)	\$12	\$19 Cleaner: \$16 (pt.) Primer: \$18 (6 oz.)	\$16	\$68/ qt.	\$12.50 Cleaner: \$11.50 (pt.) Primer: \$39.50 (pt.)
TACK FREE	20-40 mins.	15-20 mins.	1 hour skin-over time	Tack free 1-3 days	30 mins.	1 hour	Skins over in 45 mins.
CURE TIME	48 hours	24-48 hours (full cure after 14 days)	2 days (depending on temp and humidity)	7-10 days	24 hours	24 hours	7 days
SANDABLE	After 48 hours	After 24-48 hours	After 2 days	After 7-10 days	After 24 hours	Not specified	After 7 days
TOOL CLEAN UP	Acetone/ Mineral spirits	Acetone	MEK	Life-Caulk Solvent & Cleaner	Life-Caulk Solvent & Cleaner	Life-Caulk Solvent & Cleaner	Simson Cleaner E
COMMENTS	Smooth, easy to apply	Smoother than TDS	Easy to apply; calls for Life-Caulk Primer	Comparable to WM	Application similar to Life-Caulk; no need to prime	Pourable; fairly runny; pot life 1 hour at 75 F and 50% relative humidity	Thickest; cleaner and primer have strong smell; calls for Simson Primer P
APPLICATION (1=THIN, 4=THICK)	3	2	4	4	3	1	4
PLIABILITY AFTER 8 MONTHS (1=SOFTEST, 6=HARDEST)	3	2	1	6	5	5	4

*per 10.6-oz. caulking gun cartridge, unless noted

flex to handle joint expansion, so this observation may have little bearing on our results.

CHEMICAL RESISTANCE

The goal here is to see how well each caulk holds up to chemicals one could reasonably expect a teak deck to be exposed to during its lifetime—gasoline, diesel, motor oil, ammonia, household bleach,

Cetol marine oil, acetone, Starbrite teak brightener (containing Oxalic acid), WD-40, brush cleaner, Fantastic, Murphy’s Oil soap, MEK, and a heavy-duty bilge cleaner from West Marine.

We used 16 teak panels (8 inches x 4 inches), each containing a 4-inch-long bead of each caulk tested. Of these, 14 were exposed to a single chemical, while the 15th was alter-

nately exposed to all chemicals used in the test. The 16th panel was exposed to no chemicals. After a two-week curing period, all panels were located outside (fully exposed to the weather) and given the initial dose of their respective chemicals, after which the chemicals were applied bi-monthly and in such quantity as to thoroughly saturate each caulk bead and the test panel surface.



The Finer Points of Application

Caulk is typically applied in one of two ways: The seams are taped prior to caulking (pictured here), allowing removal of excess caulk by pulling up the tape, or the seams are “flooded” and the decks sanded down afterward to remove excess caulk once cured.



Taping takes longer, but is neater—flooding the seams can be a real mess—and a lot easier on the deck. A teak deck can last the lifetime of a boat, but not if exposed to the excessive sanding that invariably results from the flooding method. Flooding and sanding can remove a lot of wood from the deck, particularly if you have grooves or weathered wood where the caulk can get into the cracks, and you have to sand it out. When taping, be sure to tape slightly outside the seams (to ensure the integrity of the seam edge when removing the tape) and remove the tape prior to the caulk skinning over, or your freshly payed seam could be damaged.

Results: So far, so good. There are no signs of damage or deterioration on any of the panels at this stage.

ADHESION

To test adhesion strength, we mounted seven 2-inch-x-2-inch squares of teak on a 2-foot-long teak plank with walnut sized gobs of each caulk tested, once again following each manufacturer's recommendations for surface preparation on new teak. The plank was then set aside for three months to ensure each caulk had plenty of time to fully cure.

Prior to being attached to the plank, each square had an eyebolt fastened through its center and secured via nut and bolt. After the three-month curing period, we braced the plank and suspended 35 pounds from each of the squares for five minutes and observed the results.

Results: Each caulk-attached square held the suspended weight with no sign of failure.

WHAT'S NEXT

We'll continue to monitor each plank and report the results in future updates. For chemical resistance testing, we plan to drench the panels in their respective chemicals. Then we'll embark on some destructive adhesiveness testing—applying pressure to each caulked square until the point of failure. Stay tuned. ▲

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Common causes of seam failure

When it comes to a successful caulking job, all manufacturers echo a common theme: Seam preparation is the key. Each product tested calls for seams to be not only clean and free of old caulk (ideally taken back to new wood), but also dry and oil free. That's a particularly interesting proposition considering the oily nature of teak. Caulking uncleaned teak can mean early seam failure, even if all other product directions are followed correctly.

Sealant failure in teak deck seams can typically be classified as either adhesive failure, substrate failure (the caulk maintains its adhesiveness, but the seam sides fail due to splits or cracks in the teak), or cohesive failure (the caulk splits or tears apart).

Proper joint design is as critical as caulk selection. According to Teak Decking Systems literature, "Failure occurs when the design of the joint exceeds the ability of the sealant to function properly, or when the material is applied incorrectly or carelessly."

A teak deck seam is simply a groove cut atop the crack between each plank to provide a cavity for the caulk. Seams can vary in width, depth, and shape (V, square, round, etc.). However, to be functional, they must have enough depth and width to hold sufficient amounts of caulking material to withstand deck movement, expansion, and contraction without failure. Razor-thin seams may look professional, but they'll be nothing but trouble in the long run. They will eventually pull away from the seam sides.

A 1/8-inch seam is realistically the thinnest that should be used, and 1/4-inch is typically the widest from an aesthetic standpoint—however, this depends on deck plank size (wider planks need wider seams due to their greater expansion and contraction).

Teak, like all wood, expands when



There were no signs of seam failure during our adhesiveness test when each seam was subjected to 35 pounds of pull.

it's wet and contracts when it's dry, a factor you can use to your advantage. When caulking a deck, move the boat indoors, if possible, or at least cover the decks, letting them dry out for a few months. This not only ensures the seams are dry (a basic requirement no matter which product you use), but also allows maximum shrinkage of the teak planks. Once exposed to moisture, the planks will expand (squeezing the caulk in the seams between them) rather than shrink, which causes the seams to open, possibly pulling the caulk away from the seam sides. If caulked while the deck is completely dry, the seams will always be pushed together.

All this movement is the reason manufacturers stress the need to apply bond-breaker tape to the bottom of each seam prior to caulking (epoxy backing adhesive may also serve the same purpose in the case of glued teak overlays). Yes, it's a pain in the poop deck and adds yet another step to the project, however, it's a step you skip at your own peril.

A seam with no breaker-bond tape suffers from three-way adhesion, a situation where the caulk adheres to both the sides and the bottom of the seam. Caulk needs to be able to expand horizontally to keep up with seam expansion and contraction. Once adhered to the bottom of the seam, the caulk loses this flexibility, causing the sealant to pull away from the sides during deck movement, starting the downward spiral of failure.