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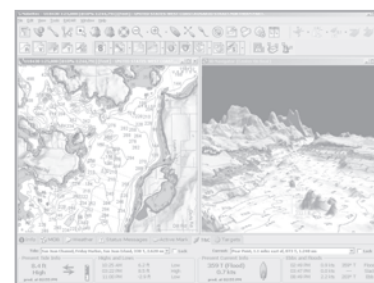
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Water Repellents For Fabric

303 Fabric Guard outdoes our old favorite, Scotch Gard Heavy Duty, for about the same price.

ReviveX is another top performer, but costs a lot per ounce.



The top picture shows the 13 products used in the test. The bottom photo shows 15 cotton duck 'seals,' shown attached to the clothes pins with which they were suspended for initial drying. The 'seals' were sprayed and dried (and re-coated, if recommended) exactly as specified by each manufacturer.

Breathable material that keeps out water but allows air to circulate is best for helm covers, awnings, hatch covers, ditty bags, seat cushions, bimini tops, boatswain's chairs, life jackets, stowage bags—the list goes on.

The rub is that, being prone to mildew, grime, spiders, mold, stains, moths, water marks, and lady bugs, they get to looking something awful.

They also lose their water repellency, partly from wear but also due to the ravages of the sun.

Ipsa facto, fabrics need both washing and re-coating with some kind of water repellent.

The best thing to do is to not let

the fabric get filthy to begin with. With good water repellency, most fabric is easy to keep clean. A very light scrubbing and good rinse does the job. Then, restore the water repellency. The maker of the fabric should supply a recommendation on the fre-

Value Guide: Fabric Waterproofers

PRODUCT	CONTAINER PRICE	PRICE PER OZ.	CONTAINER	COVERAGE	INITIAL LEAKING W. WATER LEFT IN JARS
1. ReviveX	\$9.95 / 5 oz.	\$1.99	Manual Pump	Not Stated	Dripped hard
2. Granger's (Fabsil)	\$9.95 / 20 oz.	50¢	Pressurized Can	Not Stated	Did not leak
3. Iosso Water Repellent	\$15.70 / 22 oz.	71¢	Manual Pump	27 Sq. Ft.	Soaked thru/leaked
4. Kel Water and Stain Repellent	\$7.99 / 11 oz.	73¢	Pressurized Can	200 Sq. Ft.	Did not leak
5. Marykate Fabric Waterproofer	\$12.99 / 32 oz.	41¢	Manual Pump	Not Stated	Did not leak
6. Nikwax	\$8.00 / 5.8 oz.	\$1.38	Manual Pump	'One Garment'	Did not leak
7. Scotch Gard	\$7.99 / 10 oz.	80¢	Pressurized Can	'1 Sofa, 2 Chairs'	Did not leak
8. Scotch Gard Heavy Duty	\$8.29 / 11 oz.	75¢	Pressurized Can	75 Sq. Ft.	Did not leak
9. Starbrite Waterproofing w/Teflon	\$11.99 / 22 oz.	55¢	Manual Pump	Not Stated	Soaked thru/leaked
10. Tectron Wet Guard	\$7.50 / 11 oz.	68¢	Pressurized Can	50 Sq. Ft.	Soaked thru/leaked
11. 303 Fabric Guard	\$22.95 / 32 oz.	72¢	Manual Pump	Not Stated	Did not leak
12. West Marine Fabric Protectant	\$9.99 / 16 oz.	62¢	Manual Pump	Not Stated	Soaked thru/leaked
13. West Marine Waterproofing w/Teflon	\$9.99 / 20 oz.	50¢	Manual Pump	Not Stated	Soaked thru/leaked
14. Thoroughly Soaked w/#8	N.A.	N.A.	N.A.	N.A.	Did not leak
15. Untreated	N.A.	N.A.	N.A.	N.A.	Dripped but briefly

quency, or you can check it for "beading." You can get to be an expert with the tell-tale beading test. Use a small piece of new or protected fabric for comparison; the difference is usually startling.

This report has to do with commonly available products used to provide or restore water repellency. The one most familiar is 3M's Scotch Gard. *Powerboat Reports* collected 13 products, a sizeable sampling, from chandleries, hardware stores, camping stores, and on the Web. Check the chart below for the names.

Out of curiosity, we included two products that contain silicone—Granger's Fabsil and Nikwax (a spray wax) Such sprays and liquids (along with plain old wax) are often used for tents, tarps, and other camping canvas. But silicone is an oil. It yellows with age and, because it never really dries, attracts dirt and is very difficult to clean when it gets dirty. (You can check by placing drops of both plain water and a silicone product on a bit of treated fabric. The water will bead up; the oil in the silicone will soak in and spread.)

The spray products discussed here are treated with chemically inert fluoropolymers. (Because we just know you're curious, the newest of these coatings is N-fluoromethanesulfonimide/N-fluorol (1,3,2) dithiazinane-1.1.3.3.tetraoxide.)

The polymers need heat to cure completely. The coating is best done

in an industrial setting, but you can approximate that by doing your spraying in the sun on a good hot day.

Work in the open air and keep the spray to leeward, if possible. Most of these products are combustible and not good to inhale. The containers bear the usual warnings.

Polymers don't bond well with anything, especially dirty fabric, which is another reason to keep the fabric clean and treat it when the "beading test" first indicates it's breaking down.

The Testing

For the first phase of this *PBR* testing, two varieties of light-weight cotton duck were used. (Ideally, the test might have included Sunbrella, Gore-Tex...and others like Ultrex, Helly Tech, Entrant, Weblon, Triple Point, Sunforger, Seamark, Pfifertex, Supplex, and maybe even Twilfast, a coated fabric made by the Hoartz Corp., of Acton, Massachusetts, which in 1907 came up with three-ply tops for horseless carriages.)

Both varieties of cotton duck were sold as untreated material. One was a thin tannish duck, the other white and somewhat heavier. In case they had some kind of light coating not known to the stores that sold them, each cotton duck piece was washed (using strong laundry detergent), rinsed thoroughly, and dried in standard home laundry machines. To make sure, the laundering procedure was repeated a second time.

To test the water-repellent behavior of untreated cotton duck, a 3-1/4" circle of each material was cut out with scissors.

The round fabric samples—marked "A" and "B" with a permanent ink marker—were used as the sealing lids for pint-sized Ball canning jars—the kind that have the sealing top separate from the ring that threads on the jar. The jars

have handy markings in both fluid ounces and milliliters, with a molded-in grape design that makes it easy to check finer changes in volume.

The two jars were half-filled with water, a cotton duck circle was placed on each jar and sealed with the screw-down ring. Then the jars were placed on their sides. As expected, the water quickly seeped through the canvas and made the exterior surface wet to both touch and sight. However, neither jar dripped water, even when left on their sides for several weeks.

The two varieties of duck behaved exactly alike. For the rest of the testing, the thinner, natural tan-colored duck was used.

Curious about how far this experiment could proceed, we used Brawny paper towel squares, which were sprayed and saturated with the 13 products and dried overnight. As with the cotton duck, perfect seals resulted. Even when left for several weeks, no leakage occurred. Vigorous shaking would, of course, tear the paper towel circles.

Next came toilet paper squares. Sprayed, dried and fitted to the jars, they appeared to provide a seal equal to the cotton duck and Brawny toweling—even though the delicate paper stretched and sagged.

After several weeks set aside at the back of a workbench, the paper towel and toilet paper samples—still not leaking, and still beading nicely when misted—were dismantled.

(The triumphant announcement to all within hearing that a way had been discovered to waterproof toilet paper got only a couple of rolled eyeballs.)

It was time to return from far afield. More jars were needed. The folks at the canning jar store got so curious that they had to be told what was going on. (They seemed like they might be about to call Tom Ridge or even Donald Rumsfeld.)

The Real Question

More than a dozen circles of the tan duck were cut and numbered. Each was treated on one side only with one of the 13 products.

One circle—#14—was treated heavily on both sides with Scotch Gard Heavy Duty, just to see if saturation

TEST WATER AFTER 1 HR.	AFTER 2 HRS.	AFTER 4 HRS.	AFTER 24 HRS.	AFTER 5 DAYS
1/3 Gone	1/3 Gone	1/2 Gone	1/2 Gone	2/3 Gone
1/2 Gone	3/4 Gone	7/8 Gone	Gone	Gone
2/3 Gone	Gone	Gone	Gone	Gone
Same	Same	Same	1/4 Gone	7/8 Gone
Same	1/8 Gone	1/8 Gone	Gone	Gone
Same	Same	Same	Same	Gone
Same	Same	1/8 Gone	Gone	Gone
Same	Same	Same	Same	Gone
Gone	Gone	Gone	Gone	Gone
Gone	Gone	Gone	Gone	Gone
Same	Same	Same	Same	1/2 Gone
Gone	Gone	Gone	Gone	Gone
1/2 Gone	2/3 Gone	3/4 Gone	Gone	Gone
Same	Same	Same	Same	1/8 Gone
Same	Same	Same	Same	1/4 Gone

made a difference. Circle #15 was left untreated, as with "A" and "B" in the earlier cotton duck comparison.

(Because the spray seemed in every case to soak through and wet the other side, doing one side was probably futile. After the circles were dried, mist beaded on both sides of the samples. We attempted to apply the products like a boat owner might do, spraying but one side of a bimini, which would be made of heavier duck than that used in this test. In an experiment with a heavy canvas tote bag, the spray did not soak through.)

After drying overnight in the shop (68°, 55% humidity) and an initial beading examination, the circles were further dried for an hour in an oven set at "warm"—which was about 200°.

Finally, with treated surfaces on the inside, the canvas "seals" were set in the rings and screwed tightly down on jars half filled with water.

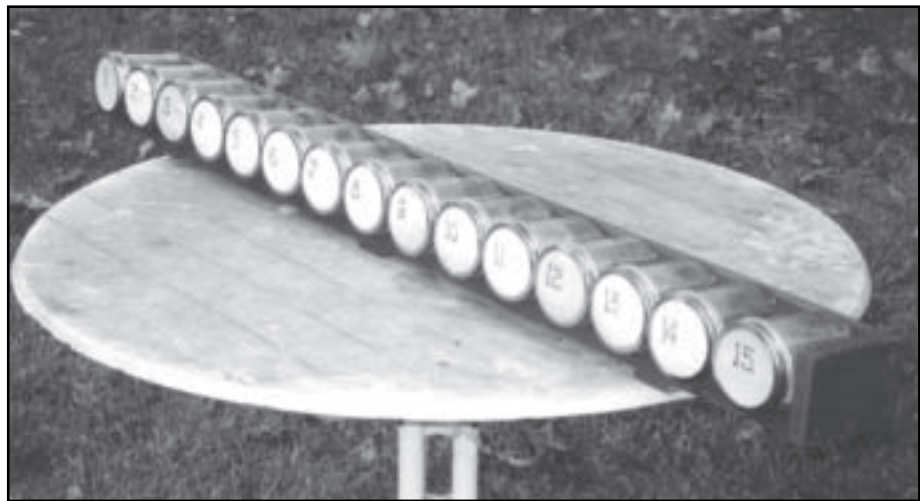
As the jars were upended to check for leaks, it was noted that #1 (the ReviveX) leaked immediately. Hard tightening of the ring made no difference. Three different jars and four rings were tried, but made no difference in the leaking. The moisture simply soaked through the seal, wet the canvas duck, accumulated on the outside and dripped down. (The ReviveX bottle states that it "Totally Restores Outerwear Water Repellency," but also states in finer print that it is "Specifically Engineered for Gore-Tex®, Windstopper® and Dryloff® products.")

After six minutes, the leakage stopped. The same leakage occurred with five other products, although we should note that #3, Iosso, leaked far more slowly than the others.

The remainder of the samples did not leak. The outside surfaces of the canvas seals remained dry.

The untreated seal, #15, soaked up water, dripped a few dozen drops over two or three minutes, and then stopped leaking. The sample saturated with Scotch Gard, #14, did not leak.

All 15 jars, with the restored water level in each carefully marked with a permanent ink pen, then were taken outdoors and placed in a rack. The rack was made to hold them on their sides (see photo above), with half of each canvas seal in contact with the



Above: Placed in a rack that holds them firmly in place, the 15 bottles, with water levels carefully noted, were placed outdoors for weathering, although this proved unnecessary.

water in each jar. The water levels in the jars were checked at one-, two-, four-, and 24-hour intervals, then again after five days. The specific results for each brand are noted on the chart.

Conclusions

At the 24-hour mark, the water level was unchanged in only three jars—the British-made Nikwax, the Scotch Gard Heavy Duty, and the 303 Fabric Guard. Because it's a wax, which accumulates dirt, we'll discount the Nikwax. Kel Water and Stain Repellent and ReviveX had let most of the water out by that point, but were still hanging on.

At the final five-day checkpoint, the Scotch Gard Heavy Duty had given up all its water. Making the final cut were ReviveX (the product that had leaked so severely in the beginning), Kel Water, and Stain Repellent (this was the version without silicone; there is also a version called "Shield" that contains silicone), and 303 Fabric Guard, which not only lost the least water in the "standard" part of the test, but is priced in line with the Kel and Scotch Gard Heavy Duty. The

303 is our winner.

It was no surprise that the cotton duck sample soaked thoroughly with Scotch Gard Heavy Duty did best of all, but it was a bit of an amazement that the completely untreated sample, as well as our experiments with toilet paper and paper towels, were so leak-proof. The reason, according to manufacturers we spoke with, is that much of the success of a waterproofer depends on how thoroughly and quickly it's absorbed by the fabric it's used on. Obviously, waterproofed TP wouldn't put up much of a fight against any force used against it.

As for the untreated duck, it soaked up the water quickly, swelled its threads, and effectively waterproofed itself with the water itself. We all know what happens, though, if you touch the inside of a canvas tent in a rainstorm—instant leak path. ■

303, 800/223-4303, www.303products.com.
Gore-Tex, 800/431-GORE, www.gore-tex.com.
Granger's, 44 (0) 1773 521 521, www.stay-dry.co.uk;
in US, 604/220-0420, www.allenslade@telus.net.
Iosso, 847/437-8400, www.ioosso.com.
MaryKate, 800/272-8963, www.marykate.com.
Nikwax, 425/303-1410, watershedusa.com.
ReviveX (McNett Corp.), 360/671-2227, www.mcnett.com.
Scotch Gard (3M), 800/364-3577, www.mmm.com.
Star brite, 800/327-8583, www.starbrite.com.
Tectron Wet Guard, 877/236-8428, www.bentgate.com.
West Marine, 800/262-8464, www.westmarine.com.

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