

Weatherizing Outdoor Inductors and Traps

An insulation varnish protects coils and hardware from the elements.

Dick Sander, K5QY

Over the years, I've built matching networks, loading coils, and traps for my antennas. To protect the exposed coils from the sunlight and weather, I use a high-voltage varnish coating. I had used Krylon 1385 Red Insulation Varnish, but unfortunately, that product is no longer available. However, Sprayon® EL601 Red Insulating Varnish Aerosol works, and can be found in industrial supply houses.^{1, 2} Its dielectric strength is listed as 2600 V per mil. To test this varnish, I measured a coil at 1.807 μH using an L/C meter before painting. After painting and drying, the measured inductance was 1.809 μH — essentially no change in inductance.

Weatherizing and Protecting Coils and Traps

I found various applications for using a high-voltage varnish. Two of my 160 meter Hy-Tower antennas are phased and use center-loading coils. The 70 μH center loading coils 41 feet high on two modified 61-foot Hy-Gain AV-18HT Hy-Tower vertical antennas were installed in 1997 and are still protected. Another Hy-Tower vertical that operates on both 80 and 75 meters is located between the two 160-meter vertical antennas, and has a loading coil that is also varnish-protected.

Figure 1 shows a base-loading coil protected by the varnish. I tested the SWR before and after painting, and there was no change.

My area recently suffered a massive hail storm, and the center-loading coil on my 40-foot free-standing 60-meter vertical antenna was damaged. Because I didn't have a replacement coil with enough turns to reach the needed 5.7 μH , I soldered two shorter coil sections together and weather-proofed them with varnish. Figure 2 shows the red varnish on the two joined coils that I mounted around a solid fiberglass insulator to replace the damaged loading coil.



Figure 1 — Base-loading coil for switching between 80 and 75 meters is weatherized with Sprayon® EL601 Red Insulating Varnish Aerosol. The SWR did not change after applying the varnish.



Figure 2 — Two series-connected coils surrounding a solid fiberglass insulator tube on a 60 meter vertical, after two coats of high-voltage insulating varnish.



Figure 3 — Red high-voltage insulating varnish protects the fold-over insulators of a 60 meter vertical.

Figure 3 shows the high-voltage varnish protecting the fold-over insulators of my free-standing 60-meter vertical antenna. I also built and weatherized two 1,500 W traps, shown in Figure 4, for a 40/30-meter inverted V antenna.

Final Thoughts

Whenever I finish tuning an antenna component, I try to measure and check it on the antenna, then I spray-paint it and re-measure. I've never found an SWR or frequency shift of any consequence with the Sprayon varnish, and there may be

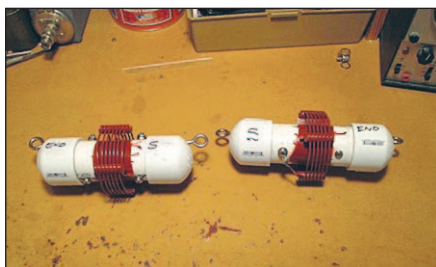


Figure 4 — 1,500 W traps for a 40/30-meter inverted V antenna are weatherized with high-voltage insulating varnish.

similar products available that do just as well. More details on the various antennas described in this article are available on my web page at www.k5qy.net.

Notes

¹sprayon.com/product-categories/electrical-and-electronic-cleaners-and-degreasers/red-insulating-varnish-aerosol-el601

²Grainger's Industrial Supply, Item no. 32PJ01, www.grainger.com, listed for approximately \$14 per 15 oz spray can.

He's listed on the DXCC #1 Honor Roll and has earned Seven-Band DXCC and Six-Band WAS. He serves as an ARRL DX card checker, including 160 meters. Dick has modeled, designed, and built many of his antennas, from 160-meter phased verticals to 440 MHz Yagis. You can reach Dick at k5qy1@verizon.net.

For updates to this article, see the QST Feedback page at www.arrl.org/feedback.



ARRL Life Member Dick Sander, K5QY, was first licensed in 1958. Dick retired from Rockwell/Alcatel Telecom as a senior technical writer.

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Examiner	Sessions	Accreditation Date	Examiner	Sessions	Accreditation Date	Examiner	Sessions	Accreditation Date
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Jobst Vandrey, AC0LP	312	23-Jun-08	Paul Maytan, AC2T	549	06-Sep-84	Judy Friel, AC4RG	252	01-Feb-91
Edward Genoino, WA2NDA	287	10-Jul-85	E. Drew Moore, W2OU	388	01-Aug-90	Alan Moeck, WA2RPX	225	27-Sep-94
James McCloskey, NS3K	273	14-Nov-94	Gerald Miller, Jr., AA2ZJ	363	05-Dec-95	David Snyder, W4SAR	208	01-May-93
George Brechmann, N3HBT	242	01-Apr-91	Stanley Rothman, WA2NRV	361	01-Mar-85	Thomas Hill, KJ4IV	201	01-Jun-91
Robert Benna, N3LWP	212	21-May-97	Fritz Boigris, KB2O	329	26-Oct-84	Sheila Frank, KT4YW	200	30-Oct-96
Central			Midwest			Rocky Mountain		
Eldon Boehm, NK9U	271	21-Nov-86	Harry Nordman, AB0SX	640	09-Jan-02	Karen Schultz, KA0CDN	431	06-Sep-84
George Greene, NE9ET	268	13-Nov-00	David Bartholomew, AB0TO	608	22-Mar-02	Robert Hamilton, N0RN	341	19-May-87
Allan Bukowski, N9ZD	264	01-Jun-92	Kevin Naumann, N0WDG	546	17-Nov-02	Frank Goddard, W0AJY	267	01-Feb-92
Donald Hlinsky, N9IZU	259	01-Mar-91	Jeanette Nordman, AB0YX	459	21-Aug-03	David Avery, N0HEQ	262	13-Jan-88
Timothy Pechtold, AA9BV	248	01-Nov-92	Roland Kramer, W0RL	436	21-Jun-01	Jeffrey Weinberg, W0QO	252	01-Apr-93
Dakota			New England			Southeastern		
John Schwarz, Jr., AE0AL	265	26-Oct-94	Robert Beaudet, W1YRC	312	01-Aug-90	Victor Madera, KP4PQ	408	01-Mar-92
Jeffrey Goodnuff, W0KF	249	17-Jun-03	Lawrence Polowy, KU1L	309	02-Jan-85	Pablo Soto, KP4SJ	338	01-May-92
Daniel Royer, KE0OR	210	01-Jul-91	Stefan Rodowicz, N1SR	300	20-Nov-84	Val Jacyno, AK4MM	301	08-Nov-11
Dennis Ackerman, KB0OQQ	210	15-Jul-96	James Mullen, KK1W	297	01-Mar-91	Joseph Patti, N4UMB	298	01-Sep-90
Tom Wilson, NI0I	205	30-Jul-86	Bruce Anderson, W1LUS	294	11-Feb-88	Harold Prosser, III, KK1B	293	22-Jan-86
Delta			Northwestern			Southwestern		
Arthur Parry, Jr., WB4BGX	244	01-May-91	Richard Morgan, KD7GIE	444	11-Aug-00	Bill Martin, AI0D	823	01-Nov-84
Edward Scheufele, AB5RS	224	19-Jan-94	Loren Hole, KK7M	342	06-Sep-84	Fred Bollinger, AB7JF	452	17-Apr-95
William Easterday, KB8FU	209	01-Mar-91	George Ftikas, N7TQZ	276	01-Dec-92	Steve Gurley, KY7W	382	19-Apr-96
Roger Gray, N5QS	195	01-Mar-93	David Brooks, N7HT	249	10-Jun-87	Joseph Cutitta, W0SLL	347	09-Nov-99
Glenn King, N5GK	187	05-Jun-86	Duane Anderson, NA7DA	241	26-Oct-94	David Morrill, N7TWT	324	20-Jul-00
Great Lakes			Pacific			West Gulf		
David Schmidt, K14QH	250	15-Feb-85	Morris Jones, AD6ZH	383	27-Nov-01	Franz Laugermann, K3FL	869	01-Dec-91
Charles Hall, W8HF	237	01-Jun-92	Bill Nichols, NN7K	248	01-Sep-93	Sammy Neal, N5AF	540	20-Nov-84
Herbert Blasberg, WA8PBW	216	06-Sep-84	Gordon Fuller, WB6OVH	248	06-Sep-84	John Moore, III, KK5NU	450	21-May-95
Dale Pritchett, KC8HJL	211	26-Mar-98	Kenneth Hall, W06J	230	18-Mar-86	Gerald Grant, WB5R	399	04-Jan-85
Christian Anderson, K8VJ	205	09-Feb-90	Jim Brunk, N6BHX	226	13-Jul-95	Adolph Koehler, K5VCR	388	29-Sep-95