

Roof resaturants: can the claims be true?

To hear some critics talk, it would seem the main ingredient in most resaturants is snake oil. And when you think about it, there is a familiar ring to manufacturers' claims that their products "restore flexibility" and "add years of extra life."

But in the roofing industry claims such as these can be proven or disproven. Right? In the case of resaturants, unfortunately, the answer seems to be a firm maybe. The most any resaturant study has proved so far is that more studies are needed.

Much of the controversy surrounding resaturants may stem from the products' unique position in the industry. They are billed as roof rejuvenators. Using a spray-applied mixture of solvents and bitumen, the products restore built-up membrane performance and prevent premature roof failure, according to the manufacturers. Judging the truth of these claims becomes a bit tricky, however, because it is impossible to tell how long a treated roof would have lasted if it had not been treated.

Despite these somewhat nebulous claims, there are some in the industry who have tried to quantify and measure resaturant performance. Robert Bynoe, director of roofing technology for Tremco, a Cleveland-based resaturant manufacturer, has listed three objectives a resaturant must achieve to be effective. First, it must fill and seal over fractures and voids in weathered flood coats. Second, it must penetrate as far as possible to fill voids to saturation. And finally, it must lower a treated asphalt's softening point and increase its penetrometer readings. Not surprisingly, tests using these criteria have shown that Tremco's products do indeed work.

NBS study finds no difference

A different set of criteria was used to test resaturants in a National Bureau of Standards (NBS) study, which was published in 1983. NBS researchers Robert Mathey and Walter Rossiter Jr. measured the tensile strength, load-strain modulus, flexural strength, maximum deflection, coefficient of linear thermal expansion and thermal

Studies prove need for more studies

by Martin Eastman,
editor

shock factor of coated and uncoated samples. These criteria were chosen from a list of performance criteria originally suggested in a 1974 paper by Mathey and NRCA Research Associate Bill Cullen.

Using these criteria, Mathey and Rossiter compared the performance of coated and uncoated samples and came to a conclusion about resaturants that was the opposite of Tremco's. "From the results," their report said, "it was concluded that in general no statistically significant difference (0.05 significance level) in average values of the measured membrane performance properties existed between uncoated and comparable coated specimens."

By Mathey's and Rossiter's own admission, however, the study and its report did not represent the definitive word on the subject of resaturant effectiveness. "The results of the laboratory tests were applicable only to the membranes tested since the number of membrane samples and coatings included in the study was limited," the researchers say in the report's conclusion. Even so, resaturants' critics point to the NBS study as proof that the products do not improve membrane performance.

The first to use the study was the Energy Research and Development Administration (ERDA), the Department of Energy's predecessor and the government agency that requested and sponsored the original research conducted more than six years ago.

NBS took 20 coated and uncoated samples from 10 government roofs in Kentucky; four samples were taken from asphalt roofs while the rest were taken from coal tar pitch roofs. The coated roofs had been treated with resaturants anywhere from 12 to 29 months prior to the time the samples were removed.

For comparison, the samples were grouped according to age and composition. Before tests were conducted on the samples, their condition was visually examined. Noting that researchers found sections of several coal tar pitch samples' top plies missing or torn, the report said, "The damage was attributed in part to

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removal of the aggregate surfacing prior to resaturant-coating application."

According to the NBS report, undamaged portions of all 20 membrane samples were tested using the six criteria chosen. After studying and comparing the test results, the researchers reached the conclusion that resaturants have no noticeable effect on a BUR membrane. Because the study was based on the premise that untreated and rejuvenated membranes should yield different test results, the study's findings imply that a resaturant will have no effect on membrane performance. As Mathey told *Roofing Spec* in a recent interview, "If it does do something, you ought to be able to measure it."

Study's influence is felt

Word of the study's findings began to get out shortly after the research was completed, although ERDA was the only organization to receive a full-scale account of the study. According to Mathey, NBS didn't have enough money to develop a publishable report. Nevertheless, Mathey said the researchers freely discussed the study with anyone interested, and hints of the study's conclusions began to appear in the trade press.

In 1983, the U.S. Navy became interested in NBS's work and agreed to fund a report, Mathey said. After receiving the finished write-up, the Naval Civil Engineering Laboratory, Port Hueneme, Calif., sent out Tech Data Sheet 83-24 summarizing NBS's findings. NBS also sent a copy of the report to Elsevier Science Publishers B.V., Amsterdam, The Netherlands, where it was accepted for use in Elsevier's *Durability of Building Materials* report in June of 1983.

Although Mathey says the NBS report presents only preliminary findings, it has influenced many people's decisions to use resaturants. According to Mathey, the Navy has begun to advise its field installations to check into resaturants further before applying them. Bynoe says that former Tremco resaturant customers are now telling the company's salespeople that the report is causing them to have second thoughts about using the products.

Putting so much faith in NBS's conclusions is unfair, according to Bynoe. He says that the small number of samples that were examined makes the study's findings suspect, and he points out that Mathey and Rossiter themselves have admitted the number tested was insufficient to draw any general conclusions about resaturants' performance.

But the lack of a significant number of samples isn't Bynoe's only objection to the report. He also questions much of the stu-

dy's procedures. He claims that the large number of damaged samples indicates that some of the roofs were prepared with a gravel scratcher before resaturating. This is a practice that will, according to Bynoe, "beat hell out of the roof membrane," and prevent an effective resaturant application.

Bynoe also claims that the way samples were collected and prepared made it impossible to tell if the resaturants accomplished their primary purpose, keeping the membranes from getting wet. By giving all the samples enough time to dry before examination, the researchers prevented the presence of moisture from affecting the test results. If the samples had been taken immediately after a rain and tested right away, the results would have indicated that the coated samples suffered less water infiltration than the uncoated samples, Bynoe believes.

Mathey counters Bynoe's argument by saying that it is possible to detect a history of water infiltration in a dried organic roof sample. He cites evidence in the literature that suggests that organic felts exposed to repeated wetting and drying cycles do experience permanent changes such as lower tensile strength, and that these changes can be measured using the study's criteria.

However, Bynoe is also unhappy with NBS's choice of testing criteria. He points out that Mathey and Cullen originally suggested 20 criteria in their 1974 paper, while Mathey and Rossiter chose to use only six. Bynoe suggests that evaluating resaturants using some of the other criteria might be a better way to assess their effectiveness.

"What Bynoe says is probably a good idea," Mathey concedes. At the same time he defends his and Rossiter's choice of criteria by saying that they are the only ones that the industry has developed into measurable standards. "You can't compare something that doesn't exist," he said.

Back to the lab

It seems as if there are almost as many questions about the use of resaturants now as before the NBS study was published. One thing Bynoe and Mathey agree on is the need for further research. For Bynoe, the ideal resaturant study would compare two halves of the same weathered but repairable organic roof. One half would be coated and the other half would be left in its existing condition. Core samples would be cut from both halves after a rain and tested immediately. Mathey suggests beginning future resaturant research with a thorough literature search to get up to speed on the subject.