

PRODUCT TESTING COSTS ARE MAJOR ROOFING PRODUCTS MANUFACTURER BUDGET ITEM

How much would you estimate that the average roof membrane manufacturer spends each year on product testing?

This cost of doing business may surprise you. Product testing can account for a significant expenditure of money, time, and manpower every year at many roofing products manufacturing companies.

For example, one major industry supplier of sheet membranes estimates that it spends, on average, over \$250,000 each year on testing and approvals for its wide range of roofing options. Interestingly, too, much of that testing is to maintain existing third-party approvals.

In fact, another manufacturer budgeted about \$50,000 this year just for follow-up compliance inspections in its plants by Factory Mutual Engineering and Research Corp. (FMR), Norwood, MA and/or Underwriters Laboratories (UL), Northbrook, IL.

SPRI, the trade association representing manufacturers and marketers of flexible roof membranes, summarizes the test procedures for evaluating the physical properties of roof membranes in its manual, "Flexible Membrane Roofing: A Professional's Guide to Specifications." (Incidentally, an updated version of this comprehensive manual is due out shortly.)

What goes on behind the scenes before a roofing product goes to market? Essentially, manufacturers perform and/or commission two types of testing: material tests for physical properties and system or assembly tests for wind uplift and fire resistance.

Material tests cover physical properties like tensile strength, tear strength, elongation, puncture resistance, and dimensional stability. Long-term testing, such as heat aging, is typically done both in a lab using accelerated test methods as well as in the field on test jobs in various locations to further test those physical properties.

Everyone understands the need for product testing of new



products. But did you know that even when a product has been performing successfully for years, suppliers may sometimes have to sponsor new testing to meet a growing industry demand for current results?

Both UL and FM perform their own fire testing on system assemblies. Each of these organizations conducts exterior fire testing as prescribed by the American Society for Testing & Materials (ASTM) E-108, Standard Test

Methods for Fire Tests of Roof Coverings, such as for external spread of flame, which measures how far down a membrane a fire can burn. The E-108 test also includes a burning brand test and intermittent flame test for assemblies on a wood deck.

At FM, this fire testing is part of FM Approval Standard 4470, which also includes calorimeter testing. The calorimeter measures fuel contributed by combustible materials in a roof assembly to a fire inside a building. Both FM 4470 and UL 1256 are based on the principle that the roof assembly should have a very limited contribution to the growth of a fire in a building.

FM 4470 includes tests for wind uplift, corrosion, and seam strength. At UL, UL 1897 covers wind uplift.

Every time a manufacturer makes a slight change in a material or an assembly, these tests have to be repeated. With all the possible combinations of roofing membranes, insulations, cover boards and decks, it's no surprise there are pages and pages of listings for system approvals in the UL Directory, for example.

Those numbers will increase as more insulations containing HCFCs are phased out in the next few years and alternatives are made with new blowing agents.

"We get calls constantly from contractors asking if such-and-such an assembly has a UL rating," reports one technical services manager.

All the testing sponsored by manufacturers causes some people to feel as if they practically live at FM or UL.

Also challenging to track are the 181 roofing material standards published by ASTM. These standards pertain to many different kinds of products and list what physical properties should be tested and by what test.

This number is due to increase because efforts have been underway for several years now to develop a product standard for TPO (thermoplastic polyolefin) roof membranes. This TPO task force was, in fact, scheduled to ballot a proposed material specification for the first time sometime this spring. Of course, it typically takes time to reach consensus, so this doesn't mean that a standard is imminent, but it's in the works.

So, from both the testing and test development front, roofing products manufacturers and suppliers make a significant investment each year in bringing quality products to market.

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