

Groups evaluate fastener rusting problem

by Bob LaCrosse



The consequences of the General Motors fire in Livonia, Mich. continue to affect the industry 31 years later. Since the 1953 catastrophe, which most believe was fueled by molten bitumen that had been solid-mopped to the deck dripping into the flames, the industry has been searching for a safer and more effective way to attach roof systems to buildings.

Shortly after the fire, Factory Mutual (FM) began to require that insulation be adhered to metal decks by strip-mopping the bitumen. FM believed that strip-mopping was less of a fire hazard than solid-mopping because it avoided large deposits of bitumen on the deck.

However, as high winds damaged more and more strip-mopped roofs, the industry realized that strip-mopping would not hold a system to the deck as securely as solid-mopping. NRCA and the Midwest Roofing Contractors Association (MRCA) joined to tackle this problem. After studying wind-caused roof damage for a number of years, the NRCA/MRCA task group submitted its recommendations to FM.

In May 1983, FM acted on the NRCA/MRCA recommendations by revising its loss prevention data sheet 1-28 on Insulated Steel Deck. The new data sheet stated, "Approved insulation fasteners are currently the only recommended manner of securing insulation to the steel deck," for approved Class 1 construction.

Problems not over yet

Requiring mechanical fastening has all but eliminated the problem of roof blow-offs caused by high winds, but the change has resulted in a number of unforeseen problems. The chief problem many are observing in the field is fastener rusting.

Members of one committee are reporting rusting problems with non-coated fasteners used in urethane applications. According to representatives of the Roof Insulation Committee of the Thermal Insulation Manufacturers Association (RIC/TIMA) who served on the joint RIC/TIMA-NRCA Roofing Insulation Technical Committee (RITC), moisture in roofing systems or condensation entering roofs from building interiors is causing fastener corrosion. The rusted fasteners eventually become so weakened that they break. The problem is most acute in reroofing jobs, committee members say.

Two representatives of a major nail manufacturer attended the November meeting of RITC to discuss the manufacturer's investigations of the fastener rusting problem and its use of coated fasteners to combat corrosion. The representatives described the tests the manufacturer is using to evaluate the rust-resistance of various types of fastener coatings.

According to the manufacturer's representatives, the company is experimenting with the Kesternich test and American Society of Testing and Materials' D117 Standard Method of Salt Spray (fog) to check fastener coatings. During a Kesternich test, samples are subjected to damp heat and an atmosphere containing sulphur dioxide for a specified period of time. The temperature and the amount of sulphur dioxide in the atmosphere inside the test chamber are varied during the course of the test.

RITC members also learned that the Single Ply Roofing Institute (SPRI) also has a fastener subcommittee working on a proposed new testing procedure to evaluate fastener corrosion and rusting.

Joint committee to seek solution

Because the problem of fastener corrosion and rusting is so widespread, involving both BUR and single-ply roofing assemblies over metal decks, efforts are under way to establish a joint NRCA, RIC/TIMA and SPRI committee to seek a solution. The committee would also include a number of fastener manufacturers. The committee's efforts could involve testing the rust-resistance of a variety of fastener coatings. Tests may also be conducted to evaluate the holding power of rusted fasteners.

Until NRCA and the other groups involved find solutions to the fastener rusting problem, insulation applicators should use only fasteners that have a corrosion- or rust-resistant coating that is backed by the manufacturer. This should reduce the possibility of fastener rusting, which causes roofing system failures.