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ASTM releases roof service life study

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Roofing/Siding/Insulation (RSI)



A recent research study published by the American Society for Testing & Materials (ASTM) suggests that single-ply roofing systems may provide equal or better service life compared to traditional asphalt roofing systems. In addition, the ranking process used in the study places EPDM at the top of the list in terms of heat and ultraviolet aging resistance.

The study measured physical parameters of 12 roofing membranes before and after heat over and ultraviolet exposure. The products tested included multiple-ply roof assemblies (two-ply SBS modified bitumen and two-ply BUR), as well as single-ply roofing membranes, such as EPDM, PVC and TPO.

Properties tested included load-strain, cyclic fatigue resistance, water absorption, glass transition, thermal expansion, static puncture resistance, and dynamic puncture resistance. The following table summarizes the test results from the study.

Roof Membrane/Rankings

(100 = "Best", 0 = "Worst")

Pre-Exposure		After Heat Aging		After Ultraviolet Aging	
EPDM	76.0	EPDM	87.5	EPDM	75.0
PVC	62.0	PVC	77.3	PVC	69.0
SBS	57.0	SBS	70.0	SBS	59.0
APP	56.0	APP	68.0	APP	71.5
TPO	46.0	TPO	61.0	TPO	45.0
BUR	37.5	BUR	59.0	BUR	58.5

Note: Rankings calculated using the average ranking for all samples tested in the study.

According to the authors of the study, *Service Life Tests for Roofing Membranes*, "The EPDM and PVC samples consistently posted the best ratings." The authors also noted that while this result may be attributed to the strength of reinforcement with each membrane, "the EPDM samples, without reinforcement, consistently rated among the highest in the group."

The researchers intend to evaluate these same membranes under field exposure conditions in the future, with data collections planned after two, four and six years of exposure.

Based on their own experience with the field performance of traditional BUR roofing membranes, the researchers suggest that membranes such as EPDM could be expected to perform as well or better, providing the testing procedures used in the study are predictive of field results.