

Dear Design Professional,

Sustainability has rapidly become a popular concept in building design, and many factors must be considered when determining the actual environmental impact of a roofing system. A 2010 study examined systems using a variety of roofing membranes, including EPDM, TPO, PVC, and SBS modified bitumen; Life Cycle Assessment (LCA) – a scientific approach to evaluating the ecological aspects and potential effects of a product, process or service throughout its life cycle – was used to measure and compare the relative environmental impact of these different low slope roofing systems. An Oklahoma-based strategic environmental consulting firm named the GreenTeam Inc. conducted the study titled “Life Cycle Inventory and Assessment of Low Slope Roofing Systems in North America”. **It found that EPDM’s long-term environmental impact is much less than its alternatives.**

The study used the Environmental Protection Agency’s Tool for the Reduction and Assessment of Chemical and Other Environmental Impacts model to take into account all inputs associated with the manufacture and installation of the different roofing systems. The results of the study suggested that one of the most meaningful measures for comparing the relative environmental impact of low slope roofing systems is global warming potential (GWP) related to the manufacture, installation and end of service life disposition. The study also found that the service life of a roofing system is critical to determining how effectively environmental impact can be spread over time. Even with holding service lives constant, **the data showed that EPDM roof systems have the lowest global warming potential, smog impact and acid rain impact** compared to TPO, PVC, and SBS modified bitumen systems.

System	Membrane	Attachment	GWP (kg CO2)	Smog (kg NOX)	Acid Rain (H+ moles)
EPDM	60-mil white	Fully adhered	22.4	0.05	8.8
EPDM	60-mil black	Ballasted	28.3	0.08	11.9
EPDM	60-mil black	Fully adhered	29.6	0.08	12.3
TPO	60-mil white (24-mil over scrim)	Fully adhered	30.9	0.08	19.4
PVC	60-mil white (25-mil over scrim)	Fully adhered	73.1	0.24	49.1
SBS MB	140-mil thick modified-bit	Fully adhered	81.8	0.31	52.7

The data used in this study was based on the most up-to-date and current EPDM formulation information. EPDM roof systems have become even more durable, reliable, and cost-effective with the evolution of factory-applied seam tape technology, reinforced perimeter securement and the development of thicker membranes. This recent Life Cycle Analysis research has shown that EPDM is the cornerstone of sustainable design initiatives and provides significant environmental benefits especially compared to asphalt based systems!

Sincerely,



Ronald L. Goodman
Marketing Manager, EPDM Roofing Systems