

Supplementary Graphics From:

Life Cycle Inventory and Assessment of Selected Low Slope Roofing
Systems in North America

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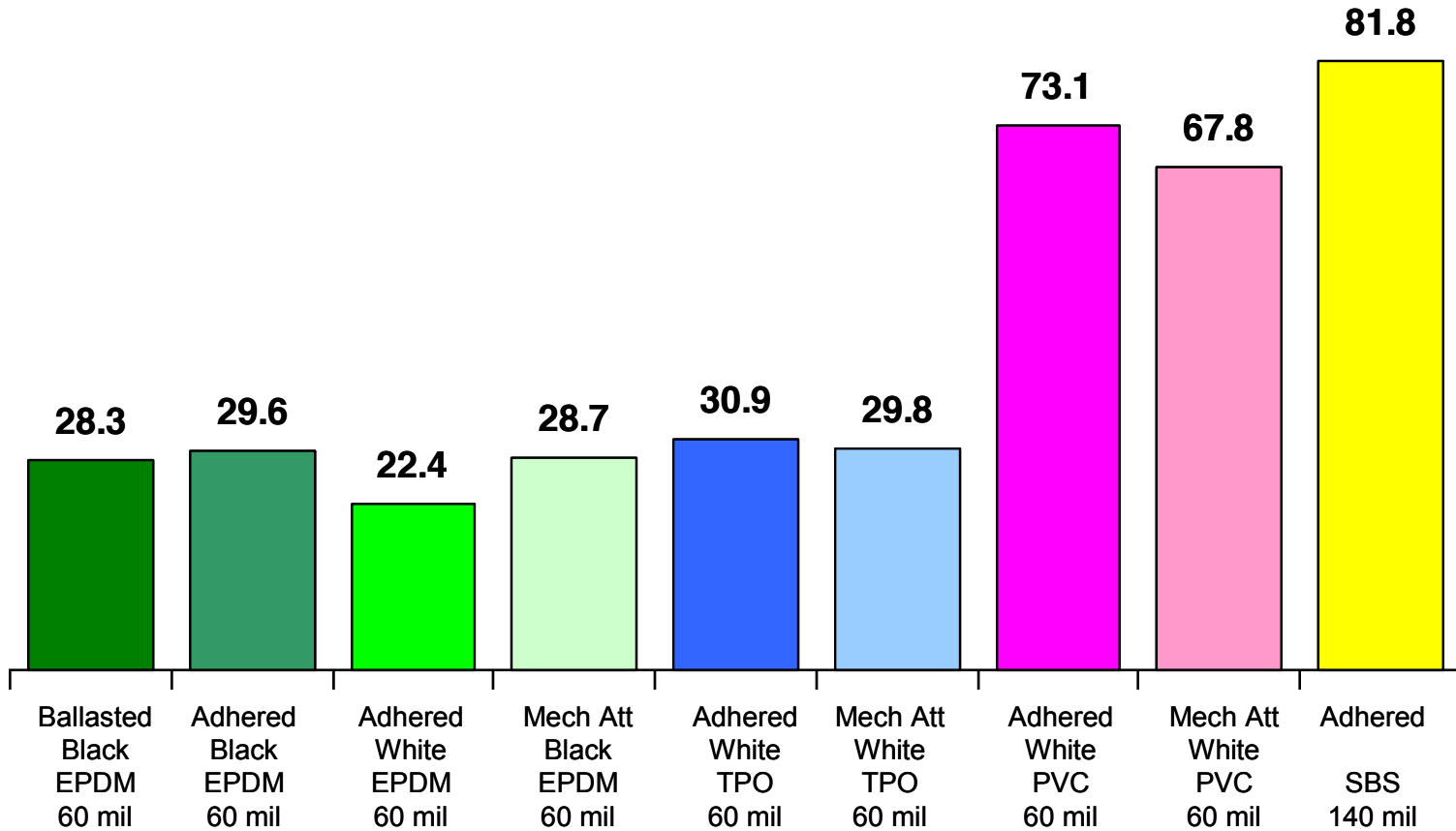
TRACI IMPACT CATEGORY

| SYSTEM DESCRIPTION | | | Global | Acid | | Non- | Respiratory | | Ozone | Eco- | |
|--------------------|-------------------------|----------------|----------|------------|--------------|--------------|-------------|-------------|-------------|------------|----------|
| | | | Warming | Rain | Carcin. | Carcin. | Effects | Eutrication | Depletion | Toxicity | Smog |
| SYSTEM | MEMBRANE | ATTACHMENT | (kg CO2) | (H+ moles) | (kg benzene) | (Kg toluene) | (kg PM) | (Kg N) | (kg CFC-11) | (Kg 2,4-D) | (Kg NOX) |
| EPDM | 60 mil Non-Reinf. Black | Ballasted | 28.3 | 11.9 | 0.17 | 463 | 0.05 | 0.004 | < 0.00001 | 3.78 | 0.08 |
| | 60 mil Non-Reinf. Black | Fully Adhered | 29.6 | 12.3 | 0.17 | 514 | 0.06 | 0.005 | < 0.00001 | 4.26 | 0.08 |
| | 60 mil Non-Reinf. White | Fully Adhered | 22.4 | 8.8 | 0.17 | 528 | 0.04 | 0.003 | < 0.00001 | 4.79 | 0.05 |
| | 60 mil Reinforced Black | Mech. Attached | 28.7 | 12.0 | 0.17 | 542 | 0.06 | 0.004 | < 0.00001 | 3.50 | 0.08 |
| TPO | 60 mil Reinforced Gray | Fully Adhered | 30.5 | 19.2 | 0.15 | 419 | 0.06 | 0.004 | < 0.00001 | 2.19 | 0.08 |
| | 60 mil Reinforced Gray | Mech. Attached | 29.4 | 18.9 | 0.15 | 477 | 0.06 | 0.003 | < 0.00001 | 1.71 | 0.08 |
| | 60 mil Reinforced White | Fully Adhered | 30.9 | 19.4 | 0.15 | 424 | 0.06 | 0.004 | < 0.00001 | 2.41 | 0.08 |
| | 60 mil Reinforced White | Mech. Attached | 29.8 | 19.2 | 0.15 | 483 | 0.06 | 0.003 | < 0.00001 | 1.93 | 0.08 |
| PVC | 60 mil Reinforced Gray | Fully Adhered | 58.6 | 39.4 | 0.05 | 492 | 0.03 | 0.010 | < 0.00001 | 6.58 | 0.20 |
| | 60 mil Reinforced Gray | Mech. Attached | 54.2 | 38.4 | 0.04 | 528 | 0.03 | 0.008 | < 0.00001 | 2.80 | 0.19 |
| | 60 mil Reinforced White | Fully Adhered | 73.1 | 49.1 | 0.06 | 606 | 0.04 | 0.010 | < 0.00001 | 8.62 | 0.24 |
| | 60 mil Reinforced White | Mech. Attached | 67.8 | 47.8 | 0.05 | 650 | 0.03 | 0.011 | < 0.00001 | 4.01 | 0.23 |
| SBS | 140 mil Unsurfaced | Fully Adhered | 81.8 | 52.7 | 0.06 | 998 | 0.04 | 0.160 | < 0.00001 | 10.9 | 0.31 |

TRACI Impacts for Widely-Used Low-Slope Roofing Systems

Unit of Impact per M² of Installed Membrane

Source: "EPDM Roofing Association Life Cycle Inventory & Assessment.." The GreenTeam, Inc. (2009)



Global Warming Potential (GWP) for Widely-Used Low-Slope Roofing Systems

Kg CO₂ Equivalent per M² of Installed Membrane

Source: "EPDM Roofing Association Life Cycle Inventory & Assessment.." The GreenTeam, Inc. (2009)

| System | Membrane | Attachment | Global Warming Potential (GWP) (kg CO2 eq.) | Minimum Service Life To Achieve Equivalency (1) (Years) |
|---------------|-------------------------|-------------------|--|--|
| EPDM | 60 mil Non-Reinf Black | Ballasted | 28.3 | 19.0 |
| | | Fully Adhered | 29.6 | 19.8 |
| | 60 mil Non-Reinf White | Fully Adhered | 22.4 | 15.0 |
| | 60 mil Reinforced Black | Mech. Attached | 28.7 | 19.2 |
| TPO | 60 mil Reinforced Gray | Fully Adhered | 30.5 | 20.4 |
| | | Mech. Attached | 29.4 | 19.7 |
| | 60 Mil Reinforced White | Fully Adhered | 30.9 | 20.7 |
| | | Mech. Attached | 29.8 | 20.0 |
| PVC | 60 mil Reinforced Gray | Fully Adhered | 58.6 | 39.2 |
| | | Mech. Attached | 54.2 | 36.3 |
| | 60 Mil Reinforced White | Fully Adhered | 73.1 | 49.0 |
| | | Mech. Attached | 67.8 | 45.4 |
| SBS | 140 mil Unsurfaced | Fully Adhered | 81.8 | 54.8 |

(1) Using a conservative 15 Year Service Life for the Lowest Impact System (White EPDM Fully Adhered)

Minimum Service Life to Distribute GWP Equally

Source: "Life Cycle Inventory and Assessment of Selected Low Slope Roofing Systems in North America." TEGNOS Research, Inc. (2009)