



Polymer Modified Asphalt

**Long-Lasting
Asphalt Binder
Provides
Cost-Effective
Value for
Owners**

Used for three decades to enhance asphalt pavement performance, polymer modified asphalt binder (PMA) offers superior performance benefits that every pavement owner desires. The optimal

**PMA PAVEMENTS
REDUCE
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road paving material, flexible PMA pavements reduce pavement distress while simultaneously increasing service life by up to ten years.¹ In fact, a 2020 study of 47 state agencies found that 96 percent reported using PMA in traditional asphalt mixtures, with

one-third of those agencies planning to increase PMA usage due to the expectation of improved pavement performance.²

Crack Resistance

Cracks, a common pavement distress, develop from pavement loading, weather and temperature fluctuations, and reflection of underlying joints and cracks. Using PMA in binder layers can mitigate cracking by enhancing a binder layer's flexibility.¹ A multi-year accelerated field study conducted by the Federal Highway Administration

shows PMA significantly improves fatigue cracking performance when compared to unmodified binders.³ In fact, state agencies report successfully using PMA to control rutting, fatigue cracking, reflective cracking, thermal cracking, and shoving along with several other distresses.² Properly constructed and maintained PMA pavements provide pavement owners with crack resistant properties that offer piece of mind.



Prolonged Pavement Life

PMA has improved crack resistance extending pavement life by up to ten years lowering future maintenance costs.¹ In addition, state highway agencies found the use of PMA improves compaction and mixture stability resulting in a smoother surface.² Researchers find that pavements built smooth remain smoother longer, which means a higher quality pavement. In fact, 40 state agencies using PMA note the increased life meets or exceeded expectations.²

Cost Effective

PMA increases the initial production cost, however a 4.5- to 14-percent lower ownership costs is expected from a life cycle cost perspective.⁴ A life cycle cost analysis of PMA shows the normalized average per ton cost drops significantly⁵, by as much as \$2.34/ton.⁶ In addition, highway agencies reported the minimal increase in initial cost was a good investment due to the benefits received.²

**A LIFE CYCLE
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More Information

Interested, but want to evaluate in more detail? There are pavement engineering tools and processes available to help evaluate your investment and the impacts on life cycle cost.²

One helpful, free software option is PAVExpress a pavement design software combined with FHWA's RealCost tool. To learn more visit PaveXpress.com



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PAVEMENT ASSOCIATION**

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¹Asphalt Institute. (2005). *Quantification of the Effects of Polymer-Modified Asphalt Binder for Reducing Pavement Distress*. Lexington, KY: Asphalt Institute.

²Stuart, K. D., Mogawer, W. S., & Underwood, S. (2020). *Use of Polymer-Modified Asphalts (PMA) in Dense-Graded Mixtures: Internet Survey and Tools to Measure Return on Investment*. Lino Lakes, MN: Association of Asphalt Paving Technologists.

³Gibson, N., Qi, X., Shenoy, A., Al-Khateeb, G., Kutay, M. E., Andriescu, A., Stuart, K., Youtcheff, Y., & Harman, T. (2012). *Performance Testing for Superpave and Structural Validation*. McLean, VA: Federal Highway Administration.

⁴Souliman, M., Zeiada, W., & Walubita, L. (2017). Mechanical and economical impacts of adding polymers into asphalt mixtures. MATEC Web of Conferences. Volume 120. Sharjah, United Arab Emirates.

⁵Gu, F. & Tran, N. (2019). *Best Practices for Determining Life Cycle Costs of Asphalt Pavement*. Auburn, AL: National Center for Asphalt Technology.

⁶Buncher, M., C. Rosenberger. (2005). *Understanding the True Economics of Using Polymer Modified Asphalt through Life Cycle Cost Analysis*. Lanham, MD: Asphalt Pavement Alliance.