



GETTING MODERN WITH HIMOD AND HIMA

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Can the asphalt industry improve our pavements? Absolutely — we can, and we do. One of the most promising recent advancements is the use of HiMOD or a highly polymerized asphalt binder in pavement mixtures.

HiMOD (highly modified asphalt) refers to binders with exceptionally high polymer content — often 6 to 7 percent polymer which fundamentally changes how the mix behaves compared to conventional or even standard polymer-modified binders (e.g., PG 64E-22 which can have as much as 3 percent polymer). At these elevated polymer levels, the binder begins to behave more like the polymer itself, enabling the mix to resist rutting even at higher asphalt contents and at very low air voids (around 1 percent). This increased “glue strength” allows for successful compaction of unusually thick lifts, improves durability, reduces cracking and mitigates risks typically associated with rich or thick mixes.

A compelling example comes from Utah DOT and Staker Parson, who placed a single 6-inch lift of highly polymer-modified asphalt at the I-80 port of entry — one of the harshest climates and loading environments in the state. Through a rich mix, careful planning, and continuous paving, the team achieved excellent full-depth compaction and early performance that exceeded expectations. A pre-project test strip proved critical, and the project's success has generated significant interest in thick-lift asphalt as a durable, efficient option for future work.

Utah DOT has identified several key benefits of HiMOD, including higher strength and durability, reduced water permeability, longer service life, and improved performance in demanding conditions. HiMOD has already demonstrated exceptional results on bridge decks and in heavy truck traffic areas.

Another form of highly modified binder is HP, or HiMA. HiMA polymer binders — typically 7 to 8 percent styrene-butadiene-styrene (SBS) — offer rubber-like elasticity and outstanding resistance to rutting, cracking and raveling over the standard polymer grades used in the past like SBS PG 64E-22. These Nex-Gen Polymer binders excel where standard polymer-modified binders fall short, such as overlays, thin lifts, SMA, and open-graded friction courses. Their enhanced stiffness and elasticity also increase structural capacity, often providing about 20 to 40 percent more strength than conventional mixes and improving long-term durability.



The HiMOD mix's homogenous nature and the depth of the lift milled section in front of the paver. PHOTO COURTESY STAKER PARSON AND ASPHALT PRO

Although HiMA is widely used as a generic industry term, it is technically a Kraton trademark. To Kraton, HiMA does not stand for “Highly Modified Asphalt,” but rather represents a high-performance polymer binder made with their low-viscosity NexGen molecule (D0243). This unique chemistry allows much higher polymer loadings without the mixing or storage challenges associated with conventional higher-polymerized binders that are utilizing the old technology SBS Molecules.

Hawaii DOT Highways is currently evaluating a pilot project using HP/HiMA. As with Utah's thick-lift trial, Hawaii may explore whether a thicker single lift is feasible and beneficial under local conditions. HDOT has closely followed the Utah results and recognizes the potential value of HiMOD and thick-lift pavement to support their mission of long-lasting, resilient infrastructure. Both recent technologies, HiMOD and HP/HiMA, show promise.

We will also be encouraging Highways to keep their colleagues at Harbors informed, as ports and harbor facilities represent another ideal application for these high-performance binders.

With continued partnership between agencies, contractors, and industry experts, Hawai'i is well-positioned to turn this promising technology into real improvements for the traveling public. ■