

# High Polymer Binder Mixes



## Science-backed research. Proven performance.

High modulus asphalt mixes were first introduced in Europe in the 1980s as HIMOD, HMAc, or EME mixes, and initially relied on **low penetration binders** and interlocking aggregates for stiffness. Over time, polymer-modified binders replaced low penetration binders, improving flexibility and **crack resistance**. The term “**HiMA**” was later trademarked to describe binders containing higher polymer loadings than conventional modified asphalt binders.

## ★ WHAT THE RESEARCH SHOWS

### EVOTHERM STUDY (2018)

Dense-graded mixes with high HiMod binder content and low air voids were produced at **275°F** using an Evotherm™ warm mix asphalt (WMA) additive and placed in a single seven-inch lift. In 2021, the Utah DOT refined this proof-of-concept into the “HiMod” mix.





### UDOT IMPLEMENTATION

Utah DOT implemented HiMod using a nonproprietary high polymer (HP) binder specification rather than proprietary HiMA binders. States like **Texas, refer to HP binders as HPG (high polymer grade) binders**. HP and HiMA binders are used in dense-graded HiMod mixes with air voids as low as **1%**.




### NCAT PAVEMENT TEST TRACK

HiMA-modified dense-graded mixes have been **used on the NCAT Test Track since 2009**. NCAT research showed HiMod mixes using HP or HiMA binders improve rutting, cracking resistance, durability, and compaction in seven-inch lifts, while providing **70% greater** structural contribution and lower LCA impacts than conventional mixes. Utah has since replaced many SMA and concrete pavements with HiMod mixes.

## ✓ KEY TAKEAWAYS

-  **High polymer content = higher performance.**  
Delivers major gains in rutting and cracking resistance.
-  **Science drives the standards.**  
Research ensures advanced materials meet real-world needs.
-  **Invest once, benefit for years.**  
Stronger pavements reduce maintenance and extended life.
-  **Innovative and sustainable.**  
Warm mix technologies and smart materials support durability and environmental goals.

## THE IMPACT

-  **STRONGER PAVEMENTS**  
Built for today’s traffic and tomorrow’s demands.
-  **LOWER LIFE-CYCLE COSTS**  
Less repair. Less disruption. More value.
-  **BETTER FOR COMMUNITIES**  
Smoother, safer roads that keep traffic moving.

**BUILT ON RESEARCH. DELIVERING RESULTS.**  
High polymer content is a smarter choice for stronger, longer-lasting roads.

Learn more at [driveasphalt.org](http://driveasphalt.org)

