

HPG BINDER

Tips and Tricks



Thanks to Anderson-Columbia, Hunter Industries, Lone Star Asphalt, Madden Contracting, and Texas Materials for their project feedback.

PLANNING:

- HPG should only be used on interstates, limited access roads, or straight runs. It doesn't rake or compact well in areas that must be hand worked.
- Ordering Binder
 - » Check with supplier on lead time for ordering and during production.
 - » Is there a minimum load order for HPG binder?
- Trial Batch: Find another section or mix to put remainder of trial batch binder in. Don't let sit in the tank for extended period.
- Production: Daily communication and feed from field to plant to supplier. Report any changes in consistency immediately to all. Keep binder supplier in the loop at all times, Group chat.
- Plan your work to run this mix daily until complete. Don't piecemeal HPG mix.
- Repairs: have critical spares available for plant and field equipment.
- Debrief daily and after project ends

TEMPERATURES:

- Binder delivery – min of 350°F
- Binder Storage – 350-375°F
- Mix Discharge/Loadout: 340-350°F
- Windrow/Hopper – 335-345°F
- Behind Screed – 300-310°F
- Ambient: Consider 80°F a minimum for thin layers or seasonal limitations.

ASPHALT PLANT:

- Equipment: Pumps, Piping, Meters, Motors, and Maintenance. Make sure the piping, pumps, and meters can handle very high viscosity liquids: 3 inch pump worked.
- HPG can be 4 times as stiff as a PG 76-22. Make sure your plant is well maintained as HPG binders are stiff, cool rapidly, and create extra stress on plant components.

HPG BINDER TIPS AND TRICKS

- Storage of binder – short term, long terms, tankage.
 - » Binder unloading: Can take up to 2-3 hours to unload binder into plant tank depending on delivery temp. Allow for time to reheat binder.
 - » Storage: Several producers say 2 days max. Use what you have within 2 days to be safe. Watch weekends and weather. Others say 5-day window. Binder increases stiffness nearing day 5.
 - » Circulation: Some circulate, some don't. Check with supplier.
- Calibrate your AC meter with HPG. Higher viscosity liquid.
- Oversize AC strainer to prevent clogging.
- Test and monitor moisture in incoming aggregate. Watch your moistures!
- If it rains, don't plan on running today and maybe the next day(s) as well.
- Start up and shut down procedures. Follow good practice.
- Do not switch mixes when making HPG mix – 1 mix per shift recommended.
- Get the equipment hot and aggregate hot before turning on AC pump.
- Watch amp draw on drag slat.
- Don't overload plant drum, slat conveyor.
- Check Batchers and Silo gates daily and during shift and remove buildup as it occurs.
- Production should run steady at 175-200 tons per hour – don't hot rod plant. Steady running wins the race. Do not push to do more.
- Balance plant/trucks/paver/roller.
- High Binder content mixes like PFC and SMA are especially sticky and tough to work with.
- Don't store mix more than 1 hour. No overnight mix storage.
- Use one silo. Gates can stick if they switch back and forth.
- Load trucks in multiple Drops. Don't load out below the cone.
- Shut Down: Run another asphalt mix, coarse aggregate, or precoat aggregate through the drum while it is hot to clean out mixing chamber, flights, and slats from chunks and build up.

TRUCKING:

- Make sure trucks are clean.
- Use trucker pusher (personnel) to visually check trucks to be clean and ready to load. Equip truck pusher with extra spray pump of release agent.
- Proper use of Release Agent (rate and type). The following have been used successfully.
 - » No Diesel.
 - » PavePro Green
 - » Loose Juice (HD Chemical)
 - » HD Cleaner (BG Chemical)
- Dry Detergent option on release agent (Florida method)
- Clean build up in truck as it occurs – don't let it accumulate in truck between loads. Watch for sticking in belly dumps.
- HPG Asphalt chunks (with fibers) doesn't remelt like other mixes, especially PFC.
- Proper tarps – waterproof tarps and tight fit to bed.

HPG BINDER TIPS AND TRICKS

- Keep trucks tarped until unloading.
- Balancing plant, trucking, and paving.
 - » Have enough dedicated Trucks – don't under truck HPG mix.
- Belly dump: Unload ½ load to 1 load at a time.
- Overlap windrow between loads

MTV:

- HPG Binder content mixes like PFC and SMA are especially sticky and tough to work with.
- Cool weather is not best for thin HPG layers (TOM, FPC)
- Shuttle buggy needs a windrow insert in the head like a funnel to bring the mix to the middle of the head.
- Discharge in windrow aim for 335-345°F – mix can lose 30°F between windrow and screed.
- Dump half load at a time, mix cools off fast. When you see the mix coming back on the belly, close the belly gates about halfway and carry the mix out. Then back the next load over the tailout for a good overlap.
- Don't allow extended stops with mix in the MTV or Paver.
- Don't fill MTV/Paver hoppers full and let mix sit. The mix can 'set-up' and increase mix stiffness requiring high motor demand - overloading motors causing the equipment to overheat/shut down. Consider backup equipment or mechanic onsite during initial operations to ensure minimum downtime.
- If using windrow elevator/Co-Cal, use the lump breaker. Some don't use.
- If paving on Hot Applied underseal. Make sure the water spraying system is working on the shuttle buggy. This helps from picking up underseal.

PAVER:

- Use "cold weather/winter" paving techniques when paving HPG, not summer techniques.
- High Binder Content mixes like PFC and SMA are especially sticky and tough to work with.
- Optimum mix temp just under screed is 300-310°F
- Use proper paver setup. See Paving Checklists <https://checklist.texasasphalt.org/>
- Paver Speed: 20-30 FPM. If you get below 20 FPM, you will see the mat starting to pull or tear behind the paver. If you get too slow waiting on trucks, you will notice the screed starting to rise. When you pick up speed the screed will come back down. Don't outrun trucks and then let paver sit. Continuous paving at uniform speed is the key.
- Make sure there are enough trucks to keep the paver always moving. Paver stops more than 5 minutes will create severe thermal segregation and create a bump.
- Keep mix flowing through MTV and paver continuously.
- Minimize truck waiting.
- Emphasize proper transverse joints – make and compact them quickly.
- Check ride daily.
- Handwork is very difficult: HPG is a very stiff binder and cools off quickly.
- Set the screed up and have electronics setup before the paver hits the joint to save time and cooling.
- Don't unload mix from truck until paver is completely setup, on the joint, and everyone is ready to go.

- Have a skid steer or loader available if paver has extended stops. Mix will cool off, become very stiff and cause screed to ride (big bumps) and create severe thermal segregation. Lift up paver, push cold mix off mat, and reset and go.

COMPACTION:

- Mix cools off quickly and is much stiffer than conventional mix as it cools.
- Use proper roller setup. See Paving Checklists <https://checklist.texasasphalt.org/>
- Run rollers in echelon and keep rollers tight to paver.
- Goal: Have density achieved by 230-250°F, Finish rolling can be lower temp.
- Use dual rollers for breakdown if possible.
- Steel wheel roller needs to stay up with paver, if they set back the mix cools off fast, and density will suffer.
- Use dawn dish soap in roller tanks.
- Confined joints need to be pinched, unconfined joint need to hang drum over joint to get extra weight on joint.
- Let mix cool prior to traffic

TESTING:

- Sampling, splitting. Make sure mix is hot. It sticks to tools and pans.
- Coring: Add dish soap to core drill water supply. Soap helps keep the cores from getting stuck in the barrel.
- Temperature segregation. Mix cools rapidly. Keep the operation moving to minimize thermal segregation.