



StellarFlex FR[®]

Fuel Resistant Asphalt

Go with the most durable, longest-lasting solution for
any airfield pavement – a P-404 mix with StellarFlex FR[®]

**Associated
Asphalt[®]**



Logan International Airport, Boston, MA

StellarFlex FR[®]

Fuel Resistant Asphalt

Resisting cracks, ruts, and more since 2002

Formulated to outperform P-401 asphalt mixes

StellarFlex FR[®] is a highly polymer-modified asphalt binder that, when used in a P-404 asphalt mix for airfield pavements, provides extreme resistance to rutting and cracking, plus damage from jet fuel, hydraulic oil, de-icing fluids, and extreme temperatures.



In part, that's because P-404 mixes are designed with lower air voids and lower compaction levels than P-401 mixes, allowing for asphalt contents that are 1.0% - 1.5% higher. That additional asphalt increases cracking and fuel resistance, without sacrificing rut resistance. More asphalt also means higher in-place densities, which studies show can extend pavement life – an in-place density increase of 1% can boost pavement life by

10%, and P-404 mixes have in-place densities at least 3% higher than P-401 mixes.

Ultimately, the high polymer modification, combined with the higher asphalt content and in-place density, means a P-404 mix produced with StellarFlex FR[®] will resist a range of punishing airport conditions for far longer than other asphalt mixes.

BENEFITS

- ▶ Meets FAA P-404 Specification for Fuel-Resistant Hot Mix Asphalt Pavement
- ▶ Long-lasting resistance to:
 - Permanent deformation
 - Fatigue cracking
 - Thermal cracking
 - Fuel and oil damage
 - De-icing chemicals
- ▶ Excellent workability and flexibility
- ▶ Cost-effective production and application
- ▶ Prevents disruptions of airport operations for seal coating

PAVEMENT APPLICATIONS

- ▶ Airports
- ▶ Airport bus lanes
- ▶ Fuel storage and containment areas
- ▶ Fueling stations
- ▶ Truck stops
- ▶ Port facilities
- ▶ Horse-drawn carriage roadways

StellarFlex FR[®] makes a lasting difference



Logan International runway ten years after being repaved with a P-401 mix (above) and a P-404 mix with StellarFlex FR[®] (below). Both were installed at the same time.



Grooving is unchanged
after a decade



Taxiway at LaGuardia International Airport

Cost-effective production, application and wear

P-404 mixes produced with StellarFlex FR® have proven to be cost-effective on General Aviation airports and large commercial airfields. By eliminating the need for pavement sealers, P-404 mixes with StellarFlex FR® prevent disruption of operations and allow funds that would have been spent on sealers to be used for other airport maintenance needs.

StellarFlex FR® asphalt mixes can be produced at any hot mix plant without modifying equipment or procedures, so production will not increase costs. Safe and worker-friendly, StellarFlex FR® need only be used in the pavement's final surface layer (minimum 1.5" thickness) for long-lasting protection that extends pavement life.

In one airfield design, FAA FAARFIELD software predicted that a pavement using a P-404 mix with StellarFlex FR® should outlast a P-401 mix by at least ten years. The first StellarFlex FR® airport pavement applications have been in place for nearly 20 years with no signs of rutting or cracking.



Application, Logan Airport, Boston, MA

"No doubt in my mind that this product will outlast anything I have placed! Associated Asphalt provides a high level of technical support, not only to the engineers who specify the product, but to our entire asphalt division who worked with the mix for the first time."

Todd Roper, Asphalt Superintendent
Sully Miller Contracting
Hollywood Burbank Airport, CA

"I have specified P-404 mix on two projects at the Georgetown County Airport in South Carolina. We had absolutely no construction issues on either project, even though one was completed in very cold weather."

Al Smith, Project Manager
Talbert & Bright, Inc.
Georgetown County Airport
Georgetown, SC

"With regular good asphalt plant production and placement practices, the P-404 mix goes down and compacts just like a P-401 mix. I also appreciate the high level of technical support that Associated Asphalt provides to engineers specifying the product. Your knowledge and information sharing is much appreciated."

Bill Prange, Project Engineer
Associate Vice President AECOM
Sr. Engineer/Project Manager
LaBelle Municipal Airport, FL



Georgetown County Airport, South Carolina

Ongoing airport pavement protection

StellarFlex FR® has been applied at a growing range of international airports and general aviation aprons to protect them from extreme stresses and temperatures, as well as jet fuel, hydraulic oil and de-icing fluids.

Lab- and field-tested fuel resistance

To meet the FAA's P-404 Fuel Resistant Asphalt Mix Pavement specification, compacted asphalt mix samples must not lose more than 1.5% of their weight after being immersed in jet fuel for 24 hours. As the photos below show, a P-401 mix with PG 64-22 lost 10% of its weight after the 24-hour soak, while a P-404 mix with StellarFlex FR® lost 1%!



Herlong Recreational Airport, Jacksonville, FL
(Note the discolored but undamaged fuel spill spot under the wheel.)

LaGuardia International Airport, New York City, NY
2002 – Taxiway Reconstruction

Logan International Airport, Boston, MA
2004 – Taxiway N and Runway 4L-22R Resurfacing

Logan International Airport, Boston, MA
2005-2007 – Terminal Alleyways Resurfacing

Douglas International Airport, Charlotte, NC
2006 – Runway 18L-36R Resurfacing

Portland International Airport, Portland, ME
2015 – Apron Rehabilitation

Williston Municipal Airport, Williston, FL
2015 – Apron Expansion

Baltimore Washington International Airport, Linthicum, MD
2016 – Freight Apron Expansion

Eastern Slopes Airport, Fryeburg, ME
2016 – Apron Rehabilitation

Georgetown County Airport, Georgetown, SC
2016 – Apron Expansion

Hurlburt Field (Eglin AFB) Mary Esther, FL
2018 – Taxiway C Rehabilitation

Philadelphia International Airport, Philadelphia, PA
2019 – Taxiway Reconstruction

Hollywood-Burbank Airport, Burbank, CA
2019 – Apron Rehabilitation

LaBelle Municipal Airport, LaBelle, FL
2019 – Apron Rehabilitation

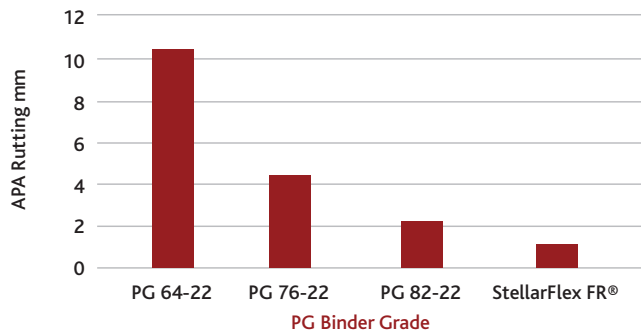
Page Field, Ft. Myers, FL
2019 – New Hangar with Apron and Apron Rehabilitation

H.L. "Sonny" Callahan Airport, Fairhope, AL
2019 – Apron Expansion

Beaver County Airport, Beaver Falls, PA
2019 – Apron Rehabilitation

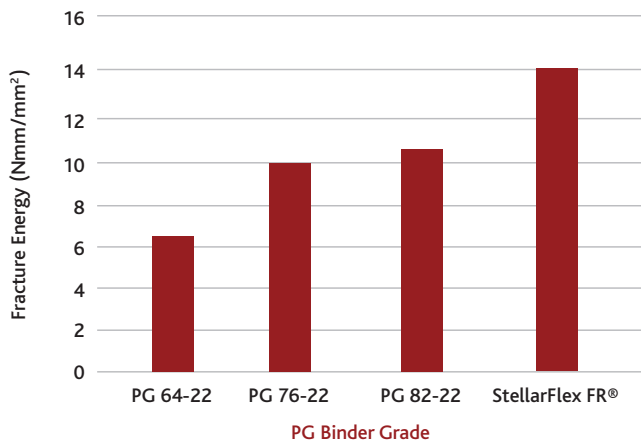
Keystone Heights Airport, Keystone Heights, FL
2019 – Re-fueling apron

Permanent Deformation



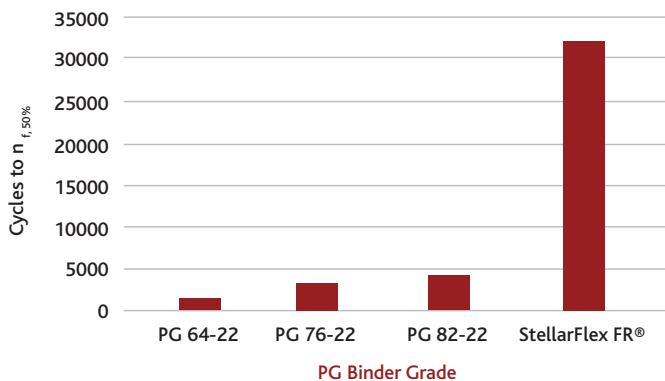
Permanent Deformation measured by an Asphalt Pavement Analyzer test machine. Test run for 8,000 cycles at 64°C with 100 psi hose pressure. Rutting measured in mm after 8,000 cycles.

Low-Temperature Cracking



Fracture Energy, as measured by an Indirect Tensile Strength Test @ 0°C. (High Fracture Energy indicates greater resistance to low temperature cracking.)

Fatigue Cracking



Fatigue Life measured by the Flexural Beam Fatigue Tester at a test frequency of 10 Hz, temperature of 15°C and at a tensile micro strain of 1,000. Failure determined by number of cycles required to reduce beam stiffness to 50% of initial stiffness.



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As one of the largest independent asphalt resellers in the United States, Associated Asphalt stores, blends, hauls and sells a diverse mix of performance grade asphalt products. With more than a 6 million barrel capacity, we also supply quality paving grade asphalts, emulsions, modified and specialty polymer-modified asphalts throughout the Eastern United States, helping many contractors pave their own road to success.

For more information about StellarFlex FR® and other Associated Asphalt products, call 800-542-5780.