For Immediate Release

ASTM standard specification granted for UL100E unleaded aviation gasoline.

December 17, 2025 – In November, American Society for Testing and Materials (ASTM) published D8631-25, the Standard Specification for Unleaded Aviation Gasoline Test Fuel Containing Ethers. This is the first ASTM specification for UL100E, the unleaded aviation gasoline co-developed by LyondellBasell and VP Racing. UL100E is currently undergoing full scale testing by the Federal Aviation Administration (FAA) and engine and aircraft Original Equipment Manufacturers (OEMs) under the Piston Aircraft Fuel Initiative (PAFI) program. Completion of these evaluations is anticipated by September 2026.

PAFI is the sole collaborative fuel certification program designed and conducted by the FAA and OEMs, requiring an ASTM specification as a condition of fleet authorization. UL100E is the last remaining test fuel in the PAFI program and it has recently passed a number of testing milestones. These milestones include material compatibility testing by several aircraft OEMs including Van's Aircraft Inc., Piper Aircraft, Textron Aviation Inc., and Cirrus; engine testing by Lycoming Engines and Continental Aerospace technologies and by the FAA at the William J. Hughes Technical Center for Advanced Aerospace in Atlantic City, NJ. Flight testing on a Lancair Super Legacy equipped with a turbocharged TSIO-550 engine and a Harvard Mk IV warbird equipped with a Pratt & Whitney R-1340-AN-1 Wasp radial engine is ongoing.

Lycoming recently concluded a 300-hour endurance test on an IO-540-D4A5 engine and met valve seat recession (VSR) performance requirements with UL100E. The FAA Technical Center also finished detonation testing on a Continental IO-550-D engine and identified the optimal timing advance for UL100E in the IO-550-A, -B, -C, -D, -E, -F, and -L series of engines. These engines are used in numerous aircraft including the Beechcraft Bonanza and Baron. Next up for testing at the Technical Center is a turbocharged Lycoming TIO-540-AJ1A which powers the six-seat Cessna T-206 Turbo Stationair.

PAFI testing of UL100E is expected to be completed in September 2026. The FAA will use the PAFI test results to define the eligible fleet and outline any operational and/or engine modifications required for a small portion of the fleet via a Special Airworthiness Information Bulletin (SAIB). Progress on UL100E testing under PAFI can be monitored at Flyeagle.org.