

# PAFI Unleaded Fuel Testing Protocols – UL100E as of 11-Feb-2025

## PAFI Initial Testing

### COMPLETE (GATES 1, 2, and 3)

#### ☑ Mini-Materials Compatibility

Subset of full materials compatibility testing involving articles representative of sealants, fuel bladders, and elastomers, performed by fuel developer

#### ☑ Engine Performance/Fuel Properties

Rated power check of TIO-540-J2BD to compare engine operational parameters and CoA to 100LL

#### ☑ Performance & Detonation

Comparative testing between minimum specification 100LL and test fuel performed in altitude test cell on TSIO-520-VB engine

#### ☑ Mini-Durability

Engine test to evaluate the deposit forming characteristics and effects of the fuel during a § 33.49 150-hour endurance test, TSIO-550-K engine

## Full Scale PAFI Testing

### IN PROGRESS (GATE 4)

#### ➔ **Materials Compatibility (26% Complete)**

Full materials compatibility lab and bench tests

- **Rig Testing:** Storage stability, cold soak storage, hot surface ignition temperature, low temperature flow ability

#### ➔ **Performance & Detonation (32% Complete)**

Testing of multiple engine models at simulated altitude, hot day conditions

#### ➔ **Durability (25% Complete)**

- 1) § 33.49 150-hour endurance engine test followed by
- 2) 200-hour flight duty cycle durability test per AC 33.19-1 to characterize effects on engine durability and TBO on multiple engine models

#### ➔ **Additional Testing (15% Complete)**

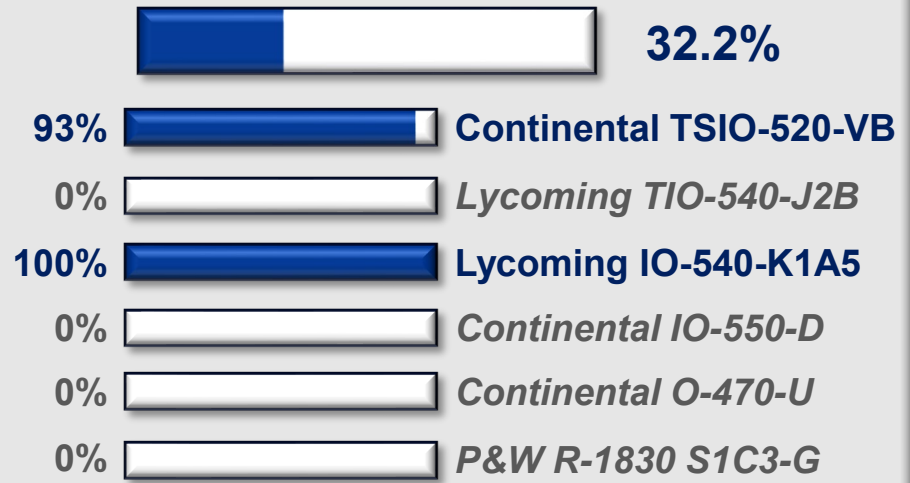
Evaluate propeller stress levels compared to 100LL for multiple engine / propeller combinations and cold starting and fuel tank quantity sensing

#### ➔ **Aircraft (6% Complete)**

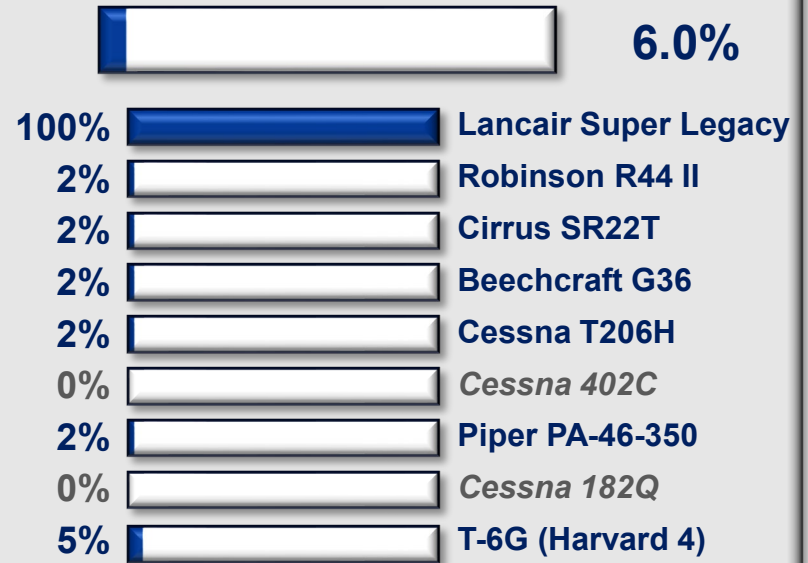
Ground and flight testing on multiple aircraft to evaluate engine and aircraft operability, handling, cooling, and fuel system hot weather

# PAFI GATE 4 – UL100E Full Scale Testing Status as of 11-Feb-2025

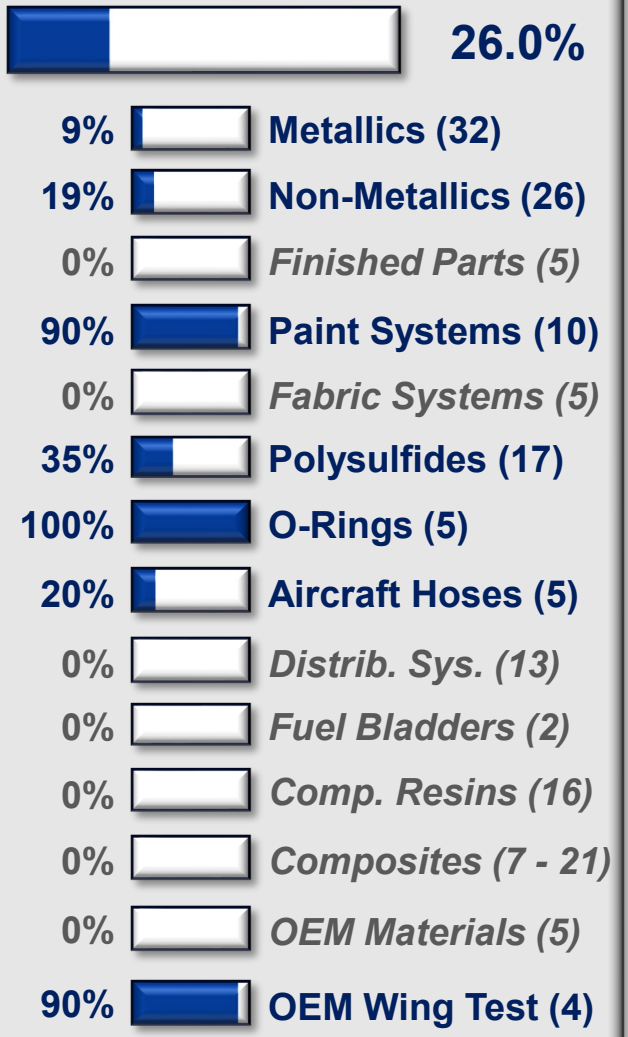
## Detonation & Performance



## Aircraft Testing (Operation, Cooling Climb, Hot Fuel)

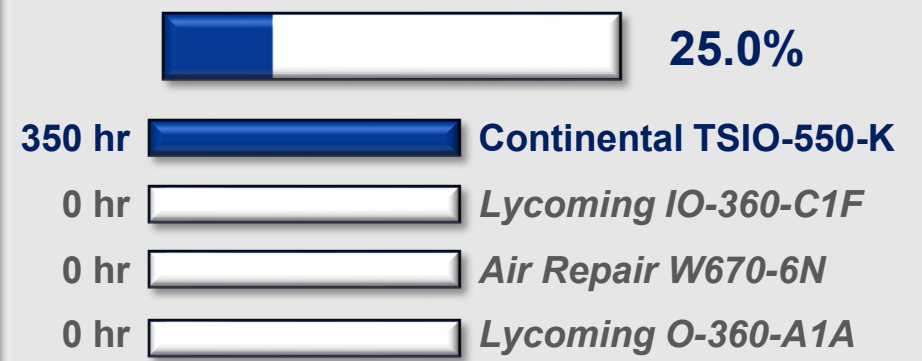


## Materials Compatibility



## Durability & Performance

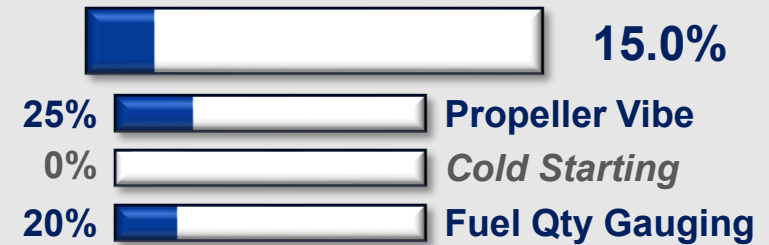
(150 Hr. § 33.49 + 200 Hr. flight duty cycles)



## R&D Testing (CHT, OAT/MAT, Timing)



## Additional Testing



# PAFI Fleet Authorization Process / Status - UL100E as of 11-Feb-2025

