

31.1 Aircraft Fuel

- ☐ AVGAS (Aviation Gasoline): Used for piston engines. Graded by octane rating and color-coded.
- ☐ AVTUR (Aviation Turbine Fuel / Jet Fuel): Kerosene-based fuel used for gas turbine engines. Its quality is defined by properties like flashpoint and freezing point. Additives are mixed in, including an icing inhibitor (FSII) and a static dissipator.

32.2 Fuel Tanks and System Components

- ☐ Tank Types:
 - Integral Tanks: The most common type on large aircraft, where a sealed-off section of the wing or fuselage structure (the "wing box") is used as the fuel tank.
 - Rigid Tanks: A separate, self-contained tank fitted into a compartment.
 - Flexible (Bladder) Tanks: A rubberized bag fitted into a structural cavity.
- ☐ System Components:
 - Booster Pumps: Electric, centrifugal pumps located inside the tanks. They supply fuel under low pressure from the tanks to the engine-driven pumps, preventing vapor lock at high altitude.
 - Collector Tank (Feeder Box): A small compartment at the lowest point in the tank where the booster pumps are located. It is designed to remain full of fuel during maneuvers to prevent the pumps from running dry.
 - Baffles: Internal walls with holes that reduce the sloshing (surging) of fuel in the tanks.
 - Vent System: Allows air to enter and exit the tank as fuel is consumed or the aircraft climbs/descends, preventing pressure differences. A vent/surge tank at the wingtip collects any fuel that overflows into the vent lines.
 - Cross-feed and Shut-off Valves: A system of valves that allows fuel from any tank to be fed to any engine, and allows engines/tanks to be isolated in case of a leak or fire.

- Fuel Quantity Measurement: Modern aircraft use a capacitive fuel gauging system. It
- measures the mass (weight) of the fuel, not the volume, which is much more accurate as fuel
- density changes with temperature.

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