

(1) Be designed and arranged to provide independence between multiple fuel storage and supply systems so that failure of any one component in one system will not result in loss of fuel storage or supply of another system;

(2) Be designed and arranged to prevent ignition of the fuel within the system by direct lightning strikes or swept lightning strokes to areas where such occurrences are highly probable, or by corona or streamering at fuel vent outlets;

(3) Provide the fuel necessary to ensure each powerplant and auxiliary power unit functions properly in all likely operating conditions;

(4) Provide the flightcrew with a means to determine the total useable fuel available and provide uninterrupted supply of that fuel when the system is correctly operated, accounting for likely fuel fluctuations;

(5) Provide a means to safely remove or isolate the fuel stored in the system from the airplane;

(6) Be designed to retain fuel under all likely operating conditions and minimize hazards to the occupants during any survivable emergency landing. For level 4 airplanes, failure due to overload of the landing system must be taken into account; and

(7) Prevent hazardous contamination of the fuel supplied to each powerplant and auxiliary power unit.

(b) Each fuel storage system must—

(1) Withstand the loads under likely operating conditions without failure;

(2) Be isolated from personnel compartments and protected from hazards due to unintended temperature influences;

(3) Be designed to prevent significant loss of stored fuel from any vent system due to fuel transfer between fuel storage or supply systems, or under likely operating conditions;

(4) Provide fuel for at least one-half hour of operation at maximum continuous power or thrust; and

(5) Be capable of jettisoning fuel safely if required for landing.

(c) Each fuel storage refilling or recharging system must be designed to—

(1) Prevent improper refilling or recharging;

(2) Prevent contamination of the fuel stored during likely operating conditions; and

(3) Prevent the occurrence of any hazard to the airplane or to persons during refilling or recharging.

§ 23.2435 Powerplant induction and exhaust systems.

(a) The air induction system for each powerplant or auxiliary power unit and their accessories must—

(1) Supply the air required by that powerplant or auxiliary power unit and its accessories under likely operating conditions;

(2) Be designed to prevent likely hazards in the event of fire or backfire;

(3) Minimize the ingestion of foreign matter; and

(4) Provide an alternate intake if blockage of the primary intake is likely.

(b) The exhaust system, including exhaust heat exchangers for each powerplant or auxiliary power unit, must—

(1) Provide a means to safely discharge potential harmful material; and

(2) Be designed to prevent likely hazards from heat, corrosion, or blockage.

§ 23.2440 Powerplant fire protection.

(a) A powerplant, auxiliary power unit, or combustion heater that includes a flammable fluid and an ignition source for that fluid must be installed in a designated fire zone.

(b) Each designated fire zone must provide a means to isolate and mitigate hazards to the airplane in the event of fire or overheat within the zone.

(c) Each component, line, fitting, and control subject to fire conditions must—

(1) Be designed and located to prevent hazards resulting from a fire, including any located adjacent to a designated fire zone that may be affected by fire within that zone;

(2) Be fire resistant if carrying flammable fluids, gas, or air or required to operate in event of a fire; and

(3) Be fireproof or enclosed by a fire proof shield if storing concentrated flammable fluids.

(d) The applicant must provide a means to prevent hazardous quantities of flammable fluids from flowing into,