

Code of Federal Regulations

▼ Sec. 25.1420

Part 25 AIRWORTHINESS STANDARDS: TRANSPORT CATEGORY AIRPLANES	
Subpart F--Equipment	Safety Equipment

Sec. 25.1420

Supercooled large drop icing conditions.

(a) If certification for flight in icing conditions is sought, in addition to the requirements of § 25.1419, an airplane with a maximum takeoff weight less than 60,000 pounds or with reversible flight controls must be capable of operating in accordance with paragraphs (a)(1), (2), or (3), of this section.

(1) Operating safely after encountering the icing conditions defined in Appendix O of this part:

(i) The airplane must have a means to detect that it is operating in Appendix O icing conditions; and

(ii) Following detection of Appendix O icing conditions, the airplane must be capable of operating safely while exiting all icing conditions.

(2) Operating safely in a portion of the icing conditions defined in Appendix O of this part as selected by the applicant:

(i) The airplane must have a means to detect that it is operating in conditions that exceed the selected portion of Appendix O icing conditions; and

(ii) Following detection, the airplane must be capable of operating safely while exiting all icing conditions.

(3) Operating safely in the icing conditions defined in Appendix O of this part.

(b) To establish that the airplane can operate safely as required in paragraph (a) of this section, an applicant must show through analysis that the ice protection for the various components of the airplane is adequate, taking into account the various airplane

operational configurations. To verify the analysis, one, or more as found necessary, of the following methods must be used:

- (1) Laboratory dry air or simulated icing tests, or a combination of both, of the components or models of the components.
 - (2) Laboratory dry air or simulated icing tests, or a combination of both, of models of the airplane.
 - (3) Flight tests of the airplane or its components in simulated icing conditions, measured as necessary to support the analysis.
 - (4) Flight tests of the airplane with simulated ice shapes.
 - (5) Flight tests of the airplane in natural icing conditions, measured as necessary to support the analysis.
- (c) For an airplane certified in accordance with paragraph (a)(2) or (3) of this section, the requirements of § 25.1419(e), (f), (g), and (h) must be met for the icing conditions defined in Appendix O of this part in which the airplane is certified to operate.
- (d) For the purposes of this section, the following definitions apply:

- (1) Reversible Flight Controls. Flight controls in the normal operating configuration that have force or motion originating at the airplane's control surface (for example, through aerodynamic loads, static imbalance, or trim or servo tab inputs) that is transmitted back to flight deck controls. This term refers to flight deck controls connected to the pitch, roll, or yaw control surfaces by direct mechanical linkages, cables, or push-pull rods in such a way that pilot effort produces motion or force about the hinge line.
- (2) Simulated Icing Test. Testing conducted in simulated icing conditions, such as in an icing tunnel or behind an icing tanker.
- (3) Simulated Ice Shape. Ice shape fabricated from wood, epoxy, or other materials by any construction technique.