TABLE 1—ICING CONDITIONS FOR GROUND TESTS

Condition	Total air temperature	Water concentration (minimum)	Mean effective particle diameter	Demonstration
1. Rime ice condition	0 to 15 °F (18 to −9 °C)	Liquid—0.3 g/m³	15–25 microns	By test, analysis or combination of the two.
2. Glaze ice condition	20 to 30 °F (−7 to −1 °C).	Liquid—0.3 g/m³	15–25 microns	By test, analysis or combination of the two.
3. Large drop condition.	15 to 30 °F (−9 to −1 °C).	Liquid—0.3 g/m³	100 microns (minimum).	By test, analysis or combination of the two.

(c) *Supercharged reciprocating engines.* For each engine having a supercharger to pressurize the air before it enters the carburetor, the heat rise in the air caused by that supercharging at any altitude may be utilized in determining compliance with paragraph (a) of this section if the heat rise utilized is that which will be available, automatically, for the applicable altitude and operating condition because of supercharging.

[Doc. No. 5066, 29 FR 18291, Dec. 24, 1964, as amended by Amdt. 25–38, 41 FR 55467, Dec. 20, 1976; Amdt. 25–40, 42 FR 15043, Mar. 17, 1977; Amdt. 25–57, 49 FR 6849, Feb. 23, 1984; Amdt. 25–72, 55 FR 29785, July 20, 1990; Amdt. 25–140, 79 FR 65526, Nov. 4, 2014]

§ 25.1101 Carburetor air preheater design.

Each carburetor air preheater must be designed and constructed to—

(a) Ensure ventilation of the preheater when the engine is operated in cold air;

(b) Allow inspection of the exhaust manifold parts that it surrounds; and

(c) Allow inspection of critical parts of the preheater itself.

§ 25.1103 Induction system ducts and air duct systems.

(a) Each induction system duct upstream of the first stage of the engine supercharger and of the auxiliary power unit compressor must have a drain to prevent the hazardous accumulation of fuel and moisture in the ground attitude. No drain may discharge where it might cause a fire hazard.

(b) Each induction system duct must be—

(1) Strong enough to prevent induction system failures resulting from normal backfire conditions; and

(2) Fire-resistant if it is in any fire zone for which a fire-extinguishing system is required, except that ducts for auxiliary power units must be fireproof within the auxiliary power unit fire zone.

(c) Each duct connected to components between which relative motion could exist must have means for flexibility.

(d) For turbine engine and auxiliary power unit bleed air duct systems, no hazard may result if a duct failure occurs at any point between the air duct source and the airplane unit served by the air.

(e) Each auxiliary power unit induction system duct must be fireproof for a sufficient distance upstream of the auxiliary power unit compartment to prevent hot gas reverse flow from burning through auxiliary power unit ducts and entering any other compartment or area of the airplane in which a hazard would be created resulting from the entry of hot gases. The materials used to form the remainder of the induction system duct and plenum chamber of the auxiliary power unit must be capable of resisting the maximum heat conditions likely to occur.

(f) Each auxiliary power unit induction system duct must be constructed of materials that will not absorb or trap hazardous quantities of flammable fluids that could be ignited in the event of a surge or reverse flow condition.

[Doc. No. 5066, 29 FR 18291, Dec. 24, 1964, as amended by Amdt. 25–46, 43 FR 50597, Oct. 30, 1978]

§ 25.1105 Induction system screens.

If induction system screens are used—

(a) Each screen must be upstream of the carburetor;