

Icing Terms Commonly Used in Aviation

- **Clear ice:** See “glaze ice.”
- **Freezing rain (FZRA):** Precipitation at the ground level or aloft in the form of liquid water drops. The raindrop diameters are greater than 0.5 mm. Freezing rain exists at air temperatures less than 0degC (supercooled), remains in liquid form, and freezes on contact with objects on the surface or airborne.
- **Glaze ice:** Sometimes glaze ice is clear and smooth. Glaze ice usually contains some air pockets that result in a lumpy translucent appearance. Glaze ice results from supercooled drops striking a surface but not freezing rapidly on contact. Glaze ice is denser, harder, and sometimes more transparent than rime ice. Factors, which favor glaze formation, are those that favor slow dissipation of the heat of fusion (i.e., slight supercooling and rapid accretion). With larger accretions, the ice shape typically includes “horns” protruding from unprotected leading edge surfaces. Flight crews are more likely to assess the ice shape, rather than the clarity or color of the ice, accurately from the cockpit. The terms “clear” and “glaze” have been used for essentially the same type of ice accretion. Some reserve “clear ice” for thinner accretions that lack horns and conform to the airfoil.
- **Heavy icing:** A descriptor used operationally by flight crews when they report encountered icing intensity to air traffic control. The rate of ice buildup requires maximum use of the ice-protection systems to minimize ice accretions on the airframe. A representative accretion rate for reference purposes is more than 3 inches (7.5 cm) per hour on the outer wing. A pilot encountering such conditions should consider immediate exit from the conditions.
- **Ice bridging:** Classic pneumatic deicing boot ice bridging occurs when a thin layer of ice is sufficiently plastic to deform to the shape of the inflated deicing boot. This occurs without the thin ice breaking or shedding during ensuing cycling of the deicing boot. As the deformed ice hardens and accretes more ice, the deicing boot becomes ineffective. Ice bridging may occur when enough supercooled water freezes during the inflated deicing boot dwell period. It will keep that shape after the deicing boot deflates and will form a deformed surface that continues to accrete ice and is unaffected by ensuing cycling of the deicing boot. A deicing boot ice bridge may also form when flying into increasingly colder ambient temperature conditions following a mixed-phase icing encounter at near-freezing temperatures. Ice bridging also refers to the ice “caps” or “bridges” between adjacent component surfaces. For example, unprotected leading edge surfaces of an elevator horn and the horizontal stabilizer.
- **Light icing:** A descriptor used operationally by flight crews when they report encountered icing intensity to traffic control. The rate of ice buildup requires occasional cycling of manual deicing systems to minimize ice accretions on the airframe. A representative accretion rate for reference purposes is 1/4

inch to one inch (0.6 to 2.5 cm) per hour on the outer wing. The pilot should consider exiting the condition.

- **Mixed ice:** A simultaneous appearance or a combination of rime and glaze ice characteristics. Accurate identification of mixed ice from the cockpit may be difficult since the clarity, color, and shape of the ice will be a mixture of rime and glaze characteristics.
- **Moderate icing:** A descriptor used operationally by flight crews to report encountered icing intensity to traffic control. The rate of ice buildup requires frequent cycling of manual deicing systems to minimize ice accretions on the airframe. A representative accretion rate for reference purposes is 1 to 3 inches (2.5 to 7.5 cm) per hour on the outer wing. The pilot should consider exiting the condition as soon as possible.
- **Rime ice:** A rough, milky, opaque ice formed by the rapid freezing of supercooled drops after they strike the aircraft. The rapid freezing results in trapped air. The trapped air gives the ice its opaque appearance and makes it porous and brittle. Rime ice typically accretes along the stagnation line of an airfoil and is more regular in shape and conforms more to the airfoil than glaze ice. Crew are more likely to assess the ice shape, rather than the clarity or color of the ice accurately from the cockpit.
- **Runback ice:** Ice that forms from the freezing or refreezing of water leaving protected surfaces and running back to unprotected surfaces.
- **Severe icing:** A descriptor used operationally by flight crews reporting encountered icing intensity to traffic control. The rate of ice buildup results in the inability of the ice protection systems to remove the buildup of ice satisfactorily. Also, ice builds up in locations not normally prone to icing, such as areas aft of protected surfaces and any other areas identified by the manufacturer. Immediate exit from the condition is necessary.

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