FAA
Aircraft Certification Service

SPECIAL AIRWORTHINESS INFORMATION BULLETIN

SAIB: CE-09-35
SUBJ: Carburetor Icing Prevention **Date:** 06/30/2009

This is information only. Recommendations aren't mandatory.

Introduction

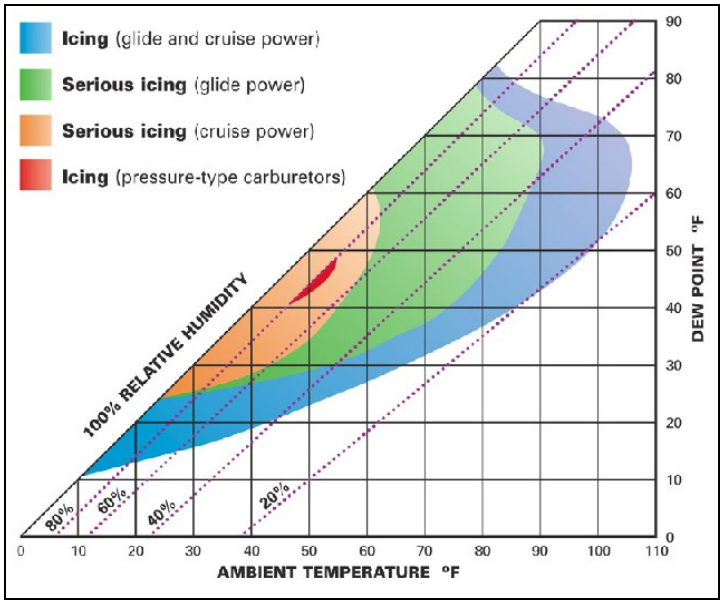
This Special Airworthiness Information Bulletin is written to inform pilots of the potential hazards associated with carburetor icing.

At this time, this airworthiness concern is not considered an unsafe condition that would warrant an airworthiness directive (AD) action under Title 14 of the Code of Federal Regulations (14 CFR part 39).

Background

There were 212 accidents attributed to carburetor icing between 1998 and 2007. Of these accidents, 13 resulted in fatalities. The certification requirements for carbureted airplanes require that a heated source of air be provided as mitigation for carburetor icing. The FAA and the Aircraft Owners and Pilots Association (AOPA) have addressed the subject of carburetor icing several times in various forms. Despite the certification requirements, and the information provided by the FAA and AOPA, the accident trend has remained fairly steady throughout the years.

Pilots should be aware that carburetor icing doesn't just occur in freezing conditions, it can occur at temperatures well above freezing temperatures when there is visible moisture or high humidity. Icing can occur in the carburetor at temperatures above freezing because vaporization of fuel, combined with the expansion of air as it flows through the carburetor, (Venturi Effect) causes sudden cooling, sometimes by a significant amount within a fraction of a second. Carburetor ice can be detected by a drop in rpm in fixed pitch propeller airplanes and a drop in manifold pressure in constant speed propeller airplanes. In both types, usually there will be a roughness in engine operation. The graph below shows the probability of carburetor icing for various temperature and relative humidity conditions:



Recommendations

There are some steps a pilot can take to prevent, recognize, and respond to carburetor icing.

To prevent carburetor icing, the pilot should:

- Assure the proper functionality of the carburetor heat during the ground (Before Takeoff) check.
- Use carburetor heat on approach and descent when operating at low power settings, or in conditions where carburetor icing is probable.

To recognize carburetor icing, the warning signs are:

- A drop in rpm in fixed pitch propeller airplanes.
- A drop in manifold pressure in constant speed propeller airplanes.
- In both types, usually there will be a roughness in engine operation.

The pilot should respond to carburetor icing by applying full carburetor heat immediately. The engine may run rough initially for short time while ice melts.

The above recommendations are general suggestions. The pilot should consult the AFM or the pilot's operating handbook for the proper use of carburetor heat.

Included below are some references, and their associated links, for more information:

- AC 20-113, Pilot Precautions and Procedures to be taken in Preventing Aircraft Reciprocating Engine Induction System and Fuel System Icing Problems
  http://rgl.faa.gov/Regulatory_and_Guidance_Library/rgAdvisoryCircular.nsf/0/F5BD7904E845409D862569AE00783347?OpenDocument&Highlight=carburetor%20icing

- AC 91-51A, Effect of Icing on Aircraft Control and Airplane Deice and Anti-Ice Systems
  http://rgl.faa.gov/Regulatory_and_Guidance_Library/rgAdvisoryCircular.nsf/0/451296DBDF212C81862569E70077C8F9?OpenDocument&Highlight=carburetor%20icing

- AOPA Safety Advisor – Aircraft Icing
  http://www.aopa.org/asf/publications/sa11.pdf

- AOPA Safety Advisor – Aircraft Deicing and Anti-icing Equipment http://www.aopa.org/asf/publications/sa22.pdf

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