

For Widest Dissemination:

AeroSports Update: Beware Of Jack Frost

As Colder Weather Approaches It's Important To Understand The Dangers Of Frost On The Aircraft

The basic theory regarding the formation of ice is quite simple; it requires below freezing temperatures and moisture. That makes it pretty easy to understand from the broadest point of view to determine when ice will or will not occur. However, when it comes to frost things get a little more complicated.



We are primarily concerned about frost when we see it on an airplane prior to flight. What seems like a very light coating of frozen moisture, is actually a rough surface that, if left on the wings and other lifting and control surfaces of the aircraft, can degrade performance to such an extent that it may not be safe to fly.

The age-old principle of frost formation is if a solid surface is chilled below the dew point of the surrounding humid air and the surface itself is colder than freezing, ice (frost) will form on it. If the air is moist, desublimation of the water vapor occurs and frost appears. In this case, the surface we are talking about is the airframe of an airplane.

There's more to it than that, but because frost requires moisture, a close temperature dew point spread and a surface that is freezing, it makes it easier to understand how to avoid it. The most logical way to avoid a morning frost on an airplane is to keep it in a hangar that is above freezing, even if only by a couple of degrees.

If frost does form on an airplane it's absolutely mandatory that it at least be removed from the wings, the tail surfaces, and all control surfaces. Leaving any of these surfaces with any frost can lead to asymmetrical stalls resulting in uncontrolled rolling of the airplane at lift off. At the very minimum, frost could increase the stall speed by a significant amount and reduce the airplane's wing lift capacity by as much as 30 percent.

Many pilots have heard that polishing the frost is another way to decrease its detrimental effect on aircraft performance, but there is actually very little information available to prove that this is effective.

Frost may look harmless, but it has been a major contributor to the loss of control in the early stages of the flight.

The following tip is good advise for driving a vehicle as well. Always keep an eye for "Black" ice on the road when driving, and keep your window wipers clean and clear of ice and snow. Keep the windshield fluid full and with cleaner containing an anti-freeze mixture.

Enjoy the change of season and be safe out there!

**For CAP
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