



**SAFETY**

# Ice in summer? Are you mad?

Nope – as **Chloe Eriksen** says, carb icing can be a threat at any time of year

AN ignorant helicopter pilot, who shall remain anonymous, had been overheard scoffing at the recent publication of the *Safety Sense* leaflet on icing with the comment: “Why on earth are we talking about icing on these hot summer days?”

Thankfully some sensible chap politely pointed out that those with non-fuel-injected engines might just need to pay attention to the temperature and dew point on hot humid days, due to something called “carburettor icing”.

Every day’s a school day, and the latest leaflet from the CAA could be a very important lesson for us all this summer...

Here’s the science bit, from the *Skyway Code*, p34: “The most significant icing risk to GA aircraft equipped with carburettor engines is ‘carb icing’. It is caused by the lowering of the pressure (and therefore temperature) in the aircraft’s carburettor as the fuel-air mixture is sucked in for combustion. As the temperature lowers, the water vapour in the fuel-air mixture will condense and freeze, potentially blocking delivery of fuel and air to the engine.”

The *Safety Sense* leaflet states that although carb icing is more of a risk at temperatures of 0-10°C with a high relative humidity, tests have shown serious icing was produced at temperatures above 25°C with humidity as low as 30%.

Signs of high humidity include the temperature and dew point being close together, visible mois-

**“““**  
You can get serious icing above 25°C with only 30% humidity

ture on the ground and, among other things, a low cloudbase.

So how can we guard against this tricky adversary? Well, monitoring and understanding the weather, for one.

The Met Office offers an excellent aviation briefing service, completely free of charge. You just need to sign up.

It provides accurate up-to-date weather information, with crucial detail on the temperature and dew point; and if you’re a little rusty on your TAF and METAR terminology, it also offers a handy decode.

### Whoops, that sounds a bit rough

Some of the signs of carb icing include a drop in



Now this is the kind of ice in summer that Chloe can live with

engine performance or power loss. It can be tricky to identify as the cause of an accident, as due to its very nature all evidence of the danger could have melted away before inspection.

The application of carb heat can help, and it’s important to always refer to the aircraft handbook for measures particular to your aircraft to prevent and deal with carb icing.

Of course, the summer weather can lead to other problems too, including performance.

The *Skyway Code* advises that while it is not always necessary to conduct a full weight and balance or performance calculation prior to each flight, it is prudent to do so if there are any significant changes like temperature or takeoff weight.

It’s important to note that this also assumes that you have a working knowledge of the normal operation of your aircraft.

I know that I feel pretty sluggish on a hot day, and the same could be said for your aircraft. An appreciation of the density altitude, that is to say the pressure altitude corrected for temperature, is paramount.

We saw temperatures soar to 40°C last year, and even my powerful military machine struggled to take off in a normal configuration above 40°C in Iraq, so when planning a trip this summer, it is important to consider takeoff weight and the distance it may require to get airborne on a hot day.

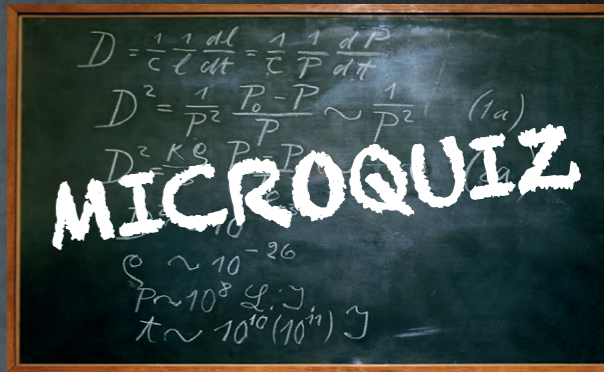
Furthermore, if you are heavy and in conditions of a high density altitude, climbs may take longer and burn more fuel.

In conclusion, please take care out there. Our climate may seem benign compared to some parts of the world, but it’s not without its dangers.

In my old squadron, we used to have a little rectangle drawn on the window out to the airfield, marked “actual”. This was a reminder to look outside as well as at the TAFs and METARs, but of course that is not the full picture. We must always consider that conditions can change.

So take a little time to consider the forecast weather for the day and the implications for the duration of your planned trip. Below are some handy links. □

- *Safety Sense* leaflet: <https://publicapps.caa.co.uk/docs/33/SSL-14-piston-engine-icing.pdf>.
- *Skyway Code*: <https://publicapps.caa.co.uk/docs/33/CAP1535S%20Skyway%20Code%20V3.pdf>.
- Met Office: <https://www.metoffice.gov.uk/services/transport/aviation/regulated/aviation-briefing-service-guidance>.



- 1 In terms of V-speeds, what does  $V_a$  refer to?
  - a Best angle of climb
  - b Best rate of climb
  - c Manoeuvring speed
- 2 Where is Class B airspace found in the UK?
  - a above FL195
  - b above FL245
  - c Class B airspace is not used in the UK.
- 3 Which element of the structure may provide lateral stability?
  - a Fin
  - b Differential ailerons
  - c Wing dihedral
- 4 What is the principle of a Fowler flap?
  - a The rear part of the wing is folded down.
  - b At high angles of attack, part of the leading edge lifts.
  - c A split flap is extended from the trailing edge of the wing.
- 5 An increase of 10% in the aircraft’s weight will increase the landing distance from 50ft by...
  - a 10%
  - b 20%
  - c 25%

MF’s quizmaster Lawrence Bell is the developer of QuizAero, the online groundschool for microlight student pilots, [quizaero.co.uk](http://quizaero.co.uk).



Answers overleaf



GASCo, the General Aviation Safety Council, is a charity whose members are aviation organisations. Its aim is to make aviation safer through education. It presents the CAA safety evenings, runs seminars and provides safety information through its magazine and website, [gasco.org.uk](http://gasco.org.uk).



CHIRP, the Confidential Human Incident Reporting Programme, reviews and analyses reports from pilots, then publishes them so others can learn. Get the app at [chirp.co.uk](http://chirp.co.uk).

## PIPISTREL

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9<sup>th</sup> & 10<sup>th</sup> September



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