



"TAKE YOUR CESSNA HOME  
FOR SERVICE AT THE SIGN  
OF THE CESSNA SHIELD"

# MULTIENGINE CUSTOMER CARE SERVICE INFORMATION LETTER

MARKETING DIVISION / CESSNA AIRCRAFT COMPANY / WICHITA, KANSAS 67201 / CABLE ADDRESS - CESSCO WICHITA

February 16, 1979

ME79-2

## USE OF FUEL ADDITIVE FOR COLD WEATHER OPERATION

AIRCRAFT APPLICABILITY: Turbo-Charged Multi-Engine Aircraft

As originally communicated in Cessna Service Letter ME73-25 dated November 2, 1973, all aviation gasolines contain some water in both dissolved and liquid form.

Some factors affecting the amount of water concentration are:

- 1). Variations in refining procedures used throughout the world.
- 2). Age of fuel and the storage facilities that are used.
- 3). Techniques used in transporting fuels.
- 4). Ambient temperatures and atmospheric humidity.

To remind owners and operators of the importance and proper use of fuel additives during cold weather operation, the attached Owner Advisory was recently mailed to owners of Turbo-Charged Multi-Engine aircraft.

Cessna recommends that these instructions be followed closely when re-fueling Turbo-Charged Multi-Engine aircraft for cold weather operation.

\* \* \* \* \*

(Owner Notification System - No. 1)

COPYRIGHT © 1979  
CESSNA AIRCRAFT COMPANY  
WICHITA, KANSAS USA

THERE ARE MORE CESSNAS FLYING THAN ANY OTHER MAKE



"TAKE YOUR CESSNA HOME  
FOR SERVICE AT THE SIGN  
OF THE CESSNA SHIELD"

# multi-engine SERVICE LETTER

MARKETING DIVISION • CESSNA AIRCRAFT COMPANY  
WICHITA, KANSAS 67201 • CABLE ADDRESS / CESSCO WICHITA

November 2, 1973

ME73-25

SUBJECT: USE OF FUEL ADDITIVES FOR COLD WEATHER OPERATION

AIRCRAFT AFFECTED: Cessna aircraft using Continental Engines

All aviation gasolines contain some water in both dissolved and liquid form. Some factors affecting the amount of water concentration are:

1. Variations in refining procedures used throughout the world.
2. Age of the fuel and the storage facilities that are used.
3. Techniques used in transporting fuels.
4. Ambient temperatures and atmospheric humidity.

Strict adherence to recommended preflight draining instructions as called for in the Aircraft Owner's Manual will eliminate any free water accumulations from the tank sumps. While small amounts of water may still remain in solution in the gasoline, it will normally be consumed and go unnoticed in the smooth operation of the engine.

One exception to this can be encountered when operating under the combined effect of -- 1) use of certain fuels, with 2) high humidity conditions on the ground 3) followed by flight at high altitude and low temperature (flight levels of 20,000' or above and temperatures of -20°F or below). Under these unusual conditions small amounts of water in solution can precipitate from the fuel stream and freeze in sufficient quantities to induce partial icing of the engine fuel injection system. This occurrence has been verified on the Model 421 series aircraft.

While these conditions are quite rare and will not normally pose a problem to owners and operators, they do exist in certain areas of the world and consequently must be dealt with, when encountered.

Therefore, to alleviate the possibility of fuel icing occurring under these unusual conditions it is permissible to add Isopropyl Alcohol to the fuel supply.

The introduction of Alcohol into the fuel provides two distinct effects -- 1) it absorbs the dissolved water from the gasoline and 2) alcohol has a freezing temperature depressant effect.

To provide owners and operators with some guideline information on adding alcohol to fuel tanks the attached information has been prepared.

Page 3 of the attached TCM Bulletin M73-3 also discusses use of alcohol in TCM engines.

## GUIDELINES FOR USING ALCOHOL

### I. ALCOHOL APPROVAL

The use of alcohol as a fuel additive is approved on all Cessna aircraft utilizing Continental Engines.

### II. ALCOHOL SPECIFICATION

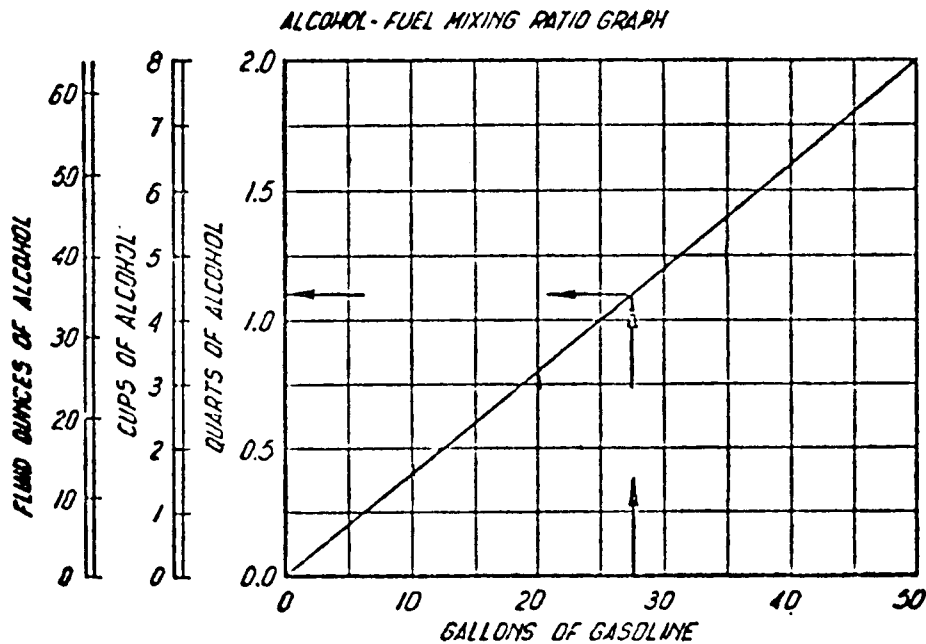
Any high quality Isopropyl Alcohol may be used, such as:

Anti-icing fluid (MIL-F-5566) or  
Isopropyl Alcohol (Federal Specification TT-I-735a)

### III. RECOMMENDED QUANTITY

Alcohol, if used, is to be blended with the fuel in a concentration of 1% by volume. Concentrations greater than 1% are not recommended since they can be detrimental to fuel tank materials.

The following graph provides alcohol-fuel ratio mixing information.



**EXAMPLE :** FOR A GASOLINE LOAD OF 27.5 GALLONS THE CORRESPONDING ALCOHOL DOSAGE IS 1.1 QUARTS, 4.4 CUPS OR 35.2 OUNCES.

Alcohol quantities for empty tanks are as follows:

- 2 quarts per 50 gallon Main Tank
- 3 cups or 25 oz. per 20 gallon Auxiliary Tank
- 4 cups or 1 quart per 26 gallon Auxiliary Tank
- 5 cups or 41 oz. per 32 gallon Auxiliary Tank
- 6 cups or 46 oz. per 36 gallon Auxiliary Tank
- 2 quarts per 49 gallon Auxiliary Tank

#### IV. MIXING RECOMMENDATIONS

The manner in which the alcohol is added to the fuel is significant because alcohol is most effective when it is completely dissolved in the fuel. To insure proper mixing the following is recommended:

1. For best results the alcohol should be added during the fueling operation by pouring the alcohol directly on the fuel stream issuing from the fueling nozzle.
2. An alternate method that may be used is to premix the complete alcohol dosage with some fuel in a separate clean container (approximately 2-3 gallon capacity) and then transferring this mixture to the tank prior to the fueling operation.

(Owner Notification System - No. 1)

\* \* \* \* \*

THE CESSNA AIRCRAFT COMPANY