

cc: Dr. G. Calingaert
Dr. R. A. Kehoe
Mr. J. B. Macauley
Dr. L. W. Sanders

Mr. E. O. Jones

New York

Mr. R. V. Kerley

Detroit

May 20, 1948

This is in reference to your letter dated May 7, 1948 to Mr. D. B. Jacques, Coastal Aviation Corporation, copy of which was forwarded to this office.

The reply which you forwarded to Mr. Jacques raises rather a difficult question since isooctane + 6.0 ml. tetraethyllead per gallon has been used for some time as the upper end of the primary reference fuel scale in aircraft engine fuel testing. In the past, orders for small quantities of certified isooctane have been received by the New York office and forwarded, I believe, to Dr. Calingaert and these orders were filled by supplying one-gallon containers of the certified isooctane which had been leaded here to 6.0 ml. per gallon.

In addition, the CRC Handbook 1948, Page 172, indicates that leaded isooctane is available from the Ethyl Corporation, 405 Lexington Avenue, New York 17, N.Y. A similar note was also until recently incorporated in ASTM manuals. It is my understanding that this reference is being deleted in the 1948 manuals but these will probably not reach the consumers for several months.

A further complication arises from the fact that secondary reference fuel which was used prior to the availability of very pure isooctane from Phillips and referred to as "S Reference Fuel" and was essentially isooctane available from Shell, was used in aircraft engine fuel testing in the multi-cylinder engines and S Reference Fuel leaded to 6.0 ml. per gallon was used as the upper reference fuel limit in multi-cylinder engine testing. I do not know how the engine manufacturers obtained this leaded reference fuel but Wright Field obtained it from the fuel manufacturer, namely Shell, preleaded to the specified value and I do know that neither Pratt and Whitney nor Wright Aero are in a position to lead drum quantities of fuels.

I am unacquainted with Mr. D. B. Jacques and the Coastal Aviation Corporation. It may be that his request for leaded isooctane of certified quality was unjustified. I would consider the request unjustified if actual fuel knock tests were not being conducted, in other words, if he had in mind the use of certified isooctane for anything but fuel rating purposes. In the past the Coordinating Research Council, 80 Rockefeller Plaza has passed on such orders. They are now out of this business and the ASTM office in New York is responsible for passing on the orders for primary or secondary reference fuels. I would suggest that Mr. W. T. Gunn be contacted in instances of this kind.

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The third paragraph of your letter would indicate that primary reference fuels containing over 4.6 ml. of lead and "used for experimental purposes" may still be available. I hope that this is the proper interpretation since the use of primary or secondary reference fuels containing 6.0 ml. tetraethyl-lead per gallon are not high enough in knock ratings to properly bracket some special aviation fuels blends currently being supplied for engine durability tests by a number of fuel companies. If our interpretation of the third paragraph of your letter is correct that we still may use 6.0 ml. of leaded reference fuels for experimental purposes it would appear to me that we should not necessarily place ourselves in the position of analysing each use for such materials but that these requests should be routed through Mr. Gunn at the ASTM office for determination of the validity of the order. In this case it may be well to impress on the ASTM office the necessity for closer scrutiny of such orders than would normally be given them.

I will appreciate the comments of our Medical Department.

Yours very truly,

RVK:rel


Robert V. Kerley

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