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MOTOR FUEL COMPOSITION

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The present invention is directed to an improved motor fuel composition. More particularly, the invention is concerned with a motor fuel composition comprising hydrocarbons and oxygenated compounds. In its more specific aspects, the invention comprises a motor fuel composition including gasoline hydrocarbons and oxygenated compounds.

The present invention may be briefly described as a high octane number fuel composition comprising a major amount of hydrocarbons in the gasoline boiling range and a minor but effective amount of a mixture of methanol and trioxane in synergistic amounts, the amount of the trioxane in the composition being greater than its solubility alone in said hydrocarbon.

The hydrocarbons in the gasoline boiling range may sutiably include those hydrocarbons boiling from about 80° F. up to about 440° F. Preferably, the hydrocarbons will boil in the range from about 100° to about 400° F. While pure hydrocarbons may be employed as the hydrocarbon component of the motor fuel composition of the present invention, it is preferred to employ a mixture of hydrocarbons such as those distilled from crude petroleum, catalytically converted naphthas, such as those from hydroforming operations, catalytically cracked naphthas, alkylate, and other hydrocarbons, either produced synthetically or obtained naturally from crude petroleum. Such hydrocarbons in the gasoline boiling range may preferably be isoparaffinic, naphthenic and aromatic hydrocarbons, but the use of normal paraffinic hydrocarbons and olefinic hydrocarbons are not excluded from the present invention. Vapor pressures of the composition may range from about 6 to about 14 pounds Reid vapor pressure at 100° F.

As stated, the gasoline hydrocarbons are used in a major amount and will usually comprise from about 80 percent to about 90 percent by volume of the gasoline hydrocarbons, the mixture of methanol and trioxane being the remainder. Good results are obtained in a fuel composition containing 80 percent by volume of gasoline hydrocarbons and 20 percent by volume of a mixture of equal parts of methanol and trioxane.

It is contemplated that the fuel composition of the present invention may include other additives besides the methanol and trioxane. Specifically, it is contemplated that the fuel composition may suitably include from about 0.5 to about 6 cc. of tetraethyl lead per gallon with very desirable results being obtained with 3 cc. of tetraethyl lead in the fuel composition.

Likewise, when the fuel composition comprises hydrocarbons produced by catalytic cracking, and the like, it may be desirable to employ an antioxidant in the fuel composition. As examples of antioxidants may be mentioned tertiary butyl hydroquinone, disalicylal di-imine, N,N'-di-sec-butyl-p-phenylenediamine, 2,6-di-tert-butyl-4-methylphenol, hydroquinone dimethyl ether, p-tertiary-butyl catechol, and the like.

In order to illustrate the invention further, a number of blends were made up in which gasoline hydrocarbon base had added to it in one instance a specific amount of methanol and in another instance an amount of trioxane to the limit of solubility of trioxane in the gasoline hydrocarbon. In other instances, mixtures of methanol and trioxane in amounts ranging from 5 to 10 volume percent were made up with the gasoline base hydrocarbons. These blends were then tested to determine the research octane number thereof. The results of these tests are shown in the following table:

Table I

Composition of Blend, Vol. Percent			Research O.N. +3 cc. TEL			
Methanol	Trioxane	Gasoline Base	Blend	Effective Research Octane Number	Linear Blending Value	Gasoline Base
10	----	90	98.3	97.4	97.4	98.4
----	3	97	96.5	99.6	99.8	96.4
5	5	90	101.1	107.4	115.5	99.5
10	10	80	99.1	105.7	109.9	96.4
10	10	80	101.6	106.1	109.6	99.6

The data in the preceding table shows that a mixture of equal parts of methanol and trioxane results in a beneficial effect on research octane number of high octane number motor fuels far beyond what may be expected from the beneficial effect on octane number of either the methanol or trioxane alone. This effect is very pronounced at both 10 and 20 volume percent concentration of the mixture in the high octane number motor fuel. The effect is also quite pronounced in motor fuel base stock of 96.4 and 99.6 research octane number. From these data it may be concluded that the methanol and trioxane are used in synergistic amounts in the motor fuel.

It is very beneficial and advantageous and quite useful to employ the motor fuel composition of the present invention in automotive motors and in aviation motors. In other words, a composition consisting of gasoline hydrocarbons and synergistic amounts of methanol and trioxane and including tetraethyl lead gives quite beneficial results as a motor fuel.

The nature and objects of the present invention having been completely described and illustrated, what we wish to claim as new and useful and to secure by Letters Patent is:

1. A high octane number fuel composition consisting of from about 80 to about 90 percent by volume of hydrocarbons in the gasoline boiling range, from about 20 to about 10 percent by volume of a mixture of equal parts of methanol and trioxane, and an amount from about 0.5 to about 6 cc. of tetraethyl lead per gallon.

2. A composition in accordance with claim 1 in which the amount of tetraethyl lead is 3 cc. per gallon.

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