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COLOR INHIBITOR

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This invention relates to a method for preventing depreciation of hydrocarbon distillates of motor fuel boiling range, and particularly to gasolines which may be exposed to the action of sunlight and which may or may not contain added quantities of tetraethyl lead to improve the anti-knock value.

In many instances motor fuels are dispensed through pumps having large storage bowls wherein the motor fuel is visible to the purchaser end, as which, may be exposed to sunlight for various intervals of time. Many gasolines when so exposed develop a cloudy, milky appearance and a sediment separates which discolors the bowl rendering it unsightly in appearance. Moreover, this tendency toward haze formation is sometimes greatly increased in gasolines containing added tetraethyl lead. Since a major portion of present day gasolines contain tetraethyl lead, this problem becomes more serious, partly because of the sediment which separates, partly because of the appearance and partly because depreciation of knock characteristics of fuel so exposed for long periods of time may occur. It is an object of the present invention to prevent or at least minimize the tendency of such gasolines to form haze in sunlight.

In one specific embodiment the present invention comprises a method for preventing haze formation in gasoline exposed to sunlight by adding thereto a minor quantity of sulfurized glycerides, either in the presence or absence of added gum inhibitors.

Motor fuels which may be treated according to this invention may comprise straight run, natural, cracked or polymer gasoline, or blends thereof in varying proportions. These gasolines may or may not contain added quantities of anti-knock agents such as tetraethyl lead, and in the case of gasolines containing olefins, may have added thereto various gum inhibitors to prevent the formation of gum and other undesirable oxidation products during storage period. Phenolic gum inhibitors and gum inhibitors composed of fractions of hardwood tar distillate, especially those boiling within the range of approximately 240–280° C., are of particular value when used in conjunction with the haze inhibitors of the present invention.

The color inhibitors, which are sulfurized glycerides, are prepared by heating vegetable or animal oils such as fish oil, corn oil, cotton seed oil and the like with minor quantities of sulfur. The oils used have the properties of semi-drying oils. The amount of sulfur added may vary to a certain extent, but is ordinarily of the order of approximately 10% by weight of the oil and is in any case less than 20% by weight of the oil. The temperature of heating is normally approximately 150° C. and the heating is carried out for a period of approximately 1–6 hours. The exact amount of sulfur and the exact time of heating is difficult to specify, in view of the fact that the oils vary. Thus it is important that the heating and the amount of sulfur be such that the oil after treatment remains in the form of a viscous liquid. If too much sulfur is added, a rubbery mass results which is substantially insoluble in petroleum hydrocarbons, and therefore, cannot be used for the purposes of this invention.

In the example given hereinafter are indicated quantities of sulfur and times of heating which were found to be satisfactory for given samples of various oils. This example is not intended to limit the invention, but merely to indicate certain satisfactory preparations. For other samples of oils having somewhat different properties or for oils from different sources, it may be necessary to vary the quantities still further.

The amount of material added to the gasoline is normally within the range of approximately 0.0001–0.05% by weight of the gasoline treated, and is usually within the range of approximately 0.001–0.01%.

The sulfurized oils may be added to gasolines as solutions in part of the gasoline or other hydrocarbon oil in order to facilitate handling.

The following example is given to illustrate the usefulness of the invention but should not be interpreted as limiting it to the exact conditions or compounds shown.

In making the haze inhibitor 25 gr. of sulfur was added to 250 gr. of menhaden oil and the mixture heated at 150° C. for 5 hours. The oil, after this treatment, was viscous, dark red in color and soluble in gasoline. This oil was used to inhibit a Pennsylvania cracked gasoline and a Pennsylvania straight run gasoline. A commercial gum inhibitor was used in a portion of the tests. The gasoline was exposed to sunlight in

4-ounce glass bottles and the gasoline was examined at regular intervals until the appearance of haze was noted. The results are shown in the following table. The gum inhibitor was added in an amount of 0.01% and the sulfurized fish oil in amount of 0.001% by weight of the gasoline.

	Haze time, minutes			
	Straight run gasoline		Cracked gasoline	
	No lead added	+3 cc. tetraethyl lead/gallon	No lead added	+3 cc. tetraethyl lead/gallon
Blank	45	15	30	15
+Gum inhibitor	45	15	105	15
+Fish oil (not sulfurized)	45	15	30	15
+Sulfurized fish oil	165	30	375	45
+Sulfurized fish oil+gum inhibitor	255	45	300	60

I claim as my invention:

1. A method for preventing haze formation in gasoline exposed to sunlight which comprises adding thereto approximately 0.0001–0.05% by weight of a sulfurized glyceride of a high molecular weight fatty acid.

2. A method for preventing the formation of haze in gasoline by adding thereto approximately 0.0001–0.05% by weight of a sulfurized fatty acid glyceride derived from the group consisting of animal and vegetable oils.

3. A method for preventing haze formation in gasoline comprising adding thereto approximately 0.0001–0.05% by weight of a sulfurized glyceride-containing fish oil.

4. A method for preventing haze formation in gasoline by adding thereto approximately 0.0001–0.05% by weight of a sulfurized glyceride containing vegetable oil.

5. A method for preventing haze formation in gasoline upon exposure to sunlight which comprises adding thereto approximately 0.0001–0.05% by weight of a sulfurized glyceride of a high molecular weight fatty acid wherein the amount of sulfur is not more than approximately 20% by weight of the glyceride.

6. A method for preventing haze formation in gasoline upon exposure to sunlight which comprises adding thereto approximately 0.0001–0.05% by weight of a sulfurized glyceride of a high molecular weight fatty acid wherein the sulfur content is not more than approximately 10% by weight of the glyceride.

7. A method for preventing haze formation in gasoline which comprises adding thereto approximately 0.0001–0.05% by weight sulfurized glyceride-containing fish oil containing not more than approximately 10% by weight of sulfur.

8. A method for preventing haze formation in gasoline upon exposure to sunlight which comprises adding thereto approximately 0.0001–0.05% by weight of a sulfurized glyceride of a high molecular weight fatty acid containing not more than approximately 10% by weight of sulfur and a gasoline gum inhibitor.

9. The process of claim 8 wherein the gum inhibitor is added in an amount less than approximately 0.1% of the motor fuel.

10. A method for prevening haze formation in gasolines containing added antiknock agents which comprises adding thereto approximately 0.0001–0.05% by weight of a sulfurized glyceride of a high molecular weight fatty acid containing not more than approximately 10% by weight of sulfur.

11. A method for preventing haze formation in gasolines containing added antiknock agents upon exposure to sunlight which comprises adding thereto approximately 0.0001–0.05% by weight of a sulfurized glyceride of a high molecular weight fatty acid containing not more than approximately 10% by weight of sulfur and a gasoline gum inhibitor.

12. The process of claim 10 wherein the antiknock agent is tetraethyl lead.

13. A method for preventing haze formation in gasolines containing added antiknock agents upon exposure to sunlight which comprises adding thereto approximately 0.0001–0.05% by weight of sulfurized glyceride-containing fish oil containing not more than approximately 10% of sulfur.

14. Motor fuel comprising gasoline containing a sulfurized glyceride of a high molecular weight fatty acid in the amount of approximately 0.0001–0.05% by weight of the gasoline.

15. Motor fuel comprising gasoline containing a gum inhibitor and a sulfurized glyceride of a high molecular weight fatty acid in the amount of approximately 0.0001–0.05% by weight of the gasoline.

16. Motor fuel comprising gasoline containing an antiknock agent, a gum inhibitor, and a sulfurized glyceride of a high molecular weight fatty acid in the amount of approximately 0.0001–0.05% by weight of the gasoline.

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