

UNITED STATES PATENT OFFICE

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ANTI-KNOCKING MOTOR FUEL

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6 Claims. (Cl. 44-9)

This invention relates to improvements in anti-knocking motor fuels, and more particularly to a process for stabilizing tetra-ethyl-lead when used as an antiknock agent.

5 The antiknock compounds recently used in motor fuels and containing tetra-ethyl-lead as the active component, if desired together with other organic substances, possess the undesirable property of decomposing, especially under the influence of light and in the presence of water; they are even decomposed by light alone, in the complete absence of water, although somewhat more slowly. Apart from the ineffectiveness of such decomposed compounds for the purpose in view, 10 the decomposition products which separate out in the form of a mud, strongly corrode some of the metals employed for constructing the fuel receptacle, such corrosion being especially dangerous, since it is apt to manifest itself by a strongly intensified local attack. These phenomena are moreover promoted by the presence of even but a small percentage of water in the fuels which, as a rule, cannot be avoided.

Exhaustive research upon which the present 25 invention is based has shown that it is possible to stabilize the tetra-ethyl-lead as against the influence of light and/or water, to a very high degree by adding thereto very small proportions of water-soluble fluorides. In this manner, corrosion in the dark is practically completely 30 avoided and is diminished even in the light to a very considerable extent.

The present invention accordingly comprises adding extremely small amounts of fluorides (a few hundredths of 1 percent) to the antiknock compounds or the fuels containing the latter, the result being that antiknock compounds thus treated retain their effectiveness even when the fuels containing same have been subjected to prolonged storage. By thus preventing the antiknock compounds from decomposing, corrosion of the metallic fuel receptacles is avoided, no matter whether moisture be present or not.

Neutral ammonium fluoride has been found 45 suitable for the purpose of the present invention, since owing to its volatility, deposits are not li-

able to form in the engine during consumption of the fuels treated therewith. Proportions of ammonium fluoride ranging from 0.01 to 0.05 percent calculated on the amount of fuel to be stabilized, have been found particularly suitable. While this fluoride may be successfully employed, it is frequently more advantageous to employ sodium or potassium fluoride in approximately the same percentages as above stated, in view of the fact that ammonium fluoride is capable of corroding 10 some metals to a certain extent.

In order to avoid undissolved salt from gaining access to the feed pipes for the fuel or into the motor respectively, the fluoride may be introduced into the fuel receptacle in a perforated cartridge, which is mounted on the inner walls of said receptacle. 15

I claim:—

1. An anti-knock agent comprising tetraethyl lead and a small amount of a water-soluble fluoride to stabilize the tetraethyl lead against light and water. 20

2. An anti-knock agent comprising tetraethyl lead and a small amount of an alkali metal fluoride to stabilize the tetraethyl lead against light and water. 25

3. A motor fuel non-corrosive to metallic containers on long standing comprising tetraethyl lead and a small amount of a water-soluble fluoride. 30

4. A motor fuel non-corrosive to metallic containers on long standing comprising tetraethyl lead and a small amount of an alkali metal fluoride. 35

5. A method of stabilizing motor fuels containing tetraethyl lead which comprises admixing therewith a small quantity of a water-soluble fluoride to stabilize the tetraethyl lead against light and water. 40

6. A method of stabilizing motor fuels containing tetraethyl lead which comprises admixing therewith a small quantity of an alkali metal fluoride to stabilize the tetraethyl lead against light and water. 45

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