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PROCESS FOR TREATING MINERAL OILS

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2 Claims. (Cl. 252—56)

This invention pertains generally to the improvement of oils and pertains particularly to the stabilization thereof.

This invention pertains more particularly to the stabilization of lubricating oils intended for motor car use.

The result of improvements in the automobile motor to develop more power at higher operating temperatures with units occupying smaller space has been to place a much greater demand upon motor oils.

While commercial motor oils as a rule and particularly those made from Pennsylvania grade crudes are composed of highly inert substances capable of heavy duty performance without substantial change in chemical composition, yet extreme service conditions, particularly when accompanied by high temperatures, are sometimes capable of causing undesirable chemical and/or physical changes as evidenced for instance by the corrosion of certain types of bearings.

This invention is based upon the discovery that the stability of oils in general, and particularly those derived from Pennsylvania grade crudes is materially improved upon the addition to said oil of a relatively small amount of oxalic acid in conjunction with a solubilizing agent.

Oils, when treated in accordance with this invention, exhibit unusual stability under the most exacting conditions.

To illustrate these stabilizing qualities, 150 cubic centimeters of an untreated neutral oil were placed in a container and maintained at a temperature of 341° F. A cadmium-silver-copper alloy bearing, having an area of 16 square centimeters, was placed in the oil together with a catalyst comprising a strip of copper having an area of 21 square centimeters and air was passed through the oil at the rate of 5 liters per hour. At the end of 12 hours the bearing showed a loss due to corrosion of approximately 100 milligrams.

The same oil under exactly the same conditions but after treatment caused no loss in weight of an identical bearing due to corrosion during the entire 12 hour period.

The stabilizing effect is thus made clearly evident.

The treated oil was made by adding to a quantity of untreated oil 0.1% by weight of a 10% solution of oxalic acid in ethyl oxalate followed by thorough mixing at room temperatures. Any other temperature may be employed and the stabilizer may be added in any other manner.

In view of the fact that the above test is extremely severe and that corrosion of the bearing of zero milligrams resulted during a period of 12 hours even though a very active catalyst was present, it follows that good results may be produced upon the addition of smaller quantities of stabilizer. Furthermore larger quantities may be added if desired.

It is to be understood that the oxalic acid may be brought and/or maintained in solution by other solubilizing agents if desired. Other solubilizing agents which have produced good results are xylidine and methyl diethyl carbinol.

Furthermore the percentage of oxalic acid in solution with the solubilizing agent may be varied.

In fact commercial ethyl oxalate itself is a good stabilizer as evidenced by the fact that during a run of 12 hours, using .1% inhibitor, and with a copper-lead bearing of 9.5 square centimeters substituted for the copper strip a cadmium-nickel bearing lost only .2 milligram due to corrosion as against 74 milligrams without the inhibitor. Commercial ethyl oxalate contains oxalic acid.

Further evidence of the stabilizing effect appears to reside in reduction in rate of increase in color, viscosity, acidity, etc., and in an improvement in lubricating qualities.

Oils treated in accordance with this invention may be used for any other purpose such as insulating oils for transformers, cables, etc., or for other lubricating purposes.

In the claims the term "oxalic acid" when referred to is employed generically and includes a mixture containing oxalic acid in sufficient quantities to be effective as such. The term also includes a mixture wherein "oxalic acid" is for practical purposes essentially the sole active component operating as a stabilizer.

Also in the claims the term "lubricating oil" when referred to is intended to mean a petroleum oil of a viscous character, that is, an oil having a viscosity of 50 Saybolt seconds at 100° F. or above, and regardless of the use to which such oil is put.

While procedure for the purpose of carrying out the invention has been particularly described, it is to be understood that this is by way of illustration. Therefore changes, omissions, additions, substitutions, and/or modifications may be made within the scope of the claims without departing from the spirit of the invention which is intended to be limited only as required by the prior art.

We claim:

1. A lubricating oil having added thereto a quantity of oxalic acid in amounts sufficient to substantially stabilize the oil.

2. A lubricating oil having added thereto a quantity of commercial ethyl oxalate.

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