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OIL-COMPOSITION

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This invention relates to that type of improvements in oil compositions which comprises the addition to a hydrocarbon oil of a small amount of nitrogenous bases.

Heretofore, as far as I am aware, it has been proposed to use for this purpose a condensation product of a ketone with ammonia. I have found that nitrogenous bases made or separated from petroleum are available in this connection and can be used without a ketone, being, in fact, incapable of forming a condensation product therewith; thus attaining the improvement sought more economically; and when the oil to which the addition is made is a refined petroleum oil, the improvement in the oil composition reaches its highest attainment. I have found, further, that nitrogenous bases made or separated from petroleum have a peculiar and highly desirable effect in oil compositions of this type, not enjoyed by nitrogenous bases made or separated from sources other than petroleum; namely, they inhibit the corrosion of metals by acids, even after said bases have become completely neutralized. This is very important in an oil used where high sulphur or chlorinated fuels or lubricating oils are used, as mentioned hereinafter; and due to this peculiarity or property they can be used in very small amounts and still protect the metal surfaces from oil corrosion.

The invention, therefore, may be briefly stated to consist of an oil composition comprising a hydrocarbon oil, preferably, a petroleum oil, which in practise is best refined, having combined therewith a small amount of a nitrogenous base made or separated from petroleum.

When oils are used at high temperatures, as, for example, in internal combustion engines, or for long periods of time exposed to air, as in transformer oils or for other insulating purposes, they tend to form acids or sludge. These are detrimental and cause trouble. This makes it necessary to change the oil at frequent intervals.

The object of the present invention is an improved oil that withstands oxidation and which can be used for longer periods of time without changing. Any acids that may be formed are neutralized and do not collect to cause corrosion and further acidification by what is well known in the art as autocatalysis.

The oil used may be a pure hydrocarbon oil, or one blended with a fatty oil, or may be in the form of a grease. The expression pure hydrocarbon oil is used herein to mean any hydrocarbon oil which is not crude oil, but has been refined.

In general, any oil, including a refined petroleum oil, in use at present as an insulating or lubricating oil is improved by the use of the said nitrogenous bases. Chlorinated or compounded oils that heretofore were not adapted for this use because they gave acids as products of their disintegration may be used in my composition by simply neutralizing them. Such oils thus adapted for use herein are superior wetters of metal, due to the attraction of the chlorine atom for the metal. They are made by chlorinating the oil with gaseous chlorine by any of the well known processes of chlorination. Even gasoline or kerosene is improved by this method, especially gasolines containing anti-knock dopes that tend to give acids as products of their combustion. High sulphur oils can also be used with safety as the sulphur acids formed are at once neutralized by the nitrogenous bases. In the hypochlorite process for treating gasoline, one of the objections to it for use in oil-compositions of this type is that it chlorinates a portion of the hydrocarbon although extreme precautions are taken to prevent this reaction. With the use of the nitrogenous bases herein this objection would not be serious. By simply bubbling gaseous chlorine through the oil or by treating it with sodium or calcium hypochlorite, it will be chlorinated.

The nitrogenous bases used are those made or separated from petroleum in any suitable manner, as, for example, by treatment with dilute sulphuric acid, neutralization of the acid liquor, and subsequent steam distillation. These bases may be defined as a mixture of basic compounds of carbon, hydrogen and nitrogen, of which the largest proportion is probably composed of nitrogen bases with

the nitrogen in the ring; as, for example, pyridine, quinoline and piperidine, and homologues thereof. Generally speaking the separated nitrogenous base is an oily liquid soluble in acid and insoluble in alkali. It precipitates with silico-tungstic acid from acid solution.

As an example of the improved oil composition, the following is given.

Nitrogenous bases made, as is common and long well known in the art from the gas oil fraction of California petroleum by treatment with dilute sulfuric acid, neutralization of the acid liquor, and subsequent steam distillation were blended with a naphthene base lubricating oil in the proportion of 1% nitrogenous bases with 99% of hydrocarbon oil. This blended oil was then run in a motor for 16 hours under load with the throttle wide open. The motor was then taken down and examined. The used oil was dark brown in color instead of a greenish black. It contained very little sediment and sludge as determined by centrifuging. It showed complete separation in the Government emulsion test with caustic soda.

Very little carbon was formed and less consumption was noted as compared to the same oil without nitrogenous bases run under the same conditions.

In some cases it may be necessary to purify the nitrogenous bases by redistillation, or by slight oxidation by blowing them with air while warm and redistilling, or by any other suitable oxidizing agent such as potassium permanganate or bleaching powder.

More in detail it may be stated that when air-blowing is resorted to, they are blown from two to five hours at a temperature of 1000° F. When another oxidizing agent, such as potassium permanganate is used, they may be treated for two hours with a ten percent permanganate solution, in an agitator with air agitation; after which the water portion is drawn off and then the remaining oxidized bases are redistilled.

I claim:—

1. An improved oil-composition comprising a hydrocarbon oil having combined therewith a small amount of the nitrogenous bases made from petroleum.

2. An improved oil-composition comprising a petroleum oil having combined therewith a small amount of the nitrogenous bases made from petroleum.

3. An improved oil-composition comprising a refined petroleum oil having combined therewith a small amount of the nitrogeneous bases made from petroleum.

In testimony whereof I have signed my name to this specification.

HARRY K. IHRIG.