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GERALD L. WENDT, OF CHICAGO, ILLINOIS, ASSIGNOR TO STANDARD OIL COMPANY, OF WHITING, INDIANA, A CORPORATION OF INDIANA.

REMOVAL OF SULPHUR AND SULPHUR COMPOUNDS FROM HYDROCARBON OIL.

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The present invention relates to the removal of sulphur and sulphur compounds from hydrocarbon oil, and particularly the lighter oils, such as gasoline, naphtha, burning oils, and the like. It has to do more particularly with the treatment of those oils which, after "sweetening" with the usual sodium plumbite or "doctor" solution, or rerunning are found to again become "sour"; that is, indicate by doctor and corrosion tests the presence of sulphur compounds.

In refinery practice, many distillate oils are sweetened, or treated with aqueous sodium plumbite (doctor) solution (with or without added sulphur) and are subsequently redistilled. With many of these oils it is found that the redistilled oils show the presence of hydrogen sulphide, and are again "sour". A particularly important example of such oil is found in pressure distillate, the distillate from oils cracked under pressure for the formation of lighter oils, such as gasoline.

The present invention has for its subject the complete removal of sulphur and sulphur compounds from hydrocarbon oils particularly of the type hereinbefore referred to, which, when treated with aqueous doctor solution, again becomes sour on rerunning. In accordance with this invention, the oils to be sweetened are treated with an alcoholic solution of sodium hydroxide saturated with litharge. It is preferred that the strength of alcohol in the solution be in excess of 50%, and preferably from 75 to 90% in strength. In preparing the alcoholic plumbite or doctor solution, an alcoholic solution of sodium hydroxide containing from 5 to 20% of sodium hydroxide is prepared, and 0.1 to 1% of litharge. The alcoholic plumbite or doctor solution is then employed in the same manner as aqueous solutions of plumbite are now employed. If desired, the oil may be treated first with an aqueous doctor solution, and subsequently treated with the alcoholic plumbite solution, an appreciable economy in the loss of alcohol being thereby effected. The alcoholic plumbite solution may be used on the oil in proportions of 1 part of the plumbite solution to 15 to 50 parts by volume of the oil.

By treating the oil in accordance with the present invention, it is found that oils which, after treatment with aqueous doctor solution alone, becomes sour on rerunning or redistillation, remain sweet. In other words, the alcoholic plumbite solution removed from the oil, in addition to the sulphur compounds removed by aqueous doctor solution, those which remain in the oil and break down on redistillation with the formation of compounds imparting "sourness" to the oil.

I claim:

1. The method of refining hydrocarbon oils for the removal of sulphur therefrom comprising subjecting the oils to the action of an alcoholic solution of sodium plumbite.

2. The method of refining hydrocarbon oil distillates comprising washing a hydrocarbon oil with an alcoholic solution of sodium plumbite having an alcohol strength of at least 50%.

3. The method of refining hydrocarbon oil distillates comprising washing a hydrocarbon oil with an aqueous solution of sodium plumbite and subsequently washing the oil with an alcohol solution of sodium plumbite.

GERALD L. WENDT.