

UNITED STATES PATENT OFFICE

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SWEETENING PETROLEUM DISTILLATES

No Drawing.

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This invention relates to improvements in the sweetening of petroleum distillates, such as gasolene and kerosene.

I have found that acid aqueous solutions of salts of chlorous acid, such as sodium chlorite and calcium chlorite, are effective refining agents for petroleum distillates and may be used to produce petroleum distillates of good color, odor and stability. Although the exact degree of acidity is not important, I have found solutions having a pH value of about 4 to be advantageous. The rapidity and extent of reaction between the chlorites and the objectionable constituents of crude petroleum distillates such as sulfur compounds may be largely controlled by regulating the amount of acid agent, acid or acid salt, used in conjunction with the chlorite. With some distillates a pH of 4 in the treating solution may be sufficient. With other distillates it is preferable to use N/10 acid or stronger. The acidity of the treating solution may be controlled by the addition of an acid or acid salt, such as hydrochloric acid or sulphuric acid or sodium acid sulfate or sodium acid phosphate. The amount of the chlorite required for refining varies with and is determined by the character of the distillate being refined. The concentration of the treating solution is not critical; in general lower concentrations of the chlorite are desirable in conjunction with higher acidity. The refining operation may be carried out as a batch operation or as a continuous operation in any convenient manner.

For example: 100 parts of a gasolene distillate are placed in a suitable agitator with 40 parts of N/10 hydrochloric acid. The agitator is started and 2 parts of a calcium chlorite solution containing 68 grams of $\text{Ca}(\text{ClO}_2)_2$ per liter are added every 15 minutes until 24 parts have been added. A gasolene sweet to the Doctor test and of good color is produced.

Acid chlorite solutions apparently react with many of the sulphur compounds occurring in petroleum distillates to convert the sulphur of such compounds into reaction products soluble in water and thus susceptible of removal in the water of the treating solu-

tion or in the water of subsequent washes. Acid chlorite solutions, however, react to but a very slight extent, if at all, upon those hydrocarbon constituents of the petroleum distillate suitable as components of the refined product.

While alkali-metal chlorites or alkaline-earth-metal chlorites are particularly useful in carrying out my invention, the other salts of chlorous acid and chlorous acid itself are also useful in carrying out my invention, the chlorite radical being the essential component.

I claim:

1. In sweetening petroleum distillates, the improvement which comprises subjecting the distillate to treatment with an acid aqueous solution of a chlorite of a metal of the group comprising the alkali-metals and the alkaline-earth-metals.

2. In sweetening petroleum distillates, the improvement which comprises subjecting the distillate to treatment with an acid aqueous solution of a salt of chlorous acid.

3. In sweetening petroleum distillates, the improvement which comprises subjecting the distillate to treatment with an acid aqueous solution containing chlorous acid and an acid agent.

In testimony whereof I affix my signature.
MAURICE C. TAYLOR.