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LIQUID CLEANER

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2 Claims. (Cl. 252—127)

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This invention relates to a cleaner effective for the cleaning of metal articles, particularly small metal parts such as automobile carburetors and the like where the removal of dirt, grease, oil and the like is desired. Such articles are commonly cleaned, for example, in the automobile repair business, by immersion in a two-phase liquid with a chlorinated hydrocarbon, frequently containing cresol, as the active solvent as one phase, and water or aqueous soap or alkali as the other. Such cleaners are subject to a number of disadvantages, including difficulties in the transfer of the liquid in correct proportions from drums or large containers to the small containers used for cleaning, toxicity of the chlorinated solvent, objectionable odors, and skin sensitivity to cresols and chlorinated solvents. Furthermore, such compositions are relatively expensive.

The present invention provides more economical yet highly effective cleaners free from objectionable properties of the products commonly used today. The compositions of the invention are homogeneous, i. e., exist as one phase, are stable, are relatively non-toxic and non-irritating. They consist of a liquid alkylated benzene in which the benzene radical has one or more hydrocarbon substituents, particularly xylene or cymene, a soap, advantageously a potassium soap and an alcohol, having 4 to 7 carbon atoms, advantageously butyl alcohol. A rust inhibitor, such as an oil soluble petroleum sulfonate, will usually be included to retard rust formation. While the compositions need not be anhydrous they should contain little water and the less they contain the better. The soaps of naphthenic acids, I believe because of greater solubility in the aromatic solvent, give products superior to those obtained with the fatty acid soaps. Excellent products are obtained with the use of admixtures of naphthenic acid soaps and fatty acid soaps.

Suitable relative proportions are from 55 to 80 parts of alkylated benzene, 6 to 12 parts of soap, calculated as the anhydrous material, 20 to 30 parts of the alcohol, and not more than 1 part of water. About 1 to 6 parts of rust inhibitor, assuming that an oil soluble petroleum sulfonate is used, may be included.

To minimize the amount of water included in the compositions while achieving economy in production, it is advantageous to prepare the soap by dissolving the alkali (caustic soda or caustic potash) in the alcohol and add the fatty or naphthenic or other soap forming acid or an ester thereof to the solution. This method of making soap is well known.

The invention will be illustrated by the following example but it is not limited thereto.

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Example

To a 150 gallon closed vessel fitted with an agitator, cooling and heating coils and a reflux condenser is charged 160 lbs. of secondary butyl alcohol and 17 lbs. of flake potassium hydroxide about 88% pure. The kettle is heated to gently reflux the alcohol and the agitation is continued until all the caustic potash is dissolved. 25 lbs. of oleic acid and 30 lbs. of naphthenic acid are then added over a period of ½ to 1 hour using agitation and continuing the agitation for another hour after which the batch is cooled to 40 to 50° C. Enough xylene is now run in to make the batch size 100 gallons. On standing for two hours or more a lower layer forms and is withdrawn. This is usually very small in quantity and is aqueous material which may contain some tars, etc., from the naphthenic acid as well as solid impurities. The upper layer is drawn off to drums.

This liquid is usually used for cleaning metal parts by immersion, as in customary practice, but it may be sprayed or brushed over large surfaces such as motor blocks and then flushed off with water.

The addition of a small amount of oil soluble petroleum sulfonate, e. g. 5%, to the cleaning solution retards rust formation on iron or steel surfaces even if the part is washed off with water after cleaning.

I claim:

1. A liquid cleaner for metal articles consisting essentially of from 55 to 80 parts of a liquid alkylated benzene, from 20 to 30 parts of an aliphatic alcohol having 4 to 7 carbon atoms, from 6 to 12 parts of alkali soap and not more than 1 part of water.

2. A cleaner as in claim 1 in which the alkylated benzene is xylene, the alcohol is butyl alcohol and the soap is a potassium soap made to a substantial extent from naphthenic acid.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
895,477	Lendrich	Aug. 11, 1908
1,049,467	Ellis	Jan. 7, 1913

FOREIGN PATENTS

Number	Country	Date
8,934	Great Britain	of 1913
365,160	Germany	Dec. 9, 1922