

UNITED STATES PATENT OFFICE

2,182,992

CORROSION PREVENTIVE

Robert B. Lebo, Elizabeth, N. J., assignor to
Stanco, IncorporatedNo Drawing. Application September 24, 1937,
Serial No. 165,493

4 Claims. (Cl. 134—1)

This invention relates to a corrosion preventive composition and particularly to a composition that will protect iron, copper, brass, aluminum and other metals from corrosion.

When metals are stored, especially in the form of finished articles composed of metals in whole or part, particular care is required to protect the surfaces from corrosion. The corrosion of the metals is accelerated to a marked degree when contacted with air containing substantial quantities of water vapors, sulfur dioxide, sulfur trioxide and other corrosive materials. If the objects are moistened or wet by rain or by immersion in water, sea water, aqueous solutions of salts, acids or alkalies, the corrosion is greatly accelerated, especially when any of the protective coating composition has been partly or wholly displaced.

An object of this invention is to prepare a corrosion preventive coating composition which will prevent corrosion of the metal that is coated with it and will also adhere tenaciously to the surface of the metal and resist displacement.

According to this invention, it has been found that oil-soluble alkali metal salts of sulfonic acids formed on treating petroleum oils with concentrated sulfuric acid and degreas when applied as a coating on the surface of a metal, will prevent corrosion of the metal.

Application of the corrosion preventive may be adjusted to the requirements of the job by the proper choice of the vehicle carrying the preventive. For easy application by spraying, dipping, brushing or swabbing, the agent may be carried in a volatile solvent, such as a petroleum naphtha, kerosene or mineral seal oil; in a coal tar solvent and other hydrocarbon solvent of suitable volatility; or it may be carried in any other liquid possessing the desired volatility and solubility characteristics, such as the chlorinated hydrocarbons. When applied thus, the solvent evaporates and a relatively non-sticky coating is left. Instead of using a solvent, the agent by itself or with the admixture of other materials, may be emulsified and the emulsion applied as above.

Upon cutting back the corrosion preventive with a relatively low viscosity mineral oil, products are obtained which can be applied easily at room temperature. The resulting coatings are sticky and fairly easily removed by wiping. More durable coatings may be obtained by employing a more viscous oil as a vehicle and heating the mixture prior to application to get the sought for ease of spreading. The oily diluents may be mineral, fatty or any other product possessing the sought for volatility, solubility and viscosity character-

istics. Viscosity may be increased up to the point of employing asphalts or resins, in which case a very durable, relatively non-sticky coating is secured. Paraffin wax, petrolatum and other waxes may also be employed and very durable, dry coatings result when high melting point amorphous waxes, such as ceresin, ozokerite and those obtainable by de-oiling petrolatum, are used.

It is obvious that a variety of combinations of the above materials will be best suited for particular applications, and that in each instance where the material is too viscous or solid for application at room temperature, it may be rendered fluid either by heating or by solution in a volatile solvent.

Along with the corrosion preventive and the vehicle, certain fillers may be employed. These may be such reagents as chromates, silicates and other alkaline materials, derivatives of zinc, lead and other metals of known protective properties, all of which possess no anti-corrosive properties. Fillers may also be introduced to modify the texture of the coating and thus render it more easy to handle, more resistant to scuffing and perhaps more readily removed. In this category would be such inert materials as chalk, wood flour, etc. A colored filler may also be chosen where it is desirable to impart a distinctive coloration to the product.

Other corrosion preventives may be added to this composition, such as sodium nitrite, sodium resinate, borax, amines, anilides, onium base compounds and other organic bases. The basic materials are especially valuable as corrosion preventives as they may also neutralize acidic materials left on the metal.

The preferred formulas are as follows:

(1)		Per cent
Petroleum solvent naphtha (boiling range 300° to 410° F.)	-----	80
Oil solution of sodium salts of oil-soluble sulfonic acids formed on treating petroleum oils with concentrated sulfuric acid	-----	10-50
Degreas	-----	10
(2)		Per cent
Petroleum lubricating oil (Saybolt viscosity at 100° F.=85 seconds)	-----	85
Oil solution of sodium salts of oil-soluble sulfonic acids formed on treating petroleum oils with concentrated sulfuric acid	-----	10-50
Degreas	-----	5

(3)

	Per cent
Petroleum lubricating oil (Saybolt viscosity at 100° F.=750 seconds)-----	85
Oil solution of sodium salts of oil-soluble sulfonic acids formed on treating petroleum oils with concentrated sulfuric acid-----	10-50
Degras-----	5

(4)

	Per cent
Petrolatum-----	25.5
Petroleum lubricating oil (Saybolt viscosity at 100° F.=750 seconds)-----	59.5
Petroleum lubricating oil-----	10.0-50
Degras-----	5.0

(5)

	Per cent
Petrolatum-----	85
Lubricating oil-----	10-50
Degras-----	5

Other proportions of the sodium salts of oil-soluble sulfonic acids may be used, such as 2% to 30%. The sodium salts of oil-soluble sulfonic acids preferred are those of medium viscosity, i. e., a salt of a sulfonic acid formed on treating a lubricating oil of about 200 seconds Saybolt viscosity with fuming sulfuric acid. Sodium salts of oil-soluble sulfonic acid of similar viscosities may be prepared by blending sodium salts of oil-soluble sulfonic acids formed by treating petroleum oils of 300 seconds Saybolt viscosity at 100° F. with fuming sulfuric acid with those in which the oil-soluble sulfonic acids were formed by treating petroleum oils of 85 seconds Saybolt viscosity at 100° F. Alkali metal salts of other oil-soluble sulfonic acids formed by treating petroleum oils of low and high viscosity with concentrated sulfuric acid may also be used. Potassium salts of oil-soluble sulfonic acids may be used in similar mixtures.

The fatty oil used is degreas and preferably one that had been neutralized. For example, one neutralized with calcium oxide. The proportions of degreas used may also be varied over a wide range, that is, from 2 to 30% or higher. Purified degreas, or the purified extract such as lanolin, may also be used but neutralized degreas is preferred.

Comparative tests of corrosive preventive com-

positions were made according to the following table:

	A	B	C	D
Oil (solvent)-----percent..	95	90	88	85
Sodium salts of oil-soluble sulfonic acids, do.....	5	2	2	5
Degreas-----do.....	10	10	10	10
Hours elapsed before corrosion appeared-----	20	5	168	500+

These tests were carried out by dissolving the various ingredients as shown above in kerosene (solvent). The objects to be protected were then dipped into the kerosene solution and the kerosene allowed to evaporate, then the test pieces were placed in a cabinet maintained at a temperature of 100° F. and the atmosphere therein saturated with water. The time for corrosion to begin was then noted.

The invention is not to be limited to the specific embodiments, nor to any theories advanced as to the operation of the invention, but in the appended claims it is intended to claim all inherent novelty in the invention as broadly as the prior art permits.

I claim:

1. A corrosion preventive composed of degreas and an alkali metal salt of oil-soluble sulfonic acids derived from petroleum by treating petroleum oil with concentrated sulfuric acid in which the ratio of alkali metal salt of oil-soluble sulfonic acids to degreas is between 1:1 and 1:15 respectively.

2. A corrosion preventive comprising a non-corrosive petroleum hydrocarbon vehicle, degreas and an alkali metal salt of oil-soluble sulfonic acids derived from petroleum in which the ratio of oil-soluble sulfonic acid salts to degreas is between 1:1 and 1:5 respectively.

3. A corrosion preventive comprising a petroleum solvent naphtha boiling within the range of 300 to 410° F., 10% degreas and 5% of a sodium salt of oil-soluble sulfonic acid derived from the treatment of petroleum oil with concentrated sulfuric acid.

4. A corrosion preventive comprising a non-corrosive petroleum hydrocarbon vehicle, degreas and an alkali metal salt of oil-soluble sulfonic acids derived from the treatment of petroleum oil with concentrated sulfuric acid in which the ratio of alkali metal salts of oil-soluble sulfonic acids to degreas is 1:2 respectively.

ROBERT B. LEBE.