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RUST INHIBITOR

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My invention relates to a method of inhibiting rust on metal articles and a composition for inhibiting rust, and has for its object the provision of a composition of the character described, which shall include as a principal ingredient "floating soap".

"Floating soap" is that saponaceous product which is formed in the black liquor produced in the digestion process in the production of paper or other cellulosic products by the sulphate or soda process, and which in part separates and floats to the top of the liquor drained from the pulp after digestion, and which also is in part in solution in the liquor and may be separated out by centrifugal separation or other methods.

"Floating soap", so called, contains the alkali salts of a complexity of fatty and resinous acids, higher alcohols, and a number of other compounds, many of which have not as yet been identified. While no dependable analysis of "floating soap" is available, it is known to treat the product, for example, as set forth in the U. S. patent to Michelson No. 1,823,752, in such a manner as to free the acid constituents and alcohols from the "floating soap" and obtain a complex mixture of such constituents which is known in the trade as "Tallo".

Among the compounds which have been identified in "floating soap" are the sodium salts of oleic acid, palmitic acid, linolenic acid, capric acid, and linoleic acid, and unidentified unsaponifiable compounds. (Hasselstrom Paper Trade Journal, July 8, 1926, page 60; Chem. Abs. 20: 2566). Also in Sandquist, Berichte, 64 B, pages 2172-4; (Chem. Abs. 26: 472), there are identified a salt of lignoceric acid, lignoceryl alcohol and phytosterol. Aschan in Finska Kem. Medd. 1918, page 8, (Chem. Abs. 13: 2868) describes salts of pinabietic acid. Dittmer in Z. Angew. Chem., vol. 39, page 262 (1926) (Chem. Abs. 20: 2072), describes abietic acid as well as confirming the work of other investigators, and mentions other unidentified hydrocarbons.

E. Phylala in Svensk. Pappers Tid. vol. 29, 601-4, 627-9 (1926); (Chem. Abs. vol. 21, page 2072) separates the co-called "floating soap" according to viscosity into twelve classifications ranging from easily mobile fatty oil to a black asphalt like resin. Among compounds not mentioned by other investigators and identified by this author are ricinoleic acid, erucic acid, erythrose and mannose.

Besides the above mentioned compounds, the so-called "soap" contains free sodium hydroxide, free sodium sulphide, free sodium carbonate, free

sodium acetate, and other unidentified materials. The physical and chemical properties of different samples vary to a certain extent depending upon the conditions of manufacture and the woody material from which it is obtained.

As is well known, in the fabrication of metal articles, particularly in the automotive industry, one of the major problems is the prevention of rust formation between the time the article is assembled and when protective coatings of paint or electro-plating are applied. A number of materials have heretofore been employed as rust inhibitors, among which are the phosphates, dichromates, and hydroxides. Most of these have to be removed before the surface can be painted.

I have discovered that "floating soap", even when used in a solution of very low concentration, for example as low as 0.5%, has remarkable rust inhibiting properties, and that it will enter in solution in practically all paints, varnishes and lacquers, so that a metal article having applied thereto my improved rust inhibiting coating, can be painted without the necessity of removing the coating. My improved rust inhibiting composition, being made from a by-product of the paper industry, is extremely economical of manufacture, and is furthermore extremely easy of application, whereby it may be made and used with a minimum of expense.

In carrying out my invention I provide a composition as follows:

	Parts
"Floating soap"	0.5 to 25
Alcohol	Up to 10
Water	Sufficient for 100

The alcohol is provided to minimize the foam which results from repeated dipping the articles into the solution, and may be omitted. It also accelerates drying of the solution on the article. Other alcohols besides ethyl alcohol and other foam inhibitors, many of which will suggest themselves to those skilled in the art, may be used.

The articles to be treated are first cleaned and all grease removed from the surfaces. If a concentration of over 5% "soap" is used the solution will aid in degreasing. They are then treated with the solution, either by dipping them in the solution or by spraying the solution on to the article, and are allowed to dry.

After articles are treated with my improved solution, they should not be put in a place where they will be rained on or subjected to a spray of water, for the reason that water dissolves and removes the coating from the articles. If the ar-

article so treated is to be painted, the paint may be applied directly over the rust inhibiting composition without removing it. If the article is to be electro-plated, the rust inhibiting solution should be removed, and this may be readily done by dipping the article in hot water.

Among the advantages of "floating soap" as a rust inhibitor are:

(1) It removes thin films of grease, oils, paint and other coatings.

(2) It reduces surface tension and hence covers the work evenly and rapidly.

(3) It forms a permanent protective coating so long as protected from rain.

(4) Very low concentrations are required (as low as 0.5%).

(5) Any "soap" remaining on work will not have a detrimental effect on paint films.

(6) The film may be easily washed off with hot water or solvents.

From the foregoing, it will be apparent that I have devised an improved rust inhibiting composition which is economical of manufacture and easy of application.

While I have shown but one form of my invention, it will be obvious to those skilled in the art that it is not so limited, but is susceptible of various changes and modifications, without departing from the spirit thereof, and I desire, therefore, that only such limitations shall be placed thereupon as are imposed by the prior art or as are specifically set forth in the appended claims.

What I claim is:

1. The method of inhibiting rust on metal surfaces which comprises coating the surfaces with a water solution of "floating soap" obtained from the black liquors in the manufacture of soda or sulphate cellulosic materials.

2. The method of inhibiting rust on metal articles which comprises cleaning the article and then coating it with a water solution of "floating soap" obtained from the black liquors in the manufacture of soda or sulphate cellulosic materials.

3. The method of inhibiting rust on metal articles which comprises coating the cleaned articles with a solution of "floating soap" obtained from the black liquors in the manufacture of soda or sulphate cellulosic materials, ethyl alcohol, and water.

4. A rust inhibiting composition comprising a solution of "floating soap" obtained from the black liquors in the manufacture of sulphate or soda cellulosic materials, in water, the soap comprising more than 0.5% of the solution.

5. A rust inhibiting composition comprising a solution containing ethyl alcohol up to 10%, "floating soap" obtained from the black liquors in the manufacture of soda or sulphate cellulosic materials up to 25%, and water.

6. A rust inhibiting composition comprising a solution containing ethyl alcohol up to 10%, "floating soap" obtained from the black liquors in the manufacture of sulphate or soda cellulosic materials, over 0.5%, and water.

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