

UNITED STATES PATENT OFFICE

2,373,787

SLUSHING COMPOSITIONS

Thomas E. Sharp, Chicago, Ill., assignor to Standard Oil Company, Chicago, Ill., a corporation of Indiana

No Drawing. Application June 24, 1943,
Serial No. 492,128

4 Claims. (Cl. 106—14)

The present invention is directed to new and improved anti-rust and slushing compositions.

Anti-rust or slushing compositions are used for the protection of metals either in the form of stock or fabricated articles against corrosion and/or rusting. Metals prior to storage should be coated with an anti-rust material to prevent corrosion and/or rusting while in storage, and finished articles and finished or semi-finished metal stocks destined for shipment by rail or by water must be protected against attack by moisture by coating such materials with anti-rust or slushing compounds. Materials for shipment overseas particularly must be protected against attack by salt spray. Since the necessity of protecting materials for overseas shipment is of the utmost importance, slushing compositions for this purpose must meet rigid specifications.

It is an object of the present invention to provide anti-rust compositions which adhere tenaciously to metal surfaces and which are highly effective in preventing corrosion and/or rusting. It is another object of the present invention to provide superior slushing and/or anti-rust compositions.

I have found that very effective anti-rust and/or slushing compositions are prepared from a mixture comprising a petroleum wax, preferably petrolatum and/or paraffin waxes, oil and an oil soluble metal soap of a fatty acid, preferably a magnesium soap of a fatty acid such as stearic acid, palmitic acid, oleic acid and the like. The petrolatum employed may be a crude or refined petrolatum having a melting point ranging between about 80° F. and about 175° F., the melting point of the petrolatum used depending upon the desired melting point and consistency of the finished anti-rust composition. Although it is preferable to use petrolatums, paraffin waxes or mixtures of paraffin waxes and petrolatum can be suitably employed. Although I prefer to use mineral oils in the composition, the use of other oils such as, for example, vegetable and animal oils is not precluded. The viscosity of the mineral oil can be varied over a wide range, depending upon the desired consistency of the final product. The amount of oil soluble soap used can range from about .05% to about 3% and preferably from about .1% to about .5%. In the following table the permissible range of constituents and

the preferred range of the constituents employed in the fabrication of the preferred embodiment of the present invention is given:

	Permissible range	Preferred range
	Per cent	Per cent
Petroleum wax.....	5 to 99.95	35 to 80
Oil.....	94.5 to 0	64.9 to 19.5
Oil-soluble soap (preferably magnesium stearate).....	0.05 to 3	0.1 to 0.5

Since for certain uses low melting petrolatums which already contain substantial amounts of oil can be used, it may not be necessary to incorporate additional oil in the composition.

Anti-rust compositions for use for or by the armed services must meet certain rigid specifications and tests. For example in one specific specification, among the required tests are the adhesion and protection test and the consistency test. In the adhesion and protection test strips of cold rolled steel 2" x 3" x 1/8" are dipped in the melted rust preventive at 150° F. for sufficient time to obtain a film thickness of 0.015". The coated strips are then suspended vertically in an oven maintained at 122° F. for five hours, following which they are placed in an atmosphere of 100% relative humidity and 100° F. temperature for a period of 300 hours. At the end of this time the test strips shall not have rusted. In the consistency test the rust preventive shall have an unworked A. S. T. M. penetration of 200 to 275 at 77° F. By numerous tests it has been established that anti-rust preventives included in the above formulations can be made to meet the above specifications. The compositions also afford complete protection of metal surfaces against corrosion and/or rust under severe test conditions.

In the development of rust preventives to meet the adhesion and protection and the consistency requirements, the composition to afford maximum protection should have a sufficiently high melting point so that the rust preventive does not slip off of the metal in the 122° F. oven. In the absence of an oil-soluble metal soap it was found that in order to meet the adhesion and protection specification, the minimum consistency requirement could not be met. However, by using the proper amount of the oil-soluble metallic soap,

such as the magnesium soap of a fatty acid, the penetration can be brought to the required range and at the same time the rust preventive will pass the adhesion and protection specifications.

The effect of an oil-soluble metal soap, such as magnesium stearate, on the penetration of petrolatum-oil blends is illustrated by the following data:

Petrolatum	Oil	Mg. stearate	Penetration at 77° F.
Per cent	Per cent	Per cent	
45	55	0	175
45	54.95	.05	221
45	54.85	.15	320
45	54.75	.25	354

Anti-rust compositions of the present invention are illustrated by the following specific examples:

I

	Per cent
Crude petrolatum base (M. P. 132-142° F.)	45
Petroleum oil (Saybolt visc. at 210° F. 110-130 sec.)	54.9
Magnesium stearate	0.1

II

	Per cent
Petroleum (M. P. 158° F.)	65
Petroleum oil (Saybolt visc. at 210° F. 210 secs.)	34.5
Magnesium stearate	0.5

If desired small amounts of other materials such as lanolin, the products derived from controlled oxidation of petroleum oil comprising mixtures of organic acids and their esters, high molecular weight alcohols, lactones, ketones and alcohol-ketones, these products being marketed as alox compounds and the like may be incorporated in the composition for additional rust protection under unusually severe conditions.

While I have described my invention in con-

nection with certain embodiments thereof, it is to be understood that these are by way of illustration only and are not intended to limit the scope of the invention except in so far as the same is defined by the following claims.

I claim:

1. A corrosion preventing coating composition consisting substantially of a petroleum wax as the major constituent, a petroleum oil, and magnesium stearate in small but sufficient quantities; namely, from about 0.05% to about 3%, to impart to the coating composition the desired penetration-consistency relationship.

2. A semi-solid to solid rust preventing coating composition having a minimum unworked A. S. T. M. penetration of about 200 at 77° F. consisting substantially of a petroleum wax, a petroleum oil, and magnesium stearate in small but sufficient quantities; namely, from about 0.1% to about 0.5% to impart to the coating composition the desired penetration-consistency relationship.

3. A semi-solid to solid rust preventing coating composition having a minimum unworked A. S. T. M. penetration of about 200 at 77° F. consisting substantially of petrolatum, a petroleum oil, and magnesium stearate in small but sufficient quantities; namely, from about 0.1% to about 0.5% to impart to the coating composition the desired penetration-consistency relationship.

4. In a semi-solid to solid corrosion preventing coating composition consisting substantially of a petroleum wax and a petroleum oil as the major constituents thereof, the method of increasing the unworked A. S. T. M. penetration at 77° F. of said coating composition without impairing the adhesion of the composition comprising incorporating in said composition magnesium stearate in small but sufficient quantity; namely, from about 0.05% to about 3% to impart to the coating composition the desired penetration-consistency relationship.

THOMAS E. SHARP.