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EMULSION

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This invention relates to emulsions and particularly to emulsions of mineral oils and to mineral oil compositions which are readily emulsifiable.

The emulsions produced according to the present invention are capable of use as cutting and grinding lubricants and for other purposes for which lubricating emulsions are employed.

I have found that the soaps of the acids derived from the oxidation of hydrocarbon waxes and particularly oxidized paraffin wax, petrolatum and the like, are highly suitable emulsifying agents for such compositions.

According to the invention, I produce compositions comprising a lubricating oil and soaps of oxidized hydrocarbon wax, with or without other ingredients. Such compositions are usually gels at ordinary temperature, but can be readily dispersed in practically all proportions in soft water and within wide proportions in hard water, to give very stable emulsions.

Any suitable oil may be employed, but it is preferred to employ hydrocarbon lubricating oils.

In addition to the soaps of oxidized wax, it is preferred to employ an additional emulsifying agent, for example, a quantity of another soap or the free acid thereof. Thus, I may add oleic, undecylenic, sulfonated or other acids or the soluble salts thereof or any other suitable emulsifying agent.

A small amount of alcohol may be incorporated in the emulsifiable composition for the purpose of aiding initial dispersion. It is also preferred to incorporate in the composition a small amount of water, which aids in dispersion and assists in retaining the alcohol, when alcohol is included in the composition.

The invention will readily be understood from the following examples.

Example I

Paraffin wax of melting point about 123° F. is oxidized at about 320 to 350° F. by blowing with air for six to seven hours. The mixture is saponified with lime, the lime soap separated and the corresponding acids precipitated with sulfuric acid. The acids are saponified with 48° Bé. caustic soda and incorporated in oleic acid, straw oil, water and alcohol. The proportions of the ingredients are suitably:

Oleic acid	10.00
Paraffin wax acids	17.00
Sodium hydroxide	1.75
Straw oil	69.00
Water	1.75
Alcohol	.50

The sodium hydroxide included in the above table is employed to saponify the paraffin wax acids and at least a portion of the oleic acid.

The amounts of the various ingredients may be varied considerably. For example, the amounts of the above substances may vary as follows: oleic acid 5 to 15%, paraffin wax acids 8 to 22%, sodium hydroxide 0.82 to 2.66%, straw oil 54 to 86%, water from a trace to 4% and alcohol from a trace to 2%.

Example II

Paraffin wax is oxidized as described in Example I, saponified with caustic potash, the potash soap separated and the paraffin wax acids precipitated with sulphuric acid. The paraffin wax acid has a neutralization value of 156 and a saponification value of 204. Such acid is mixed with preferentially oil soluble sulfonates derived from the refining of hydrocarbon mineral oil with sulfuric acid and heated with 42° Bé. potassium hydroxide solution sufficient for complete saponification. The sulfonates referred to are described in U. S. Patent No. 1,286,179 to R. E. Humphries, granted November 26, 1918. Straw oil, water and alcohol are then added in the order named. The proportions of ingredients are suitably:

Preferentially oil soluble sulfonates (45% soap)	22.00
Paraffin wax acids	4.00
Potassium hydroxide	0.82
Straw oil	70.88
Water	1.30
Alcohol	1.00

The potassium hydroxide included in the

bove table is employed to saponify the parffin wax acids and at least a portion of the referentially oil soluble sulfonates.

The proportions of the ingredients may be aried considerably. For example, the mounts of the above substances may lie vithin the following ranges: sulfonates 15 o 35%, paraffin wax acids 1 to 7%, potassium ydroxide 0.2 to 1.4%, straw oil 48 to 83%, vater from a trace to 5% and alcohol from a race to 3%.

While it is preferred to employ another uitable emulsifying agent, in addition to the oaps of oxidized hydrocarbon waxes, paricularly when fatty acids are incorporated n the composition, an emulsifiable composiion may be prepared by employing only the oaps of the oxidized hydrocarbon waxes. For example, in Example I the oleic acid may e omitted; in Example II the soaps of referentially oil soluble sulfonates may be mitted. Ordinarily, in such a composition, he amount of paraffin wax acids should be ncreased. It is preferred to employ an mount of alkali (potassium or sodium hyroxide, as the case may be) which is insufficient to saponify all of the saponifiable conituents. The desired amount of water may e added separately or along with the metal ydroxide which may be in the form of a olution.

Although the present invention has been lescribed with reference to the details of pecific examples thereof, it is not intended hat such details shall be regarded as limiations upon the scope of the invention exept in so far as included in the accompanyng claims.

What I regard as new, and desire to secure y Letters Patent, is:

1. An emulsifiable composition comprising ydrocarbon oil and soap of oxidized hydroarbon wax as an emulsifying agent therefor.

2. An emulsifiable composition comprisng a hydrocarbon lubricating oil and alkali netal soap of oxidized paraffin wax as an mulsifying agent.

3. An emulsifiable composition comprising hydrocarbon lubricating oil, alkali metal oap of oxidized hydrocarbon wax as an mulsifying agent therefor, and an additionl emulsifying agent.

4. An emulsifiable composition comprising lubricating oil, alkali metal soap of oxilized hydrocarbon wax as an emulsifying gent and oleic acid.

5. An emulsifiable composition comprising lubricating oil, alkali metal soap of oxidized araffin wax as an emulsifying agent thereor and a small amount of alcohol.

6. An emulsifiable composition comprisng a lubricating oil, alkali metal soap of xidized paraffin wax as an emulsifying gent therefor, a small amount of alcohol, nd a small amount of water.

7. An emulsifiable composition comprising straw oil between 54 and 86%, paraffin wax acids between 8 and 22%, sodium hydroxide between 0.82 and 2.66%, and oleic acid between 5 and 15%.

8. An emulsifiable composition comprising straw oil 69%, paraffin wax acids 17%, sodium hydroxide 1.75%, oleic acid 10%, water 1.75% and alcohol 0.5%.

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