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WETTING AND SPREADING AGENT FOR OILS

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9 Claims. (Cl. 252—1)

This invention relates to the preparation of oils having superior wetting and spreading properties, and it relates particularly to the preparation of blends of mineral oils with compounds of the alkyl phenol type which are adapted to wet and spread in a thin film.

In dry climates, such as desert regions, the storage of water is a serious problem due to the rapid evaporation. It is known that the surface may be covered with oil layers and these oil layers will inhibit the evaporation. The disadvantages of using oils are that unsaturated oils of the vegetable or mineral oil types which will readily spread in thin films are easily oxidized, form acidic compounds and sometimes hard layers which can be broken and the value of the oil films as evaporation inhibitors thereby lost. Therefore it is desirable to use saturated mineral oils but it has been found that it is very difficult to form continuous layers or films of the oils of this type unless very large amounts of the oils are used. These saturated mineral oils tend to gather in globules and leave large portions of the surface exposed to the atmosphere, unless large volumes are used.

An object of this invention is to provide a blend of mineral oils which will not only spread rapidly but also remain as thin films on the surfaces of the water. This and other objects of the invention will be understood on reading the following description:

Where a large area of water is exposed to the atmosphere, it may be desirable to first provide a floating grill which is partly submerged and partly exposed and divides the surface of the water into small areas. On the surface of the water in these small areas is then added a blend of mineral oil which will rapidly spread and form a thin film. The blends of mineral oils prepared for this particular use are by adding to the mineral oils a material of the type of alkyl phenols such as normal alkyl phenols, secondary alkyl phenols, tertiary alkyl phenols, halogenated phenols and the bi-cyclic group, as represented by alpha nephthol, etc.

The specific alkyl phenols which are used according to this invention are cresol, thymol, chlorothymol, amyl-metacresol, alpha naphthol, secondary hexyl phenol, tertiary amyl phenol, heptal phenol, etc.

The amount of these alkyl phenols added may be varied from about 0.5 to 2%. Where the oils have low solubility ratios, it may be necessary to add a mutual solvent, such as alcohol, to hold the materials in solution, especially when higher concentrations are desirable, although it was found that some of the solid materials may be readily dissolved in the oil by means of heat, that is, heating the mixture of mineral oil and solid alkyl phenol until the solid alkyl phenol goes into solution.

The addition of these compounds to mineral oils, especially those having poor wetting and spreading properties on surfaces of water, metal, wood and other materials, causes a reduction in the surface and interfacial tension which in turn causes the oil to spread and wet the surface as desired. Where a grill prepared of wood or any other light material is used to divide the surface of the small areas, it is necessary that this mineral oil wets and forms a thin film at the point of contact of the water and the material.

Another advantage obtained by the use of this mineral oil blend is when it becomes contaminated with dust, leaves, etc., it may be easily removed from the surface of the water and replaced with a new portion. These blends are stable, that is, they are not easily oxidized or reduced by exposure to the atmosphere. A saturated mineral oil with sufficiently low volatility to be stable against ready evaporation on exposure to the atmosphere belongs to the class of highly refined mineral oils often referred to as white oils and medicinal oils. Such oils are innocuous to the digestive system of a human being.

The invention is not to be limited to the specific embodiments, nor to any theories advanced as 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 process for inhibiting evaporation from a body of water having a limited surface area which comprises coating the surface of the water with a stable solution of an alkyl phenol in a saturated mineral oil, said solvent being stable against oxidation and loss on exposure to the atmosphere, being free from ingredients which contaminate the water internally and acting as a uniformly and continuously spread protective coating between the atmosphere and the surface of the water.

2. A process as described in claim 1 in which said stable solution contains from 0.5% to 2% of the alkyl phenol in the saturated mineral oil.

3. A process as described in claim 1 in which said alkyl phenol is a secondary alkyl phenol.

4. A process as described in claim 1 in which said alkyl phenol is a tertiary alkyl phenol.

5. A process as described in claim 1 in which said alkyl phenol is a halogenated alkyl phenol.

6. A process as described in claim 1 in which said alkyl phenol is selected from the group consisting of cresol, thymol, chlorothymol, amyl-meta-cresol, alpha naphthol, secondary hexyl phenol, tertiary amyl phenol, heptal phenol.

7. A process of inhibiting the evaporation of water which comprises dividing the surface area of the water into limited surface spaces and coating the said limited surface spaces with a stable blend of a saturated mineral oil and alkyl phenol.

8. A process of inhibiting the evaporation of water which comprises dividing the surface of the water into limited surface areas and coating the said surfaces of the surface areas with a stable solution of saturated mineral oil containing from about 0.5 to 2% of an alkyl phenol.

9. A process of inhibiting the evaporation of water which comprises dividing the surface of the dater into limited surface areas and coating the said surfaces of the surface areas with a stable solution of saturated mineral oil containing from about 0.5 to 2% of a compound of the type of an alkyl phenol selected from the group consisting of cresol, thymol, chlorothymol, amyl-meta-cresol, alpha naphthol, secondary hexyl phenol, tertiary amyl phenol, heptal phenol.

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