Patented Aug. 21, 1945 2,383,114

UNITED STATES PATENT OFFICE

2,383,114

DETERGENT COMPOSITION

Truman E. De Villiers, Okmulgee, Okla., assignor to Cities Service Oil Company, New York, N. Y., a corporation of Pennsylvania

No Drawing. Application July 24, 1942, Serial No. 452,172

5 Claims. (Cl. 252—118)

This invention relates to cleaning solutions. More particularly the invention relates to detergents for removing water-insoluble material from the skin of the body.

Most hydrocarbons, such as lubricating oils, asphalt, tars and also greases, are not soluble in water, or not soluble in ordinary hand soaps. Therefore, they cannot be readily removed by washing the hands or skin with soaps. It is common to use solvents for such hydrocarbons and greases to dissolve the hydrocarbons and greases and then use soap to remove the solvents. The solvents commonly used are gasoline, kerosene, benzene, turpentine, carbon tetrachlorid, acetone, and mixtures of these ingredients. These solvents are not readily soluble in water and most of them are quite harsh to the skin. Therefore they are not well adapted for cleaning the hands or delicate parts of the skin.

The primary object of the present invention is to provide a cleaning composition that will readily dissolve most of the water-insoluble compounds and still be non-irritating to the most delicate skin.

Another object of the invention is to provide a cleaning composition which will dissolve water-insoluble ingredients, such compound being soluble itself in water to permit its ready removal from the skin after it has dissolved the water-insoluble ingredients.

A further object of the invention is to provide a detergent which is effective for cleaning, non-injurious to the skin, and relatively inexpensive.

With these and other objects in view, the invention consists in the detergent hereinafter described and particularly defined in the claims.

A detergent embodying the preferred form of the invention has the following composition:

	Per cent
Monoethanolamine	5
Oleic acid	23
Orthodichlorbenzene	30
Butyl "Cellosolve"	20
Glycerin	15
Water	7

All of the ingredients of the above composition are mutually soluble in one another and provide a clear yellow liquid of low volatility and a flash point of 150° F. Tag closed. The odor of orthodichlorbenzene prevails but this odor can be modified by means of perfumes.

The monoethanolamine and oleic acid are preferably used in proportions to provide an ethanolamine oleate soap. Monoethanolamine appears to produce a soap which has the highest solvent properties of any of the ethanolamines, such as the mono-, di-, and tri-ethanolamines. All of the ethanolamine soaps produce a satisfactory product. Orthodichlorbenzene is a very effective solvent and still is not corrosive or injurious to the skin or metals. In place of the orthodichlorbenzenes other dichlorbenzenes, such as the meta- may be used. The commercial orthodichlorbenzene contains small amounts of both meta- and paradichlorbenzenes. However, the orthodichlorbenzene is the most satisfactory solvent from the standpoint of solubility in the other ingredients and the injurious effect on the skin.

Butyl "Cellosolve" is a monobutyl ether of ethylene glycol. The function of this product is principally that of a solvent.

Glycerin is a trihydric alcohol which is soluble in water and acts as a stabilizing compound for bringing the ingredients into mutual solution. Furthermore it gives a different viscosity to the solution and is a solvent for many of the materials for which it may be used as a cleaning compound.

A large series of experiments have been made to vary the composition of the preferred detergent and still provide a satisfactory product. It has been found that the constituents of the detergent may be varied between the following limits:

	Per cent
An ethanolamine	1 to 15
Oleic acid	5 to 50
Dichlorbenzene	10 to 40
Butyl "Cellosolve"	10 to 40
Glycerin	5 to 20
Water	0 to 15

It is preferred to provide a cleaning detergent by adjusting the volume of ethanolamine and oleic acid therein to give a pH of approximately 9.3. The preferred composition of the detergent given above has a pH of 9.3. This pH, however, may be varied when making a detergent which is to be used for dissolving different types of materials.

When using the detergent solution the solution is poured upon the hands or the portion of the skin which is soiled by the water-insoluble and other types of ingredients so that the detergent will dissolve the products to be removed. Thereupon the detergent, together with the materials to be removed, can be easily rinsed from the hands or skin with water.

By having a detergent which is a solvent for water-insoluble ingredients, such as hydrocarbons, greases and the like, and also which is soluble in water, a product is provided which may be conveniently used for cleaning because it is merely necessary to use the detergent upon the hands first and then rinse the dissolved material from the hands. In cases where solvents have been used heretofore, the solvent is generally placed upon a cloth to wipe and remove as much of the ingredients to be removed from the hands as possible with the solvent, and thereafter the hands have to be thoroughly washed with soap in order to remove the solvent.

While the invention has been described as a detergent adapted for cleaning skin, this detergent is satisfactory for cleaning purposes for fabrics and other surfaces where it is intended to remove water-insoluble materials, such as hydrocarbons, asphalts, greases and the like.

The preferred form of the invention having been thus described what is claimed as new is:

1. A detergent mixture comprising approximately 30% of orthodichlorbenzene, approximately 20% of ethylene glycol monobutyl ether, approximately 15% of glycerin, approximately 7% of water, the remainder of the mixture consisting essentially of an ethanolamine oleate soap.

2. A detergent mixture comprising approximately 30% of orthodichlorbenzene, approximately 20% of ethylene glycol monobutyl ether, approximately 15% of glycerin, up to 15% of water, the remainder of the mixture consisting essentially of an ethanolamine oleate soap.

3. A detergent mixture comprising approximately 30% of orthodichlorbenzene, approximately 20% of ethylene glycol monobutyl ether, approximately 15% of glycerin, up to 15% of water, the remainder of the solution consisting essentially of a monoethanolamine oleate soap.

4. A detergent mixture resulting from the mixing of the following materials, approximately 5% of monoethanolamine, approximately 23% of oleic acid, approximately 30% of orthodichlorbenzene, approximately 20% of ethylene glycol monobutyl ether, approximately 15% of glycerin, and approximately 7% of water.

5. A detergent mixture resulting from the mixing of the following materials, from 1% to 15% of an ethanolamine, from 5% to 50% of oleic acid, from 10% to 40% of orthodichlorbenzene, from 2% to 20% of glycerin, from 10% to 40% of ethylene glycol monobutyl ether, and from zero to 15% of water.

TRUMAN E. DE VILLIERS.