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3,457,175  
SHAMPOOS

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4 Claims

ABSTRACT OF THE DISCLOSURE

The specification discloses shampoo formulations con-  
taining a solvent combination having high solvency power  
for the grease of the hair. The solvent combinations dis-  
closed are (1) mixtures of dipropylene glycol and the  
monomethyl ether of diethylene glycol and (2) mixtures  
of glycerine and polyethylene glycol.

This invention relates to shampoos.

It has been found that certain solvents when used to-  
gether in pairs in a shampoo have an unexpectedly high  
solvency power for the grease of the hair.

According to the invention there is provided a shampoo  
containing dipropylene glycol in combination with methyl  
digol (the monomethyl ether of diethylene glycol) or  
glycerine in combination with a polyethylene glycol.

The combined solvents may suitably constitute up to 5%  
by weight of the shampoo, preferably from 1 to 3%.

The dipropylene glycol or the glycerine, preferably con-  
stitutes from 20 to 80% by weight of the combined sol-  
vents.

The molecular weight of the polyethylene glycol is not  
critical, similar results having been obtained with di- and  
triethylene glycol as with the high molecular weight  
glycols.

Conventional surface-active agents can be used in the  
shampoo, for example alkyl sulphates, alkyl benzene sul-  
phonates, and alkyl ether sulphates.

The following are examples of typical shampoo for-  
mulae in accordance with the invention. Percentages are  
by weight.

Example 1

|                                  | Percent  |
|----------------------------------|----------|
| Monoethanolamine lauryl sulphate | 16.5     |
| Methyl digol                     | 1.0      |
| Dipropylene glycol               | 1.0      |
| Water                            | To 100.0 |

Example 2

|                                  |          |
|----------------------------------|----------|
| Monoethanolamine lauryl sulphate | 16.5     |
| Glycerine                        | 1.0      |
| Polyethylene glycol (1500)       | 1.0      |
| Water                            | To 100.0 |

Example 3

|                                     |          |
|-------------------------------------|----------|
| Monoethanolamine lauryl sulphate    | 7        |
| Ammonium dodecyl benzene sulphonate | 4        |
| Sodium tripolyphosphate             | 2        |
| Lauric isopropanolamide             | 2        |
| Methyl digol                        | 1        |
| Dipropylene glycol                  | 1        |
| Water                               | To 100.0 |

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The unexpected solvency power for greases of the hair  
exhibited by the above pairs of solvents was demonstrated  
by the following experiment that was carried out.

A synthetic sebum was first prepared; this had the fol-  
lowing composition:

| Ingredient:                 | Percent |
|-----------------------------|---------|
| Myristic acid               | 3.5     |
| Palmitic acid               | 10.5    |
| Oleic acid                  | 17.5    |
| Stearic acid                | 3.5     |
| Lard                        | 8.5     |
| Olive oil                   | 8.5     |
| Lanolin                     | 15.0    |
| Octadecanol                 | 10.0    |
| Squalene                    | 4.0     |
| Hydrocarbon wax M.P. 49° C. | 3.5     |
| Hydrocarbon wax M.P. 65° C. | 3.5     |
| Cholesterol                 | 3.0     |
| Linseed oil (oxidised)      | 6.0     |
| Glyceryl mono-oleate        | 1.5     |
| Glyceryl mono-stearate      | 1.5     |

The synthetic sebum was dissolved in petroleum ether  
(40–60° C.) to give a 5% solution. 10 mls. of this solu-  
tion were pipetted into each of three 100 ml. beakers and  
the solvent evaporated off on a steam bath to give 0.50  
g. of sebum in each beaker. The beakers were then al-  
lowed to cool in a desiccator and then weighed to check  
that all the petroleum ether and moisture had been re-  
moved.

20.00 g. of shampoo containing the solvents indicated  
in the table were then added to each beaker and then the  
beakers were placed on a water bath maintained at 40° C.  
for one hour with gentle agitation.

The solidified sebum broke up under the treatment and  
become suspended in the form of small solid particles in  
the warm shampoo.

These suspensions were then filtered to remove un-  
dissolved sebum and then cooled.

A ten gram sample of each shampoo was then weighed  
out and 100 mls. of 50% aqueous ethanol added and the  
solution warmed to assist solubilisation. The solution was  
again cooled and washed into a 250 ml. separating funnel  
with a further 50 mls. of 50% aqueous alcohol.

This solution was then extracted with 3×50 mls. of  
petroleum ether (40–60° C.) and the petroleum ether  
extracts combined and back washed with 2×20 mls. of  
distilled water.

The washed petroleum ether extract was then dried by  
filtering through a funnel containing anhydrous sodium  
sulphate into a tared flask and evaporating the petroleum  
ether on the steam bath. The residue in the flask was final-  
ly dried in an oven at 60° C. for one hour, cooled in a  
desiccator, and then weighed. The sample was heated in  
the oven until a constant weight was obtained.

The above process was repeated using shampoo which  
had not been treated with sebum, to obtain the amount  
of petroleum ether soluble material already present in the  
shampoo, so that the true weight of sebum dissolved could  
be obtained.

The results are indicated in the following table. The  
shampoo base in each case was 16.5% monoethanolamine  
lauryl sulphate.

TABLE

| Percent Solvent in Shampoo |                 |                |                                       |                                         |
|----------------------------|-----------------|----------------|---------------------------------------|-----------------------------------------|
| Dipropyl-<br>ene<br>Glycol | Methyl<br>Digol | Glycer-<br>ine | Poly-<br>ethylene<br>Glycol<br>(1500) | Weight of<br>Sebum<br>Dissolved<br>(g.) |
| 2                          |                 |                |                                       | 0.21                                    |
|                            | 2               |                |                                       | 0.20                                    |
| 1                          | 1               |                |                                       | 0.24                                    |
| 1.5                        | 0.5             |                |                                       | 0.27                                    |
| 0.5                        | 1.5             |                |                                       | 0.23                                    |
|                            |                 | 2              |                                       | 0.17                                    |
|                            |                 |                | 2                                     | 0.17                                    |
|                            |                 | 1              | 1                                     | 0.25                                    |
|                            |                 |                |                                       | 0.18                                    |

What is claimed is:

1. A shampoo preparation for cleaning hair and dissolving hair grease consisting essentially of an organic anionic surface active agent, water, and from about 1% to about 5% by weight of a solvent for the grease of the hair selected from the class consisting of (1) a mixture of from about 20% to about 80% by weight dipropylene glycol and the balance the monomethyl ether of diethylene glycol and (2) a mixture of from about 20% to about 80% by weight glycerine and the balance polyethylene glycol.

2. The shampoo as defined by claim 1 wherein the amount of said solvent is from about 1% to about 3% by weight.

3. The shampoo as defined by claim 1 wherein the solvent is said mixture of dipropylene glycol and the monomethyl ether of diethylene glycol.

4. The shampoo as defined in claim 1 wherein the solvent is said mixture of glycerine and polyethylene glycol.

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