

UNITED STATES PATENT OFFICE

2,445,975

SOLUBILIZED ALKARYL SULFONATE
COMPOSITION

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1

This invention relates to solubilized alkaryl sulfonate compositions such as the alkali metal or ammonium salts of alkyl naphthalene sulfonates, and more particularly to compositions containing dicyandiamide as a solubilizing agent therefor.

The water-soluble salts of alkaryl sulfonates such as sodium isopropyl naphthalene sulfonate, sodium butyl naphthalene sulfonate and sodium keryl benzene sulfonate are in wide commercial use as wetting and emulsifying agents and as detergents. Large quantities of these and similar compounds are prepared in the form of aqueous solutions containing 10-20% of the alkaryl sulfonic acid salt. It is a principal object of the present invention to solubilize the alkaryl sulfonates in these solutions to prevent crystallization or deposition of the solute at low temperatures.

I have found that dicyandiamide is an unusually effective solubilizing agent for alkaryl sulfonic acid salts of the type of isopropyl or butyl naphthalene sulfonates and particularly for alkyl benzene sodium sulfonates wherein the alkyl radical contains about 10-15 carbon atoms. These alkyl benzene sulfonates are usually prepared by first chlorinating a fraction of kerosene which contains about 10-15 and preferably about 13 carbon atoms followed by condensing the chlorinated kerosene fraction with benzene in the presence of a Friedel-Craft catalyst. The resulting alkyl benzene is sulfonated with strong sulfuric acid or other sulfonating agent to produce the wetting agent. Typical compounds of this type are described in U. S. Patent No. 2,220,099.

The alkyl naphthalene sulfonates are ordinarily prepared by condensing naphthalene beta sulfonic acid with isopropyl or butyl alcohol in the presence of excess free sulfuric acid, preferably under conditions such as to introduce about 1.5-2.5 alkyl groups per molecule of naphthalene. These compounds and their method of preparation are described in German Patent No. 336,558.

The exact quantity of dicyandiamide to be used as a stabilizing agent will depend on the concentration of the alkaryl sulfonate solution and on the minimum storage temperatures to which it is likely to be exposed. In general, however, less than about 2.5% of dicyandiamide, based on the weight of the wetting agent solution, is satisfactory for most practical purposes.

The quantities of dicyandiamide that will stabilize a 16% aqueous solution of a sodium keryl benzene sulfonate, sold commercially as "Nacconol NRSF," are given in the following table:

2

Gms. Dicyandiamide per 100 Gms. of Solution	Cloud Point, °C.	Clear Point, °C.
0.00	7	24
0.20	5	33
0.50	4	39
1.0	-1	15
1.2	-1	10
1.5	-5	0
1.75	-2	0

Approximately the same quantities of dicyandiamide can be used to prevent crystallization or deposition of a 15% sodium isopropyl naphthalene sulfonate solution at the same temperature.

It will thus be seen that the compositions of my invention consist essentially of 10-20% water solutions of alkaryl sulfonic acid salts having wetting, detergent and emulsifying properties, stabilized against crystallization or deposition by the incorporation therein of small amounts of dicyandiamide on the order of 0.2-2.5%, based on the weight of the solution. These quantities of dicyandiamide are much smaller than the amounts of urea or other solubilizing agents that have heretofore been necessary to obtain the same degree of stabilization.

What I claim is:

1. An aqueous 10-20% solution of a wetting agent selected from the group consisting of alkali metal and ammonium salts of alkaryl sulfonates containing from 4 to 15 carbon atoms in the alkyl radicals thereof, said solution being stabilized against deposition at low temperatures of about 7° C. to 0° C. by a content of 0.2% to 2.5% of dicyandiamide.

2. An aqueous 10-20% solution of a wetting agent selected from the group consisting of alkali metal and ammonium salts of keryl benzene sulfonates stabilized against deposition at low temperatures of about 7° C. to 0° C. by a content of 0.2-2.5% of dicyandiamide.

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REFERENCES CITED

The following references are of record in the file of this patent:

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