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2,709,665

GERMICIDAL COMPOSITION AND METHOD OF
TREATING FABRICS THEREWITH

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Our invention relates to a composition for and a method of treating fabrics, and has for some of its objects the treatment of fabrics and clothing of various materials and more particularly those of cotton and linen, by a composition that will; (a) prevent the growth of bacteria; (b) prevent the dissemination of dust and lint from treated bed linens and garments, and (c) prevent or eliminate static electricity.

A further object of our invention is to provide a composition which can conveniently be added to the rinse water, in connection with the laundering of textiles and garments, and materials that color the rinse water and those that would otherwise be seriously objectionable in sewage, are eliminated to such an extent that the water will be discharged in an optically clear condition.

Our invention has the further advantage that the oil in the mixture lengthens the life of the fabrics, and the mixture further helps keep bed linens and the like white, thereby sometimes avoiding the necessity of using of blueing and bleach.

A composition suitable for the practice of our invention comprises, by volume:

- U. S. P. white mineral oil----- 50% to 80%.
- An emulsifying agent for the oil, such as a polyoxyalkylene ether of partial oleic acid series. Sufficient for emulsification of the oil or 1% to 25%, depending upon the percentage of oil and moisture.
- A wetting agent such as a polyether alcohol condensation or a series of poly glycol type nonionic product, or a polyethylene sodium alkyl sulfate series. Sufficient to facilitate adsorption of oils by the fibers—usually 1% to 5%.
- A cationic germicide agent such as alkyl dimethyl benzylammonium chloride or di-solutylareosocycethoxy-ethyl-dimethyl benzyl ammonium chloride hydrate, or dusobutylphenoxyethoxyethyl dimethylbenzyl ammonium chloride monohydrate. About 2% to 6%.
- Water that contains 1% to 16% NH_4HF_2 (ammonium acid fluoride). 1% to 20%.

The white U. S. P. mineral oil we have been able to use is a white mineral oil with a viscosity ranging from 90 to 350. We prefer to use a white mineral oil with a viscosity between 330 to 350 for the best results. We have also used a percentage from 50% of white mineral oil to 80% in our product but prefer to use around 75%.

The mineral oil serves as a carrier or base for the other materials, and serves also to retain the chemicals on the fabric and to prevent floating of dust and lint from the fabrics. Also, being white, it will not discolor the fabrics.

Other products such as one that comprises 1% to 20%

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of water and 1% to 8% of acetic acid can be used with this product, depending upon the combination or the percentage of white mineral oil mixture desired.

The cationic products and mineral oil together serve the purpose of preventing or dissipating static electricity which sometimes occurs in certain fabrics, and they also have germicidal properties.

As to the ammonium acid fluoride incorporated in the water, the percentage so incorporated will vary with other percentage changes. Usually 8% will be adequate. We prefer to use four ounces of the $\text{H}_2\text{O}-\text{NH}_4\text{N}-\text{F}_2$ with each ounce of acetic acid.

The ammonium acid fluoride and the acetic acid help kill or neutralize any soap action; and act in cooperation in the penetration of the cloth by controlling the different ions; and allowing the positive ions to overcome the negatives; whereby the cloth can pick up the oil and the germicidal compound out of the water and into the cloth.

The mixture is particularly useful to institutions such as hospitals, and will be sold in containers for addition to rinse water at room temperatures or tepid, until the rinse water takes on a milky appearance. In most cases, about one quart of the mixture will suffice for 100 to 200 lbs. of the fabric to be treated. The rinsing operation is carried on for perhaps ten minutes which will usually be sufficient for the fabrics to absorb so much of the composition as to render the rinse water optically clear. In some cases, stirring of the rinse water from three to five minutes will be sufficient to render the water from 95% to 97% clear, or sufficiently clear to be able to read through a test tube full of water.

There is therefore not only avoidance of waste of treating material, but the drain water is substantially clear of objectionable pollution.

We claim as our invention:

1. The method of treating fabrics, that comprises immersing the fabrics in water, adding thereto a composition that comprises:

	Per cent
A mineral oil-----	50 to 80
An emulsifying agent for the oil-----	1 to 25
A wetting agent-----	1 to 5
A cationic germicide agent-----	2 to 6
Water that contains 1% to 16% ammonium acid fluoride-----	1 to 20

and agitating the water and the fabric until the composition has been incorporated in the fabric to a degree at which the water is approximately optically clear.

2. A composition for treating fabrics, comprising:

	Per cent
A mineral oil-----	50 to 80
An emulsifying agent for the oil-----	1 to 25
A wetting agent-----	1 to 5
A cationic germicide agent-----	2 to 6
Water that contains 1% to 16% ammonium acid fluoride-----	1 to 20

References Cited in the file of this patent

UNITED STATES PATENTS

1,515,182	Turner -----	Nov. 11, 1924
1,708,519	Phair -----	Apr. 9, 1929
2,176,896	Epstein et al. -----	Oct. 24, 1939
2,372,159	Manchey et al. -----	Mar. 20, 1945
2,474,412	Bersworth -----	June 28, 1949

FOREIGN PATENTS

663,725	Great Britain -----	Dec. 27, 1951
4,535	Great Britain -----	of 1908

OTHER REFERENCES

The Merck Index, 5th ed. Pub. by Merck & Co., Inc., Rahway, New Jersey, 1940. (Only p. 30 relied on)