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DETERGENT

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This invention relates to detergents and has special reference to that class of detergents known as soap powders. The objects of the invention are the provision of a soap powder having maximum bulk and enhanced cleansing power joined with a less expensive composition. Most soap powders consist essentially of a mixture of soap and soda ash, mixed hot with an amount of water too small to crystallize the soda so that when quickly chilled, as by being poured on a cold surface, a brittle cake is produced which is afterwards ground to a powder and retains its powdery condition regardless of all ordinary atmospheric changes. The amount of soap varies, the customary limits being between about 10% and about 30% and such powders are ordinarily classified in accordance with the amount of soap contained, being known as 15% powders, 25% powders, etc., these numerals referring to the content of anhydrous soap. However, powders having a minimum quantity of soap are generally deficient in cleansing power and it is an object of my invention to produce a composition of minimum soap content which shall have a cleansing power heretofore associated only with a much larger proportion of the anhydrous soap.

It is also a known fact that a bulky powder is not only more easily salable, but it exhibits superior cleansing effect and is more easily spread or disseminated as well as shown less tendency to cake or gum, and a further object of my invention is to enhance this bulkiness.

My improved detergent consists of a powdered mixture of soap, soda ash, water, and colloidal clay. Of natural clays the material known as bentonite is preferred, but artificial materials such as kaolin can be employed if rendered colloidal in any of the known modes. The amounts of such material may constitute from about ½% to about 20% of the composition. I have had the best results with from about 2% to 2½% of the same. The general composition of my improved washing powder is as follows:

(*a*)

Ingredients	Limits	Preferred compounds
Anhydrous soap	5% to 20%	(10%)
Colloidal clay	½% to 20%	(2½%)
Soda ash	40% to 55%	(45%)
Water	35% to 50%	(42½%)

The preferred proportions are those given in the parentheses.

It will be understood that the extreme limits of composition indicated above cannot all be reached at the same time. For example it is the best practice to maintain the proportion of soda ash always at least as great as that of the water up to about 50% greater than that of the water. As between the soap and the clay, the latter is more important as the proportion of the former decreases. In the case of a powder containing 20% of soap the addition of clay is not necessary as the concentration of active detergent is already so high. At decreased soap percentages, however, the advantage of the clay is augmented to supplement the reduced detergent action of the soap, which under these conditions is even superior to an equal weight of soap as well as rendering the powder lighter and more fluffy. The amount of water must be adjusted to both the clay and the soda ash. It may not exceed the capacity of the soda ash plus the clay to absorb it and hold it in sensibly dry form and it must not be present in too small a quantity to render the mixture fluid while hot else manufacture is impeded. Soda ash will take up water from 5 to 10 molecules of water depending upon the process of manufacture although 5 molecules (equivalent to about 85% of the sodium carbonate) is the practical maximum; while the colloidal clay will take up about its own

weight of water. As a general practice the total water should be about 40% to 50% of the mixture. There is no close connection between the amount of the soda ash and that of the clay; the amount of clay depends primarily upon that of the soap and the total detergent qualities required. The purpose of the soda ash is to dry the mixture and so much of it is used as will absorb whatever moisture the clay does not.

As examples of some other successful compositions falling within the general outline heretofore given:

(*b*)

	Per cent
Soap	5
Clay	10
Soda ash	40
Water	45

(*c*)

Soap	12
Clay	3
Soda ash	45
Water	40

(*d*)

Soap	10
Clay	1
Soda ash	50
Water	39

(*e*)

Soap	15
Clay	2
Soda ash	43
Water	40

(*f*)

Soap	5% to 20%
Clay	½% to 10%
Soda ash, Water	together making 100% and the water insufficient to crystallize the soda ash

(*g*)

Soap	5% to 15%
Clay	2% to 10%
Soda ash, Water	together making 100% and the water at least not materially in excess of the soda ash

(*h*)

Soap	5% to 20%
Clay	1% to 10%
Soda ash	20% to 50%
Water	25% to 55%

(*i*)

Soap 5% to 19%, Clay 1% to 10%	together making 12% to 20%
Soda ash, Water	together making 100% and the amount of water at least not substantially in excess of the soda ash

When employed in admixture with soap and soda ash this colloidal clay exhibits two important features; first it greatly increases the bulk of the powder, second, it increases the detergent effect of the same more than would an equal addition of either soap or soda ash. Accordingly the advantageous effects of this substance are most conspicuous in connection with those soap powders having minimum percentages of soap, owing to the fact that the increased bulkiness is most effective under these conditions, and also owing to the fact that the effect of the clay is more apparent when the amount of soap is already small. This enables a package of given size to be made and sold more cheaply; or a given amount of cleansing effect to be secured by smaller weight of material, or a larger quantity of the powder to be furnished for a given price, depending upon the choice of the manufacturer.

Having thus described my invention what I claim is:

A detergent preparation consisting of a pulverized mixture containing approximately: Soap 10% (anhydrous content), colloidal clay 2½% (anhydrous, content), soda ash 45% (anhydrous content), water 42½%.

In testimony whereof I hereunto affix my signature.

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