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DETERGENT-SOFTENER COMPOSITIONS

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This invention relates to detergent-softener compositions in powder or liquid form which contained, in addition to builders and additives, non-ionic detergents and hydrazinium salts as the active ingredients. Such compositions can be used to simultaneously wash and soften textiles during the course of a conventional laundering process.

With the possible exception of luster, no physical characteristic of a fabric is more highly esteemed than its softness. And in order to achieve maximum possible softness, virtually all textiles are finished with some type of softening agent. Articles of clothing, towels, etc., must of necessity be washed many times in the course of ordinary use. These repeated washings remove the softening agent causing the item to lose its softness and to become harsh. The tactile impression given by textiles to the hand or body is of great esthetic and commercial importance. Many synonyms exist in the trade to describe this important property; handle, hand, touch and feel are some of the terms in a common use. Since softness plays such a great part in imparting hand to a fabric, it is not surprising that there is a great interest in resoftening articles that have been washed or have otherwise lost their hand.

Since softness is lost by washing, it is logical as well as convenient to resoften textiles at the time of their washing. In addition to restoring softness and imparting a better hand, towels become fluffier, etc., and in general the washed articles are more wrinkle free and easier to iron. Several commercial products are available as softening agents, usually as aqueous solutions. Current laundering practice requires that the wash be rinsed several times after the washing with detergent has been completed. The softener, when used, is added usually during the last rinse. This is necessary because the present softening agents of the usual quaternary ammonium salt type do not give softening when used during the washing proper because of their incompatibility and chemical breakdown in the presence of the detergent used to effect the washing.

It is an object of this invention to provide an improved method of washing and softening textiles and other washable articles. More specifically, to provide compatible detergent-softener compositions suitable for use in simultaneously washing and softening textiles and other items during the normal laundering process. Not only is it no longer necessary to interrupt the wash cycle or add the softening agent in the rinse cycle, but the use of hydrazinium salts in these novel compositions gives enhanced softening and other desirable results.

It is a further object of this invention to lessen the static electrical charge quite often found on washed articles, especially those made from synthetic fibers.

A further object of this invention is to lessen or destroy the bacteria present in the wash.

Other objects of this invention will appear from the following detailed description. It should be emphasized that the superiority of the hydrazinium cation flows from the fact that it is highly substantive to fabrics. The desirable benefits imparted by the use of hydrazinium salts in detergent formulation are cumulative and are therefore augmented by continued or repeated usage.

The softening ability and other desirable properties of certain hydrazinium salts has been disclosed in the copending application Serial No. 641,271, filed February 20,

1957, and now U.S. Patent 2,929,847 of Bernard Rudner et al. It has now been demonstrated that these salts are compatible with nonionic detergents and most of the additives and builders used in conventional detergent formulations. By using the novel detergent-softener compositions of this invention, it is now possible to wash and simultaneously soften textiles and other articles during the normal laundering process. The stable one-package compositions of this invention obviate the need for interrupting the normal wash cycle and separately adding as a second ingredient the softening agent during the rinse portion of the washing cycle. While of a lesser order of magnitude, other beneficial effects of the hydrazinium cation are obtained. The two most noteworthy are their antistatic and antibacterial properties. Nor is the highly surface active nature of the hydrazinium cation to be discounted; for it is believed to act mutually and synergistically with the detergent in the primary washing process.

Given below is a typical nonionic detergent composition formulation. It will be discussed in some detail.

	Percent
Nonionic detergent	15
Trisodium phosphate	39
Soda ash	25
Sodium silicate	10
Moisture	10
Sodium carboxymethylcellulose	1
Optical bleach or brightener	trace

Cation and anionic soaps or detergents are salts of organic compounds exhibiting hydrophilic properties because of their salt functions and lipophilic properties because of the organic portion of the molecule. In nonionic detergents, this highly polar salt function is not present; but the nonionics still possess hydrophilic and lipophilic properties. As with the cationic and anionic detergents, the lipophilic portion of these surfactants is usually hydrocarbon in nature and may be long chain aliphatic, cycloaliphatic or aromatic. But nonionics differ in that their hydrophilic properties reside in a neutral portion of the molecule. A multiplicity of polar but neutral functions such as ether and alcohol are usually employed to impart hydrophilic properties to nonionics. In all detergents, whether cationic, anionic or nonionic, it is necessary that the hydrophilic and lipophilic portions of the molecule be in balance to make them effective detergents.

The flexibility of nonionic detergents is reflected in the variety of types commercially available and in the manner of their preparation. By far, ethoxylation has proved to be the most versatile and successful approach. Fatty acids, alcohols, mercaptans, amines and amides have been reacted with ethylene oxide to produce commercially available nonionics. By using combined oxyalkylation with ethylene oxide and propylene oxide, compounds with "tailor-made" hydrophilic-hydrophobic balances can be readily produced. Other nonionics commercially available are the ethylene oxide condensates of alkylphenols, the fatty acid esters of polyhydric alcohols, the compounds obtained from the reaction of alkanolamines and fatty acids, and the ethylene oxide condensates of the latter two. Representative members of the various classes of nonionics mentioned above have been used successfully in the detergent-softener compositions of this invention as will be illustrated in the examples.

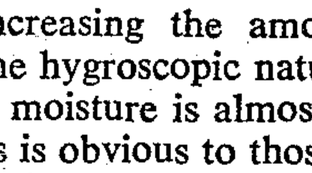
The nonionic detergent formulations of commerce contain only about 15% of the detergent proper. The greater part of the formulation consists of builders which are usually the alkali metal salts of weak inorganic acids but sometimes may contain strong bases or neutral salts. Formulations for heavy duty purposes will contain more free caustic and those for light duty applications will

usually contain a neutral salt such as sodium sulfate. While an alkaline builder is useful only so long as it maintains an alkalinity in solution greater than the detergent it is building, it is more desirable that it operate as a buffer salt. The builder is capable of neutralizing acids without itself being a strong base (free caustic) which may be harmful to the fabric. For superior results, mixed builders are commonly used, for example, one of the salts of the various phosphorus acids with sodium metasilicate and with sodium carbonate or carbonate-bicarbonate. Those mentioned are the most frequently used builder salts. It is obvious to those versed in formulating detergent compositions that other salts such as borates, etc., may be used; these salts, while not specifically enumerated, fall within the scope of this invention. Below is a non-limiting list of builders successfully used in the detergent-softener compositions of this invention:

Trisodium phosphate
Tetrasodium pyrophosphate
Sodium acid pyrophosphate
Sodium tripolyphosphate
Sodium monobasic phosphate
Sodium dibasic phosphate
Sodium metasilicate
Sodium carbonate
Sodium acid carbonate
Sodium sulfate

Sodium carboxymethylcellulose is often added to build detergents in order to reduce redeposition of soil. While there is some interaction between sodium carboxymethylcellulose and the hydrazinium salt used as the softener, this interaction is minimal when they are present in the customary concentrations. There is a slight interaction between hydrazinium salts and brighteners (optical bleaches) of the sodium stilbene sulfonate type; this can be overcome by increasing the amount of brightener used. Because of the hygroscopic nature of certain salts, a certain amount of moisture is almost always present in the formulation. As is obvious to those versed in the art, the finished formulation must be balanced, compatible, and water soluble. A good formulation is more than a mere mixture of constituents; therefore, a change in the nonionic detergent used may require a corresponding change in the entire formulation.

Many workers in the field have attempted to prepare formulations capable of simultaneously acting as a detergent and as a softener. When conventional quaternary ammonium salts are incorporated into standard detergent formulations, their softening power is not exercised. Only by using the novel hydrazinium salts disclosed in the copending applications of Bernard Rudner et al., Serial Nos. 641,271 and to a limited extent 641,810, now U.S. Patent 2,906,753, was it possible to prepare true detergent-softener compositions. The above applications refer to 1,1,1-trisubstituted hydrazinium salts having the general formula:



In application Serial No. 641,271, R may be an alkyl, alkenyl or alkadienyl radical containing 16 to 24 carbon atoms and R′ and R″ may be alkyl radicals having 1 to 24 carbon atoms, alkenyl radicals containing 2 to 24 carbon atoms or alkadienyl radicals having 4 to 24 carbon atoms; the compounds of this invention are the softeners of choice. The beneficial hand imparted by these hydrazinium compounds is attributed to the presence of at least one long (16 to 24 carbon atoms) chain in the molecule. Since the softening action resides in the hydrazinium cation, the selection of the anion is governed primarily by cost considerations and convenience. The general considerations relating to balanced detergent formulations, as previously discussed, still apply. No one standard formulation can be ideal or even completely satisfactory for all hydrazinium salts and all nonionic detergents.

The scope and utility of this invention will be further illustrated by the following examples:

Example I

The general procedure used for testing softening ability was as follows: All Indian Head and Terry cloth used was desized by washing in an automatic washing machine with a non-ionic detergent at 140° F. The cloth was rinsed four times, twice at 140° F. and twice at 110° F., spun dry after each rinse and finally dried in an automatic drier.

The test washings were carried out in the Atlas Launder-Ometer which is accepted as a standard by the American Association of Textile Chemists and Colorists (AATCC) for textile testing. All samples were run in triplicate using 180 ml. of preheated test solution in pint Mason jars containing 20 ¼″ stainless steel balls as the load. Using a 7½ x 6″ Terry cloth swatch weighing 8.4 grams gave a ratio of 20 parts test solution to 1 part cloth. After the addition of the test cloth, the jars were agitated usually for 10 minutes at 140° F. The swatches were rinsed free of detergent-softener, dried in hot air and allowed to stand for 24 hours at 50% relative humidity (conditioning). The swatches were rated by hand using a scale of 1 for soft and 8 for harsh. The mean score of all of the ratings for each sample solution are reported.

Methyldihydrotallowhydrazinium chloride was tested for compatibility and effectiveness as a softener with various phosphate builders in a synthetic detergent mixture as shown below. The hydrotallow grouping consists essentially of a mixture of 16 and 18 carbon containing chains in the approximate ratio of 3 octadecyls to 1 hexadecyl.

	Percent
Renex 20	15.6
Phosphate	37.7
Sodium carbonate	24.6
Sodium silicate	8.3
Sodium carboxymethylcellulose	0.8
Moisture	13.0

The non-ionic detergent used, Renex 20, is the mixed polyoxyethylene ester of mixed fatty and resin acids. In order to apply 0.2% softener to the cloth, a 0.25% solution of the detergent containing 0.0105% softener was used. The phosphate builders used are tabulated below together with the harshness ratings obtained when the above formulation was used with and without added softener (about 4% methyldihydrotallowhydrazinium chloride by weight of the dry detergent-softener composition).

Phosphate	No softener	Softener
Trisodium phosphate (chlorinated)	7.7	7.0
Sodium tripolyphosphate	8.0	4.3
Sodium acid pyrophosphate	7.8	3.3
Tetrasodium pyrophosphate	7.9	2.8
Sodium phosphate, monobasic	8.0	6.4
Sodium phosphate, dibasic	7.9	5.5
Sodium pyrophosphate	7.7	4.6
Trisodium phosphate	8.0	3.1

Example II

Methyldihydrotallowhydrazinium chloride (hereinafter abbreviated as M2HTHC) and dimethyloctadecylhydrazinium chloride (hereinafter abbreviated as DM18HC) were tested for compatibility and effectiveness as softeners with various non-ionic detergents in non-built formulations. In order to apply 0.2% softener to the cloth, the test solution contained 0.25% detergent and 0.0105%

softener. The detergent used, its type and the results obtained are given in the following table.

Detergent	Type	Softener		
		None	M2HTHC	DM18HC
Pluronic F68	Polyoxypropylene-polyethylene glycol.	8.0	4.6	6.6
Renex 20	Mixed polyoxyethylene ester.	8.0	5.2	7.4
Neopone L.O	Ethylene oxide condensate.	7.0	2.8	3.8
Sterox CD	Polyoxyethylene ester of tall oil.	8.0	6.8	7.5
Alrosol C	Polyoxyethylene amide.	8.0	3.7	----------
Tetronic 304	Mixed polyoxyalkylene ethylenediamine.	7.8	5.5	----------
Tetronic 704	Mixed polyoxyalkylene ethylene diamine.	7.9	5.4	----------
Teox C3	Ethylene oxide condensate.	7.9	3.3	----------

Example III

A slightly different procedure than that of Example II was used to independently test methyldihydrotallowhydrazinium chloride as a softener with another group of non-ionic detergents. Two desized swatches of Terry cloth were agitated for five minutes at 90° F. in one liter of test solution which contained 0.0375% detergent and 0.01% softener (when used). The swatches were hydro-extracted for one minute and dried overnight at 70° F. and 65% relative humidity; results are reported using the 1 to 8 scale.

Detergent	Type	No softener	Softener
None		7.1	----------
Pluronic L62	Polyoxypropylene polyoxyethylene glycols.	6.7	2.8
Pluronic L64		6.7	2.4
Pluronic F68		7.3	2.9
Sterox CD	Polyoxyethylene ester of tall oil	----------	3.7
Ipegal CO-630	Alkyl phenoxy polyoxyethylene ethanol.	----------	4.8
Ninol 201	Polyoxyethylene amide	----------	2.8

Example IV

Using Sterox CD as the detergent, a typical non-ionic detergent formulation was built in a step-wise fashion. The softening power of methyldihydrotallowhydrazinium chloride and of dimethyloctadecylhydrazinium chloride was measured at each step. The percent compositions of the test solutions are tabulated below:

Reagent	A	B	C	D	E
Sterox CD	0.0390	0.0390	0.0390	0.0390	0.0390
Sodium triphosphate	--------	0.0942	0.0942	0.0942	0.0942
Sodium carbonate	--------	--------	0.0615	0.0615	0.0615
Sodium silicate	--------	--------	--------	0.0207	0.0207
Sodium carboxymethylcellulose	--------	--------	--------	--------	0.0020
Total weight, solids	0.0390	0.1332	0.1947	0.2154	0.2174

The concentration of the softener used was 0.0105%. Softness ratings are listed in the following chart:

Solution	Softener		
	None	M2HTHC	DM18HC
A	7.0	1.6	4.4
B	6.9	1.7	4.1
C	6.8	2.4	4.8
D	7.0	2.4	4.0
E	7.0	3.0	4.0

Example V

The softening powers of methyldihydrotallowhydrazinium chloride and of dimethyloctadecylhydrazinium chloride were tested in several commercially available household detergents. These were built formulations based on non-ionic detergents. The test solutions contained 0.25% by weight of the detergent-softener composition; the composition contained 4% of softener based on the dry weight of the detergent formulation alone.

Household detergent	Softener		
	None	M2HTHC	DM18HC
A	8.0	5.0	4.8
B	8.0	4.2	4.6
C	8.0	6.4	6.2
D	7.4	6.0	4.2
E	7.4	5.6	5.8

Example VI

Several built formulations were prepared having the following dry weight composition:

	Percent
Non-ionic detergent	18
Sodium triphosphate	43
Sodium carbonate	28
Sodium silicate	10
Sodium carboxymethylcellulose	1
Total	100

When used, the softener was added to correspond to 4.5% of the dry weight of the detergent formulation. The non-ionic detergent used and the softness obtained are tabulated below:

Detergent	Type	Softener	
		None	M2HTHC
Renex 20	Mixed polyoxyethylene ester	8.0	3.1
Ipegal CO-630	Alkylphenoxy polyoxyethylene ethanol.	8.0	4.3
Nonic 218	Polyethyleneglycol tert-dodecylthioether.	7.7	5.3
Pluronic L64	Polyoxypropylene polyoxyethylene glycol.	8.0	6.7
Sterox CD	Polyoxyethylene ester of tall oil	7.0	3.0
Ethomid C/15	Polyoxyethylene fatty amide	8.0	5.3
Alrosol C	Polyoxyethylene amide	7.7	7.0

Example VII

The compositions most frequently used in the practice of this invention contain 3.0 to 5.0% of the hydrazinium softener (based on the dry weight of the detergent-softener composition). As shown below, the lower limit is not absolute but depends on the number of washings utilized and on the degree of softening desired; 3% appears to be a reasonable lower limit. Concentrations above 6% are operable but considerations of cost and the minimal increase in efficiency of the softening with increased concentration do not encourage their use. The concentration desirable, however, depends on the usage and to state a numerical upper limit would be arbitrary.

Swatches were washed in test solutions containing 0.25% of a standard household detergent and the indicated amount of softener (methyldihydrotallowhydrazinium chloride). After drying, etc., the softness of a given swatch was measured and it was then rewashed in a fresh solution containing the same concentration of detergent-softener. The softener concentration of 0.0073% corresponds to about 0.15% softener by weight of cloth. Note the cumulative softening affect on repeated washings.

Percent softener	Softness			
	First wash	Second wash	Third wash	Fourth wash
0.0000	8.0	8.0	8.0	7.9
0.0052	7.6	7.6	7.7	7.0
0.0073	6.2	6.2	4.4	3.9

Example VIII

This example compares hydrazinium softeners with several commercial softeners of various types. The superiority of hydrazinium salts in built formulations is demonstrated with a standard household detergent. Since a given formulation is used or tested as its aqueous solution, it is immaterial when the detergent-softener composition proper is solid or liquid in form. While most of the formulations are solid, liquids are just as satisfactory. Results with Pluronic F68 are included here for comparison. The test solutions contained 0.25% of the detergent or built detergent and 0.0105% of the indicated softener.

Softener	Type	Detergent used	
		Pluronic F68	Household detergent
M2HTHC	Hydrazinium	3.2	4.2
DM18HC	do	5.2	4.9
Arquad 18	Quaternary ammonium	7.7	7.4
Triton K-60	do	7.6	7.6
Onyxsan S	Alkylimidazoline hydroacetate	6.9	7.7
Sapamine OC	Acid salt of organic amine	6.3	7.7
None		7.7	7.6

Example IX

Detergent-softener compositions must both clean and soften textiles. The detergency of various built and non-built non-ionic detergents used in conjunction with methyldihydrotallowhydrazinium chloride or dimethyloctadecylhydrazinium chloride was investigated on Foster D. Snell soiled cotton. F.D.S. Soiled Cotton #159 is prepared by dispersing the soiling mixture in carbon tetrachloride and immersing pieces of desized Indian Head cotton fabric in the suspension. The cloth is air dried, lightly rinsed with water to remove loosely adherent soil and is again air dried. The percentage composition of the soiling mixture is as follows:

	Percent
Carbon	28.4
Cocoanut oil	35.8
Cocoanut oil fatty acids	17.9
Mineral oil	17.9
Total	100.0

Test swatches 4 x 8" in size were prepared by stapling 4 x 4" swatches of F.D.S. soiled cotton to 4 x 4" swatches of desized Indian Head cloth. The cloth was washed as before in the detergent-softener compositions using the Atlas Launder-Ometer. Swatches, in triplicate, were washed in each formulation for one hour at 140° F. using a 1 to 20 weight ratio of cloth to detergent-softener solution. Three control swatches were washed in water alone. All the swatches were rinsed, at 120° F. and ironed. Reflectometer readings were made through a green filter with a Gardner Automatic Photometric Unit. The result, designated as detergency variation from control, is obtained when the average reflectometer readings of the control swatches is subtracted from the average reading of the swatches in question. The soiled section of the swatch allows a measurement of the detergency of the solution; while the desized Indian Head fabric allows a measurement of redeposition of soil from the test solution.

The effect of adding methyldihydrotallowhydrazinium chloride and dimethyloctadecylhydrazinium chloride to unbuilt solutions of non-ionic detergent was studied. The test solution contained 0.25% detergent and 0.0105% softener. As shown by the reflectance differences from the control given below, detergency was unimpaired and redeposition of soil was no worse than when softener was added.

Detergent	No softener		M2HTHC		DM18HC	
	Soiled	Unsoiled	Soiled	Unsoiled	Soiled	Unsoiled
Ipegal CO-630	23.6	−4.0	22.2	−10.1	23.2	−4.5
Renex 20	9.9	−4.8	11.0	−3.5	7.2	−0.5
Sterox CD	7.7	−9.4	9.6	−6.6	15.3	−8.5
Nonic	16.5	−11.8	13.8	−6.5	12.0	−12.3

Example X

Similar results were obtained when the hydrazinium softener was added to several household detergents (non-ionic and built). The general procedure was that of the previous example.

Household detergent	No softener		M2HTHC		DM18HC	
	Soiled	Unsoiled	Soiled	Unsoiled	Soiled	Unsoiled
A	12.9	−9.3	12.0	−8.0	14.5	−5.7
B	15.6	−9.5	13.7	−7.7	11.1	−5.7
C	14.8	−7.7	8.4	−5.3	14.4	−5.4

Example XI

Several synthetic built detergent formulations were prepared and methyldihydrotallowhydrazinium chloride added as described in Example VI. The solutions were tested according to the procedure of Example IX. Results are tabulated below.

Built detergent	No softener		Softener	
	Soiled	Unsoiled	Soiled	Unsoiled
Sterox CD	7.7	−9.4	9.6	−6.6
Ipegal CO-630	5.2	0.5	4.4	2.1
Renex 20	4.4	1.5	1.5	5.1
Nonic 218	4.5	0.9	4.1	1.8
Pluronic L64	3.9	1.4	3.8	1.8
Ethomid C/15	3.2	4.6	0.4	5.5
Teox C3	2.3	3.0	−2.6	7.9
Tetronic 304	1.2	−8.3	−1.0	−1.5
Tetronic 704	2.7	−4.7	−0.2	−5.8

Example XII

This example shows that the presence of hydrazinium softening agents did not exercise a significant adverse effect on the bursting strength of oven-dried washed cloth. Data obtained on the yellowing of softened fabric is also included here. The procedure used was as follows: An 8" x 6" swatch of Indian Head muslin was treated in the Terg-O-Tometer (accepted by AATCC) at 90° F. for five minutes, hydroextracted and air dried overnight at 70° F. and 65% relative humidity. Two 7" x 3" portions of this swatch were exposed in the Fade-Ometer (accepted by AATCC) at 145° F. (black panel) for 5, 10, 20 and 40 hour periods. After each interval, reflectance war determined using the Hunter reflectometer with blue, green and amber filters on a single thickness of cloth. Yellowness increases with increase in index; yellowness index equals reading amber less reading blue divided by reading green. For oven exposure tests, softening and drying were as before. Two 4" x 2½" swatches were placed in a capped quart glass bottle and heated at 175° F. for five days. Reflectance was read, and bursting strength was determined on the Mullen tester.

The test solutions used contained 0.035% non-ionic

detergent and 0.01% methyldihydrotallowhydrazinium chloride. Results are summarized in the following table:

Detergent used	Yellowness index, hours, Fade-Ometer exposure				Oven exposure	
	5	10	20	40	Yellowness index	Bursting strength, lb./in.²
Pluronic L62	0.005	0.012	0.011	−0.004	0.032	112
Pluronic L62 [1]	0.011	0.010	0.006	−0.004	0.058	111
Pluronic L64	0.011	0.011	0.011	0.001	0.032	104
Pluronic L64 [1]	0.010	0.004	0.009	−0.001	0.048	102
Pluronic F68	0.012	0.012	0.006	0.002	0.045	103
Pluronic F68 [1]	0.011	0.009	0.009	−0.005	0.054	92
Sterox CD [1]	0.015	0.006	0.006	−0.001	0.048	108
Ipegal CO-630 [1]	0.007	0.007	0.006	0.000	0.045	98
Ninol 201 [1]	0.045	0.027	0.018	0.002	0.083	89

[1] Indicates softener added.

I claim:

1. A detergent-softener composition consisting essentially of a non-ionic detergent, inorganic builders and a softener, said softener being a surfactant hydrazinium salt having the general formula $(RR'R''NNH_2)A$ wherein R is selected from the group consisting of alkyl, alkenyl and alkedienyl radicals containing 16 to 24 carbon atoms, R′ and R″ are independently selected from the group of alkyl radicals having 1 to 24 carbon atoms, alkenyl radicals having 2 to 24 carbon atoms and alkadienyl radicals having 4 to 24 carbon atoms and A is an anion, said softener constituting at least 3.0% by weight of the total composition.

2. A detergent-softener composition consisting essentially of 10–35 parts non-ionic detergent, 60–85 parts inorganic builders and a softener, said sotfener being a surfactant hydrazinium salt having the general formula $(RR'R''NNH_2)A$ wherein R is selected from the group consisting of alkyl, alkenyl and alkadienyl radicals containing 16 to 24 carbon atoms, R′ and R″ are independently selected from the group of alkyl radicals having 1 to 24 carbon atoms, alkenyl radicals having 2 to 24 carbon atoms and alkadienyl radicals having 4 to 24 carbon atoms and A is an anion, said softener constituting at least 3.0% by weight of the total composition.

3. A composition, the aqueous solutions of which simultaneously clean and soften fabrics, said composition consisting essentially of 10–35 parts non-ionic detergent, 60–85 parts inorganic builders and at least 3 parts of a surfactant hydrazinium salt having the general formula $(RR'R''NHH_2)A$ wherein R is selected from the group consisting of alkyl, alkenyl and alkadienyl radicals containing 16 to 24 carbon atoms, R′ and R″ are independently selected from the group of alkyl radicals having 1 to 24 carbon atoms, alkenyl radicals having 2 to 24 carbon atoms and alkadienyl radicals having 4 to 24 carbon atoms and A is an anion.

4. A composition, the aqueous solution of which simultaneously clean and soften fabrics, said composition consisting essentially of 10–35 parts non-ionic detergent, 60–85 parts inorganic builders, 1 part sodium carboxymethylcellulose and at least 3 parts of a surfactant hydrazinium salt having the general formula $(RR'R''NNH_2)A$ wherein R is selected from the group consisting of alkyl, alkenyl and alkadienyl radicals containing 16 to 24 carbon atoms, R′ and R″ are independently selected from the group of alkyl radicals having 1 to 24 carbon atoms, alkenyl radicals having 2 to 24 carbon atoms and alkadienyl radicals having 4 to 24 carbon atoms and A is an anion.

5. A detergent-softener composition consisting essentially of the following ingredients:

	Percent
Mixed polyoxyethylene ester of mixed higher fatty and rosin acids	17.3
Tetrasodium phosphate	41.8
Sodium carbonate	27.4
Sodium silicate	9.2
Sodium carboxymethylcellulose	1.0
Methyldihydrotallowhydrazinium chloride	3.3
	100.0

6. A detergent-softener composition consisting essentially of the following ingredients:

	Parts
Polyoxyethylene ester of tall oil	18
Sodium triphosphate	43
Sodium carbonate	28
Sodium silicate	10
Sodium carboxymethylcellulose	1
	100

said composition containing 4.5% by weight of methyldihydrotallowhydrazinium chloride.

7. A detergent-softener composition consisting essentially of the following ingredients in parts by weight:

Polyoxyethylene ester of tall oil	39.0
Sodium triphosphate	94.2
Sodium carbonate	61.5
Sodium silicate	20.7
Sodium carboxymethylcellulose	2.0
Dimethyloctadecylhydrazinium chloride	10.5

8. A detergent-softener composition consisting essentially of the following ingredients:

	Percent
Higher alkyl phenoxy polyoxyethylene ethanol	18
Trisodium phosphate	43
Sodium carbonate	28
Sodium silicate	10
Sodium carboxymethylcellulose	1
	100

said composition containing 4.5% by weight of methyldihydrotallowhydrazinium chloride.

9. A detergent-softener composition consisting essentially of the following ingredients:

Polyoxyethylene higher fatty amide	18
Trisodium phosphate	43
Sodium carbonate	28
Sodium silicate	10
Sodium carboxymethylcellulose	1

said composition containing 4.5% by weight of methyldihydrotallowhydrazinium chloride.

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