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⑤④ **Method for preparing fabric softening compositions.**

⑤⑦ A process for preparing an aqueous liquid fabric softening composition comprising making a hot molten mixture of a cationic fabric softener and a nonionic material with a low HLB, such as a fatty acid, fatty ester, fatty alcohol or lanolin, adding the molten mixture to water while still hot, mixing to form a dispersion of droplets in the water and thereafter adding an electrolyte such as a salt of lithium, sodium, potassium, calcium, magnesium or aluminium. By forming the dispersion before adding the electrolyte, the viscosity of the end product is reduced and long term stability is improved.

EP 0 122 140 A2

METHOD FOR PREPARING FABRIC SOFTENING COMPOSITIONS

5 The present invention relates to a method of
preparing fabric softening compositions, in particular for
preparing concentrated aqueous liquid fabric softening
compositions containing water-insoluble cationic fabric
softening agents and fatty acids or other nonionic
materials with a low HLB.

10

It is known from GB 2 039 556 (UNILEVER - Case
C.567) to form aqueous liquid fabric softening
compositions containing up to 20% of a mixture of a
water-insoluble cationic material and fatty acid, the
15 fatty acid acting to improve the efficiency of softening,
thereby enabling the level of the cationic material to be
reduced without loss of performance. It is also known
from EP 13780-A (PROCTER & GAMBLE) to form concentrated
aqueous liquid fabric softening compositions from a
20 mixture of a water-insoluble cationic material and a
nonionic material selected from hydrocarbons, fatty acids,
fatty esters and fatty alcohols, the nonionic material
acting to improve the viscosity characteristics of the

product when the level of cationic material is above 8%.
It is also known from GB 2 039 556 and EP 13780 that
preferred compositions can also include low levels of
electrolyte such as respectively sodium chloride or
5 calcium chloride, to further control product viscosity.

It is found that when such a composition is prepared
by dispersing a pre-mix of the cationic and nonionic
materials in water to which the electrolyte has already
10 been added, followed by thorough mixing, the viscosity of
the end product is often still higher than desired,
particularly when the total active level exceeds about 8%.

It has been proposed in EP 52517 (PROCTER & GAMBLE)
15 that where the composition is based on a mixture of
cationic materials, some electrolyte is added, together
with a premix of the cationic materials, to water with
vigorous agitation and thereafter a remaining portion of
the electrolyte is added. Also in US 3 681 241 (RUDY) it
20 is proposed that compositions based on a mixture of
cationic materials are preferably formed in such a manner
as to be substantially free of electrolytes, electrolytes
being optionally added to the resulting product to
regulate the viscosity thereof. Further, GB 1 104 441
25 (UNILEVER) discloses that products based on a cationic
softener and a fatty acid ethanolamide may be made by
adding water to a premix of the cationic and nonionic and
then, after cooling, adding an electrolyte such as sodium
carbonate to thin the product.

30

We have surprisingly found that, where the
composition is based on a mixture of a cationic fabric
softener and a nonionic material of low HLB, and is formed
by adding a premix of the cationic and the nonionic to
35 water, if the electrolyte is added only after the mixing
stage but not before, the end product viscosity is lower.

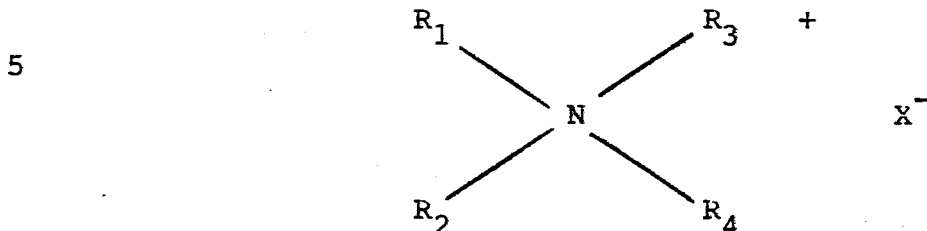
This enables the level of electrolyte used to be reduced without detriment to the properties of the product. It has also surprisingly been found that this post-addition of electrolyte can improve the long term stability of the product.

Thus, according to the invention there is provided a process for preparing a concentrated aqueous liquid fabric softening composition containing at least 8% by weight water-insoluble cationic fabric softener, said process comprising the steps of:

- (i) forming a molten mixture containing the water-insoluble cationic fabric softener and a nonionic material having an HLB of not more than 10;
- (ii) adding the molten mixture to water at an elevated temperature;
- (iii) mixing the molten mixture and the water together to form a dispersion of the molten mixture in droplet form in the water; and
- (iv) adding electrolyte in the form of a source of lithium, sodium, potassium, calcium, magnesium or aluminium ions thereto, characterised in that the electrolyte is added after, but not before, the formation of said dispersion.

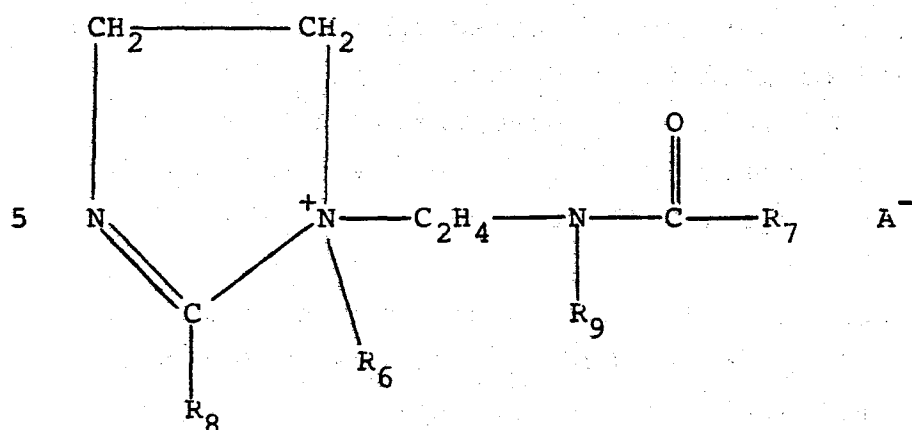
The water-insoluble cationic fabric softener can be any fabric-substantive cationic compound that has a solubility in water at pH 2.5 and 20°C of less than 10 g/l. Highly preferred materials are quaternary ammonium salts having two C₁₂-C₂₄ alkyl or alkenyl chains, optionally substituted or interrupted by functional groups such as -OH, -O-, -CONH, -COO-, etc.

Well known species of substantially water-insoluble quaternary ammonium compounds have the formula



10 wherein R_1 and R_2 represent hydrocarbyl groups of from about 12 to about 24 carbon atoms; R_3 and R_4 represent hydrocarbyl groups containing from 1 to about 4 carbon atoms; and X is an anion, preferably selected from halide, methyl sulfate and ethyl sulfate radicals. Representative
15 examples of these quaternary softeners include ditallow dimethyl ammonium chloride; ditallow dimethyl ammonium methyl sulfate; dihexadecyl dimethyl ammonium chloride; di(hydrogenated tallow alkyl) dimethyl ammonium chloride; dioctadecyl dimethyl ammonium chloride; dieicosyl dimethyl
20 ammonium chloride; didocosyl dimethyl ammonium chloride; di(hydrogenated tallow) dimethyl ammonium methyl sulfate; dihexadecyl diethyl ammonium chloride; di(coconut alkyl) dimethyl ammonium chloride. Ditallow dimethyl ammonium chloride, di(hydrogenated tallow alkyl) dimethyl ammonium
25 chloride, di(coconut alkyl) dimethyl ammonium chloride and di(coconut alkyl) dimethyl ammonium methosulfate are preferred.

Another class of preferred water-insoluble cationic
30 materials are the alkylimidazolinium salts believed to have the formula:



10

wherein R_6 is an alkyl or hydroxyalkyl group containing from 1 to 4, preferably 1 or 2 carbon atoms, R_7 is an alkyl or alkenyl group containing from 8 to 25 carbon atoms, R_8 is an alkyl or alkenyl group containing from 8 to 25 carbon atoms, and R_9 is hydrogen or an alkyl group containing from 1 to 4 carbon atoms and A^- is an anion, preferably a halide, methosulfate or ethosulfate. Preferred imidazolinium salts include 1-methyl-1-(tallowylamido-) ethyl -2-tallowyl-4,5-dihydro-imidazolinium methosulfate and 1-methyl-1-(palmitoylamido) ethyl -2-octadecyl-4,5- dihydro-imidazolinium chloride. Other useful imidazolinium materials are 2-heptadecyl-1-methyl-1- (2-stearyl-amido)-ethyl-imidazolinium chloride and 2-lauryl-1-hydroxyethyl-1-oleyl-imidazolinium chloride. Also suitable herein are the imidazolinium fabric softening components of US Patent No 4 127 489, incorporated herein by reference.

In the present invention, the water-insoluble cationic softener is present at a total level of at least 8%. The maximum level of cationic softener is determined by practical considerations; even with the nonionic materials to control viscosity it is not generally possible to prepare stable, pourable emulsions containing more than 26% of cationic softener. When particularly high concentrations are desired, it is preferred to use an

imidazolinium softener and preferred compositions contain from 12% to 26% of imidazolinium softener. When a di-long chain non-cyclic mono-quaternary softener is employed, it is preferred not to exceed a level of 22%,
5 and a preferred range is 10% to 18%.

The compositions further contain nonionic materials having an HLB of not more than 10, preferably not more than 8. The HLB scale is a known measure of the
10 hydrophilic-lipophilic balance in any compound and can be determined from trade literature. Nonionic materials having lower HLB values are less hydrophilic than those having higher HLB values.

15 Preferred nonionic materials are selected from:

- (i) C_8-C_{24} fatty acids;
- (ii) esters of C_8-C_{24} fatty acids with monohydric
20 alcohols containing from 1-3 carbon atoms;
- (iii) $C_{10}-C_{18}$ fatty alcohols;
- (iv) lanolin and derivatives thereof; and
- 25 (v) fatty acid esters of C_2-C_8 polyhydric alcohols.

Particularly preferred examples of such nonionic materials include lauric acid, myristic acid, palmitic
30 acid, iso-stearic acid, stearic acid, oleic acid, linoleic acid, undecanoic acid, methyl laurate, ethyl myristate, ethyl stearate, methyl palmitate, dodecanol, tetradecanol, hexadecanol, octadecanol, lanolin, lanolin alcohols, hydrogenated lanolin, ethylene glycol monostearate,
35 glycerol monostearate and mono-iso- stearate, sorbitan monostearate and mono-iso-stearate.

The nonionic material may be present at a level of about 1.0% to about 6.0%, preferably between about 1.6% and about 4.0%.

5 The electrolyte is selected from the salts of lithium, sodium, potassium, calcium, magnesium, aluminium and mixtures thereof. Aluminium salts are most preferred. Sodium and potassium salts are least preferred. Preferably the salts contain monovalent
10 anions. Preferred examples include aluminium chloride, aluminium chlorhydrate, calcium chloride, calcium bromide, calcium nitrate and magnesium chloride. The preferred level of highly ionic electrolyte in the final product is at least 10 ppm and less than 3,000 ppm, most preferably
15 50 ppm to 2,000 ppm. In the case of electrolytes with a more covalent character such as aluminium chlorhydrate, the preferred level is at least 50 ppm and less than 12,000 ppm, most preferably from 120 to 6,000 ppm.

20 The first step in the process of the invention is the formation of a molten mixture of cationic and nonionic components. The temperature of this mixture is suitably less than 100°C. When this molten mixture is added to water at an elevated temperature, such as above 40°C,
25 preferably above 60°C, and thoroughly mixed, a dispersion of the active materials in droplet form is created. The water preferably contains substantially no electrolyte at this stage. Some electrolyte may be tolerated however provided that the weight ratio of electrolyte in the final
30 product to that initially present is at least 3:1 and provided that the water initially contains no more than 300 ppm electrolyte. It is preferred that the level of cationic material in this dispersion is from 8% to 40% by weight, and the level of the nonionic material is
35 preferably 1% to 9% by weight. While this dispersion may be cooled to ambient temperature at this stage, it is

preferred not to cool the dispersion until after the addition of the electrolyte. The electrolyte must be added after the dispersion of the active material in droplet form has been created. At this stage, provided
5 that at least 8% cationic fabric softener has been added, further amounts of the molten mixture may be added. The electrolyte is preferably added in the form of a concentrated solution, such as about 1-10% by weight.

10 Thus in a preferred embodiment of the invention the electrolyte is added in the form of a concentrated solution, after the formation of the dispersion but before the dispersion is cooled below 40°C. This is of particular benefit if the cationic softener contains
15 hardened (ie mainly saturated) alkyl groups.

Where the cationic raw material used for making the product already contains electrolyte, we have found it to be of advantage if at least a portion of the added
20 electrolyte contains the same cation. Thus, where for example the cationic raw material contains sodium ions, the added electrolyte preferably also contains some sodium ions, advantageously together with an electrolyte containing more highly charged ions, such as calcium ions.

25 The compositions may also contain one or more optional ingredients selected from non-aqueous solvents such as C₁-C₄ alkanols and polyhydric alcohols, pH buffering agents such as weak acids eg phosphoric, benzoic
30 or citric acids (the pH of the compositions are preferably less than 6.0), antigelling agents, perfumes, perfume carriers, fluorescers, colourants, hydrotropes, antifoaming agents, antiredeposition agents, enzymes, optical brightening agents, opacifiers, stabilisers such
35 as guar gum and polyethylene glycol, anti-shrinking agents, anti-wrinkle agents, fabric crisping agents,

spotting agents, soil-release agents, germicides, fungicides, anti-oxidants, anti-corrosion agents, preservatives, dyes, bleaches and bleach precursors, drape imparting agents and antistatic agents.

5

These optional ingredients may be added to the active melt, to the water before forming the dispersion or after adding the electrolyte as appropriate.

10 It is particularly advantageous if the water to which the molten cationic/nonionic mixture is added already contains a dispersing aid. This dispersing aid should be a water-soluble non-anionic surfactant having an HLB of greater than 10, ideally greater than 12. In this
15 context, the term "water-soluble" means having a solubility of more than 1.0g/l in water at pH 2.5 and at 20°C. Preferred examples include water-soluble quaternary ammonium salts (such as Arquad 16, Arquad 2C),
20 ethoxylated quaternary ammonium salts (such as Ethoquad 0/12), quaternary diamine and ethoxylated diamine salts (such as Duoquad T), ethoxylated amines and diamines (such as Ethoduomeen T/25, Ethomeen T/15) and their acid salts, ethoxylated fatty esters of polyhydric alcohols (such as sorbitan monolaurate 20 EO), ethoxylated fatty alcohols
25 (such as Brij 58 - cetyl alcohol 20 EO) and ethoxylated fatty acids (such as Myrj 49 - stearic acid 20 EO).

A useful test for whether a particular material will be a suitable dispersing aid is one which results in a
30 lower product viscosity after the addition of the electrolyte.

The dispersing aid may be present at a level of at least 0.1%, preferably at least 0.2% by weight based on
35 the final product. Usually, it will not be necessary to

use more than 2.5%, preferably not more than 1.0% dispersing aid.

It is preferred that the weight ratio of the cationic fabric softener material to the low HLB nonionic material is in excess of about 2.0:1, such as in excess of about 3.0:1, most preferably within the range of 5:1 to 20:1. A preferred composition contains about 8% to about 22% of the cationic material, about 1.0% to about 6% of the nonionic material and from about 0.01% to about 0.2% of the electrolyte.

The invention will now be illustrated by the following non-limiting examples, in which parts and percentages are by weight, based on the weight of the end product. Where materials are referred to by their commercial names, the percentages quoted are percentages of the active materials.

20

EXAMPLE 1

A homogenous molten premix was prepared containing 10.9% di (soft tallow) dimethyl ammonium chloride (Arquad 2T) and 2.6% hardened tallow fatty acid (Pristerene 4916). This premix was added at a temperature of 60°C to demineralised water at the same temperature. After thorough mixing with a high speed constant torque stirrer the dispersion formed was allowed to cool to 25°C and thereafter 0.1% calcium chloride (in the form of a 10% solution) and 1% perfume were added.

The viscosity of the product measured 110 sec^{-1} was 30cP.

The experiment was repeated with the only difference that the calcium chloride was pre-dissolved in the water. In this case the product viscosity was 438 cP.

- 5 This example demonstrates the benefit of post-addition of the electrolyte.

EXAMPLE 2

- 10 Example 1 was repeated using a molten pre-mix of 17% di (soft tallow) imidazolinium methosulphate (Varisoft 475) and 3% Pristerene 4916. In this example, various levels of various electrolytes were added. The viscosity of the product was measured immediately after preparation and
15 then again after 12 weeks storage at room temperature. The results are set out in the following Table.

| | Electrolyte | Level | Viscosity | |
|----|-------------------|-------|-----------|---------------|
| | | | Initial | After storage |
| 20 | NaCl | 0.2% | 72 | 400 |
| | CaCl ₂ | 0.2% | 62 | 120 |
| | MgCl ₂ | 0.17% | 48 | 91 |
| | AlCl ₃ | 0.15% | 60 | 67 |

- 25 This example illustrates the benefit of using calcium, magnesium or aluminium salt as the electrolyte, rather than sodium salts.

EXAMPLE 3

- 30 Similarly beneficial results can be obtained by processing in the same manner compositions with the following formulations:

| | | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----------------------------------------------------------------|---------|
| 5 | A. | Arquad 2HT | 12.0% |
| | | Pristerene 4916 | 1.5% |
| | | CaCl ₂ (added at 60°C) | 0.03% |
| | | Water | balance |
| <p>Similar results are obtained when the calcium chloride is replaced by the same level of aluminium chloride or sodium chloride, added at 60°C and/or when the levels of Arquad 2HT and Pristerene 4916 are changed to 10.9% and 2.6% respectively. A lower initial viscosity is achieved with these products than if identical formulations are prepared by adding the electrolyte after cooling.</p> | | | |
| 15 | B. | Varisoft 475 | 14.5% |
| | | Hardened rape seed fatty acid | 3.5% |
| | | CaCl ₂ or MgCl ₂ | 0.2% |
| | | Water | balance |
| 20 | C. | Arquad 2T | 17.0% |
| | | Pristerene 4916 | 1.0% |
| | | Aluminium chlorhydrate | 1.0% |
| | | Water | balance |
| 25 | D. | Arquad 2T | 10.9% |
| | | Pristerene 4916 | 2.6% |
| | | Perfume | 1.0% |
| | | CaCl ₂ (added at 60°C) | 0.025% |
| | | Water | balance |
| 30 | E. | Di(hardened tallow) imidazolinium methosulphate (Varisoft 445) | 11.0% |
| | | Commercial iso-stearic acid (ex Emery) | 2.5% |
| | | NaCl | 0.15% |
| | | Water | balance |
| | | | |

This composition is particularly beneficial if the sodium chloride is added at 60°C, and still more beneficial if the sodium chloride is replaced by calcium chloride, magnesium chloride or aluminium chloride.

| | | | |
|----|---|----------------------------------------------------------------------------------------------|---------|
| 5 | | | |
| | F | Varisoft 445 | 12.2% |
| | | Prifac 7962 (unhardened soyabean fatty acid containing 54% linoleic acid and 30% oleic acid) | 2.8% |
| 10 | | Calcium chloride | 0.2% |
| | | Water | balance |

EXAMPLE 4

15 Similarly beneficial results can be obtained by processing in the same manner compositions with the following formulations:

| | <u>EXAMPLE NO</u> | <u>4A</u> | <u>4B</u> | <u>4C</u> | <u>4D</u> | <u>4E</u> | <u>4F</u> | <u>4G</u> |
|----|----------------------------|-------------------|-----------|-----------|-----------|-----------|-----------|-----------|
| 20 | <u>Ingredients %</u> | | | | | | | |
| | Arquad 2HT | 22 | 12 | 12 | 8 | 18 | 12 | 8 |
| | Lanolin | 4 | 2 | 6 | 4 | - | - | - |
| | Lanolin alcohol (Hartolan) | - | - | - | - | 6 | 1 | 2 |
| 25 | Calcium chloride* | 0.1 | 0.07 | 0.05 | 0.03 | 0.1 | 0.1 | 0.1 |
| | Perfume | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | Water | -----balance----- | | | | | | |

30 *Added to the dispersion after cooling. The calcium chloride may be replaced by a similar level of aluminium chloride. Beneficial results may be obtained by adding the calcium chloride or other electrolyte before cooling the dispersion.

35 In this Example the Arquad 2HT may be replaced by Varisoft 445.

EXAMPLE 5

Similarly beneficial results can be obtained by processing in the same manner compositions with the following formulations:

| <u>EXAMPLE NO</u> | <u>5A</u> | <u>5B</u> | <u>5C</u> | <u>5D</u> | <u>5E</u> |
|------------------------|-------------------|-----------|-----------|-----------|-----------|
| <u>Ingredients (%)</u> | | | | | |
| 10 Arquad 2HT | 12 | 8 | 9 | 15 | 12 |
| Octadecanol | 1 | 1 | 3 | 5 | 6 |
| Calcium chloride | 0.1 | 0.1 | 0.06 | 0.1 | 0.05 |
| Perfume | 0.6 | - | - | 1.0 | 0.8 |
| Water | -----balance----- | | | | |

15

In this Example the calcium chloride may be added after or (more preferably) before cooling the dispersion. Calcium chloride may be replaced by magnesium or aluminium chloride. Arquad 2HT may be replaced by Varisoft 445.

20 The octadecanol may be replaced by glycerol monostearate, glycerol mono-iso-stearate, sorbitan monostearate or sorbitan mono-iso-stearate. Any two or more of these modifications may be combined.

25

EXAMPLE 6

The following formulation was prepared by the method set out below.

| | | |
|----|------------------|---------|
| 30 | Arquad 2HT | 12.0% |
| | Lanolin | 4.0% |
| | Phosphoric acid | 0.03% |
| | Perfume | 0.75% |
| | Calcium chloride | 0.05% |
| 35 | Dye | 0.0075% |
| | Water | balance |

The molten mix of the Arquad 2HT and the lanolin was formed at 60°C. This molten mix was added to demineralised water at 60°C, which already contained the phosphoric acid (added as a pH buffer). After thorough mixing to form a dispersion of the active materials in droplet form, the calcium chloride was added in the form of a 10% solution. Thereafter the mixture was cooled to ambient temperature and the perfume and dye added.

EXAMPLE 7

The following formulations demonstrate the range of active levels that are possible within the scope of this invention. In each case the active materials were premixed at 60°C, added to water at the same temperature and shear mixed to form a dispersion in droplet form. Then the calcium chloride was added in the form of a 10% solution. After further mixing the perfume and dye were added and thereafter the mixture was cooled to ambient temperature.

| <u>EXAMPLE NO</u> | 7A | 7B | 7C | 7D |
|----------------------|-------------------|--------|--------|------|
| <u>Ingredients %</u> | | | | |
| Arquad 2HT (hard) | 12.5 | 14.7 | 17.6 | 14.5 |
| Pristerene 4916 | 1.7 | 2.0 | 2.4 | 3.5 |
| CaCl ₂ | 0.05 | 0.06 | 0.07 | 0.05 |
| Perfume | 0.55 | 0.75 | 0.75 | 1.0 |
| Dye | 0.0075 | 0.0075 | 0.0075 | - |
| Water | -----balance----- | | | |
| Total active level | 14.2 | 16.7 | 20.0 | 18.0 |

| EXAMPLE NO | 7E | 7F | 7G | 7H | 7I |
|------------------------|-------------------|--------|--------|--------|--------|
| <u>Ingredients (%)</u> | | | | | |
| Arquad 2T (soft) | 12.0 | 14.0 | 16.53 | 11.5 | 11.5 |
| 5 Pristerene 4916 | 1.5 | 2.0 | 2.07 | 2.0 | 2.3 |
| CaCl ₂ | 0.04 | 0.06 | 0.07 | 0.03 | 0.03 |
| Perfume | 0.55 | 0.75 | 0.75 | 0.55 | 0.55 |
| Dye | 0.0075 | 0.0075 | 0.0075 | 0.0075 | 0.0075 |
| Water | -----balance----- | | | | |

10

EXAMPLE 8

The benefit of including a dispersing aid in the water to which the active premix is added is illustrated as follows. An active premix was prepared by mixing 10.5 parts of Arquad 2HT with 2.5 parts Pristerene 4916 and heating to 70°C. This premix was then added to distilled water at 70°C containing the dispersing aid. After stirring to form a dispersion in droplet form, calcium chloride was added to the hot mixture using a 10% solution. The end product composition was:

| | |
|----------------------|-------|
| Arquad 2HT | 10.5% |
| Pristerene 4916 | 2.5% |
| 25 CaCl ₂ | 0.03% |
| Dispersing aid | 0.5% |

After cooling to room temperature the viscosity of each product was measured at 110 sec⁻¹ at 25°C. Various materials were used as dispersing aids. The results were as follows:

30

| <u>EXAMPLE NO</u> | <u>DISPERSING AID</u> | <u>(HLB)</u> | <u>VISCOSITY (cP)</u> |
|-------------------|-----------------------|--------------|-----------------------|
| 8A | Ethoduomeen T/25 | (18.5) | 40 |
| 8B | Myrj 49 | (15.0) | 30 |
| 5 8C | Brij 76 | (12.4) | 24 |
| 8D | None | (Control) | 204-240 |
| 8E | Span 20 | (8.6) | 351 |

In a further set of experiments using an apparatus
 10 of slightly different dimensions but otherwise using a
 similar technique, the results were:

| <u>EXAMPLE NO</u> | <u>DISPERSING AID</u> | <u>(HLB)</u> | <u>VISCOSITY (cP)</u> |
|-------------------|-----------------------|--------------|-----------------------|
| 15 8F | Arquad 16 | (15.8) | 39 |
| 8G | Ethoquad 0/12 | (about 15) | 27 |
| 8H | Duomac T | (10.7) | 219 |
| 8I | None | (control) | 300 |

20

These results demonstrate that the product viscosity
 is lowered when the dispersing aid has an HLB of more than
 10 (Example 8H for instance) but not when the dispersing
 aid is less than 10 (Example 8E). Also it is apparent
 25 that the benefit is most noticeable where the dispersing
 aid has an HLB above 12.0 (Examples 8A to 8C, 8F and 8G).

The dispersing aids used in this Example are
 commercial materials which are approximately as follows:

30

Ethoduomeen T/25: Ethoxylated N-tallowyl 1,3 propane
 diamine with 15 ethoxylene oxide groups per molecule

Myrj 49: Ethoxylated stearic acid with 20 ethylene
 35 oxide groups per molecule.

Brij 76: Ethoxylated stearyl alcohol with 10 ethylene oxide groups per molecule.

Span 20: Sorbitan monolaurate.

5

Arquad 16: Cetyl trimethyl ammonium chloride.

Ethoquad 0/12: Oleyl, methyl bis (2 hydroxyethyl) ammonium chloride.

10

Duomac T: N-tallowyl 1,3 propane diamine diacetate.

EXAMPLE 9

15 Using the process described in Example 1, a product was formed containing 10.9% Arquad 2T, 2.6% Pristerene 4916, 0.05% calcium chloride and 0.75% post-dosed perfume. The calcium chloride was added either before addition of the molten active to the water (pre-dosed), after
20 formation of the dispersion (post-dosed) or part pre-dosed and part post-dosed. In each case the viscosity of the product was measured. The results were:

| <u>Pre-dosed CaCl₂ (%) Post-dosed CaCl₂ (%) Viscosity (cP)</u> | | |
|--------------------------------------------------------------------------------------------|------|-----|
| 0 | 0.05 | 38 |
| 0.02 | 0.03 | 322 |
| 0.05 | 0 | 948 |

25

30 These results demonstrate the particular benefit of adding all the electrolyte after the formation of the dispersion.

In all the above Examples, the initial level of electrolyte in the process water was less than 10 ppm.

5

EXAMPLE 10

82.5 parts of water containing 50 ppm Ca/MgCO₃, water hardness and small amounts of dye were heated to 66°C in a vessel containing 3 inclined paddles of 0.88 x vessel diameter. 17.5 parts of a premix of Arquad 2HT (75% active) and Pristerene 4916 at 65°C was added to the stirred hot water over a period of 10 minutes via a jet manifold between the top two agitators. This mixture was stirred for 20 minutes at which point 0.25 parts of a 10% CaCl₂ solution was added. After stirring for a further 10 minutes the mixture was cooled to 35°C. 0.72 parts of perfume were added and stirring continued for a further 5 minutes. The product was finally cooled to 30°C and stored.

20

The final product had the following composition:

| | <u>%</u> |
|-----------------------------|----------|
| 25 Arquad 2HT | 12.0 |
| Pristerene 4916 | 1.5 |
| Perfume | 0.72 |
| Added CaCl ₂ | 0.025 |
| Water and minor ingredients | to 100 |

C L A I M S

1. A process for preparing a concentrated aqueous liquid fabric softening composition containing at least 8%
5 by weight water-insoluble cationic fabric softener, said process comprising the steps of:
- (i) forming a molten mixture containing the water-insoluble cationic fabric softener and a nonionic
10 material having an HLB of not more than 10;
- (ii) adding the molten mixture to water at an elevated temperature;
- 15 (iii) mixing the molten mixture and the water together to form a dispersion of the molten mixture in droplet form in the water; and
- (iv) adding electrolyte in the form of a source of
20 lithium, sodium, potassium, calcium, magnesium or aluminium ions thereto, characterised in that the electrolyte is added after, but not before, the formation of said dispersion.
- 25 2. A process according to Claim 1, characterised in that the composition is cooled to ambient temperature after the addition of the electrolyte.
3. A process according to Claim 1, characterised in
30 that the electrolyte is selected from a source of calcium, magnesium or aluminium ions.
4. A process according to Claim 1, characterised in
35 that the water-insoluble cationic fabric softener is selected from water-insoluble quaternary ammonium salts and imidazolinium salts.

5. A process according to Claim 1, characterised in that the nonionic material is selected from

(i) C_8-C_{24} fatty acids;

(ii) esters of C_8-C_{24} fatty acids with monohydric alcohols containing from 1-3 carbon atoms;

(iii) $C_{10}-C_{18}$ fatty alcohols;

(iv) lanolin and derivatives thereof; and

(v) fatty acid esters of C_2-C_8 polyhydric alcohols.

6. A process according to Claim 1, characterised in that the weight ratio of the cationic fabric softening agent to the nonionic material in the composition is from 5:1 to 20:1.

7. A process according to Claim 1, characterised in that the water to which the molten mixture is added in step (ii), already contains a dispersing aid.

8. A process according to Claim 7, characterised in that the dispersing aid is selected from water-soluble cationic and water-soluble nonionic surfactants having an HLB of more than 10.

9. A process according to Claim 1, characterised in that after the addition of the electrolyte, the composition contains from 8% to 22% of the water-insoluble cationic fabric softening material, from 0.5% to 4% of the nonionic material, and from 0.01% to 0.2% of the electrolyte.