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(54) **Thickened liquid bleaching composition.**

(57) The invention relates to a liquid, pourable, thickened chlorine bleaching composition, which has been thickened by means of a mixture of a trialkylamine oxide and a fully saturated fatty acid soap. By using a total level of trialkylamine oxide plus soap of 1.25-3% by weight in a weight ratio of 75:25 to 50:50, a product is obtained with an increased cloud point and a low shear (plateau) viscosity at lower temperatures.

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THICKENED LIQUID BLEACHING COMPOSITION

The present invention relates to liquid, pourable, thickened chlorine bleaching compositions, based on an aqueous alkali metal hypochlorite solution which has been thickened by the inclusion therein of a thickening system which comprises at least two different detergent-active agents.

Such compositions have been described in the art, e.g. in our British Patent Specification 1 329 086 and our European Patent Specification 0 030 401. A specific example of such a mixture of two different detergent-active agents is the mixture of a trialkylamine oxide having one C_8-C_{18} alkyl group and two C_1-C_4 alkyl groups and a fully saturated C_8-C_{18} fatty acid soap as described in our British Patent Specification 1 329 086, and the present invention will be in particular concerned with such a mixture, it being understood, however, that the present invention is not restricted to these particular systems, other systems as described in our European Patent Specification 0 030 401 being equally suitable.

Formulations, prepared with a system according to British Patent Specification 1 329 086 are generally quite satisfactory, and have a viscosity up to about 150 cS at 25°C. Higher viscosities can also be obtained with these mixtures by varying the ratio between the trialkylamine oxide and the saturated fatty acid soap and using certain levels of both ingredients. Thus, products with a viscosity of 300 cS at 25°C can be obtained to provide increased-viscosity products.

However, we have found that such products are susceptible to shear, and show an increase in viscosity at low shear (e.g. less than 20 $sec.^{-1}$) when the temperature decreases. When the increase in low shear viscosity, by temperature change, is very high, then the product can take on unattractive flow characteristics, viz. it can become difficult to squirt the product from a bottle, and it can become elastic and lumpy. It can furthermore appear to have poor clinging properties, even though the viscosity at low shear may be high.

It is therefore an object of the present invention to provide a liquid, pourable, thickened chlorine bleaching composition having an increased viscosity at 25°C, and having an appropriate viscosity at lower temperatures and at low shear. More in particular, the object of the present invention is to provide such products having a low shear (plateau) viscosity) of up to 1500 cP, preferably up to 1000 cP and most preferably between 300 and 1000 cP at a shear of less than 20 $sec.^{-1}$ at a temperature of below 25°C, especially at 10°C or below, and having a viscosity of 150-700, preferably 200-400 cP at a temperature of 25°C.

We have now found that these objectives can be achieved by increasing the cloud point of the thickened products, which is attained by using an increased ratio of the trialkylamine oxide to saturated fatty acid soap and using a higher total level of these ingredients in the products.

We have found that the products should be formulated to have a cloud point of at least 55°C, preferably at least 60°C, using a weight ratio of trialkylamine oxide to saturated fatty acid soap of 75:25 to 50:50, and using a total level of trialkylamine oxide plus saturated fatty acid soap of 1.25 to 3, preferably 1.5 to 2% by weight of the total composition.

The compositions of the invention furthermore contain from 1-15% preferably 5-10% by weight of active chlorine, e.g. of alkali metal hypochlorite, and may contain the usual additives such as colouring agents, perfumes, buffers, free alkali etc. as e.g. described in our aforementioned patent specifications. Instead of or together with the saturated fatty acid soap, a material can be used which generates a fatty acid in the composition, e.g. a lower alkyl ester of a fatty acid such as isopropyl laurate.

The invention will further be illustrated by way of Examples.

Example 1

Thickened liquid chlorine bleaching compositions were prepared having the following formulations:

	% by weight
sodium hypochlorite	9
lauryldimethylamine oxide	x
lauric acid	y
free NaOH	0.7
perfume	0.03
demineralized water	to 100

The amounts x and y were varied, and the cloud points of the various formulations were measured. Also, initial viscosity at 25°C was measured, using an F-tube, the viscosity being expressed in cS, and the viscosity at low shear (3 $sec.^{-1}$) was measured at 25 and 5°C, also after the products had been stored for 3 weeks at 20°C and 6 weeks at 0°C. These latter viscosities are expressed in cP, and were measured in a Haake viscometer.

The following results were obtained:

x	y	x+y	x:y	cloud point °C	initial viscosity at 25°C in cS	initital low shear viscosity in cP Temp. range from 25 - 5°C	low shear visc. after 3 weeks storage at 20°C. Temp. range from 25 - 5°C	low shear visc. after 6 weeks storage at 0°C. Temp. range from 25 - 5°C
1.17	0.52	1.69	69:31	38	209	300-2100	390-2400	390-2600
1.09	0.45	1.54	71:29	45.5	194	280- 880	300-1300	340-2000
1.25	0.48	1.73	72:28	55	202	290- 700	320-1100	390-1400
1.49	0.52	2.01	74:26	65	190	280- 420	350- 850 *	390- 900 *

* max. at 10°C

These results show that the first formulation has an unacceptable high plateau viscosity at low shear, the second formulation equally so after storage at 0°C, but the last two formulations show an acceptable plateau viscosity at all stages. These formulations have a cloud point of 55 and 65°C resp.

Example 2

Repeating Example 1, using the following amounts x and y, gave the following results:

x	y	x+y	x+y	cloud point (°C)	storage 3 weeks at 20°C low shear viscosity at temp. range 25-5°C
1.06	0.46	1.52	70:30	40.5	260-1800 cP
1.32	0.47	1.79	74:26	65	330- 820 cP

These results show that the product with the cloud point of 65°C has an acceptable plateau viscosity at low shear, whereas the other product does not have such acceptable plateau viscosity.

Claims

1. A liquid, pourable, thickened chlorine bleaching composition, based on an aqueous alkali metal hypochlorite solution which has been thickened by the inclusion therein of a mixture of a trialkylamine oxide having one C_8-C_{18} alkyl group and two C_1-C_4 alkyl groups and an alkali metal salt of a fully saturated C_8-C_{18} fatty acid, characterized in that the composition has a cloud point of at least 55°C and contains 1.25 to 3% by weight of the trialkylamine oxide plus alkali metal salt of the fully saturated fatty acid, the weight ratio between the trialkylamine oxide and the alkali metal salt of the fully saturated fatty acid being from 75:25 to 50:50.

2. A composition according to claim 1,
characterized in that the cloud point is at least 60°C and the amount of trialkylamine oxide plus alkali metal salt of the fully saturated fatty acid is from 1.5 to 2% by weight.

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EUROPEAN SEARCH REPORT

Application number

EP 87 10 4198

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
X	EP-A-0 137 551 (UNILEVER PLC) * claims 1-6 *	1	C 11 D 3/395
Y	EP-A-0 145 084 (UNILEVER NV) * claims 1-5 *	1	
Y	GB-A-2 046 321 (LANKRO CHEMICALS LTD.) * claims 1-11 *	1	
D,A	GB-A-1 329 086 (UNILEVER LTD.) * claims 1, 2 *	1	
			TECHNICAL FIELDS SEARCHED (Int. Cl.4)
			C 11 D 3/00

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
BERLIN	29-06-1987	SCHULTZE D

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
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& : member of the same patent family, corresponding document

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