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A VISCOUS CLEANING AGENT WITH SCOURING ACTION
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- (57) Claim

1. An acidic, viscous, stable cleaning agent with a scouring action containing:

anionic tenside

linear alkylbenzenesulphonate or alkane sulphonate, 1 to 10% by weight;

non-ionic tenside

fatty alcohol oxyethylate, 0.5 to 2% by weight;

fatty acids with a carbon chain length of C_{12} - C_{18} , 0.1 to 0.5% by weight;

mono- or sesquiterpenes or mixtures thereof, 0 - 2% by weight;

silicones, 0.5 to 2% by weight;

scouring agents in the form of alumina mixtures of various particle sizes, 20 to 60% by weight;

acids for the adjustment of a pH value of 2.5 to 4 in the form of a mixture of citric acid and amidosulphonic acid;

and the balance comprising water, perfume oil and colouring materials wherein the cleaning agent is in the form of a paste having a viscosity at 20°C of 7000 to 9000 mPa.

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5. Process for the production of an acid , viscous, stable cleaning agent with a scouring action according to claim 1, wherein a pre-mixture is produced by successively introducing into water aqueous sodium hydroxide solution, sodium carbonate, fatty acid, colouring material, alkylbenzenesulphonic acid or sodium alkanesulphonate, non-ionic tenside and perfume with the adjustment of a pH value of preferably 10.3 and polishing alumina and silicone oil are successively introduced into the pre-mixture with vigorous stirring and subsequently mixed with citric acid and amido-sulphonic acid until a pH value of 2.5 to 4 is achieved.

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COMPLETE SPECIFICATION

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Complete Specification for the invention entitled:
A ~~LIQUID~~ CLEANING AGENT WITH SCOURING ACTION,
VISCIOUS

The following statement is a full description of this invention
including the best method of performing it known to me:-



The present invention is concerned with a viscous, ~~liquid~~ cleaning agent with a scouring action for cleaning acid-resistant, hard surfaces in the household and especially for cleaning glass ceramics.

5 Cleaners for hard surfaces in the household are necessary, for example, for metals, glass, ceramics, synthetic materials, glass ceramics and the like. Such cleaners can be powdery, pasty or liquid.

10 The liquid products have the advantage that, immediately after application to the surface to be cleaned, they manifest a cleaning ability insofar as they are intended for the removal of fat-containing and lime-containing dirt.

15 A number of liquid products have the deficiency that they are not acid adjusted. Stubborn, for example aged, lime-containing contaminations such as can occur especially on glass ceramic cooking plates, can only be very unsatisfactorily removed with such products.

20 Another disadvantage of liquid cleaners is the absence of abrasively-acting scouring agents since lime-containing contaminations greatly aged due to the action of temperature and firmly adhering strongly counter the removal thereof.

25 For the better dissolving of fat-containing dirt or for the achievement of a sufficient stability, liquid cleaners can contain more or less large amounts of organic solvents. However, these solvents represent an



additional burdening of the ecosystem and reduce the economy of such cleaners.

Liquid cleaners which contain abrasives can display deficiencies with regard to the storage
5 stability. Various thickening agents, for example polyacrylates, have been suggested for overcoming this deficiency.

More particularly, from Federal Republic of Germany Patent Specification No. 28 43 160, products are
10 known which have been rendered acidic with amido-sulphonic acid but negative effects are thereby the burdening of the air in the room and the inflammability due to the content of isopropyl alcohol and of other organic solvents.

In Federal Republic of Germany Patent Specification No. 33 27 926, reference is made to the use of
15 acids, for example citric acid, amidosulphonic acid and the like and mixtures thereof, in order to adjust the pH value to 3 to 3.5. Here, too, organic solvents, such
20 as hydrocarbons, with the disadvantages of burdening the air in the room and of inflammability, must be employed.

From European Patent Specification No. 0,216,416, a system is known which is made up with the use of
25 natural minerals, benzyl alcohol and polymeric thickeners. Natural minerals have proved to have a negative effect since they can contain scouring agent components with a very great degree of hardness and

thus components which bring about very considerable wear. Amounts of benzyl alcohol are necessary as polar solvent.

In all, the known cleaning agents have the disadvantage that they are not able satisfactorily to clean, for example, glass ceramic cooking plates or damage the surfaces thereof or, in the case of application to hot cooking plates, attack these chemically.

It is an object of the present invention to provide a cleaning agent of the initially mentioned kind, with the help of which, inter alia, even hot cooking plates can be especially well cleaned without attacking the surfaces thereof.

The present invention provides a cleaning agent in the form of a paste which has a viscosity at 20°C. of 7000 to 9000 mPas and especially of 7500 to 8500 mPas.

The agent according to the present invention contains:

anionic tenside

20 linear alkylbenzenesulphonate or alkane sulphonate, 1 to 10% by weight;

non-ionic tenside

fatty alcohol oxyethylate, 0.5 to 2% by weight;

25 fatty acids with a carbon chain length of $C_{12} - C_{18}$, 0.1 to 0.5% by weight;

mono- or sesquiterpenes or mixtures thereof, 0 to 2% by weight;

silicones, 0.5 to 2% by weight;
scouring agents in the form of alumina mixtures of
various particle sizes, 20 to 60% by weight;
acids for the adjustment of a pH value of from 2.5 to 4
5 in the form of a mixture of citric acid and
amidosulphonic acid;
and the balance comprising water, perfume oil and
colouring materials wherein the cleaning agent is in the
form of a paste having a viscosity at 20°C in the range
10 from 7000 to 9000 mPa.

Thus, the present invention provides an acidic,
viscous cleaning agent with a scouring action which is
free from solvents which would bring about an
unnecessary burdening of the air of the room and give
15 rise to a danger of ignition.

The present invention provides an acidic cleaning
agent of higher stability against demixing in which the
viscosity necessary for the achievement of stability is,
according to the present invention, achieved without the
20 use of thickening agents.

In particular, the present invention provides an
agent which is especially suitable for cleaning glass
ceramic surfaces and is effective without chemically or
mechanically attacking the surfaces.

25 Description of the components:

Anionic tensides:

As anionic tensides, the agent preferably
contains linear alkylbenzenesulphonate wherein the alkyl
chain contains 10 to 13 carbon atoms or secondary
30 alkane-



sulphonate with a $C_{13} - C_{18}$ alkyl chain, for example in each case in the form of sodium salts.

Non-^{ionic}anionic tensides:

- 5 Condensates of fatty alcohols with a chain length of C_{10} with 7 or 11 moles of ethylene oxide or with a chain length of $C_{11} - C_{13}$ with 7 or 11 moles of ethylene oxide. ^{are preferred}

Fatty acids:

- 10 A mixture of fatty acids obtainable by the decomposition of coconut fat: C_{10} 2%, C_{12} 52%, C_{14} 22%, C_{16} 12%, C_{18} 2%, C_{18} unsaturated once 9%; C_{18} unsaturated twice 1%.

Terpineols:

A mixture of α -, β - and γ -isomers of ^{is preferred} p-menthenols.

15 Silicones:

Polymethylsiloxanes with a viscosity of 50 to 150 mPas. ^{are preferred}

Polishing aluminas:

- 20 The most suitable polishing aluminas are mixtures with the following characteristics:
- polishing alumina P2 > 63 μ m. maximum 5%, bulk density 800 to 950 g./litre
- polishing alumina P10 > 63 μ m. 30 to 50%, bulk density 850 to 950 g./litre
- 25 polishing alumina P6 > 63 μ m. 15 to 25%, bulk density 850 to 950 g./litre
- polishing alumina P10 finest < 20 μ m. minimum 95%, bulk density 550 to 650 g./litre.



Acids:

The acid mixture of citric acid and amidosulphonic acid used according to the present invention for the adjustment of a pH value in the range
5 from 2.5 to 4 and preferably in the range from 3 to 3.5 brings about at an elevated temperature, in contra-distinction to acids such as alkylbenzenesulphonic acid or phosphoric acid, surprisingly no attack on glass ceramic surfaces.

10 The use of amidosulphonic acid alone for the acid adjustment of the formulation gives a product with insufficient lime removal.

For the production of the cleaning agent according to the present invention, the preparation of a
15 pre-mixture is necessary in such a manner that aqueous sodium hydroxide solution, sodium carbonate, fatty acid, colouring material, alkylbenzenesulphonic acid, non-ionic tenside and perfume are successively introduced into water. The pH value of the pre-mixture
20 should preferably be 10.3. Into the pre-mixture are introduced, with vigorous stirring, the polishing aluminas, subsequently the silicone oil and thereafter the acids, the introduction of the acids being continued until a pH value of 3 to 3.5 has been reached. The
25 citric acid can also, in part, be introduced into the pre-mixture together with the alkylbenzenesulphonic acid.

The use of alkanesulphonate takes place in such a manner that a pre-mixture is produced by successively



introducing aqueous sodium hydroxide solution, sodium carbonate, fatty acid, colouring material, sodium alkanesulphonate and non-ionic tenside into water. The pH value of the pre-mixture should ^{preferably} be 10.3. Into
5 the pre-mixture are introduced, with vigorous stirring, the polishing alumina, subsequently the silicone oil and thereafter the acids, the introduction of the acids being continued until a pH value of 3 to 3.5 has been reached.

10 The products according to the present invention were tested with regard to stability over a period of time of 2 months. The testing for scratching showed no negative effects in the case of the use of the mixture of polishing alumina according to the present
15 invention. The cleaning ability with regard to dried up milk and dried up foodstuffs of the formulations described in the following Examples is comparably good.

In the following Table, Examples 1 to 3 are of
cleaning agents according to the present invention,
20 the other Examples being given for the purpose of comparison. The Table also gives the results obtained in the testing of the various agents. The tests indicate the following:

scratching 0: no scratching ascertainable after use
25 chemical attack at 600°C.: no chemical attack occurs
cleaning off of foodstuffs, milk 0: the foodstuff contaminations are completely removed
removal of lime 0: lime is completely removed.



Table

	1	2	3	4	5	6	7
water, completely desalinated	40.2	39.7	40.2	44.0	40.7	39.7	35.3
aqueous sodium hydroxide solution, 50%	1.6	1.6	1.6	0.9	1.6	1.6	1.6
sodium carbonate	1.0	1.0	1.0	1.0	1.0	1.0	1.0
coconut fatty acid Edenor K1218	0.2	0.2	0.2	0.2	0.2	0.2	0.2
colouring material solution	+	+	+	+	+	+	+
alkylbenzenesulphonic acid	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lutensol ON 110	1.0	1.0	-	1.0	1.0	1.0	1.0
Lutensol ON 70	-	-	1.0	-	-	-	-
terpeneol	-	0.5	-	0.5	0.5	0.5	0.5
perfume	0.4	0.4	0.4	0.4	0.4	0.4	0.4
polishing alumina P2	27.0	27.0	27.0	27.0	27.0	-	27.0
polishing alumina P6	-	-	-	-	-	45.0	-
polishing alumina P10	18.0	18.0	18.0	18.0	18.0	-	18.0
dimethylsiloxane AK 100	1.0	1.0	1.0	1.0	1.0	1.0	1.0
citric acid solution, 50%	3.6	3.6	3.6	-	11.0	3.6	-
amidosulphonic acid	2.0	2.0	2.0	2.0	-	2.0	-
lactic acid	-	-	-	-	-	-	10.0
tendency to precipitate	very slight	very slight	very slight	very slight	very slight	strong	strong
scratching	0	0	0	0	0	0	0
chemical attack at 600°C.	0	0	0	0	2	0	0
cleaning off foodstuffs, milk	0	0	0	0	0	0	0
removal of lime	0	0	0	2	0	0	0

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. An acidic, viscous, stable cleaning agent with a scouring action containing:
anionic tenside
linear alkylbenzenesulphonate or alkane sulphonate, 1 to
5 10% by weight;
non-ionic tenside
fatty alcohol oxyethylate, 0.5 to 2% by weight;
fatty acids with a carbon chain length of $C_{12} - C_{18}$, 0.1
to 0.5% by weight;
10 mono- or sesquiterpenes or mixtures thereof, 0 - 2% by
weight;
silicones, 0.5 to 2% by weight;
scouring agents in the form of alumina mixtures of
various particle sizes, 20 to 60% by weight;
15 acids for the adjustment of a pH value of 2.5 to 4 in
the form of a mixture of citric acid and amidosulphonic
acid;
and the balance comprising water, perfume oil and
colouring materials wherein the cleaning agent is in the
20 form of a paste having a viscosity at 20°C of 7000 to
9000 mPa.
2. A cleaning agent according to claim 1 with a
2 viscosity at 20°C of 7500 to 8500 mPa.
3. A cleaning agent according to any of the
preceding claims, the pH value of which is from 3 to
3 3.5.
4. The use of a cleaning agent according to any of
claims 1 to 3 for cleaning hard surfaces, for example
metals, glass, synthetic materials and ceramics and
4 especially glass ceramics.
5. Process for the production of an acid, viscous,
stable cleaning agent with a scouring action according
to claim 1, wherein a pre-mixture is produced by
successively introducing into water aqueous sodium
5 hydroxide solution, sodium carbonate, fatty acid,
colouring material, alkylbenzenesulphonic acid or sodium



alkanesulphonate, non-ionic tenside and perfume with the adjustment of a pH value of preferably 10.3 and polishing alumina and silicone oil are successively introduced into the pre-mixture with vigorous stirring and subsequently mixed with citric acid and amido-sulphonic acid until a pH value of 2.5 to 4 is achieved.

6. Process according to claim 5, wherein the citric acid and amidosulphonic acid are introduced until a pH value of 3 to 3.5 is achieved.

7. Process according to claim 5 or 6, wherein the citric acid is introduced into the pre-mixture together with the alkylbenzenesulphonic acid.

8. An acidic, viscous, stable cleaning agent with a scouring action, whenever produced by the process according to any of claims 5 to 7.

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