Claims

[Claim 1]

A detergent composition for hard surfaces comprising:

0.05% by mass or more and 3% by mass or less of (A) an amine oxide type surfactant [hereinafter referred to as an (A) component];

(B) a nonionic surfactant represented by the following general formula (B1) [hereinafter referred to as a (B) component],

$R^{1b}-O(C_2H_4O)_p-H$ (B1)

wherein R^{1b} represents an alkyl group having 8 or more and 22 or less carbon atoms, and p represents an average addition mole number and is a number of 0.1 or more and 20 or less;

(C) a cationic surfactant [hereinafter referred to as a (C) component]; and

0.001% by mass or more and 4.5% by mass or less of (D) a polycarboxylic acid having 3 or more and 6 or less carbon atoms or a salt thereof [hereinafter referred to as a (D) component], wherein

a mass ratio of the (B) component to the (A) component, (B)/(A), is 0.5 or more and 1.5 or less,

a mass ratio of the (C) component to the (A) component, (C)/(A), is 0.5 or more and 1.5 or less,

a mass ratio of the (B) component to the (C)

component, (B)/(C), is 0.5 or more and 3.0 or less, and

a content of an anionic surfactant is 10% by mass or less based on the amount of all surfactants.

[Claim 2]

The detergent composition for hard surfaces according to claim 1, wherein a mass ratio of the (D) component to a total content of the (A) component, the (B) component, and the (C) component, (D)/[(A) + (B) + (C)], is 0.001 or more and 15 or less.

[Claim 3]

The detergent composition for hard surfaces according to claim 1 or 2, wherein a total content of the (A) component, the (B) component, the (C) component, and the (D) component is 0.1% by mass or more and 6.5% by mass or less.

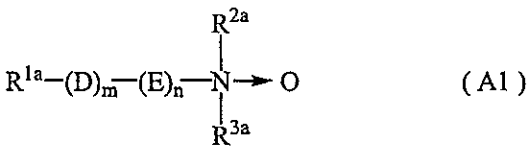
[Claim 4]

The detergent composition for hard surfaces according to any one of claims 1 to 3, wherein a stock solution thereof has a pH of 5 or more and 8 or less at 20°C.

[Claim 5]

The detergent composition for hard surfaces according to any one of claims 1 to 4, wherein the (A) component is a compound represented by the following general formula (A1):

[Formula 1]



(A1)

wherein R^{1a} represents an alkyl group or an alkenyl group having 8 or more and 24 or less carbon atoms, R^{2a} and R^{3a} each identically or differently represent an alkyl group having 1 or more and 3 or less carbon atoms, D represents a -NHC(=O)- group or a -C(=O)NH- group, E represents an alkylene group having 1 or more and 5 or less carbon atoms, and m and n represent m = 0 and n = 0 or m = 1 and n = 1.

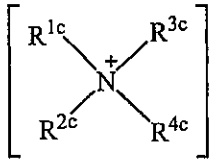
[Claim 6]

The detergent composition for hard surfaces according to any one of claims 1 to 5, wherein the (B) component is a nonionic surfactant in which R^{1b} in general formula (B1) is an alkyl group having 12 or more and 22 or less carbon atoms.

[Claim 7]

The detergent composition for hard surfaces according to any one of claims 1 to 6, wherein the (C) component is a cationic surfactant selected from a compound represented by the following general formula (C1) and a compound represented by general formula (C2),

[Formula 2]

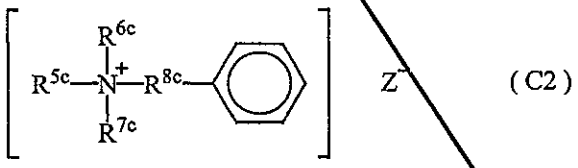


Y^- (C1)

wherein R^{1c} and R^{2c} each identically or differently represent a long chain alkyl group, a long chain alkenyl

group, or a long chain hydroxyalkyl group having 8 or more and 16 or less carbon atoms, a total number of carbon atoms of R^{1c} and R^{2c} is 16 or more and 26 or less, R^{3c} and R^{4c} each identically or differently represent an alkyl group or a hydroxyalkyl group having 1 or more and 3 or less carbon atoms, or a polyoxyethylene group having an average addition mole number of 10 or less, and Y^- represents an anionic residue of a halogen atom or an ester of sulfonate or sulfate having 1 or more and 5 or less carbon atoms, and

[Formula 3]



(C2)

wherein R^{5c} represents a long chain alkyl group, a long chain alkenyl group, or a long chain hydroxyalkyl group having 8 or more and 16 or less carbon atoms, R^{6c} and R^{7c} each identically or differently represent an alkyl group or a hydroxyalkyl group having 1 or more and 3 or less carbon atoms, or a polyoxyethylene group having an average addition mole number of 10 or less, and R^{8c} represents an alkylene group having 1 or more and 3 or less carbon atoms, and Z^- represents an anionic residue of a halogen atom or an ester of sulfonate or sulfate having 1 or more and 5 or less carbon atoms.

[Claim 8]

The detergent composition for hard surfaces

according to claim 7, wherein the (C) component is a compound represented by general formula (C2).

[Claim 9]

The detergent composition for hard surfaces according to any one of claims 1 to 8, wherein the (C) component is a cationic surfactant having disinfecting properties.

[Claim 10]

The detergent composition for hard surfaces according to any one of claims 1 to 9, wherein the (D) component is one or more polycarboxylic acids or salts thereof selected from malonic acid, succinic acid, glutaric acid, adipic acid, malic acid, tartaric acid, citric acid, and salts thereof.

[Claim 11]

The detergent composition for hard surfaces according to any one of claims 1 to 10, comprising as an (E) component a surfactant other than the (A) component, the (B) component, and the (C) component in an amount of 50% by mass or less based on an amount of all surfactants.

[Claim 12]

The detergent composition for hard surfaces according to any one of claims 1 to 11, wherein the hard surface is a floor surface.

[Claim 13]

A method for cleansing a hard surface, comprising

applying to a hard surface a cleansing liquid obtained by diluting the detergent composition for hard surfaces according to any one of claims 1 to 12 by 70 times or more and 200 times or less with water.

[Claim 14]

The method for cleansing hard surfaces according to claim 13, comprising drying a hard surface without rinsing after applying the cleansing liquid to the hard surface.

Claims

[Claim 1]

A detergent composition for hard surfaces comprising:

0.05% by mass or more and 3% by mass or less of (A) an amine oxide type surfactant [hereinafter referred to as an (A) component];

(B) a nonionic surfactant represented by the following general formula (B1) [hereinafter referred to as a (B) component],

R^{1b}-O(C_2H_4O)$_p$-H (B1)

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(C) a cationic surfactant [hereinafter referred to as a (C) component]; and

0.001% by mass or more and 4.5% by mass or less of (D) a polycarboxylic acid having 3 or more and 6 or less carbon atoms or a salt thereof [hereinafter referred to as a (D) component], wherein

a mass ratio of the (B) component to the (A) component, (B)/(A), is 0.5 or more and 1.5 or less,

a mass ratio of the (C) component to the (A) component, (C)/(A), is 0.5 or more and 1.5 or less,

a mass ratio of the (B) component to the (C)

component, (B)/(C), is 0.5 or more and 3.0 or less, and

a total content of all anionic surfactants is 5% by mass or less based on the amount of all surfactants.

[Claim 2]

The detergent composition for hard surfaces according to claim 1, wherein a mass ratio of the (D) component to a total content of the (A) component, the (B) component, and the (C) component, (D)/[(A) + (B) + (C)], is 0.001 or more and 15 or less.

[Claim 3]

The detergent composition for hard surfaces according to claim 1 or 2, wherein a total content of the (A) component, the (B) component, the (C) component, and the (D) component is 0.1% by mass or more and 6.5% by mass or less.

[Claim 4]

The detergent composition for hard surfaces according to any one of claims 1 to 3, wherein a stock solution thereof has a pH of 5 or more and 8 or less at 20°C.

[Claim 5]

The detergent composition for hard surfaces according to any one of claims 1 to 4, wherein the (A) component is a compound represented by the following general formula (A1):

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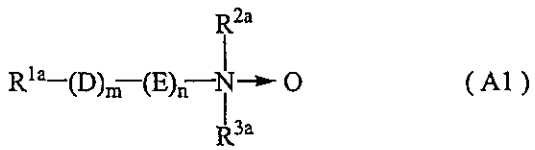

(A1)

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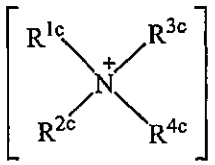
The detergent composition for hard surfaces according to any one of claims 1 to 5, wherein the (B) component is a nonionic surfactant in which R^{1b} in general formula (B1) is an alkyl group having 12 or more and 22 or less carbon atoms.

[Claim 7]

The detergent composition for hard surfaces according to any one of claims 1 to 6, wherein the (C) component is a cationic surfactant selected from a compound represented by the following general formula (C1) and a compound represented by general formula (C2),

[Formula 2]

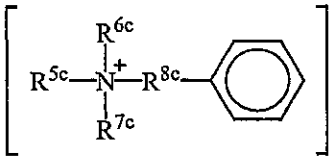


Y^- (C1)

wherein R^{1c} and R^{2c} each identically or differently represent a long chain alkyl group, a long chain alkenyl

group, or a long chain hydroxyalkyl group having 8 or more and 16 or less carbon atoms, a total number of carbon atoms of R^{1c} and R^{2c} is 16 or more and 26 or less, R^{3c} and R^{4c} each identically or differently represent an alkyl group or a hydroxyalkyl group having 1 or more and 3 or less carbon atoms, or a polyoxyethylene group having an average addition mole number of 10 or less, and Y^- represents an anionic residue of a halogen atom or an ester of sulfonate or sulfate having 1 or more and 5 or less carbon atoms, and

[Formula 3]



(C2)

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The detergent composition for hard surfaces

according to claim 7, wherein the (C) component is a compound represented by general formula (C2).

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[Claim 12]

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[Claim 13]

A method for cleansing a hard surface, comprising

applying to a hard surface a cleansing liquid obtained by diluting the detergent composition for hard surfaces according to any one of claims 1 to 12 by 70 times or more and 200 times or less with water.

[Claim 14]

The method for cleansing hard surfaces according to claim 13, comprising drying a hard surface without rinsing after applying the cleansing liquid to the hard surface.