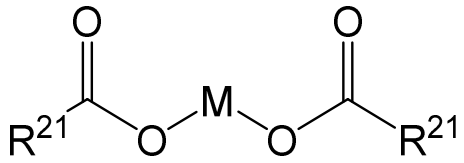
CLAIMS

1. An antifouling coating composition comprising:

a polyorganosiloxane block-containing hydrolyzable copolymer (A) and medetomidine (B), wherein:

the polyorganosiloxane block-containing hydrolyzable copolymer (A) contains (i) a constituent unit derived from a hydrolyzable group-containing monomer (a1) and (ii) a constituent unit derived from a polyorganosiloxane block-containing monomer (a2), and

the hydrolyzable group-containing monomer (a1) contains a monomer (a12) represented by the following formula (1-2):

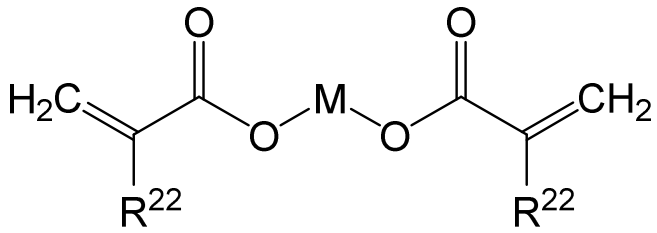


(1 - 2)

wherein R^{21} each independently represents a monovalent group containing a terminal ethylenically unsaturated group; and M represents a metal.

2. The antifouling coating composition according to claim 1, wherein the polyorganosiloxane block-containing hydrolyzable copolymer (A) further contains (iii) a constituent unit derived from any other monomer (a3).

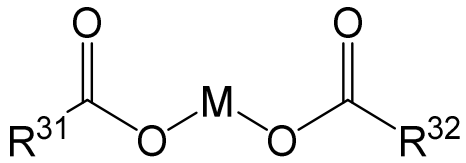
3. The antifouling coating composition according to claim 1 or 2, wherein the hydrolyzable group-containing monomer (a1) contains a monomer (a12') represented by the following formula (1-2'):



(1 - 2')

wherein R^{22} each independently represents a hydrogen atom or a methyl group; and M represents copper or zinc.

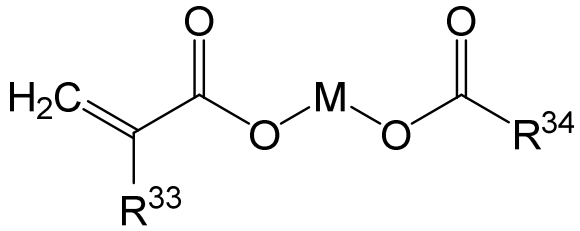
4. The antifouling coating composition according to any one of claims 1 to 3, wherein the hydrolyzable group-containing monomer (a1) contains a monomer (a13) represented by the following formula (1-3):



(1 - 3)

wherein R^{31} represents a monovalent group containing a terminal ethylenically unsaturated group; R^{32} represents a monovalent organic group having 1 to 30 carbon atoms containing no terminal ethylenically unsaturated group; and M represents a metal.

5. The antifouling coating composition according to claim 4, wherein the hydrolyzable group-containing monomer (a1) contains a monomer (a13') represented by the following formula (1-3'):



(1 - 3')

wherein R^{33} represents a hydrogen atom or a methyl group; R^{34} represents a monovalent organic group having 1 to 30 carbon atoms containing no terminal ethylenically unsaturated group; and M represents copper or zinc.

6. The antifouling coating composition according to any one of claims 1 to 5, wherein the polyorganosiloxane block-containing hydrolyzable copolymer (A) is obtained by a method in which a solvent is put into a reactor and heated, and a mixture of the monomer (a1), the polyorganosiloxane block-containing monomer (a2) and a polymerization initiator is dropwise added thereto, and polymerization is carried out.

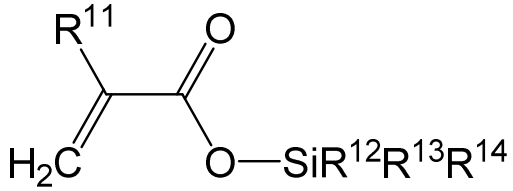
7. The antifouling coating composition according to any one of claims 3 to 6, wherein the monomer (a12') is obtained by stirring an inorganic metal compound and methacrylic acid, acrylic acid or an ester thereof in the presence of an organic solvent and water, while heating.

8. An antifouling coating composition comprising:

a polyorganosiloxane block-containing hydrolyzable copolymer (A) and medetomidine (B), wherein:

the polyorganosiloxane block-containing hydrolyzable copolymer (A) contains (i) a constituent unit derived from a hydrolyzable group-containing monomer (a1) and (ii) a constituent unit derived from a polyorganosiloxane block-containing monomer (a2), and

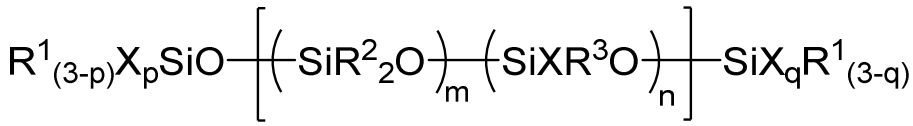
the hydrolyzable group-containing monomer (a1) contains a monomer (a11) represented by the following formula (1-1):



(1 - 1)

wherein R^{11} represents a hydrogen atom or a methyl group; and R^{12}, R^{13} and R^{14} each independently represent a monovalent hydrocarbon group.

9. The antifouling coating composition according to any one of claims 1 to 8, wherein the polyorganosiloxane block-containing monomer (a2) is represented by the following formula (2):



(2)

wherein R^1, R^2 and R^3 each independently represent a monovalent hydrocarbon group; X each independently represents a (meth)acryloyloxyalkyl group or a mercaptoalkyl group; m represents 1 or more; n represents 0 or more; and p and q each independently represent 0 or 1, provided that n + p + q is 1 or more.

10. The antifouling coating composition according to any one of claims 1 to 9, wherein the polyorganosiloxane block-containing hydrolyzable copolymer (A) contains 1 to 50% by mass of a constituent unit derived from a polyorganosiloxane block-containing monomer (a2).

11. The antifouling coating composition according to any one of claims 1 to 10, comprising the polyorganosiloxane block-containing hydrolyzable copolymer (A) in an amount of 10% by mass or more based on the solid content of the antifouling coating composition.

12. The antifouling coating composition according to any one of claims 1 to 11, comprising the medetomidine (B) in an amount of 0.01 to 5% by mass based on the solid content of the antifouling coating composition.

13. The antifouling coating composition according to any one of claims 1 to 12, further comprising zinc oxide (C).

14. The antifouling coating composition according to any one of claims 1 to 13, further comprising a polyester-based polymer (D).

15. The antifouling coating composition according to any one of claims 1 to14, further

comprising a wetting dispersant (E).

16. An antifouling coating film, which is formed with the antifouling coating composition according to any one of claims 1 to 15.

17. A substrate with an antifouling coating film, wherein the substrate is coated with the antifouling coating film according to claim 16.

18. A method for producing a substrate with an antifouling coating film, comprising:

(I) a step of providing an applied body or an impregnated body by applying the antifouling coating composition according to any one of claims 1 to 15 on a substrate or impregnating a substrate with the antifouling coating composition according to any one of claims 1 to 15, and

(II) a step of drying the applied body or the impregnated body.

19. An antifouling method comprising using the antifouling coating film according to claim 16.