Claims

[Claim 1]

An antifouling coating composition comprising:

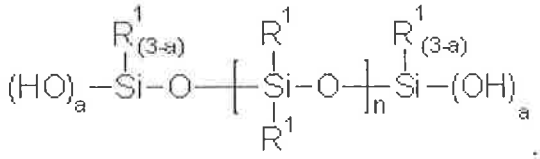
(A) a diorganopolysiloxane having at least two silanol groups in the molecule,

(B) an organosilane and/or a partial hydrolyzate condensate thereof having at least two hydrolyzable groups in the molecule, and

(C) a pyrithione metal salt, wherein the content of said pyrithione metal salt (C) in said antifouling coating composition ranges 3 to 20 wt%.

[Claim 2]

The antifouling coating composition according to claim 1, wherein the diorganopolysiloxane (A) is represented by General Formula [I]:



…[I]

(wherein R^1 indicates independently at each occurrence a hydrocarbon group of 1 to 6 carbon atoms, the letter a is an integer of 1 to 3, and the letter n is an integer of 5 to 1,000).

[Claim 3]

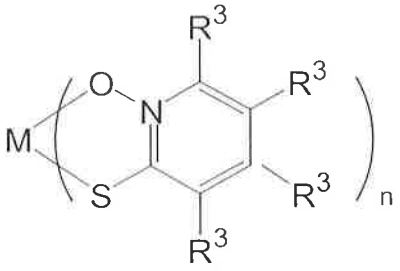
The antifouling coating composition according to claim 1 or 2, wherein the organosilane and/or a partial hydrolyzate condensate thereof (B) is a compound represented by General Formula [II] below and/or a partial hydrolysate condensate thereof:

$$R^2_dSiY_{4-d} \quad \cdots[II]$$

(wherein R^2 indicates independently at each occurrence a hydrocarbon group of 1 to 6 carbon atoms, Y indicates independently at each occurrence a hydrolyzable group, and the letter d is an integer of 0 to 2).

[Claim 4]

The antifouling coating composition according to any one of claims 1 to 3, wherein the pyrithione metal salt (C) is represented by General Formula [III]:



…[III]

(wherein R^3 indicates independently at each occurrence a hydrogen atom or an alkyl, cycloalkyl, alkenyl, aryl, alkoxy or halogenated alkyl group of 1 to 6 carbon atoms, M indicates a metal Zn, Cu, Na, Mg, Ca, Ba, Fe or Sr, and the letter n is the valence of the metal M).

[Claim 5]

The antifouling coating composition according to any one of claims 1 to 4, wherein the diorganopolysiloxane (A) has a weight average molecular weight of 500 to 1,000,000.

[Claim 6]

The antifouling coating composition according to any one of claims 1 to 5, wherein part or the whole of the diorganopolysiloxane (A) has been heat treated with silica beforehand.

[Claim 7]

The antifouling coating composition according to any one of claims 1 to 6, wherein the organosilane and/or the partial hydrolyzate condensate thereof (B) has at least one of oxime groups, acetyloxy groups and alkoxy groups as the hydrolyzable groups.

[Claim 8]

The antifouling coating composition according to any one of claims 1 to 7, further comprising at least one selected from the group consisting of a curing catalyst (G), a phenyl-modified organopolysiloxane and an ether-modified organopolysiloxane.

[Claim 9]

An antifouling coating film obtained by curing the antifouling coating composition recited in any one of claims 1 to 8.

[Claim 10]

An antifouling substrate obtained by coating or impregnating a substrate with the antifouling coating composition recited in any one of claims 1 to 8, and thereafter curing the composition.

[Claim 11]

The antifouling substrate according to claim 10, wherein the substrate is an underwater structure or a marine vessel.

[Claim 12]

A method for manufacturing antifouling substrates, comprising a step of coating or impregnating a substrate with the antifouling coating composition described in any one of claims 1 to 8, and a step of curing the composition that has been applied to coat or impregnate the substrate.