proposed. However, this organic silicon compound has a structure in which an amino group-containing silane coupling agent is added to an aromatic ring-nonhydrate. This organic silicon compound is not suitable for touch panel application because of its high colorability and also provides insufficient adhesion-improving effect.

PRIOR ART DOCUMENTS

PATENT DOCUMENTS

[0008]

Patent Document 1: WO 2008-065944 A

Patent Document 2: WO 2009-096050 A

Patent Document 3: JP 2006-316032 A

Patent Document 4: JP 09-222729 A

NON-PATENT DOCUMENTS

[0009]

Non-patent Document 1: "Material design, coating technique, and hardness improvement in hard coating film on plastic substrate", Ohara Noboru et al., TECHNICAL INFORMATION INSTITUTE CO., LTD., Apr. 28, 2005, p 301.

SUMMARY ~~OF THE INVENTION~~

PROBLEMS TO BE SOLVED ~~BY THE INVENTION~~

[0010]

An object of the present ~~invention~~disclosure is to provide a cured film having excellent adhesion to a substrate surface made of metal or inorganic matter, high hardness, and excellent resolution. Further, another object of the present ~~invention~~disclosure is to provide a cured film having low cure shrinkage and good planarization properties.

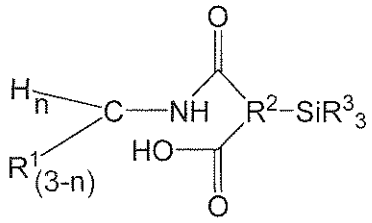
MEANS FOR SOLVING THE PROBLEMS

[0011]

To achieve the objects described above, the present ~~invention~~disclosure has a constitution below.

In a first aspect, there is provided~~Thus the present invention is~~ a silane coupling agent represented by Formula (1) below.

[0012]



(1)

[0013]

wherein e(~~E~~ach R^1 may be the same or different from each other and represents C_1-C_6 alkyl; the alkyl may further have a substituent(s); n represents 0 or 1; R^2 represents a C_3-C_{30} trivalent organic group; and R^3 may be the same or different from each other and represents C_1-C_6 alkyl, C_1-C_6 alkoxy, phenyl, hydroxyl, and phenoxy, among which groups for R^3 groups other than hydroxyl may further have a substituent(s)~~)~~.

In a second aspect, there is provided a negative-tone photosensitive resin composition, comprising at least (A) the silane coupling agent as defined above, (B) an alkali-soluble resin, (C) a polyfunctional acryl monomer, and (D) a photo-radical polymerization initiator.

In a third aspect, there is provided a cured film obtained by curing the negative-tone photosensitive resin composition as defined above.

In a fourth aspect, there is provided a component for a touch panel having the cured film as defined above.

EFFECTS OF THE INVENTION

[0014]

A cured film containing the silane coupling agent of the present invention has the effect of having superiority in improving adhesion to a substrate surface made of metal or inorganic matter, high hardness, and excellent resolution. Moreover, the cured film containing the silane coupling agent of the present invention also has the effect of having low cure shrinkage and good planarization properties.

BEST MODE FOR CARRYING OUT THE INVENTION

[0015]

The silane coupling agent of the present invention has a structure represented by Formula (1) below.