

DESCRIPTION

TITLE OF THE INVENTION: FIRE-RESISTANT COATING MATERIAL AND
FIRE-RESISTANT COATING STRUCTURE

TECHNICAL FIELD

[0001] The present invention relates to a fire-resistant coating material to be used for the fire-resistant coating construction in buildings and structures, and in particular to a wound fire-resistant coating material.

BACKGROUND ART

[0002] In order to prevent fibers from scattering from conventional fire-resistant coating materials, a polyfilm, an unwoven cloth or an aluminum laminated glass cloth is provided only on the front surface layer of the fire-resistant coating material. In such a case, however, it is difficult to prevent fibers or dust from scattering from the rear surface of the material at the time of construction.

[0003] In contrast, such a technology is disclosed that an aluminum laminated glass cloth or an unwoven cloth is provided not only on the front surface layer but also on the rear surface layer of the fire-resistant coating material (Patent Document 1).

[0004] However, the above-described prior art has problems as follows.

(1) In the case where the fire-resistant coating material is fixed by electrically welding fixture pins, such a problem arises that there is a risk of the rear surface material being set on fire due to the heat at the time of welding when the material provided on the rear surface is organic.

(2) A thin metal foil such as an aluminum foil is easily broken. In particular, an aluminum laminated glass cloth (ALGC) as in Patent Document 1 is not smooth on the surface of the glass cloth, which therefore partially makes contact with (does not make close contact with) the aluminum foil. This makes it easy for the aluminum laminated glass cloth (ALGC) to be caught and scratched, and as a result, the aluminum foil is easily broken.

(3) Aluminum laminated glass cloths (ALGC) as in Patent Document 1 are thick, and thus have a problem such that it is difficult for fixture pins to penetrate up to the steel frame, which makes the workability poor.

PRIOR ART DOCUMENT

Patent Document

[0005] Patent Document 1: Japanese Unexamined Patent Publication 2013-19153

SUMMARY OF THE INVENTION

1. Problem to Be Solved by the Invention

[0006] The present invention is provided in order to solve the

above-described problems, and an object of the invention is to provide a fire-resistant coating material that is excellent in dust resistance and fire resistance.

2. Means for Solving Problem

[0007] In order to achieve the above-described object, the present invention provides a fire-resistant coating material, which is gained by providing an aluminum laminated polyfilm (ALP) on one side or on both sides of a fire-resistant coating material in a blanket form having inorganic fibers as its main material.

An aluminum laminated polyfilm (ALP) may be provided on the rear surface of a fire-resistant coating material as described above.

The above-described inorganic fibers, which are the main material of the above-described fire-resistant coating material, may be rock wool.

The present invention also provides a fire-resistant coating structure having a fire-resistant coating material as described above.

3. Effects of the Invention

[0008] (1) By providing an aluminum laminated polyfilm (ALP) on one side or on both sides, particularly on the rear surface, of a fire-resistant coating material in a blanket form having

inorganic fibers as its main material, fibers and dust can be prevented from scattering from the rear surface of the material at the time of construction.

(2) The problem in the case where a layer material is provided on the rear surface of a fire-resistant coating material can be solved, that is to say, the risk of the layer material being set on fire due to the heat at the time when the fixture pins are welded can be eliminated.

(3) Such problems that the aluminum foil is easily broken and the thick layer material makes workability poor can be solved. That is to say, the polyfilm is smooth enough to make close contact with the aluminum foil, which makes it difficult for the aluminum foil to break, and at the same time, the thin polyfilm prevents the total thickness when layered on the aluminum foil from becoming too large.

(4) Furthermore, the fire-resistant performance can be increased. For example, the temperature of the steel frame when heated for one hour can be lowered by 50 degrees centigrade.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] FIG. 1 is a diagram illustrating one embodiment of the present invention; and

FIG. 2 is a diagram showing photographs of the test results.

PREFERRED EMBODIMENTS OF THE INVENTION

[0010] FIG. 1 is a diagram illustrating one embodiment of the present invention.

As shown in the figure, a fire-resistant coating material 10 is in a blanket form or in a sheet form, which is used for the fire-resistant coating of a beam or a pillar portion as a wound fire-resistant coating.

[0011] The fire-resistant coating material 10 is provided with an aluminum laminated polyfilm (ALP) 12 on the rear surface side of the main body 11 having rock wool as its main material, that is to say, on the beam or pillar side to be coated.

By providing the aluminum laminated polyfilm (ALP) 12 on the rear surface side of the main body 11 in this manner, fibers and dust can be prevented from scattering from the rear surface of the material at the time of construction.

[0012] The aluminum laminated polyfilm (ALP) 12 is incombustible and thin, which means there is no risk of being set on fire due to the heat at the time of welding, and the film has excellent workability.

Furthermore, the film can increase the fire-resistance performance of the fire-resistant coating material 10 and can lower the temperature of the steel frame when heated for one hour by 50 degrees centigrade.

The aluminum laminated polyfilm (ALP) 12 may be provided with an unwoven cloth layer.

[0013] Next, a test was carried out concerning the anti-scratching performance on an aluminum laminated polyfilm (ALP) and an aluminum laminated glass cloth (ALGC). The contents of the test and the test results are as follows.

[Test Subjects]

A: Aluminum laminated glass cloth (ALGC)

B: Aluminum laminated polyfilm (ALP)

[Test Method]

The test method was set in reference to the JIS K5400 Testing Methods for Paints Standard. According to the measurement method, the following steps (1) through (4) were carried out.

(1) A 100 mm square was cut out from a test subject.

(2) The cut out test subject was fixed to a steel plate by means of a cellophane tape, and the surface of the test subject was scratched with a pencil having a prescribed hardness. The scratching was done by hand.

(3) The rear surface of the test subject was illuminated with light, and it was confirmed whether or not light had transmitted.

(4) It was evaluated that there were pinholes in the case when

the light had transmitted, and there were no pinholes in the case when the light had not transmitted.

[Test Results]

As shown in Table 1 below, it was confirmed from the test of the above-described contents that the aluminum laminated glass cloth (ALGC) can be broken with a lower hardness. It is assumed that this result was gained due to the difference in the state of layering on an aluminum foil. Namely, in the aluminum laminated glass cloth, the glass cloth partially makes contact with the aluminum foil, which is to say that the layers do not make close contact with each other, while in the aluminum laminated polyfilm (ALP), the polyfilm makes close contact with the aluminum foil in the multilayer.

[Table 1]

Test Subject	Existence of Breakage	Breaking Hardness
ALGC	Present	5B or higher
ALPET	Present	6H or higher

*The hardness is minimum at 6B and is higher when closer to 6H.

INDUSTRIAL APPLICABILITY

[0014] The present invention is widely applicable to the fire-resistant coating materials to be used for the fire-resistant coating construction in buildings and structures, and in particular to the wound fire-resistant

coating materials.

EXPLANATION OF SYMBOLS

[0015]	10	Fire-resistant coating material
	11	Main body
	12	Aluminum laminated polyfilm (ALP)

CLAIMS

[1] A fire-resistant coating material, characterized by comprising an aluminum laminated polyfilm on one side or on both sides of a fire-resistant coating material in a blanket form having inorganic fibers as its main material.

[2] The fire-resistant coating material according to Claim 1, characterized by comprising an aluminum laminated polyfilm on the rear surface of the fire-resistant coating material.

[3] The fire-resistant coating material according to Claim 1 or 2, characterized in that the inorganic fibers that are the main material of the fire-resistant coating material are rock wool.

[4] A fire-resistant coating structure, comprising the fire-resistant coating material according to any of Claims 1 through 3.