

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
21 August 2008 (21.08.2008)

PCT

(10) International Publication Number
WO 2008/099975 A1

(51) International Patent Classification:
H01L 31/042 (2006.01)

(21) International Application Number:
PCT/KR2007/000755

(22) International Filing Date:
13 February 2007 (13.02.2007)

(25) Filing Language: Korean

(26) Publication Language: English

(71) Applicant and

(72) Inventor: **KIM, Bong Gi** [KR/KR]; 448, Gambuk-Dong,
Hanam-si, Gyeonggi-do, 465-819 (KR).

(74) Agent: **CHO, Hwal-Rai**; Suite 1507, Yoksam Hights
Bldg, 642-19, Yoksam-dong, Kangnam-gu, Seoul, 135-981
(KR).

(81) Designated States (*unless otherwise indicated, for every kind of national protection available*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— with international search report

(54) Title: LAMINATED BOARD GENERATING ELECTRICITY BY SUNSHINE

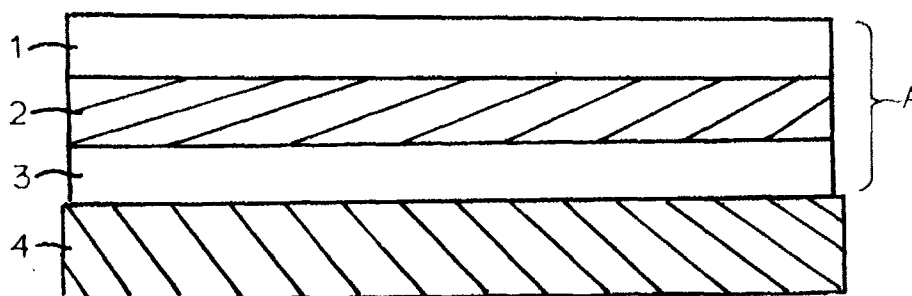


Fig. 3

(57) **Abstract:** The present invention relates to a laminated board for generating electricity by sunshine, which has a magnesium board 1 composed of 75 to 85% by weight of magnesium and 15 to 25% by weight of a binder comprising sand, cement and acryl resin, a solar power based electricity-generating substrate 2 integrally laminated over the magnesium board 1, and a glass substrate 3 integrally laminated over the solar power based electricity-generating substrate 2. The laminated board according to the present invention includes the magnesium board 1 so that it can be attached to and used on a wall surface of a building by an adhesive.

WO 2008/099975 A1

LAMINATED BOARD GENERATING ELECTRICITY BY SUNSHINE

TECHNICAL FIELD

The present invention relates to a laminated board for generating
5 electricity by sunshine, and more specifically to a laminated board for
generating electricity by sunshine, which can be attached to and used
on a wall surface of a building.

Recently, environmental problems such as the generation of
extreme weather events, for example, El Nino, etc. due to excessive use
10 of fossil energy such as petroleum are seriously on the rise.

Thus, recent study of a technology for generating electricity by
sunshine instead of limited fossil energy has been actively undertaken.

BACKGROUND ART

15 Currently, a laminated board A for generating electricity by
sunshine is primarily being used, which has a solar power based
electricity-generating substrate 2 (hereinafter, abbreviated to “solar
power substrate”) is laminated between two glass substrates 1 as shown
FIG. 2.

20 FIG. 2 is a cross-sectional view of the conventional laminated
board A for generating electricity.

However, the conventional laminated board A for generating
electricity has problems that since its upper board and lower board are

glass substrates, it can not be attached to and used on a wall surface of a building and must be installed and used on a rooftop, etc. by manufacturing a separate mounting kit.

In other words, the conventional laminated board A for
5 generating electricity has a number of restrictions as to how it can be used.

The present invention has been proposed in order to solve above problems. It is an object of the present invention to provide a laminated board for generating electricity by sunshine, which can be installed and
10 used even on a wall surface of a building.

DETAILED DESCRIPTION OF THE INVENTION

TECHNICAL PROBLEM

The present invention intends to provide a laminated board for
15 generating electricity by sunshine that has a magnesium board designed as its lower board instead of the conventional glass substrate so that the magnesium board can be attached to a wall surface of a building by an adhesive.

20 TECHNICAL SOLVING METHODS

Hereinafter, the present invention will be described in detail with reference to attached drawings, etc.

A laminated board of the present invention has a magnesium

board 1 composed of 75 to 85% by weight of magnesium and 15 to 25% by weight of a binder comprising sand, cement and acryl resin, a solar power substrate 2 integrally laminated over the magnesium board 1, and a glass substrate 3 integrally laminated over the solar power substrate 2, as shown FIG. 1.

FIG. 1 is a cross sectional view of a laminated board A for generating electricity by sunshine according to the present invention.

It is preferable that the binder comprises 40 to 60% by weight of sand, 20 to 30% by weight of cement and 20 to 30% by weight of acryl resin.

If magnesium content in the magnesium board 1 is less than 75% by weight, physical properties of the magnesium board 1 become poor, and if binder content is less than 15% by weight, it is difficult to form a board.

As the solar power substrate 2, any kind of substrates for generating electricity by sunshine, which are already well known in the prior art, can be used.

The magnesium board 1, the solar power substrate 2 and the glass substrate 3 can be integrally laminated according to the general laminating process using an adhesive.

As shown FIG. 3, the laminated board A for generating electricity according to the present invention can be attached to and used on a wall surface of a building by the adhesive, etc.

FIG. 3 is a cross sectional view showing a state where the laminated board for generating electricity according to the present invention is used.

5 **EFFECT OF THE INVENTION**

The present invention has an advantage that since a laminated board for generating electricity according to the present invention can be attached to and used on the wall surface of the building, it is not particularly subject to restriction in an installation place thereof.

10

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a cross sectional view of a laminated board for generating electricity by sunshine according to the present invention;

FIG. 2 is a cross sectional view of a conventional laminated board
15 for generating electricity by sunshine;

FIG. 3 is a cross sectional view showing a state where the laminate generating electricity according to the present invention is used.

(Explanation of numerals for main parts of the drawings)

20 A: Laminated board for generating electricity

1: glass substrate

2: solar power based electricity-generating substrate

3: magnesium board

4: wall surface of building

INDUSTRIAL APPLICABILITY

The present invention can be used as a laminated board for generating electricity installed on a wall surface of a building and receiving sunshine to generate electricity.

WHAT IS CLAIMED IS:

1. A laminated board for generating electricity by sunshine comprising:

5 a magnesium board 1 composed of 75 to 85% by weight of magnesium and 15 to 25% by weight of a binder comprising sand, cement and acryl resin;

 a solar power based electricity-generating substrate 2 integrally laminated over the magnesium board 1; and

10 a glass substrate 3 integrally laminated over the solar power based electricity-generating substrate 2.

2. The laminated board for generating electricity as claimed in claim 1, wherein the binder comprises 40 to 60% by weight of sand, 20
15 to 30% by weight of cement and 20 to 30% by weight of acryl resin.

1/1

DRAWING

FIG. 1

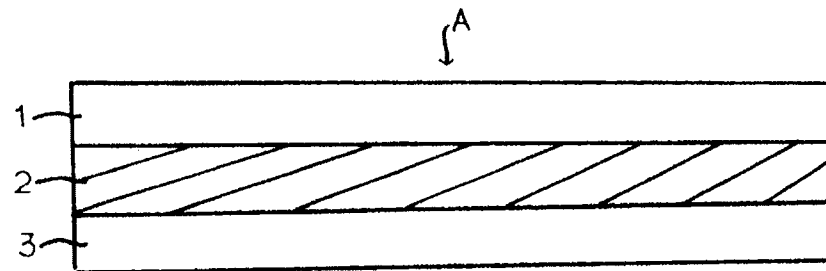


FIG. 2

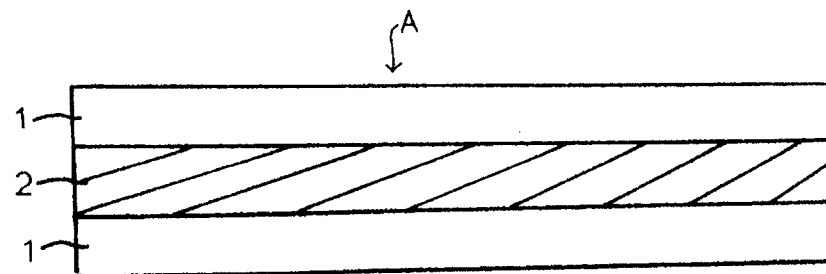
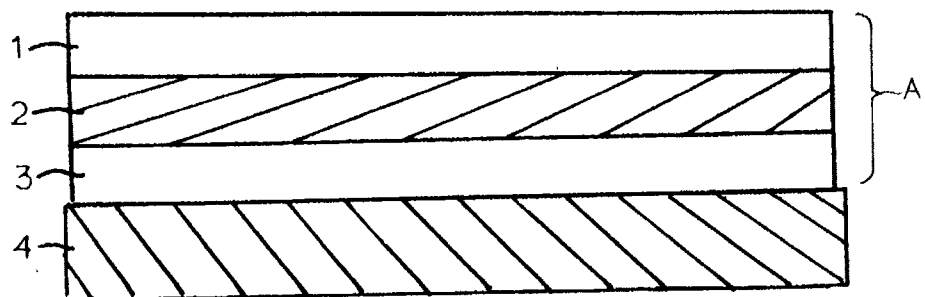


FIG. 3



A. CLASSIFICATION OF SUBJECT MATTER***H01L 31/042(2006.01)i***

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 8: H01L 31/042

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean Utility models and applications for Utility models since 1975

Japanese Utility models and applications for Utility models since 1975

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKIPASS(KIPO internal) "solar", "laminare", "board"

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 6,323,416 B1 (KOMORI, AYAKO et al.) 27 NOVEMBER 2001 See Claims 1-21, Figure 1B	1-2
A	US 6,046,403 A (YOSHIKAWA, MASATO et al.) 04 APRIL 2000 See Claims 1-7, Figure 2	1-2
A	US 6,355,125 B1 (TAHON, JEAN-PIERRE et al.) 12 MARCH 2001 See Claims 1-13, Figure 1	1-2
A	US 5,589,006 A (ITOYAMA, AHIGENORI et al.) 31 DECEMBER 1996 See Claims 1-32, Figure 1(c)	1-2



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

25 OCTOBER 2007 (25.10.2007)

Date of mailing of the international search report

25 OCTOBER 2007 (25.10.2007)

Name and mailing address of the ISA/KR

Korean Intellectual Property Office
920 Dunsan-dong, Seo-gu, Daejeon 302-701,
Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

HAN, SANG SOO

Telephone No. 82-42-481-8513



INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/KR2007/000755

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US06323416B1	27.11.2001	CN1095597B	04.12.2002
		CN1095597C	04.12.2002
		CN1178394	08.04.1998
		DE69731799C0	05.01.2005
		DE69731799T2	01.12.2005
		EP00829909A2	18.03.1998
		EP00829909B1	01.12.2004
		EP829909A3	14.10.1998
		JP10093124A2	10.04.1998
		JP3825843B2	27.09.2006
		KR1019980024614	06.07.1998
		US20010054437A1	27.12.2001
		US2001054437AA	27.12.2001
		US6323416BA	27.11.2001
US06046403A	04.04.2000	DE69809351C0	19.12.2002
		DE69809351T2	03.07.2003
		EP00896372A2	10.02.1999
		EP00896372A3	09.02.2000
		EP00896372B1	13.11.2002
		EP0896372A2	10.02.1999
		EP896372A3	09.02.2000
		JP11068134A2	09.03.1999
		US6046403A	04.04.2000
US06355125B1	12.03.2002	EP01038663A2	27.09.2000
		EP01038663A3	27.03.2002
		JP2000332306A2	30.11.2000
		US6355125B1	12.03.2002
		US6355125BA	12.03.2002
US05589006A	31.12.1996	CA2136790AA	31.05.1995
		CA2136790C	14.12.1999
		JP3001785B2	24.01.2000
		JP7211932A2	11.08.1995
		US5589006A	31.12.1996
		US5849107A	15.12.1998