



US 20140010987A1

(19) **United States**(12) **Patent Application Publication**
Xuebing(10) **Pub. No.: US 2014/0010987 A1**(43) **Pub. Date: Jan. 9, 2014**(54) **GEL MAT AND ITS UV SOLIDIFICATION
PRODUCTION METHOD**(75) Inventor: **Zhu Xuebing**, Shanghai (CN)(73) Assignee: **NEW CONCEPT DEVELOPMENTS
GROUP LIMITED**, Wanchai (HK)(21) Appl. No.: **13/636,130**(22) PCT Filed: **Mar. 30, 2012**(86) PCT No.: **PCT/CN12/00416**

§ 371 (c)(1),

(2), (4) Date: **Sep. 20, 2012**(30) **Foreign Application Priority Data**

Mar. 30, 2011 (CN) 201110078301.2

Publication Classification(51) **Int. Cl.****A47C 27/08**

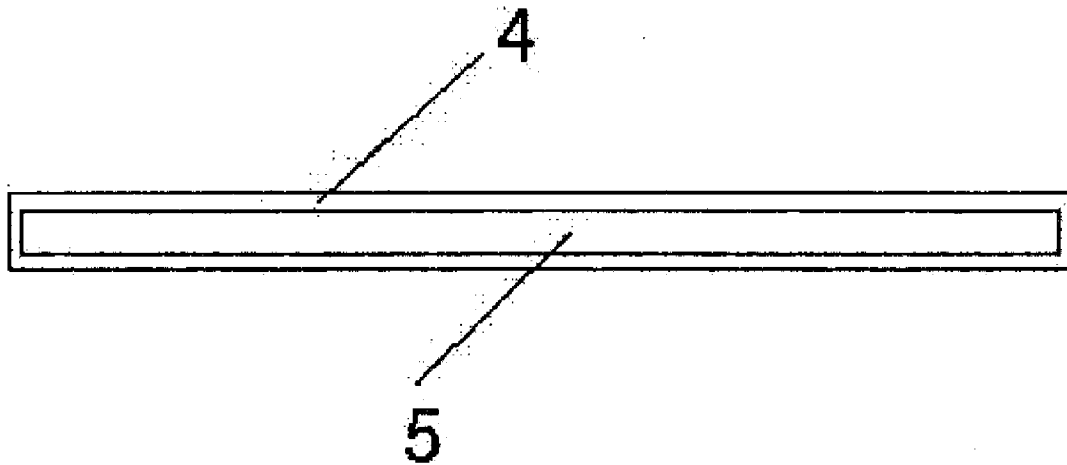
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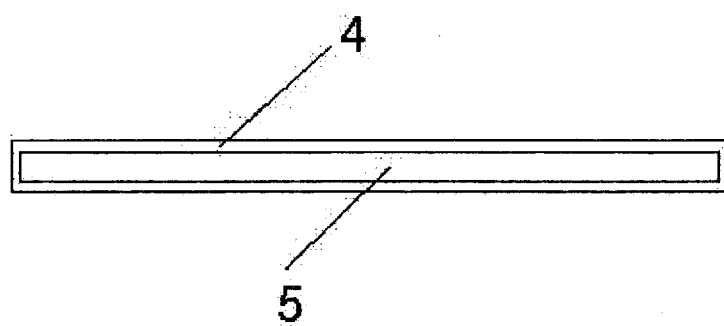
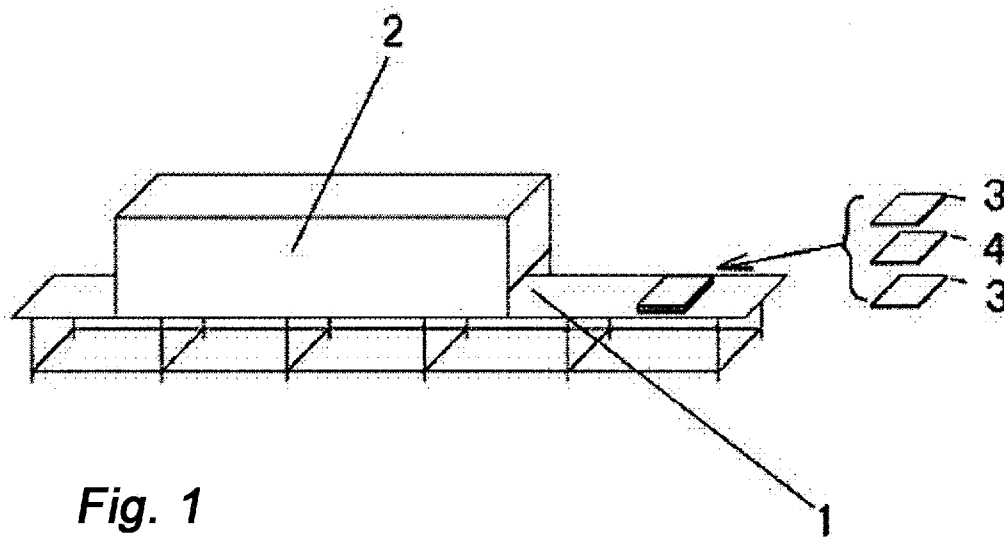
(52) **U.S. Cl.**CPC **A47C 27/085** (2013.01)USPC **428/76**; 264/496

(57)

ABSTRACT

The utility model concerns a gel mat and its UV solidification production method, comprising of gel pack, characterized in that: the gel pack is filled with gel, and the foresaid gel is composed of monocase, cross-linking agent, light initiating agent and water solidified with UV light. It characterizes in that: the foresaid gel is composed of the following compositions at certain percentage: monocase, cross-linking agent, light imitating agent, and water. It also characterizes in that: the foresaid monocase is a composition with two or more compositions including ester, acrylamide, methyl acrylamide, AMPS (2-Acrylamide-2-methylpropanesulfonic acid) generated from acryl acid, alkali metallic salt, methacrylic acid, characterized in that: the foresaid cross-linking agent is a composition with more non conjugated double bonds, is polyhydric alcohols (Glycerol), N, N'-methylene diacrylamide. It characterizes in that: the foresaid light initiating agent is a pyrolysis initiating agent or photosensitive initiating agent or cation initiating agent. Advantages of this utility model include simple production technics, fast gel solidification and smooth gel mat produced.





GEL MAT AND ITS UV SOLIDIFICATION PRODUCTION METHOD

TECHNICAL FIELD

[0001] The utility model concerns a gel mat and its UV solidification production method.

BACKGROUND ART

[0002] For recent years, some cool mats (e.g. application No.: 200810063081.4) as gel mat were put into market. However, they are troubled with insufficient cool duration and unremarkable cool sense. In addition, during production of the products, surface of the product is with long "concave"; the content is easily spattered on to outer package material causing dirty for the surface of the product; in case of uncompleted air expelled from the pack during sealing, there will be plenty of "concaves" on surface of the product, and thus makes the product ugly by appearance; the production process needs thermal pressure, and therefore costs much energy; when the product is produced, it can not be packaged until cooled. Thus, it is with the shortcoming of complicated production process and large area needed for the factory.

[0003] Moreover, these methods in production need long term for heating solidification, costs plenty of energy and achieves a low efficiency (e.g. application No.: 200810063081.4). Some of the methods cost less energy, but over 5 hours are required for solidification and thus seriously lowered production efficiency and operation; in addition, some gel mats formed with macromolecule cross-linking are troubled with serious problems like insufficient intensity, short lifespan of colloid and easily distortion caused, and insufficient solidification.

Contents of the Invention

[0004] This utility model aims at solving the above mentioned problems with the existing technology when producing gel mat, and providing a production method of gel mat and UV solidification. The utility model concerns gel mat, comprising of gel pack, characterized in that: the gel pack is filled with gel, and the foresaid gel is composed of monocase, cross-linking agent, light initiating agent and water solidified with UV light. It characterizes in that: the foresaid gel is composed of the following compositions at the following percentage:

[0005] Monocase: 5-30%

[0006] Cross-linking agent: 0.01-2%

[0007] Light initiating agent: 0.001-2%

[0008] The remainder is water.

[0009] It characterizes in that: the foresaid monocase is a composition with two or more compositions including ester, acrylamide, methyl acrylamide, AMPS (2-Acrylamide-2-methylpropanesulfonic acid) generated from acryl acid, alkali metallic salt, methacrylic acid. It characterizes in that: the foresaid cross-linking agent is a composition with more non conjugated double bonds, is polyhydric alcohols (Glycerol), N, N'-methylene diacrylamide. It characterizes in that: the foresaid light initiating agent is a pyrolysis initiating agent or photosensitive initiating agent or cation initiating agent. It characterizes in that: the outer layer of the gel pack is cotton cloth or Nylon cloth or terylene cloth, and the inner layer is PVC film or TPU film or PE film or EVA film. Production method of gel mat UV solidification characterizes in that: it is composed of 5 steps including making gel pack, filling, seal-

ing, UV solidification, and package inspection. During UV solidification, perform certain pressure on to the gel pack filled and sealed, nip two pieces of tempered glass or quartz glass at two sides of the gel pack to press the gel pack flat. UV radiation intensity per unit of area is 50 mJ/cm²-5000 mJ/cm², and the solidification time is 10 seconds to 60 minutes. The semi-finished gel pack pressed ready by glass is sent to UV light area with the conveyor as primary finished product waiting for trimming, inspection and packaging. Advantages of this utility model include simple production technics, fast gel solidification and smooth gel mat produced.

DESCRIPTION OF FIGURES

[0010] FIG. 1 is an illustration of processing equipment of the utility model. 1 indicates the conveyor, 2 indicates the UV light radiation box, 3 indicates the glass and 4 indicates the gel pack filled with gel material;

[0011] FIG. 2 is a structure sectional illustration of the utility model. 4 indicates the gel pack and 5 indicates the gel.

MODE OF CARRYING OUT THE INVENTION

[0012] In the figure, it comprises of gel pack, characterized in that: the gel pack is filled with gel, and the foresaid gel is composed of monocase, cross-linking agent, light initiating agent and water solidified with UV light. It characterizes in that: the foresaid gel is composed of the following compositions at the following percentage:

[0013] Monocase: 5-30%

[0014] Cross-linking agent: 0.01-2%

[0015] Light initiating agent: 0.001-2%

[0016] The remainder is water.

[0017] It characterizes in that: the foresaid monocase is a composition with two or more compositions including ester, acrylamide, methyl acrylamide, AMPS (2-Acrylamide-2-methylpropanesulfonic acid) generated from acryl acid, alkali metallic salt, methacrylic acid. It characterizes in that: the foresaid cross-linking agent is a composition with more non conjugated double bonds, is polyhydric alcohols (Glycerol), N, N'-methylene diacrylamide. It characterizes in that: the foresaid light initiating agent is a pyrolysis initiating agent or photosensitive initiating agent or cation initiating agent. It characterizes in that: the outer layer of the gel pack is cotton cloth or Nylon cloth or terylene cloth, and the inner layer is PVC film or TPU film or PE film or EVA film. Production method of gel mat UV solidification characterizes in that: it is composed of 5 steps including making gel pack, filling, sealing, UV solidification, and package inspection. During UV solidification, perform certain pressure on to the gel pack filled and sealed, nip two pieces of tempered glass or quartz glass at two sides of the gel pack to press the gel pack flat. UV radiation intensity per unit of area is 50 mJ/cm²-5000 mJ/cm², and the solidification time is 10 seconds to 60 minutes. The semi-finished gel pack pressed ready by glass is sent to UV light area with the conveyor as primary finished product waiting for trimming, inspection and packaging.

Embodiment 1

[0018] Take 5 Kg monocase, 0.01 Kg cross-linking agent, 0.001 Kg light initiating agent, 94.989 Kg water to form gel material at weight of 100 Kg. The monocase used is a composition with two or more compositions including ester, acrylamide, methyl acrylamide, AMPS (2-Acrylamide-2-methylpropanesulfonic acid) generated from acryl acid, alkali

metallic salt, methacrylic acid, e.g. compound of sodium acrylate and AMPS at proportion of 3:1. The cross-linking agent used is a composition with more non conjugated double bonds, is polyhydric alcohols (Glycerol), N, N'-methylene diacrylamide. Taking glycerol as an example, the light initiating agent used is benzophenone (Jiangyin More Chemical names it as light initiating agent BP), and the water is purified water. Fill the prepared ready gel material into the prepared gel pack, hot seal the pack after expelling air from it, nip two pieces of tempered glass or quartz glass at two sides of the gel pack to press the gel pack flat, send the gel pack semi-finished product pressed with the glass on the conveyor to the UV radiation machine for solidification. UV radiation intensity per unit of area is 50 mJ/cm²-5000 mJ/cm², and the solidification time is 60 minutes. The primary finished product of gel mat after passing the UV light area is sent out to wait for trimming, inspection and packaging.

Embodiment 2

[0019] Take 22 Kg monocation, 1 Kg cross-linking agent, 1 Kg light initiating agent, 76 Kg water to form gel material at weight of 100 Kg. The monocation used is a composition with two or more compositions including ester, acrylamide, methyl acrylamide, AMPS (2-Acrylamide-2-methylpropanesulfonic acid) generated from acryl acid, alkali metallic salt, methacrylic acid, e.g. compound of sodium acrylate, acrylamide and AMPS at proportion of 3:1:1. The cross-linking agent used is a composition with more non conjugated double bonds, is polyhydric alcohols (Glycerol), N,N'-methylene diacrylamide. Taking N, N'-methylene diacrylamide as an example, the light initiating agent used is light initiating agent 184 sold in the market (Methanone, 1-hydroxycyclohexyl phenyl ketone, Jiangyin More Chemical), and the water is purified water. Fill the prepared ready gel material into the prepared gel pack, hot seal the pack after expelling air from it, nip two pieces of tempered glass or quartz glass at two sides of the gel pack to press the gel pack flat, send the gel pack semi-finished product pressed with the glass on the conveyor to the UV radiation machine for solidification. UV radiation intensity per unit of area is 50 mJ/cm²-5000 mJ/cm², and the solidification time is 3 minutes. The primary finished product of gel mat after passing the UV light area is sent out to wait for trimming, inspection and packaging.

Embodiment 3

[0020] Take 30 Kg monocation, 2 Kg cross-linking agent, 2 Kg light initiating agent, 66 Kg water to form gel material at weight of 100 Kg. The monocation used is a composition with two or more compositions including ester, acrylamide, methyl acrylamide, AMPS (2-Acrylamide-2-methylpropanesulfonic acid) generated from acryl acid, alkali metallic salt, methacrylic acid, e.g. compound of acrylamide, AMPS, sodium acrylate, and methyl acrylamide at proportion of 5:1:2:1. The cross-linking agent used is a composition with more non conjugated double bonds, is polyhydric alcohols (Glyc-

erol), N, N'-methylene diacrylamide. Taking compound of glycerol and N, N'-methylene diacrylamide as an example, the light initiating agent used is diaryliodonium salt sold in the market (USA CE Company), and the water is purified water. Fill the prepared ready gel material into the prepared gel pack, hot seal the pack after expelling air from it, nip two pieces of tempered glass or quartz glass at two sides of the gel pack to press the gel pack flat, send the gel pack semi-finished product pressed with the glass on the conveyor to the UV radiation machine for solidification. UV radiation intensity per unit of area is 50 mJ/cm²-5000 mJ/cm², and the solidification time is 10 seconds. The primary finished product of gel mat after passing the UV light area is sent out to wait for trimming, inspection and packaging.

1. A gel mat, comprising of gel pack, characterized in that: the gel pack is filled with gel, and the foresaid gel is composed of monocation, cross-linking agent, light initiating agent and water solidified with UV light.

2. The gel mat as set forth in claim 1, characterized in that: the foresaid gel is composed of the following compositions at the following percentage:

Monocation: 5-30%

Cross-linking agent: 0.01-2%

Light initiating agent: 0.001-2%

The remainder is water.

3. The gel mat as set forth in claim 1, characterized in that: the foresaid monocation is a composition with two or more compositions including ester, acrylamide, methyl acrylamide, AMPS (2-Acrylamide-2-methylpropanesulfonic acid) generated from acryl acid, alkali metallic salt, methacrylic acid;

4. The gel mat as set forth in claim 1, characterized in that: the foresaid cross-linking agent is a composition with more non conjugated double bonds, is polyhydric alcohols (Glycerol), N, N'-methylene diacrylamide;

5. The gel mat as set forth in claim 1, characterized in that: the foresaid light initiating agent is a pyrolysis initiating agent or photosensitive initiating agent or cation initiating agent;

6. The gel mat as set forth in claim 1, characterized in that: the outer layer of the gel pack is cotton cloth or Nylon cloth or terylene cloth, and the inner layer is PVC film or TPU film or PE film or EVA film;

7. Production method of gel mat UB solidification characterizes in that: it is composed of 5 steps including making gel pack, filling, sealing, UV solidification, and package inspection. During UV solidification, perform certain pressure on to the gel pack filled and sealed, nip two pieces of tempered glass or quartz glass at two sides of the gel pack to press the gel pack flat. UV radiation intensity per unit of area is 50 mJ/cm²-5000 mJ/cm², and the solidification time is 10 seconds to 60 minutes. The semi-finished gel pack pressed ready by glass is sent to UV light area with the conveyor as primary finished product waiting for trimming, inspection and packaging.

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