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(54) **GEO-SYNTHETIC COMPOSITE INSULATION FOR ROOFING**

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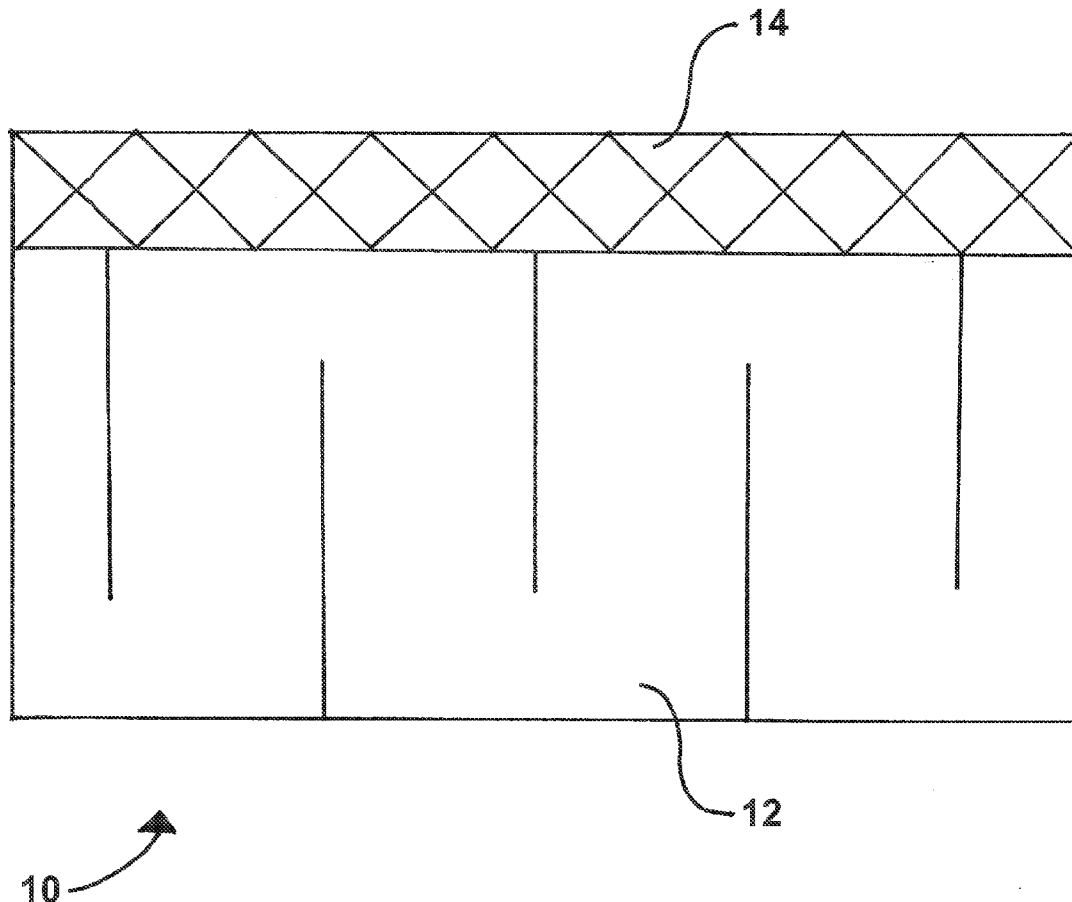
(57) **ABSTRACT**

(22) Filed: **Jun. 29, 2010**

A geo-synthetic composite insulation panel for roofing applications is provided. The panel comprises a bottom layer made of an insulating material and a top layer made from a geo-textile laminated on top of the bottom layer. The geo-textile material provides an absorption zone for any adhesive used to glue waterproof membranes onto the insulation panel. This allows a better redistribution of loads on the insulation panel and increases the resistance of the material to punctures that the surface of the waterproof membrane may be subject to. The material, by its nature, will enhance the whole integrity of the roofing system.

**Related U.S. Application Data**

(60) Provisional application No. 61/221,229, filed on Jun. 29, 2009.



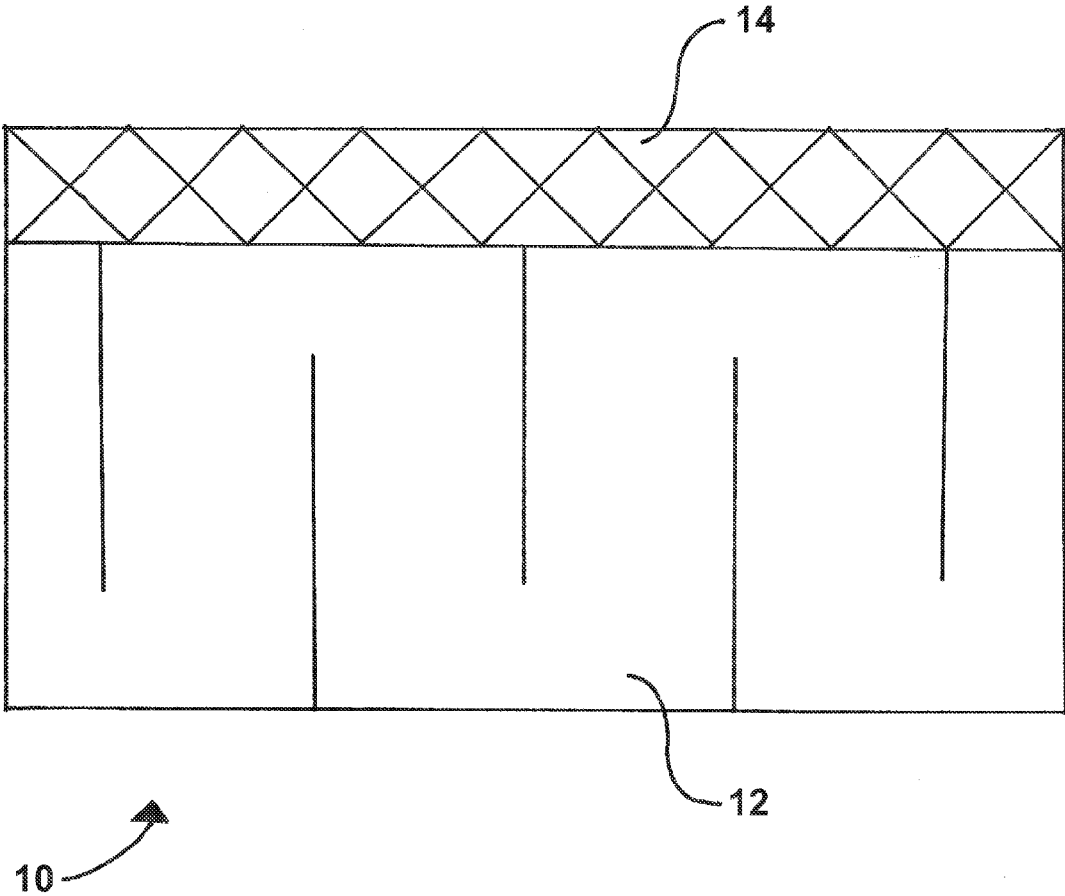


FIG. 1

**GEO-SYNTHETIC COMPOSITE INSULATION FOR ROOFING**

**CROSS-REFERENCE TO RELATED APPLICATIONS**

[0001] This application claims priority to U.S. Provisional Patent Application Ser. No. 61/221,229, filed on Jun. 29, 2009, the disclosure of which is incorporated herein by reference in its entirety.

**FIELD OF THE INVENTION**

[0002] The present invention relates to roofing insulation. More particularly, it relates to a geo-synthetic composite insulation panel and a method of using such a panel in roofing applications.

**BACKGROUND OF THE INVENTION**

[0003] Several types of panels are used for providing insulation in roofing. Typically, prior art panels are made of expanded polystyrene or EPS. Several types of densities of polystyrene are used including type 1, type 2 or other different densities.

[0004] Typically such panels are used to insulate roofs and generally receive a waterproof membrane. In these cases, construction panels, either made of wood fiber, perlite, recycled asphalt or gypsum or other materials are placed over the insulation. It can be noted that these products are the weakest link in the whole roofing assembly when wind uplift pressure is applied.

[0005] Therefore, there is still presently a need for a composite panel that better distributes stresses imposed on the insulation, improves its resistance to punctures and that will enhance the structural integrity of the whole roofing system.

**SUMMARY OF THE INVENTION**

[0006] An object of the present invention is to provide a geo-synthetic composite insulation material that addresses at least one of the above-mentioned needs.

[0007] According to an embodiment of the present invention, there is provided a geo-synthetic composite insulation panel for roofing comprising:

[0008] a bottom layer comprising an insulating material; and

[0009] a top layer comprising a geo-textile laminated on top of the bottom layer.

[0010] Preferably, the insulating material is expanded polystyrene, but can also be extruded polystyrene or isocyanurate.

[0011] Preferably, the insulating material is a rigid insulating material.

[0012] Preferably, the geo-textile is made of polyester or any glass-type fabric or any other known geo-textile composite material. The chosen material should preferably allow a certain absorption of adhesive material or glue. The geo-textile material can be of different densities.

[0013] According to another embodiment of the present invention, there is also provided a method for installing a geo-synthetic composite insulation panel for roofing applications comprising the steps of:

[0014] a) providing a geo-synthetic composite insulation panel for roofing comprising:

[0015] a bottom layer comprising an insulating material; and

[0016] a top layer comprising a geo-textile laminated on top of the bottom layer;

[0017] b) joining a waterproof membrane to the insulation panel with an adhesive.

[0018] Preferably, the laminating or assembly of the top layer on the bottom layer of the insulation panel is made in the factory prior to installation on site.

[0019] The geo-textile has two functions. Firstly, the geo-textile layer allows absorption of any adhesive material used to fix the waterproof membranes on the insulating panel. Moreover, the geo-textile membrane also reinforces the surface of the insulating material through stabilization and redistribution of loads. The geo-textile material consequently reinforces the structure of the roof and lets it resist more to punctures or other compressive forces among others. The material, by its nature, will enhance the whole integrity of the roofing system.

[0020] Other features and objects of the present invention will become apparent from the following description of preferred embodiments, and in reference to the appended drawings and given as example only as to show how the invention may be put into practice.

**BRIEF DESCRIPTION OF THE DRAWINGS**

[0021] FIG. 1 is a side view of a geo-synthetic insulating panel according to a preferred embodiment of the present invention.

**DETAILED DESCRIPTION**

[0022] Referring to FIG. 1, there is shown a geo-synthetic composite insulation panel 10. The panel 10 comprises a bottom layer 12 comprising an insulating material and a top layer 14 comprising a geo-textile laminated on top of the bottom layer 12.

[0023] Preferably, the insulating material is expanded polystyrene, but can also be extruded polystyrene or isocyanurate.

[0024] Preferably, the insulating material is a rigid insulating material.

[0025] Preferably, the geo-textile is made of polyester or any glass-type fabric or any other known geo-textile composite material. The geo-textile material can be of different densities.

[0026] The present invention also provides a method for installing a geo-synthetic composite insulation panel for roofing applications comprising the steps of:

[0027] a) providing a geo-synthetic composite insulation panel for roofing comprising:

[0028] a bottom layer comprising an insulating material; and

[0029] a top layer comprising a geo-textile laminated on top of the bottom layer;

[0030] b) joining a waterproof membrane to the insulation panel with an adhesive.

[0031] Preferably, the laminating or assembly of the top layer on the bottom layer of the insulation panel is made in the factory prior to installation on site.

[0032] The geo-textile material provides an absorption zone for any adhesive used to bond waterproof membranes onto the insulation panel. As mentioned above, this allows a better redistribution of loads on the insulation panel and increases the resistance of the material to punctures that the

surface of the waterproof membrane may be subject to. The material, by its nature, will enhance the whole integrity of the roofing system.

**[0033]** Preferably, the geo-textile is made of non-woven polyester or any other known material that allows a certain absorption of adhesive material or glue.

**[0034]** In summary, the present invention represents a composite panel laminated to a geo-textile material.

**[0035]** While the present invention has been particularly shown and described with reference to preferred embodiments thereof, it will be understood by those skilled in the art that various changes in form and details may be made therein without departing from the scope or spirit of the present invention.

What is claimed is:

**1.** A geo-synthetic composite insulation panel for roofing, comprising:

a bottom layer comprising an insulating material; and  
a top layer comprising a geo-textile laminated on top of said bottom layer.

**2.** The geo-synthetic composite insulation panel according to claim **1**, wherein said insulating material is a rigid insulating material.

**3.** The geo-synthetic composite insulation panel according to claim **2**, wherein said insulating material is selected from a group consisting of expanded polystyrene, extruded polystyrene and isocyanurate.

**4.** The geo-synthetic composite insulation panel according to claim **1**, wherein said geo-textile is made of polyester.

**5.** The geo-synthetic composite insulation panel according to claim **1**, wherein said geo-textile is made of a material adapted to absorb adhesive material.

**6.** The geo-synthetic composite insulation panel according to claim **1**, wherein said geo-textile is made of at least one of a glass-type fabric or a geo-textile composite material.

**7.** The geo-synthetic composite insulation panel according to claim **4**, wherein said geo-textile has a variable density.

**8.** The geo-synthetic composite insulation panel according to claim **5**, wherein said geo-textile has a variable density.

**9.** The geo-synthetic composite insulation panel according to claim **6**, wherein said geo-textile has a variable density.

**10.** A method for installing a geo-synthetic composite insulation panel for roofing applications, comprising:

providing a geo-synthetic composite insulation panel for roofing comprising:

a bottom layer comprising an insulating material, and  
a top layer comprising a geo-textile laminated on top of the bottom layer; and

joining a waterproof membrane to the insulation panel with an adhesive.

**11.** The method for using a geo-synthetic composite insulation panel of claim **10**, wherein the lamination of said top layer on said bottom layer of said insulation panel is completed in a factory setting prior to installation on a roof.

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