It is noted that the prior documents pertinent to the invention are JP-A H08-198384 (Patent Document 1) and JP 4076673 (Patent Document 2).

## SUMMARY OF INVENTION

### TECHNICAL PROBLEM

[0003]

Embodiments of the invention seek to provide a waterproof sheet which may serve over a long term without losing its physical properties, may maintain waterproofness over a long term, and may be suitable to apply to a boundary region between an outdoor tank and a foundation; and a waterproof treatment method.

### SOLUTION TO PROBLEM

[0004]

Embodiments of the invention provide a waterproof sheet and a waterproof treatment method using the sheet, as defined below.

~~[1]~~ In a first aspect, there is provided a method of waterproof treating an outdoor tank installed on a foundation, a boundary region being defined between the bottom of the outdoor tank and the foundation, the method comprising the step of attaching a waterproof sheet across the boundary region such that a pressure-sensitive adhesive layer of the waterproof sheet may extend from the outdoor tank to the foundation, for thereby forming a liquid tight cover to the boundary region, wherein the foundation is made of concrete, mortar, asphalt concrete, asphalt mortar, or asphalt sand, the waterproof sheet comprises a rubber base layer and the pressure-sensitive adhesive layer disposed thereon, the rubber base comprises a silicone rubber having a JIS-A hardness of 25 to 80, a tensile strength of at least 5 MPa, an elongation of 200 to 700%, and a crescent tear strength of

at least 7 kN/m, and the adhesive layer is formed of an addition cure silicone rubber composition comprising:

(A) 30 to 90 parts by weight of an organopolysiloxane containing at least two silicon-bonded alkenyl groups in a molecule,

(B) 10 to 70 parts by weight of a resinous copolymer predominantly comprising $R_3SiO_{1/2}$ units and $SiO_2$ units wherein R is a substituted or unsubstituted monovalent hydrocarbon group and contains alkenyl, a molar ratio of $R_3SiO_{1/2}$ units to $SiO_2$ units ($R_3SiO_{1/2}/SiO_2$) being in a range of 0.5/1 to 1.5/1,

(C) 0.5 to 30 parts by weight of an organohydrogenpolysiloxane containing at least two silicon-bonded hydrogen atoms (i.e., SiH groups) in a molecule, and

(D) an addition reaction catalyst in such amount to provide 0.5 to 1,000 ppm of platinum group metal based on the total weight of components (A) and (B),

the cured product having surface pressure-sensitive adhesion and a hardness of 1 to 40 on Asker C hardness scale.

There is disclosed a waterproof sheet comprising a rubber base layer and a pressure-sensitive adhesive layer disposed thereon, wherein the rubber base comprises a silicone rubber having a JIS-A hardness of 15 to 90, a tensile strength of at least 3 MPa, an elongation of 100 to 800%, and a crescent tear strength of at least 3 kN/m.

~~[2] The waterproof sheet of [1] wherein~~As disclosed, the adhesive layer has a hardness which is lower than that of the rubber base and in a range of 1 to 60 on Asker C hardness scale.

~~[3] The waterproof sheet of [1] or [2] wherein~~As disclosed, the adhesive layer has a bond strength of 0.5 to 10 N/25 mm to glass.

~~[4] The waterproof sheet of any one of [1] to [3] wherein~~As disclosed, the adhesive layer comprises a pressure-sensitive adhesive silicone resin or gel.

~~[5] The waterproof sheet of any one of [1] to [4] wherein~~As disclosed, the rubber base has a thickness of 0.2 to 5 mm and the pressure-sensitive adhesive layer has a thickness of 0.3 to 3 mm.

~~[6]~~ As disclosed, ~~The~~ the waterproof sheet ~~of any one of [1] to [5] which~~ is applied to a boundary region between an outdoor tank and a foundation for waterproof treating the outdoor tank.

~~[7] In a second aspect, there~~ There is ~~provided~~ disclosed a method of waterproof treating an outdoor tank installed on a foundation, a boundary region being defined between the bottom of the outdoor tank and the foundation, the method comprising the step of attaching the waterproof sheet ~~of any one of [1] to [6]~~as disclosed across the boundary region such that the adhesive layer of the sheet may extend from the outdoor tank to the foundation, for thereby forming a liquid tight cover to the boundary region.

~~[8] The waterproofing method of [7] wherein~~As disclosed, a plurality of waterproof sheets are juxtaposed to form a liquid tight cover to the boundary region and liquid-tightly overlapped to define an overlap between adjacent waterproof sheets, the overlap having a width of at least 5 mm.

~~[9] The waterproofing method of [7] or [8] wherein~~As disclosed, the foundation is made of concrete, mortar, asphalt concrete, asphalt mortar, or asphalt sand.

## ADVANTAGEOUS EFFECTS OF INVENTION

[0005]

Embodiments of the invention provide a waterproof sheet which may serve over a long term without experiencing any loss of its physical properties and may maintain waterproofness over a long term. In particular, the waterproof sheet may withstand

CLAIMS:

1. A method of waterproof treating an outdoor tank installed on a foundation, a boundary region being defined between the bottom of the outdoor tank and the foundation, the method comprising the step of attaching a waterproof sheet across the boundary region such that a pressure-sensitive adhesive layer of the waterproof sheet may extend from the outdoor tank to the foundation, for thereby forming a liquid tight cover to the boundary region,

wherein the foundation is made of concrete, mortar, asphalt concrete, asphalt mortar, or asphalt sand,

the waterproof sheet comprises a rubber base layer and the pressure-sensitive adhesive layer disposed thereon,

the rubber base comprises a silicone rubber having a JIS-A hardness of 25 to 80, a tensile strength of at least 5 MPa, an elongation of 200 to 700%, and a crescent tear strength of at least 7 kN/m, and

the adhesive layer is formed of an addition cure silicone rubber composition comprising:

(A) 30 to 90 parts by weight of an organopolysiloxane containing at least two silicon-bonded alkenyl groups in a molecule,

(B) 10 to 70 parts by weight of a resinous copolymer predominantly comprising $R_3SiO_{1/2}$ units and $SiO_2$ units wherein R is a substituted or unsubstituted monovalent hydrocarbon group and contains alkenyl, a molar ratio of $R_3SiO_{1/2}$ units to $SiO_2$ units ($R_3SiO_{1/2}/SiO_2$) being in a range of 0.5/1 to 1.5/1,

(C) 0.5 to 30 parts by weight of an organohydrogenpolysiloxane containing at least two silicon-bonded hydrogen atoms (i.e., SiH groups) in a molecule, and

(D) an addition reaction catalyst in such amount to provide 0.5 to 1,000 ppm of platinum group metal based on the total weight of components (A) and (B),

the cured product having surface pressure-sensitive adhesion and a hardness of 1 to 40 on Asker C hardness scale.

2. The method of claim 1 wherein the adhesive layer has a bond strength of 0.5 to 10 N/25 mm to glass.

3. The method of claim 1 or 2, wherein the rubber base has a thickness of 0.2 to 5 mm and the pressure-sensitive adhesive layer has a thickness of 0.3 to 3 mm.

4. The method of any one of claims 1 to 3 wherein a plurality of waterproof sheets are juxtaposed to form a liquid tight cover to the boundary region and liquid-tightly overlapped to define an overlap between adjacent waterproof sheets, the overlap having a width of at least 5 mm.

CLAIMS:

1. A waterproof sheet comprising a rubber base layer and a pressure-sensitive adhesive layer disposed thereon, wherein the rubber base comprises a silicone rubber having a JIS-A hardness of 15 to 90, a tensile strength of at least 3 MPa, an elongation of 100 to 800%, and a crescent tear strength of at least 3 kN/m.

2. The waterproof sheet of claim 1 wherein the adhesive layer has a hardness which is lower than that of the rubber base and in a range of 1 to 60 on Asker C hardness scale.

3. The waterproof sheet of claim 1 or 2 wherein the adhesive layer has a bond strength of 0.5 to 10 N/25 mm to glass.

4. The waterproof sheet of any one of claims 1 to 3 wherein the adhesive layer comprises a pressure-sensitive adhesive silicone resin or gel.

5. The waterproof sheet of any one of claims 1 to 4 wherein the rubber base has a thickness of 0.2 to 5 mm and the pressure-sensitive adhesive layer has a thickness of 0.3 to 3 mm.

6. The waterproof sheet of any one of claims 1 to 5 which is applied to a boundary region between an outdoor tank and a foundation for waterproof treating the outdoor tank.

7. A method of waterproof treating an outdoor tank installed on a foundation, a boundary region being defined between the bottom of the outdoor tank and the foundation,

the method comprising the step of attaching the waterproof sheet of any one of claims 1 to 6 across the boundary region such that the adhesive layer of the sheet may extend from the outdoor tank to the foundation, for thereby forming a liquid tight cover to the boundary region.

8. The waterproofing method of claim 7 wherein a plurality of waterproof sheets are juxtaposed to form a liquid tight cover to the boundary region and liquid-tightly overlapped to define an overlap between adjacent waterproof sheets, the overlap having a width of at least 5 mm.

9. The waterproofing method of claim 7 or 8 wherein the foundation is made of concrete, mortar, asphalt concrete, asphalt mortar, or asphalt sand.