[CLAIMS]

[Claim 1]

A liquefied gas storage tank that stores cryogenic substances, comprising a primary barrier, a primary insulation wall, a secondary barrier, and a secondary insulation wall,

wherein, in a state in which unit elements, each of which is formed by stacking the secondary insulation wall, the secondary barrier, and a fixed insulation wall that is a part of the primary insulation wall, are disposed adjacent to each other, the primary insulation wall includes a connection insulation wall provided in a spatial portion between the adjacent fixed insulation walls,

a first slit formed between the fixed insulation wall and the connection insulation wall when the connection insulation wall is inserted and installed between the adjacent fixed insulation walls,

a plurality of second slits formed in a longitudinal direction and a width direction of the fixed insulation wall., and

a first insulating filler material filling the first slit, wherein the first insulating filler material is

formed to fill the first slit in multiple layers so that a plurality of spaces are formed inside the first slit, and reduces low-temperature load of the secondary barrier by preventing a convection phenomenon caused through the first slit and an amount of heat transferred into the secondary barrier.

[Claim 2]

The liquefied gas storage tank of claim 1, wherein, the first insulating filler material includes:

a first upper insulating filler material formed in an upper portion of the first slit;

a first middle insulating filler material spaced a predetermined interval from the first upper insulating filler material and formed in a middle of the first slit; and

a first lower insulating filler material spaced a predetermined interval from the first middle insulating filler material and formed in a lower portion of the first slit,

each of the first upper insulating filler material, the first middle insulating filler material, and the first lower insulating filler material is formed of the same insulating material or different insulating materials, and

the insulating material includes glass wool, super lite, a soft foam material, or an aerogel blanket.

[Claim 3]

The liquefied gas storage tank of claim 1, wherein the first insulating filler material fills the first slit in an insertion method using a jig after the connection insulation wall is inserted and installed between the adjacent fixed insulation walls, or

fills the first slit in a bonding method using an adhesive member bonded to both side surfaces of the connection insulation wall facing a side surface of the fixed insulation wall before the connection insulation wall is inserted and installed between the adjacent fixed insulation walls.

[Claim 4]

The liquefied gas storage tank of claim 1, wherein the second slit is filled with a second insulating filler material therein when formed to a depth less than a total thickness of the fixed insulation wall and greater than an intermediate thickness of the fixed insulation wall, and

the second insulating filler material is formed to fill the second slit from an inlet of the second slit to a predetermined depth so that a space is formed in a lower portion of the second slit, or

formed to fill the second slit in multiple layers so that a plurality of spaces are formed inside the second slit.

[Claim 5]

The liquefied gas storage tank of claim 4, wherein, when the second insulating filler material is formed to fill the inside of the second slit in multiple layers so that the plurality of spaces are formed inside the second slit,

the second insulating filler material includes a second upper insulating filler material formed in an upper portion of the second slit,

a second middle insulating filler material spaced a predetermined interval from the second upper insulating filler material and formed in a middle of the second slit, and

a second lower insulating filler material spaced a predetermined interval from the second middle insulating filler material and formed in a lower portion of the second slit,

each of the second upper insulating filler material, the second middle insulating filler material, and the second lower insulating filler material is formed of the same insulating material or different insulating materials, and

the insulating material includes glass wool, super lite, a soft foam material, or an aerogel blanket.

[Claim 6]

The liquefied gas storage tank of claim 1, comprising one or more third slits formed in a longitudinal direction of the connection insulation wall and positioned collinearly with the second slit formed in the longitudinal direction when the connection insulation wall is inserted and installed between the fixed insulation walls,

wherein the second slit is formed to a depth corresponding to at least half or less of a total thickness of the fixed insulation wall and is not filled with an insulating filler material therein,

the third slit is formed to a depth corresponding to at least half or less of a total thickness of the connection insulation wall and is not filled with the insulating filler material therein

, and

a heat convection path is intermittently formed in the first slit, the second slit, and the third slit as the first slit is filled with the first insulating filler material.