CLAIMS

Claim 1. An upper top plate arranged at an upper part of a chamber, the upper top plate comprising:

a base;

an upper electrode that is arranged on a lower surface side of the base; and

a thermally conductive medium that is filled in a heat transfer space being provided between a lower surface of the base and an upper surface of the upper electrode and being surrounded by a sealing member,

wherein

a buffer space communicating with the heat transfer space is formed on the lower surface of the base in contact with the heat transfer space, and

the thermally conductive medium includes a liquid substance, and is also partially filled in the buffer space.

Claim 2. The upper top plate according to claim 1, wherein

the thermally conductive medium includes a heat transfer sheet arranged in the heat transfer space.

Claim 3. The upper top plate according to claim 1 or 2, wherein

the liquid substance is a vacuum grease.

Claim 4. The upper top plate according to any one of claims 1 to 3, wherein

the buffer space is connected to an injection channel communicating with an outside of the base.

Claim 5. The upper top plate according to claim 4, wherein

the injection channel communicates with an inside of the chamber.

Claim 6. The upper top plate according to claim 5, wherein

the buffer space has an internal pressure that changes according to an internal pressure of the chamber.

Claim 7. The upper top plate according to any one of claims 1 to 6, wherein

the buffer space has a slit shape.

Claim 8. The upper top plate according to any one of claims 1 to 6, wherein

the buffer space has a hole shape.

Claim 9. The upper top plate according to claim 7 or 8, wherein

the buffer space is formed to have a cross-sectional area larger on a side of the heat transfer space.

Claim 10. The upper top plate according to claim 7 or 8, wherein

the buffer space is formed to have a cross-sectional area larger on a side opposite to the heat transfer space.

Claim 11. The upper top plate according to any one of claims 1 to 10, wherein

the heat transfer space is formed into a ring shape in a circumferential direction of the base.

Claim 12. The upper top plate according to any one of claims 1 to 10, wherein

the heat transfer space is formed into a plurality of

independent islands in a circumferential direction of the base.

Claim 13. A substrate processing apparatus comprising:

a chamber; and

an upper top plate that is arranged at an upper part of the chamber,

wherein

the upper top plate includes:

a base;

an upper electrode that is arranged on a lower surface side of the base; and

a thermally conductive medium that is filled in a heat transfer space being provided between a lower surface of the base and an upper surface of the upper electrode and being surrounded by a sealing member,

in the base, a buffer space communicating with the heat transfer space is formed on the lower surface in contact with the heat transfer space, and

the thermally conductive medium includes a liquid substance, and is also partially filled in the buffer space.