CLAIMS

1. A method for manufacturing a bonded SOI wafer by bonding a bond wafer and a base wafer, each composed of a silicon single crystal, via an insulator film, comprising the steps of:

depositing a polycrystalline silicon layer on the bonding surface side of the base wafer,

polishing a surface of the polycrystalline silicon layer,

forming the insulator film on the bonding surface of the bond wafer,

bonding the polished surface of the polycrystalline silicon layer of the base wafer and the bond wafer via the insulator film, and

thinning the bonded bond wafer to form an SOI layer; wherein,

as the base wafer, a silicon single crystal wafer having a resistivity of 100 Ω·cm or more is used,

the step for depositing the polycrystalline silicon layer further comprises a stage for previously forming an oxide film on the surface of the base wafer on which the polycrystalline silicon layer is deposited, and

the polycrystalline silicon layer is deposited by two stages comprising a first growth performed at a first temperature of 1010°C or less and a second growth performed at a second temperature being higher than the first temperature to deposit the polycrystalline silicon layer thicker than in the first growth, and

deposition of the polycrystalline silicon layer is performed with using trichlorosilane as a source gas at atmospheric pressure in the first growth and the second growth.

2. The method for manufacturing a bonded SOI wafer according to claim 1, wherein the oxide film is formed by wet cleaning.

3. The method for manufacturing a bonded SOI wafer according to claim 1 or claim 2, wherein the first temperature is set to 900°C or more, and the second temperature is set to 1100°C or more.

4. The method for manufacturing a bonded SOI wafer according to any one of claims 1 to 3, wherein the polycrystalline silicon layer has a thickness of 2 μm or more when the base wafer and the bond wafer are bonded.