Claim 1

A method for producing polycrystalline silicon, comprising:

a silicon deposition step of depositing the polycrystalline silicon by reacting a chlorosilane compound and hydrogen together;

a separation step of separating, into a chlorosilane condensate and a gas component A, exhaust gas which is discharged through the silicon deposition step;

a hydrogen chloride removal step of obtaining a gas component B by removing hydrogen chloride by bringing the gas component A into contact with a chlorosilane solution;

a hydrogen refining step of obtaining hydrogen gas A by removing the chlorosilane compound by bringing the gas component B into contact with activated carbon;

an activated carbon regeneration step of bringing the activated carbon, which has been brought into contact with the gas component B, into contact with hydrogen gas B so as to regenerate the activated carbon;

a circulation step of applying pressure to a gas component C which is obtained through the activated

carbon regeneration step, and supplying the gas component C to the separation step;

a hydrogen chloride diffusion step of diffusing the hydrogen chloride from the chlorosilane solution by which the hydrogen chloride has been absorbed in the hydrogen chloride removal step; and

supplying, to the hydrogen chloride diffusion step, the chlorosilane condensate which is obtained through the separation step.

Claim 2

The method as set forth in claim 1, further comprising an absorbing solution circulation step of supplying, to the hydrogen chloride removal step, part of the chlorosilane solution which is obtained through the hydrogen chloride diffusion step and in which the hydrogen chloride has been diffused.

Claim 3

The method as set forth in claim 1 or 2, further comprising supplying, to the silicon deposition step, the hydrogen gas A which is obtained through the hydrogen refining step.

Claim 4

The method as set forth in any one of claims 1, 2, and 3, wherein the gas component C satisfies the following Inequality:

Inequality: dichlorosilane content < trichlorosilane content + tetrachlorosilane content

where the dichlorosilane content represents a ratio (mol%) of dichlorosilane to a total of the dichlorosilane content, the trichlorosilane content, and the tetrachlorosilane content; the trichlorosilane content represents a ratio (mol%) of trichlorosilane to the total of the dichlorosilane content, the trichlorosilane content, and the tetrachlorosilane content; and the tetrachlorosilane content represents a ratio (mol%) of tetrachlorosilane to the total of the dichlorosilane content, the trichlorosilane content, and the tetrachlorosilane content.

Claim 5

The method as set forth in any one of claims 1, 2, 3, and 4, wherein the separation step includes cooling the exhaust gas to a temperature of not higher than -10°C.