

ABSTRACT OF THE DISCLOSURE

METHOD FOR PRODUCING SUPER CLEAN AIR

Super clean air having therein chemical components (other than oxygen, nitrogen and noble gases) in concentrations no more than 1 ppb, and a dew point lower than -40°C is obtained from the atmosphere by low-temperature adsorption treatment in stages at temperatures ranging from -40°C to -180°C . Material air collected from the atmosphere is pretreated in a room-temperature adsorption step to remove moisture and carbon dioxide. The pretreated air is then low-temperature adsorption treated by absorbents in a plurality of steps, the treatment temperature being lower in each succeeding step. The last treatment step produces super clean air suitable for use in processing semiconductor wafers. The super clean air is heat exchanged with liquefied nitrogen from an external source and is used to cool the pretreated air to the adsorption treatment temperatures. In one embodiment the super clean air is expanded and used alone to obtain the treatment temperatures and in a second embodiment it is mixed with the heat exchanged nitrogen. A part of the super clean air is also used to provide all or a part of the gas required for regenerating and cooling the adsorbent used in the room-temperature adsorption treatment stage.

(Fig.1)

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