Pre-Furnace Clean Chemical Bench

Operating Procedures LINK

Process Description:

Silicon dioxide has many uses as an insulator in microfabrication processing. It can be created on the surface of a substrate by several methods: chemical vapor deposition, evaporation, sputtering and thermal oxidation. Thermal oxidation is when direct oxidation of the silicon surface occurs. At high temperatures, gas species containing oxygen will react with the silicon terminations of a bare silicon wafer to create silicon dioxide (SiO_2).

To facilitate thermal oxidation, the surface of a wafer must be cleaned to remove, any organics, particles, metal ions, and native oxide. The surface of the wafer must be bare silicon when inserted into the oxidation furnace tube. The wafer cleaning to produce this pure surface is referred to as a pre-furnace clean. It is a multi-step process involving acids and bases.

Equipment Description:

The Pre-Furnace Clean chemical bench has four process tanks, which are prepared with ammonia hydroxide, hydrofluoric acid, hydrochloric acid, and sulfuric acid. The bench is equipped with two wafer holders; two quick dump rinse tanks (QDR), a glove wash and bottle wash. Two process tanks and one QDR have megasonic capabilities.

Materials Allowed		***Materials Not Allowed***
Silicon		Metals
SiO2		III-V semiconductors
Si3N4		Glass
		Photoresist
		Plastics (SU8)