Measurement or Process: Photo-lithography using mask aligner

Equipment: Name Mask Aligner
Make M/s EV group, Austria
Model EVG 620

Property Measured or Process: Photo-lithography is a process used to transfer desired patterns on the wafer/substrates in semiconductor process technology, microelectronics and nanotechnology. It makes three-dimensional images (printing) on the substrate for subsequent transfer of the pattern to the substrate.Mask aligner is used to set proper alignment between pattern to be printed on the substrate with the previously formed / patterned structures of different layers (metal/conductors, doped layers, dielectric layers etc).

Photograph:

Mask Aligner (Model : EVG 620, Make :M/s EV Group, Austria)

Basic Principle: In photo-lithography,UV light is exposed to a photo-sensitive chemical known as “photoresist" to transfer a geometric pattern on a photomask either to the substrate surface or ona layer grown/deposited on the substrate.The UV exposure changes its chemical structure of the resist whichallows some of the photoresist to be removed in "developer" solution. Positive photo resist becomes soluble in the developer where it gets exposed to UV light; with negative photoresist, unexposed regions are soluble in the developer. The steps involved in the photolithographic process are wafer cleaning; photoresist application; soft baking; mask alignment; exposure and development; and hard-baking.

Capabilities: Minimum Feature size : 1 µm (Vacuum contact), 2 µm (Hard contact)

Sample Requirement: Wafer Size : 50mm and 150 mm diameter wafers
Wafer thickness : 200 to 1000 micron (0.2 to 10 mm)

User Guidelines:

1. Sample size 2 inch and 6 inch circular, thickness should be from 200 micron to 1000 micron
2. User to come with masks with their own design
3. For multilevel lithography, each level photomask should have proper alignment marks
4. Only PR development will be carried out.Post lithography processes are to be arranged by user.