Metro Chip Cleaning Procedure
Product No. 632

The cleaning procedure largely depends on the nature of the contamination and what facilities are available at your site.

Large particles can be blown off the sample by nitrogen gas sprayed from a nozzle, preferably with a point-of-use particle filter. Most facilities have high purity nitrogen plumbed in. Otherwise, use "Dust-off" cans. But avoid the kind that mention "Do not use on camera lenses." in their instructions. Use CDA (clean dry air) only if you are sure how it is produced. Some facilities use compressors that cause their air to have pump oil residues. In most semiconductor fabs and equipment manufacturer facilities, this has been resolved and CDA is quite pure and is fine to use.

Rinsing the sample in DI water is safe and effective for removing larger particles. For removing smaller particles, use DI water in combination with ultrasound.

For cleaning fingerprints, chemical baths that remove photoresist, if available, are effective. Any resist strip used in semiconductor manufacturing is safe, including sulfuric peroxide clean. (This requires a heated bath and well ventilated area.)

Facilities such as analysis labs often have small stand alone plasma cleaners for sample surface preparation. One can also use those plasma sample cleaners with pure oxygen, or mixtures of oxygen and forming gas (N_2/H_2) for removing fingerprints and also for cleaning hydrocarbon residues formed as a result of inspection in a scanning electron microscope.

Here are the things that should be avoided:

1- Wiping the sample with a cloth. This will destroy the features.
2- Spaying the sample with gases that leave residues. Also immersing the sample in liquids that leave residues.
3- Using cleaning solutions that attack silicon dioxide (glass). Any HF dip will attack the oxide and should be avoided.
4- Avoid plasma treatments that attack silicon dioxide (glass). The list includes gas mixtures containing CF_4 or CHF_3 or similar gases. Naturally, harsher plasma treatments, such as those using chlorinated gases, should be avoided since the polysilicon can be etched.

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