

TCI WINDOW CLEANING PROCEDURE

Background

The TCI system uses many sensitive optical components to achieve its goal. All of the mirrors, lenses and windows in the system have sensitive and expensive coatings applied to them, designed specifically for our application.

The TCI upper and lower windows are made of the material Zinc-Selenide (Zn-Se) which is a material that can transmit both wavelengths that we use in TCI. On the surfaces of the window, that is vacuum side and air side, there is an anti-reflective coating (AR) which maximizes the transmission of both wavelengths and minimizes reflections. These coatings are extremely important for the proper operation of the Two Color Interferometer. The coatings are also extremely thin and sensitive to abrasion and thus much care needs to be taken when cleaning these optics. The following guidelines should be employed whenever cleaning a window or a mirror in the TCI system.

Considerations/Cautions

Vacuum quality gloves should always be used when handling a mirror or a window. Body oils left by fingerprints, even at the edge of a mirror or window, can eventually creep over to the mirror surface and begin to degrade, and in some cases delaminate the coating. Fingerprints on the coating itself are frowned upon as they destroy the reflective or anti-reflective quality of the coating as well as degrade the laminate.

Speaking over an optical component should be minimized. Small airborne particles of saliva that occur during conversation can land on the optical surface and begin to destroy it. Whenever possible, talking should be done away from the optics, or the optics should be covered with optically appropriate material such as lens tissue.

Never put pressure directly on the optical surface even with gloves on. It is always best to handle the optics by the sides whenever possible.

Procedure

The first stage of cleaning is to remove all loose dust with air. Never blow on an optical surface with your mouth, but use an approved pressurized air canister and delivery system such as Micro Duster or equivalent. Gently blow across the surface of the optics to remove the loose dirt. Use care not to invert the canister and spray liquid onto the surface as the liquid is generally quite cold.

After the loose dust is removed should it be necessary to further clean the optics an ethanol wipe should be used. The approved wipe for our optics is E-Wipes by Photographic Solutions. No other method should be used for this cleaning. E-Wipes come individually packaged and are soaked with ultra-pure solvent.

The wipe should be removed from the package, opened up to full size and gently dragged across the optical surface. See Figure 1.

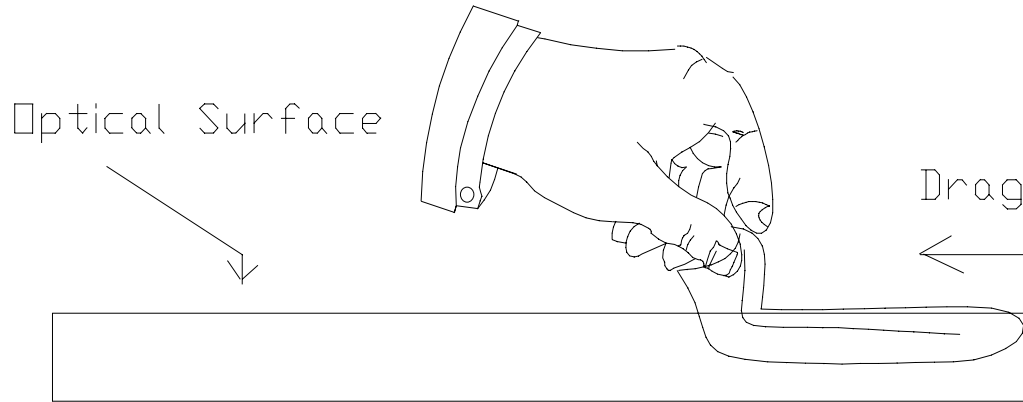


FIGURE 1.

Use the E-Wipe only one time and discard. If additional cleaning of the surface is needed then another wipe should be opened and used. Never use the wipe more than one time and never apply pressure to the wipe across the surface of the optics. Usually a good cleaning will take several passes across the surface so several wipes will be used. Wipes are cheaper than optical coatings.