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VUV-UV OPTICAL FILTERS & MIRRORS HANDLING AND CLEANING INFORMATION

Handling and Usage of VUV-UV Optical Filters & Mirrors: eSource Optics Metal-Dielectric-Metal (MDM) thin-film VUV-UV Optical Bandpass Filters & Mirrors are environmentally stable in most low humidity Laboratory type environments, or when used in vacuum or highly purged instrumentation. However, due to the relatively soft nature of the MDM filter coating, care must be taken to avoid damage from contamination of the optical surfaces as these coatings are really not suited for any chemical cleaning or exposure to certain environments, such as ozone or corrosive gases. Also, typically in most all vacuum applications there no epoxies or glue used to hold the VUV-UV Optical Filter & Mirror; or paints/sealants to blacken the filter edges because most all of these materials will out-gas under vacuum and leave a residue on the surfaces of the filter and contaminate the environment within a vacuum chamber. VUV-UV Optical Filters & Mirrors are typically mechanically mounted using stainless steel or aluminum retaining or split rings to hold the Optical Filter into a mount. If the Filter or Mirror is to be used in a vacuum application, the normal ozone and other contamination processes which take place in VUV instrumentation can be minimized by not allowing the UV light source or other radiation to strike the MDM Optical Filter or Mirror coating until the vacuum system is under a 10^{-5} Torr or below range (never above 10^{-4} Torr range). Caution should be exercised to avoid accidental high pressures within the vacuum chamber during UV light source operation. As deterioration of MDM Filter & Mirror coatings is a function of photon energy, flux density and time; VUV-UV light sources should only be run when necessary to obtain data.
As VUV-UV Optical Filters are MDM type filters and out-of-band blocking is primarily due to reflection/absorption of unwanted light, the coated MDM surface should be oriented towards the light source. In reality the VUV-UV Optical Filter will perform if oriented either way, but it helps somewhat to have the coated "most reflective looking" side facing the incident VUV-UV light source in order to help reduce any thermal load on the VUV-UV Optical Filter. Due to the higher absorption of VUV-UV Filter coating materials; distance to the light source also is very important. The closer the VUV-UV Optical Filter is to a high intensity VUV-UV light source, the faster it can degrade over time. Conditions such as vacuum pressure and cleanliness of the vacuum or purged environment can all play a part in ultimate VUV-UV Optical Filter lifetimes.

Cleaning of Open-Faced Optical Filters & Mirrors: Clean dust or other small particles by blowing off the coated surface with a clean air syringe or preferably with purified dry N2. DO NOT contact the coated surface of the filter with any liquid solvents or lens tissue. Typical particle cleaning can be accomplished by the use of a stream of dry air; however surface stains and oil-based fingerprints are extremely difficult to remove without damaging the coating. The recommended cleaning of a VUV-UV Filter is with high purity dry nitrogen dispensed with a filtered ionized air gun to remove any dust particles that may cling to the coated MDM surface due to a static charge. We do not recommend that the Optical Filters MDM coated surface be touched with any solvent cleaning methods; or any commercially available nitrogen air spray cans, as these tend to "spit" liquid and will stain the coated surface.