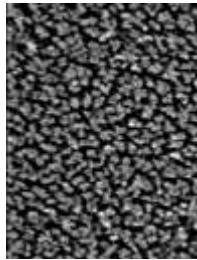




Cleaning instructions for Fiberguide RARe Motheye Fiber

****DO NOT TOUCH MOTHEYE SURFACE WITH ANY PHYSICAL MEDIA****

The Motheye anti-reflective surface is composed of nanostructures which are too small to be seen using typical light-based techniques. These unique nanostructures provide a gradient in which light becomes trapped – resulting in anti-reflective properties. The photonic damage thresholds of this surface is much greater than conventional AR coatings. While durable, the structures can be damaged or destroyed by many of the methods used to clean conventional AR coatings. Since these structures are quite small, they can be crushed or damaged by physical contact, resulting in a loss of anti-reflection.



Fiberguide RARe Motheye Nanostructure (SEM)

Basic Cleaning Procedure (Dry Nitrogen)

Equipment required:

- *Dry nitrogen, suitably pressurized*
 - *Suitable microscope for fiber inspection or similar optical zoom device (>100x)*
- 1) If the Motheye surface is dirty, first use dry Nitrogen to blow any dust and particulates off the surface.
 - 2) Inspect the surface to ensure that no visible dirt or contamination is visible. Inspect at 100X in a compound microscope or similar optical zoom device.
 - 3) If particulates are not removed, or oils are present, proceed to using a CO₂ gun cleaning system.

Advanced Cleaning Procedure (CO₂ gun cleaning)

Equipment required:

- CO₂ gun (Va-Tran Systems: SNO-GUN DRY ICE CLEANER, model # SG-2 and GAS COVER HEATER model # 830-6200-115)
- Suitable microscope for fiber inspection or similar optical zoom (>100x)
- Hot plate and/or heat lamp (optional – see below)



**SNO-GUN Dry Ice Cleaner Cleaning
Fiberguide RARe Motheye Fiber**

- 1) Inspect the part prior to cleaning using a sharply focused bright light aimed at an angle to the Motheye surface.
- 2) Aiming the gun with nozzle output almost parallel to the surface is most effective for dust. If you aim the nozzle perpendicular to the surface, it will remove light oil deposits. The CO₂ gun will generate small, hard crystals of dry ice and involves localized melting of the dry ice particles as they impact the substrate. If condensation builds up on the part, an infrared heat lamp, hot plate, or a dry hot Nitrogen flow should be used to pre heat the surface and part. Heating the substrate to about 20°C (36°F) above ambient before and after cleaning will help prevent condensation.
- 3) Check for dust deposition and removal using a sharply focused bright light aimed at an angle to the Motheye surface. Repeat the above cleaning procedure if there is still evidence of contamination, or return to Fiberguide for service.

Tips for cleaning RARe Motheye Fiber:

A common mistake is thinking that the longer you clean the better you clean. Short 2-second bursts with the CO₂ gun are all that is required to clean Motheye surfaces.

If you are in a humid area (>50%), or otherwise wish to prevent condensation, you may want to flood the cleaning site with a dry gas when using the CO₂ gun.

Never attempt to clean the surface using physical methods or abrasion. Abrasive methods will damage the nanostructures and result in a permanent decrease in performance.

Never attempt to clean the surface using any hydrophobic solvents (e.g. hydrocarbons, polycyclics, benzene/xylene, etcetera). It is often more difficult to remove these solvents than the original contaminant. The Nanosurface is extremely hydrophobic due to effects at the quantum level.