

Filter Cleaning

U S E R M A N U A L

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Imprint

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Scope

Please be aware that these cleaning guidelines only apply to glass filters.

Legal Disclaimer

Please read this document in its entirety before cleaning MPTV filters and (AR) coated optics. Understanding the complete process is beneficial for preserving the highest optical quality.

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Introduction

ARRI MPTV filters are precision optics carefully designed to support cinematographic image acquisition. Aside from fulfilling state of the art optical performance requirements, the filters also protect the lens in harsh environmental conditions.

To maintain the lowest possible optical scatter, e.g. for high dynamic range imaging, it is crucial to keep your optics clean. Surfaces are water and oil repellant to support easy cleaning and to prevent the initial contamination of optical surfaces. Nevertheless, depending on environment and lens setup, dust and nonvolatile residuals from cleaning agents, etc., may deteriorate optical performance significantly.

Although the optical coatings on ARRI MPTV filters have been designed to be extremely robust, it is recommended to follow the common rules of handling precision optics proposed in this manual to extend the life and increase the reliability of your filter.

The cleaning and handling of optics can be a complex matter and cannot be fully covered in this short reference. For a more thorough understanding of this topic, we advise literature such as Robert Schalck's *The Proper Care of Optics: Cleaning, Handling, Storage, and Shipping*, SPIE Press Book, Vol. PM233 (2013).

General Recommendations

- Avoid touching optical surfaces; only handle optics by their edges/shell surfaces. Wearing clean, disposable gloves while handling (e.g. made from nitrile) prevents the most common contamination by fingerprints, thereby saving valuable time and increasing imaging reliability.
- Use a bright lamp or bright daylight to determine the contamination level.
- Change the angle of view on the surfaces from normal to grazing incidence.
- Always clean the optic's shell surface or the frame/mount first.
- Avoid wiping optical surfaces without air blow dusting first. When particles or optical surfaces are electrostatically charged, it may improve the dusting efficiency to use deionized air.
- Use manual air blowers and clean antistatic brushes (e.g. carbon fiber anti-static brushes to clean vinyl or camera analog film).
- Avoid compressed air from cans: the chances of liquid propellants within the can being expelled in liquid droplets against the glass, thereby leaving contaminants are quite great and depend on handling. If using compressed air, use it only in a clean environment to avoid aerosols being pulled into the air stream and propelled onto the surface. Always use oil-free compressed air with less than 2 atm of pressure and equipped with a particle filter.
- Avoid wiping optical surfaces with a dry tissue/cloth, especially if surfaces are not clean.
- It may be difficult to clean an optical surface without streaks and nonvolatile residues when relative humidity exceeds 65%.
- Place optic on a clean, soft surface or a clean ARRI optics cleaning cloth intermediate to a flat surface.

- Use clean, lint free, and soft single-use paper based optics cleaning tissues/pads (plan to use at least six per MPTV filter) or a clean ARRI optics cleaning cloth when the former is not available. Avoid abrasive particle contamination of your cleaning supplies and cloths (e.g. by sand).
- Always wipe using gentle, single-direction strokes and take a new tissue for each stroke if using disposable tissues. Avoid moving back-and-forth or rubbing, especially if the optic is not free from particulate matter contamination.
- Always store your optics in the provided pouches or containers when not in use. If you do not have a cover or container, store optical surfaces upright in a clean environment to limit particulate matter contamination.
- When cleaning mounted optics (e.g. lenses) or frames, avoid that cleaning agents are drawn into narrow spaces near the retaining rings etc., due to capillary forces. Use moistened, but not soaking wet tissues.
- Have your equipment ready before starting the cleaning process.

Recommended Cleaning Agents

Use cleaning agents for dielectric coated precision optics to avoid streaking, nonvolatile residues, or damaging optical elements.

Prepare three different liquids in spray or drop dispensing bottles:

1. a neutral window detergent
 2. deionized distilled water, and 3. spectroscopy grade isopropyl alcohol.
- Always use these liquids in this sequence when cleaning.

Recommended Cleaning Sequences

For minor particulate matter contaminants like dust, pollen, rain residuals, etc., and moderate contaminants like fingerprints or comparable stains:

1. Blow on the surface to remove dust and lint.
2. If the surface is still not clean, gently brush off residual loose contaminants.
3. If the surface is still not clean, gently wipe the surface with a moistened tissue/cloth. Use one dedicated tissue/cloth for each liquid (one for neutral window detergent, one for deionized distilled water, and one for spectroscopy grade isopropyl alcohol. The liquids must be used in this sequence). Blow on the surface again to remove residual lint.
4. Using a bright light source, check for cleaning agent residues, streaks, or other contaminants. It is common to exhale carefully onto the optical surface and then to gently wipe off the condensed moisture with a soft cloth, e.g. a clean ARRI optics cleaning cloth. If you decide to do so, avoid saliva droplets on the surface and do not firmly wipe dry parts of the optical surface. If the surface is still not clean, repeat the cleaning sequence.

For severe contamination (contaminants like oils, hand lotion/cosmetics, sandy mud, etc.):

1. Immersion bath cleaning (only for unmounted optics, not suitable for lens systems, etc.):
A bath temperature of approx. 40°C improves cleaning efficiency. Immerse the optic in distilled water with low alkaline soap (approx. pH 8 is adequate) and when contaminants are softened or dissolved after soaking for a few minutes, rinse gently with clean, warm water. Hint: Prepare a clean and fresh bath frequently. Avoid ultra-sonic cleaning baths for severely contaminated optics.
2. Continue the cleaning process with steps 3 and 4 of the general cleaning sequence for minor and moderate contamination.

Material

The premium pouch, included with each filter, is made of top-quality materials.

Outer material:	CORDURA®/NYLON (100%)
Lining:	MICRODEAR®/PE (100%)
Padding:	PU (100%)
Bias tape:	PE (65%) / Cotton (35%)
Label pocket:	PVC (100%)
CORDURA® tag:	PE (100%)
MICRODEAR® tag:	PE (100%)

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