



## CLEANING AND HANDLING METHODS FOR CO<sub>2</sub> OPTICS

*To our valued customer,*

*Ophir Optronics would like to thank you for purchasing our product; it is made to meet the highest standards. In order to ensure its best performance, we would like to ask you to follow the instructions below*

### General Precautions

1. Coated surfaces should never be touched. Always hold the optic element by its sides.
2. Always wear powder-free finger cots or latex gloves when handling the optics. Bare hands might leave oils and dirt, which will damage their performance.
3. Do not use any tools or sharp objects when handling the optic element or when removing it from its packaging.
4. Prepare a clean and smooth work surface that is free of oils, grease, dirt, etc.
5. Optic elements will easily scratch when placed on hard surfaces. Once the optic is unpacked, carefully place it on the lens tissue into which it was originally wrapped. Then place the tissue and the lens on a soft cloth or on the foam in the package.

The optic elements were cleaned and packaged in a clean and controlled environment at Ophir and should be ready to install in the laser machine. If an unpacked new optic element does not appear to be clean or seems to have a defect, please contact your local Ophir agent.

### The following cleaning methods are for all optic elements

The Black Magic™ Duralens™ should be treated with the same care and by the same methods as the standard AR coated CO<sub>2</sub> Optics.

#### Method A:

Condition of lens: Dust or small loose particles on the surface

Cleaning method:

1. Use a small air bulb to gently blow off dust and debris. Do not use compressed air from a compressor as it is not a "clean" source of air and can contaminate the surface.
2. Gently place the provided optical-grade rice paper on the optic element. Slightly wet the paper with drops of Propanol/Ethanol (CP grade), using a pipette, and gently pull the paper toward the dry side away from the element, until there is no contact between them.

**If this method is not successful, proceed to Method B**

#### Method B:

Condition of lens: Fingerprints, oil, other visual contaminants

Cleaning method:

1. Use a new clean cotton ball or cotton swab.
2. Dampen cotton with Propanol/Ethanol (CP grade). The cotton must not be dry.
3. Slowly and gently wipe the element in a regular pattern. Do Not scrub the surface (scrubbing might damage the coating or the element itself). Gently wipe element in "S" motion.
4. If the surface is left with wipe marks, wipe it at a slower rate. When finished no streaks should be visible.

## Method B (II):

Condition of lens: Moderate contamination (spittle, oils)

Cleaning method:

1. Use a new clean cotton ball or cotton swab.
2. Dampen cotton with acetic acid (or vinegar) with 6% acidity. The cotton must not be dry.
3. Slowly and gently wipe the element in a regular pattern. Do Not scrub the surface (scrubbing might damage the coating or the element itself). Gently wipe element in "S" motion.
4. If the surface is left with wipe marks, wipe it at a slower rate. When finished no streaks should be visible.
5. Slightly wet the provided optical-grade rice paper with drops of Propanol/Ethanol (CP grade), using a pipette and gently pull the paper toward the dry side away from the element, until there is no contact between them, until the residue of acetic acid has been removed.

## Method C: Aggressive Cleaning

Attention: This method is to be used only after trying methods A and B.

In the event that you have completed steps A and B and the optic element is still contaminated please contact your local Ophir Dealer for further instructions.

Condition of lens: Deteriorated performance and severe signs of contamination

The aggressive cleaning will usually be needed due to heavy usage of the lens. However, certain types of contamination can not be removed and require replacing the optic element.

**Cleaning method:**

This method might erode the surface of the optics. If a change of surface color is noticeable stop polishing immediately.

1. Use a new clean cotton ball or cotton swab.
2. Dampen cotton with polishing compound (about 5 drops).
3. Gently and briefly wipe optics in "S" motion. Avoid pressing down the cotton or scrubbing the surface.
4. Wet a new cotton ball or swab with Propanol/Ethanol. Gently but thoroughly swab the surface (do not allow it to dry).
5. Examine the surface under light in front of black background. Remove remaining residue by repeating step 4 until surface is clean.



### Ophir offers a cleaning kit that includes:

- Air bulb
- Polishing compound (Alumina Oxid Polish)
- Dispensers for Propanol and cleaning fluid
- Finger cots
- Cotton balls
- Lens tissue (optical grade rice paper)