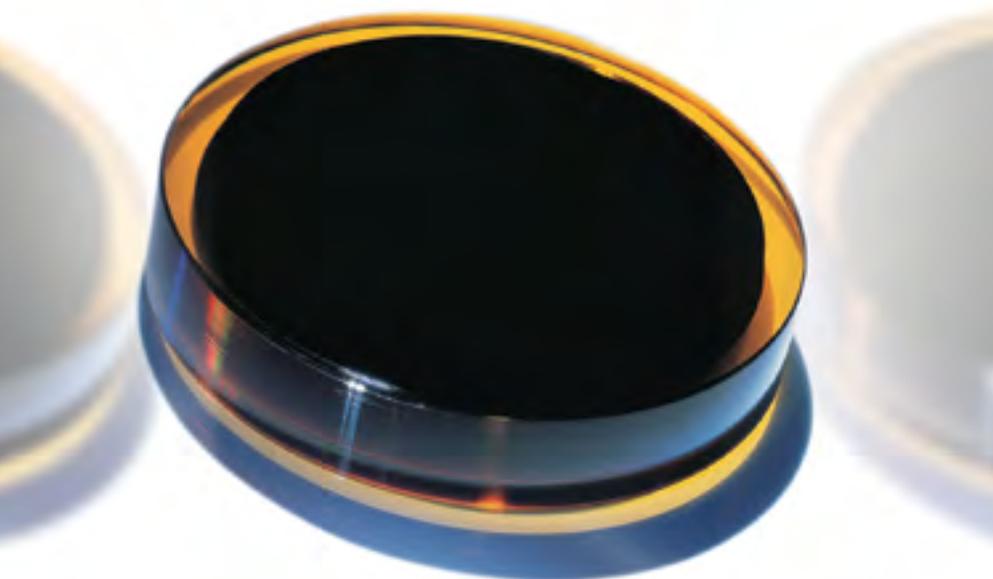


BLACK *Magic*™

Low Absorption Lens for
High Power CO₂ Lasers



Why is it worth using the Black Magic™?

If you compare the performance of a standard yellow lens to a Black Magic™, the Black will usually last about twice as long and sometimes longer. So the cost savings can be substantial.

Generally, you get a better cut on aluminum and stainless and there is less burring or no burring, this too saves money.

It is a lens that should be in the job shop as another tool. You don't throw out a hammer because you bought a screwdriver. Both tools have a use. The Black Magic™ should be thought of in a job shop as a tool. However, in the case of the Black Magic™, it is both the hammer and the screwdriver because it works well on mild steel but better on certain materials and in certain climates.

Fabrication shops need any edge they can get. Time savings is cost savings. Longer life on a lens is cost savings and better cuts are a cost savings and most importantly less down time for the machine is the biggest cost savings.

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 **OPHIR**
Optics
A Newport Corporation Brand

The Ophir Black Magic™ Lens Benefits

- The Black Magic™ has the most durable coating in the industry. It is spatter resistant and if it does get dirty, it will clean easier than any other coating. All CO₂ lenses are made of zinc selenide (ZnSe). Only two companies manufacture the kind of high quality lenses that are used worldwide by the Laser OEM's and Ophir is one of them.
- If you have two lenses manufactured from equal high grade ZnSe with exactly the same CNC shaping and superior polishing, the only difference in the performance of the lens is the coating. The coating protects the lens and the better that you care for a coating, the longer the lens will last. Cleaning too harshly can deteriorate the coating. The Black Magic™ coating will withstand cleaning for a longer period of time.
- The usual practice when you start up a machine is to get the focal length aligned. After the machine cuts for a while the lens heats and the focal will often need to be adjusted. The Black Magic™ will hold a focal length because the coating resists the heat. So rarely will you have to adjust the focal length once the machine is set up and running. This is a key feature, because even if the focus changes just a bit it will affect the cut quality.
- The Black Magic™ is impervious to humidity. While a yellow lens can get cloudy with moisture from the humid air and be useless, or you may not be able to cut well on a very humid day, the Black Magic™ will work very well regardless of the humid conditions. If for no other reason; this lens should be used during the parts of the year when humidity is a problem. Even if you choose a yellow lens for the rest of the year, during the humid days the Black Magic™ is a better choice.
- Sometimes an operator has a problem with the machine and a lens will blow up. Under certain conditions a brand new lens from any manufacturer could be blown up. A yellow lens will cause a big clean up mess. Often mirrors need to be replaced, bellows cleaned out and in general a day's work of cleaning is required before the machine is operational again. The Black Magic™ is very resilient to this problem. It is extremely rare to hear of one blowing up. If they are abused or there is a machine problem or operator error, the Black Magic™ will get a burn spot and crack. If you work really hard at it and you do blow up the lens, the amount of damage is kept to a minimum. It usually will not go through the entire system. On that rare occasion that it happened, the damage reached 6 to 10 inches at the highest.
- The Black Magic™ allows for maximum power transmission. This reduces the opportunities for reflection back to resonator, which could cause a whole range of problems including destroying mirrors.
- Although the Black Magic™ will cut mild steel cleanly, it has shown superior performance on aluminum and stainless over any yellow lens. Our customers notice a cleaner cut with less dripping or pooling of metal at the edge of the cut. As a result there is less need to do burring as the item has a cleaner, more precise cut from the machine.
- A diffusion cooled resonator has a smaller beam mode that tends to run very hot. Since the Black Magic™ passes more of the power, it allows the beam mode to pass with less heat transfer to the lens. This was examined and compared to other lenses by using the Spiricon ModeCheck™ and the results were clearly visible.
- Finally, the Black Magic™ does not have any radioactive material in the lens coating. It is the only radioactive free lens in the industry.
- The Black Magic™ has only a few minor drawbacks. It only allows laser light through so a HE NE or piercing sensor is not going to work.
- It is an odd color and takes a bit of getting used to when you set it up. It should be set up like any yellow lens with it being centered in the same manner. So if you have good operator, they can set up a Black Magic™ as quickly as a yellow.

