

Meet the NEW Optics Division

Optical Lenses, Mirrors and Telescopes for Outerspace...

The Optics Division is the most recent addition to the Techmetals family of metal finishing. It was officially opened in January of 1999, and is located in building 6. This division is dedicated to metal finishing optical components such as a wide variety of optical lens molds, x-ray incident grazing mirrors, and components used in space telescopes. In addition, we finish large precision parts up to 18" in diameter and 6 feet in length such as lenticular rolls. The Optics Division is constantly exploring new coating possibilities. A direct result of such R&D is Optakoat. It is an amorphous nickel alloy coating, which was specifically developed for the optics and diamond turning industry. Diamond turning is the use of a single point diamond tool on a precision lathe under very carefully controlled machine and environmental conditions to fabricate high-precision components including reflective optics.

An Optakoat deposit was tested by both Lawrence Livermore National Laboratory and the Marshall Space Flight Center. The conclusions were that Optakoat can outperform electroless nickel phosphorus deposits by reducing wear and improving achievable as turned surface finishes. In fact, a Talystep profile revealed that Optakoat was not as damaging to the diamond tool as the electroless

nickel phosphorus. Numerous companies have measured the flatness and surface quality of deposits with various interferometers. Typical results indicated a surface roughness of 9 angstroms. After using conventional optical lapping techniques the surface roughness was reduced to 2-3 angstroms. This is a finer surface roughness than electroless nickel phosphorus can offer. Optakoat also overcomes electroless nickel phosphorus's limitations because it has a faster plating rate of 1 to 2 mils per hour, it can be plated to a thickness of 0.050" or higher, it's internal stress can be controlled allowing for electroforming, it is denser, and it has a lower void volume which leads to fewer defects in coatings. The Optics Division is now currently working with R&D to develop a new generation Optakoat.

All of the metal finishing baths located in the Optics Division are monitored on a regular basis for concentration, alloy composition, stress, and cathode efficiency. Five highly trained staff are a part of the division and have a combined plating experience and knowledge of 60 years. As with all the other divisions, the Optics Division is dedicated to producing quality parts, competitive prices, and on time delivery. ●