

First Contact™ Black Polymer Application Note

Suppressing Back Surface Interference Fringes Using First Contact™ Black Polymer



Lambda Photometrics is proud to serve as the exclusive B2B supplier of First Contact™ Polymer, further enhancing our product suite and reinforcing our commitment to comprehensive, high-quality solutions. This strategic partnership enriches Lambda's optical metrology portfolio by integrating a precise, reliable solution for optics cleaning, essential for accurate optical surface measurements.

In this application note, we demonstrate the effectiveness of Black First Contact™ Polymer in reducing backside reflections using the Zygo Verifire Interferometer, highlighting its role in improving interferogram clarity. The black polymer not only excels in surface cleaning but also minimises unwanted back reflections, enhancing measurement accuracy for surface form analysis affected by backside reflections.

This reflection phenomenon occurs when backside glass reflections interfere with fringes from the front surface,

creating dual interference patterns. To address this, a material with a refractive index closely matching that of the glass can be used such as petroleum jelly, but this can be messy. Black First Contact Polymer offers a robust and repeatable alternative that both minimises back reflections and cleans the optics when removed.

Unlike other techniques to reduce back reflection Black First Contact Polymer provides an efficient, residue-free solution that reduces post-measurement cleaning needs, optimising workflow for optical manufacturers.



Figure 1: Covering techniques used from right to left techniques used Black Ink, Clear, Black First Contact Polymer

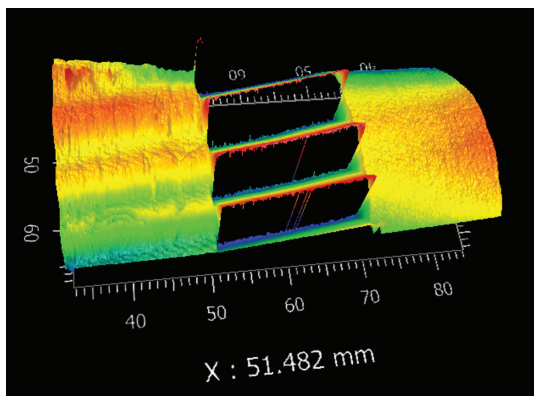


Figure 2: Showing surface form of glass optic with back surface reflection. From left to right techniques used Black Ink, Clear, Black First Contact Polymer

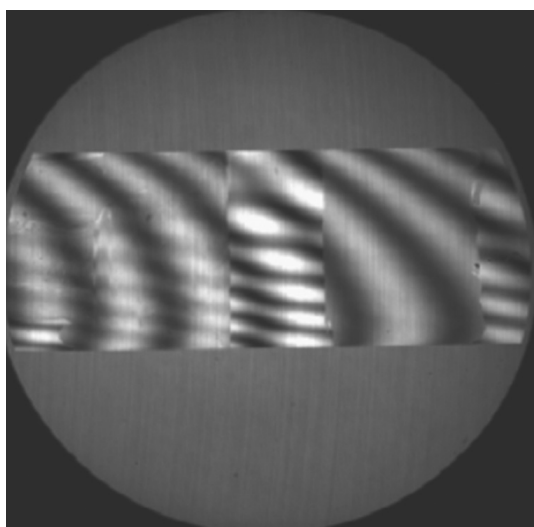


Figure 3: Interference patterns on the on the optic before processing displaying from left to right (Black Ink, Clear and Black First Contact Polymer)

In this experiment (as seen in *Figure 1*), we treated one side of the optic with black ink, left the central section clear, and applied Black First Contact Polymer to the opposite side. This setup was designed to illustrate the effects of each approach on measuring the front surface form.

Figures 2 and 3 reveal that the section coated with Black First Contact Polymer yields a smooth, uninterrupted fringe pattern, effectively eliminating back surface reflections that are evident in the black ink and untreated (clear) sections. This result underscores the superior performance of Black First Contact Polymer in minimising interference patterns caused by back reflections.

This application note demonstrates how Black First Contact Polymer delivers a clean, interference-free measurement surface, greatly enhancing accuracy in surface form assessments for parallel optics. At Lambda Photometrics, we are committed to offering products that not only meet high standards but also provide exceptional value to our customers.

To learn more about the **Black First Contact Polymer** solution or explore our **First Contact** and **Zygo** product ranges, please contact **Lambda Photometrics** on **01582 764334** or email contact@lambdaphoto.co.uk

Website links:

First Contact Polymer: <https://www.lambdaphoto.co.uk/metrology-microscopy/optical-cleaning-products.html>

Zygo Interferometers: <https://www.lambdaphoto.co.uk/metrology-microscopy/surface-form-two-interferometer.html>

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