



*Cerakote is an inorganic polymeric thin-film liquid ceramic coating and is designed to be applied directly to the substrate in a single layer application.* Cerakote provides a wide variety of functional properties that can complement 3D-printed materials, including UV stability, chemical resistance, hydrophobic properties, color consistency, scratch/abrasion resistance, and much more.

The purpose of this paper is to demonstrate the performance attributes of Cerakote coatings on polySpectra's COR Alpha photopolymer material. These results demonstrate that Cerakote is able to provide a UV-stable surface coating, which enhances the durability and weatherability of the material. The following tests were administered.

### TESTING PARAMETERS

- COR Alpha samples were provided by polySpectra for testing and coating was applied by the Cerakote technical training staff at the headquarters in White City, OR.
- The recommended application process for polymers listed in the Cerakote C-Series Application Guide was used.
- Cerakote's C-7300 Black Velvet was applied to COR Alpha material to recommended thickness.
- The coupons were 3"x5" and 3mm thick.
- Coupons were then implemented into the QUV Accelerated Weathering Chamber.

### TEST METHOD

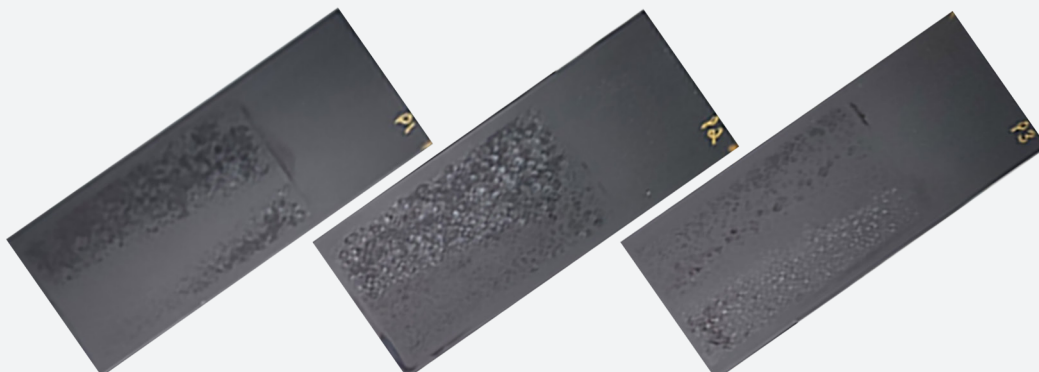
ASTM D4587 - Standard Practice for Fluorescent UV-Condensation Exposures of Paint and Related Coatings

### DURATION

1,000 Hours in QUV chamber

### RESULTS

After the 1000-hour benchmark, there is no visible sign of degradation to the substrate material or coating. C-Series inorganic polymeric resin system prevents the COR Alpha material from being exposed to the UV radiation in the chamber, thus mitigating and preventing photodegradation of the photopolymer.



Coupons after 1000 Hours in the QUV Chamber

# DISCUSSION

## Cerakote UV Protection of polySpectra COR Alpha Photopolymer

The combination of polySpectra's COR Alpha material and the Cerakote C-Series ceramic coating unlocks unprecedented durability for polymer additive manufacturing. In addition to providing a means of augmenting the color and aesthetic surface finish of the parts, the Cerakote C-Series can protect the underlying material from photochemical degradation. The inherent thermal stability, toughness, chemical resistance, and durability of the Cyclic Olefin Resin base material provides an engineering-grade matrix that enables new digital manufacturing applications in industries with notoriously challenging performance requirements, including defense, aerospace, automotive, robotics, medical devices, and consumer goods. These hybrid COR/Cerakote parts offer a new paradigm of performance for additive manufacturing, as the polymer/ceramic combination can provide a replacement to traditional thermoplastics, thermosets, and even metals. To highlight the versatility of this combination, five different C-Series coatings were applied to the same topologically-optimized COR Alpha bracket.

For more information about Cerakote on 3D coating technology visit [Cerakote.com](https://cerakote.com) > Industries > 3D Printing.

You can also email us at [industrial@cerakote.com](mailto:industrial@cerakote.com) or call us at 866-774-7628.

## CERAKOTE OFFERS ENDLESS CUSTOMIZATION OPPORTUNITIES



C-Series coatings were applied to the same topologically-optimized COR Alpha bracket.