

## **Novastrat® 905 Polyimide**

**High temperature polyimide with essentially zero coefficient of thermal expansion**

Novastrat® 905 is a high temperature polyimide film with essentially zero coefficient of thermal expansion (CTE). Because of this unique property, Novastrat® 905 has been successfully used in demanding optics, satellite and industrial applications that are exposed to severe temperature fluctuations.

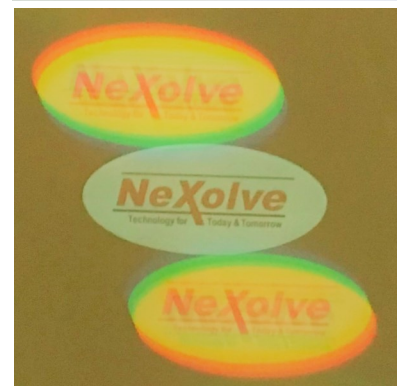
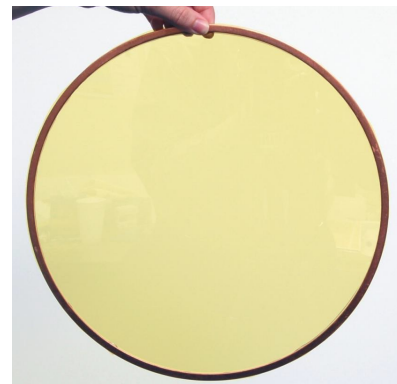
Novastrat® 905 is the recommended grade for applications that require essentially zero CTE and stable properties across a wide range of operating temperatures. Novastrat® 905 is available as a film in sheet form, or liquid resin for spray or flow casting operations. As a liquid, it bonds well to metals and metal oxides, and is supplied with and without a variety of internal adhesion promoters.

### **Characteristics**

- Essentially zero coefficient of thermal expansion
- High heat stability
- Bonds directly to metals and metal oxides (liquid)
- Conductive and non-conductive grades available
- Available as a film or liquid resin
- T<sub>g</sub> of 335 °C

### **Applications**

- Dielectric layer for microelectronics
- Optical filters/mirrors
- Advanced composites
- Space structures
- Thermal protective layer for aerospace applications
- Industrial tapes



*Novastrat®905 used as a zero-CTE diffractive optic membrane*

# Typical Properties of Novastrat® 905 Polyimide

## Physical and Mechanical Properties

| Property                                    | ASTM Method | Value              | Units             |
|---|-------------|--------------------|-------------------|
| Tensile Strength (0.8 mil; 23°C)            | D882-02     | 281 (41)           | MPa (ksi)         |
| Young's Modulus (23°C)                      | D882-02     | 7.5 (1088)         | GPa (ksi)         |
| Tensile Elongation at Break (0.8 mil; 23°C) | D882-02     | 7                  | %                 |
| Density                                     | D792-08     | 1.4                | g/cm <sup>3</sup> |
| Surface Resistivity                         | D257-91     | > 10 <sup>12</sup> | Ohm/□             |
| Volume Resistivity                          | D257-91     | > 10 <sup>9</sup>  | Ohm*cm            |

## Optical Properties

|  |                      |      |    |
|--|----------------------|------|----|
| Solar Absorptance (1 mil)                  | E903-96 <sup>1</sup> | 0.16 | -  |
| Solar Transmittance (1 mil)                | E903-96 <sup>1</sup> | 0.72 | -  |
| Solar Reflectance (1 mil)                  | E903-96 <sup>1</sup> | 0.12 | -  |
| Infrared Emissivity (hemispherical, 1 mil) | E408-13              | 0.55 | -  |
| 50% Transmission UV Cutoff (1 mil)         | -                    | 454  | nm |
| Refractive Index (Abbe, 549 nm)            | D542-00              | 1.63 | -  |

<sup>1</sup> Data weighted to air mass zero solar irradiance values in ASTM E490-00a

## Thermal Properties

|                                  |         |   |        |
|----------------------------------|---------|---|--------|
| Linear CTE (1 mil; -125°C—+20°C) | E831-06 | 0 | ppm/°C |
|----------------------------------|---------|---|--------|

## Material Availability

- Novastrat 905® Polyimide is available as a liquid resin or film
- 10—25 micron film thicknesses available. Other thicknesses available upon request
- Custom formulations involving pigments, dyes, or other additive chemistries are available
- Novastrat 905® Polyimide film can be supplied with many different metal and dielectric coatings
- Novastrat 905® Polyimide is a highly customizable material. Contact us with your specific needs today

**Warranty.** The information contained herein is believed to be accurate and reliable. However, the user is responsible for determining the suitability and use of the final formulations/products.

NeXolve warrants that its products will meet specifications, but not merchantability or fitness for use.

### For more information contact:

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