

# CR-424<sup>TM</sup> Monomer Product Bulletin

Last Revised April 20, 2006



## Introduction:

Lenses made from **CR-424** Monomer act as the substrate for manufacturing mid-index Transitions® lenses. With a refractive index of 1.554  $n_D^{20}$  and a density of 1.20g/ml, these lenses are thin and light in addition to being photochromic.

## Health and Safety:

**Always read the CR 424 Monomer MSDS (product ID # 01030) and product label. Follow all instructions when handling this product.**

## Storage and Handling:

To safeguard the quality of **CR-424** Monomer, keep the product stored in its original, unopened container out of direct sunlight. Do not store in colorless glass containers. Do not pad containers or pressurize vessels using nitrogen. Use of nitrogen will cause premature gelling and hazardous polymerization.

Our testing shows that **CR-424** monomer can be stored at less than 24° C (75° F) for at least 8 months.

Use of this product is limited to the manufacture of ophthalmic lenses by technically qualified individuals. Follow directions for preparation of initiated monomer and for the polymerization process.

## Shelf Life:

**CR 424 monomer should be stored at temperatures below 24<sup>0</sup>C and used within 8 months from the date of production at PPG.**

## Processing:

The following is intended as a basic guide to casting acceptable polymer. Fine tuning may be required depending on specific characteristics of a particular casting process.

**Photochromic** - Due to the highly technical post treatment procedures required for making the polymer photochromic, a high level of consistency is required for polymer properties. The acceptability of the polymer surface for the photochromic process will depend on details of the casting procedure, filtering, gasket material, and other factors.

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## Initiator Levels:

In laboratory castings, **CR-424** was mixed with 0.1 phm (parts per 100 monomer) Darocur 1173 (manufactured by Ciba-Geigy).

## Cure Cycle:

### **Ultraviolet Curing:**

The lens molds filled with initiated **CR-424** were passed under a Fusion D lamp at approximately 4 ft/min.

- ◆ UV energy = 4.25 J/cm<sup>2</sup>
- ◆ UV peak = 1.02 W/cm<sup>2</sup>
- ◆ UV average = 304.94 mW/cm<sup>2</sup>

The molds were passed under the lamp 2 to 4 times. After each pass, the mold temperature increased due to the polymerization exotherm. Care was taken to cool the mold to 25-30° C before each subsequent UV pass. Lenses may show surface runaway and striation if the molds are hot before a UV pass.

## Typical Monomer Properties for CR 407:

Density g/ml @25 <sup>0</sup> C	1.11
Viscosity cPs @ 25 <sup>0</sup> C	160
Tranmission %, through 50 mm	78
Refractive Index n <sub>D</sub> <sup>20</sup> at 20 <sup>0</sup> C	1.522
Haze %	Less than 1
Yellowness Index, through 50 mm	Less than 10

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## Typical Polymer Properties for CR 424:

Transmission %	90.97
Yellowness Index, 11.8mm thickness	0.63
Refractive Index $n_D^{20}$ at 20 <sup>0</sup> C	1.554
Abbe Number	38
Density g/ml @ 25 <sup>0</sup> C	12.05
Barcol 935 Hardness, 15sec	13
Bayer Abrasion Resistance, xCR-39	0.75
Polymerization Shrinkage %	8.2
Heat Distortion Temperature, <sup>0</sup> C @ 10mils deflection	51
Total Deflection at 130 <sup>0</sup> C in mils	85

## Samples and Services:

For additional information, please contact a PPG customer service representative at:

- Phone: **1-800-323-2487**
- Fax: **724-325-5042**

or: [send E-Mail](#)

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