



# Laser Crystal Ruby ( $\text{Cr:Al}_2\text{O}_3$ )

$\text{Cr:Al}_2\text{O}_3$  crystal products, also known as Ruby. It is a kind of laser crystal product with excellent comprehensive performance. It is widely used in optics and solid state lasers. The product has the characteristics of high hardness and obvious dichroism. Can be used in optical glass, watch parts, ruby laser products.

## Technical Specifications

| Spot Standard Products |                  |
|------------------------|------------------|
| Size(mm)               | Ø9.525*114.3     |
| Doping Concentration   | 0.03+0.005at% Cr |
| Coating                | AR@694nm         |

| Basic Parameters  |  |
|---|--|
| Chemical Formula  | $\text{Cr}^{3+}:\text{Al}_2\text{O}_3$ |
| Crystal Structure   | Hexagonal                              |
| Lattice Constant (Å)  | a = 4.748; c = 12.957                  |
| Crystal System  | Triangular                             |
| Axial Propertie   | Uniaxial                               |
| Growth method   | CZ                                     |
| Melting Point   | 2040°C                                 |
| Refractive Index  | $n_p = 1.759; n_m = 1.767$             |
| Birefringence   | 0.0082                                 |
| Density ( $\text{g/cm}^3$ )                                       | 3.98                                   |
| Mohs Hardness   | 9                                      |
| Specific Heat Capacity @18°C ( $\text{J kg}^{-1} \text{K}^{-1}$ ) | 761                                    |
| Thermal Conductivity @25°C ( $\text{W cm}^{-1} \text{K}^{-1}$ )   |  |
| Perpendicular to the C axis                                       | 0.35                                   |
| Parallel to the C axis  | 0.33                                   |
| Thermal Expansivity (20 – 100°C)                                  |  |
| Perpendicular to the C axis                                       | $4.78 \times 10^{-6} \text{K}^{-1}$    |
| Parallel to the C axis  | $5.31 \times 10^{-6} \text{K}^{-1}$    |

| Standard  |                      |
|---|----------------------|
| Tuning Range (nm)                                   | 680 – 1100           |
| Pump Range (nm)                                     | 450 – 532            |
| Absorption Coefficient @510 nm ( $\text{cm}^{-1}$ ) | 0.5 – 2.5            |
| FOM   | >200                 |
| Orientation   | 90° to c axis        |
| Geometry  | flat-flat / Brewster |
| Parallelism   | 10"                  |
| Flatness  | 0.2                  |
| Orientation Tolerance                               | < 5°                 |
| Wide-band AR coating (%)                            | < 0.2                |
| Dia (mm)  | (3 – 40) ± 0.1       |
| Length (mm)   | (10 – 140) ± 0.5     |

## Key Features

- ◆ Hardness is high
- ◆ Obvious dichromeity

## Applications

- Solid lasers
- Watch parts
- Optical glass

## Spectra

