

## MATERIAL SPECIFICATIONS

|  |                                   |
|--|-----------------------------------|
| Coefficient of Thermal Expansion:<br>(-75 °C to 200 °C)                  | 5 – 7 ppm/°C                      |
| Equibiaxial Flexure Strength*:<br>(Tested in Ring-On-Ring Configuration) | 68.7 ksi [68,700 psi,<br>480 MPa] |
| Modulus of Elasticity:<br>(Tested per ASTM C1259)                        | 54E+06 psi [372 GPa]              |
| Knoop Hardness:<br>(Tested per ASTM C730)                                | 1500 – 1800                       |
| Absorption:<br>(1.064 μm)  | 80 – 150 ppm/cm                   |

\*Average strength value for testing is in accordance with ASTM C1499. Value is representative of samples prepared via II-VI Optical Systems fabrication process.

## SIZES AVAILABLE

A-plane:  
Up to: 330mm Diameter x 150mm Thickness

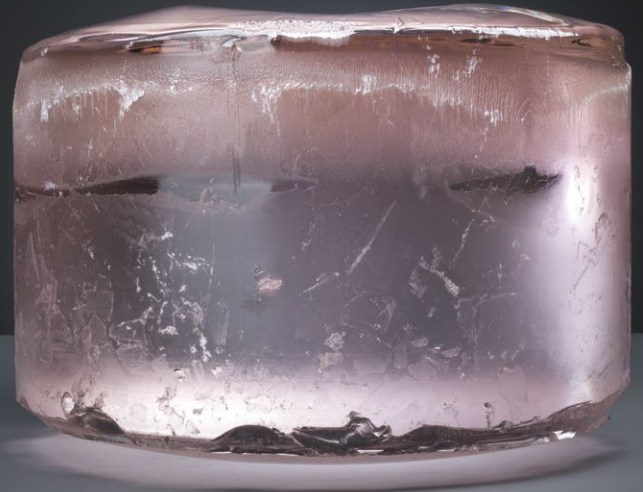
C-plane, R-plane, M-plane:  
Up to: 330mm x 150mm x 10mm  
Thicker blanks possible with smaller cross-section

## Sapphire Boules | HEM

II-VI Optical Systems world-class material experts and growth operation produce A-plane, C-plane, R-plane, M-plane and sapphire boules utilizing a Heat Exchange Method (HEM) that provides extraordinary mechanical strength, high optical transmission and low Transmitted Wavefront Distortion (TWF). These attributes make HEM sapphire a preferred material choice for many dome or windows defense and aerospace applications.

II-VI Optical Systems utilizes a vertically integrated sapphire product line, and has control of growth, window processing, rods, domes, coating and assembly.

II-VI Optical Systems has demonstrated sapphire characteristics consistent with known industry values, and has material experts on staff to answer any technical questions you may have.



|                         |                                    |   |         |   |       |                      |   |         |   |        |
|-------------------------|------------------------------------|---|---------|---|-------|----------------------|---|---------|---|--------|
| TYPICAL MEASURED VALUES | Transmission:<br>(0.22" thickness) | λ | 0.70 μm | T | 86.0% | Index of Refraction: | λ | 0.70 μm | n | 1.7627 |
|                         |                                    |   | 1.06 μm |   | 86.3% |                      |   | 1.06 μm |   | 1.7543 |
|                         |                                    |   | 1.57 μm |   | 86.5% |                      |   | 1.57 μm |   | 1.7455 |
|                         |                                    |   | 3.00 μm |   | 87.8% |                      |   | 3.00 μm |   | 1.7121 |
|                         |                                    |   | 4.00 μm |   | 87.1% |                      |   | 4.00 μm |   | 1.6751 |
|                         |                                    |   | 5.00 μm |   | 57.0% |                      |   | 5.00 μm |   | 1.6240 |

