Zinc Sulfide is the most suitable material for broadband infrared windows, domes and optics. No other material offers this combination of optical properties and environmental resistance. SCHOTT has developed a ceramic process to produce polycrystalline Zinc Sulfide, IRC-1. IRC-1 has significantly improved optical and mechanical performance compared to CVD processed material.

**IRC-1 is the material of choice for mid and long wave IR applications**

**Advantages**
- IRC-1 performs with high transmission between 3–12 µm
- Fine grained and homogenous microstructures
  - Higher Strength and Hardness
  - Lower cost finishing
  - Improved results from deterministic finishing
- Ceramic process allows the production of near net shape dome blanks and curved window blanks
  - Reduces processing time and associated costs
  - Reduces production complexity

**Forms of Supply**
SCHOTT offers various shapes from round to square with ground, standard or fine polished surfaces.
- Flat blanks can be supplied up to Ø 125 mm and from 0.5 to 15 mm thickness
- Dome blanks and curved windows: Up to 100 mm in diameter

**Sample Parts**
For sample parts we would like to offer you the following sample sizes:
- Diameter: 25 mm with a thickness of 2 mm
- Diameter: 50 mm with a thickness of 2 mm

**Applications**
- Thermal Imaging Systems
  - Thermography
  - Predictive Maintenance
  - Automotive Safety Systems
  - Vandal Proof Surveillance and Imaging
  - Force Protection
  - Intrinsically Safe IR Imaging Systems
- Machine Vision systems
  - Process Control
  - Robotic Manufacturing
  - UAV Imaging
Preliminary Data Sheet

**Optical Properties**

<table>
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<th>Wavelength, Microns</th>
<th>Refractive Index @ 20 °C</th>
<th>( \frac{dn}{dT}, 10^{-6}/K )</th>
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<td>14</td>
<td>2.130</td>
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</tr>
</tbody>
</table>

**Thermal Properties**

- **Thermal Conductivity @ 20 °C, W/m/K**: 16.70
- **Specific Heat, J/g/K**: 0.47
- **Thermal Expansion (-40 °C to 70 °C) \( x 10^{-6}, K^{-1} \)**: 5.90

**Mechanical Properties**

- **Rupture Modulus MPa**: 120
- **Young’s Modulus GPa**: 74
- **Poisson’s Ratio**: 0.27
- **Hardness (Knoop) kg/mm²**: 270 – 310
- **Density g/cc**: 4.08

**Transmission (typical curves)**

Transmission (%) – normalized to 6.3 mm