

DEFENCE OPTICS

LEADING DEFENCE COMPONENTS MANUFACTURER



ADVANCED
Technologies

Thin Film Equipment | Precision Optics

NIGHT VISION OPTICS



Product Features

- **Substrate:** Silicon, Germanium, Zinc Sulphide, Zinc Selenide, Sapphire and Chalcogenide Glass
- **Dimension:** Diameter up to 230mm
- **Durability:**
 - ARC: MIL-C-48497, MIL-C-675
 - DLC: MIL-C-48497A, TS-1888 (Windshield Wiper)
- Custom coating designs are available upon request

Applications

- Thermal imaging • Pyrometers

CHALCOGENIDE OPTICS



Product Features

- **Substrate:** GASIR5, IRG26
- **Dimension:** Diameter up to 250 mm
- **Durability:** MIL-C-48497
(Additional tests: Water solubility)

Applications

- Thermal imaging
(defense, surveillance, medical diagnostics)
- Periscopes in battle tanks for defense
- Infrared communication fibers
- Aerospace and remote sensing optics

PERISCOPES ASSEMBLIES



Product Features

- **Substrate:** Glass or PMMA
- **Height:** 232 to 320mm
- **Periscope line of sight (mm):** 162 to 225
- Periscopes models can be fitted with high quality optical glass with >50% integrated transmission
- The entire assembly is bullet-proof and chemically inert

Applications

- Stealth Operation – Enables surveillance while remaining concealed.
- Long-Distance Viewing – Helps in viewing distant objects clearly.

PERISCOPE PRISMS



Product Features

- **Substrate:** Glass and PMMA
- **Dimension:** Lengths up to 300 mm
- **Durability:** Temperatures: -40 °C to +60 °C, Relative humidity of 95%
- Custom prisms can be designed and produced upon request
- Periscopicity: 225 Max
- Total field of view, Horizontal up to 110° and Vertical up to: 30°

Applications

- Periscopes in submarines for defense
- Periscopes in battle tanks for defense

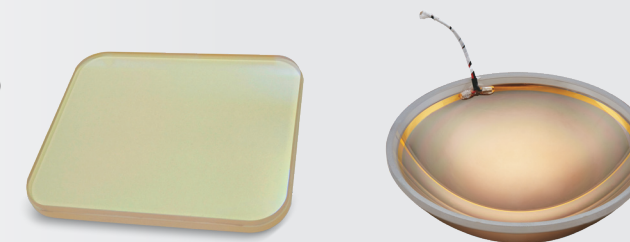
Product Features

- **Substrate:** Zinc Sulphide
- **Dimension:** Diameter up to 230 mm
- **Durability:** MIL-C-675, TS-1888 (Wiper test 40 gm Load)
Custom profiles can be generated upon request

Applications

- Seeker missiles for defense
- Front window in thermal imaging system

ZNS WINDOW AND DOMES



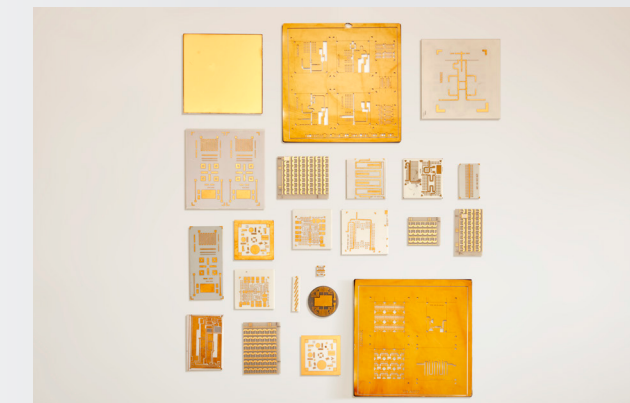
Product Features

- **Substrate:** Alumina, Zirconia, Aluminium Nitride
- **Dimension:** Up to 2 by 2 inches
- **Durability:** Qualified for Space applications
- **Additional:** Custom patterns and metallization schemes

Applications:

- RF/Microwave integrated circuits
- Hybrid Micro Circuits • SAW devices, RADAR
- Thin film resistors • Reticles

HYBRID MICRO CIRCUITS (HMC)



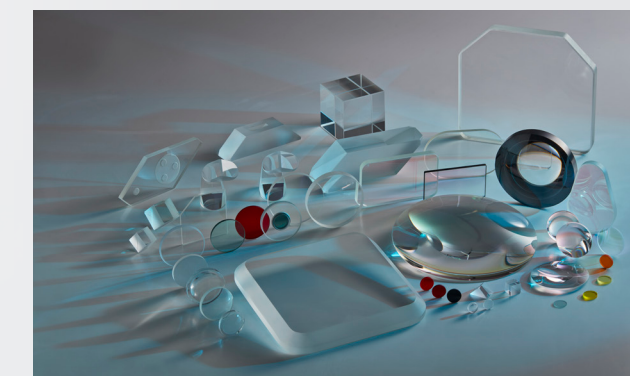
Product Features

- **Substrate:** BK7, Corning Fused Silica 7980, JGS1, JGS2
- **Dimension:** Up to 125 mm with tolerances of +0.0-0.01mm
- **Flatness:** Up to $\lambda/4$ at 632.8 nm

Applications

- Periscopes • Spectroscopy
- Telecommunications • Medical Instrumentation
- Display Systems • Precision Alignment

PRECISION OPTICS



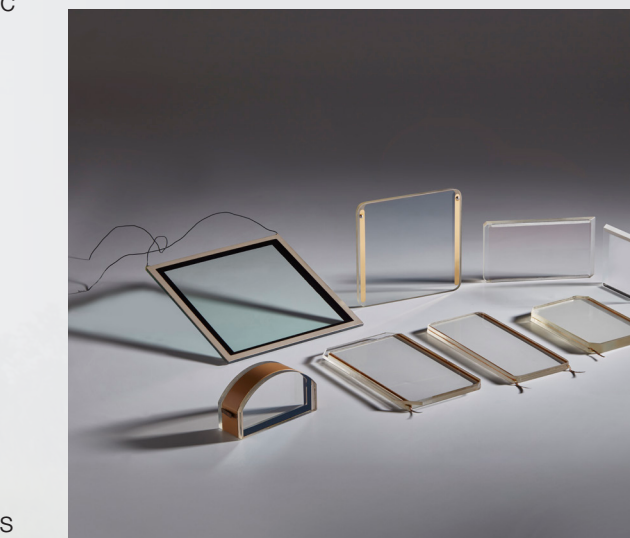
Product Features

- **Substrate:** BK7, Borofloat, Polycarbonate, Acrylic
- **Dimension:** Lengths up to 300 mm
- **Durability:**
 - Autoclaved heaters: -40 °C to +60 °C, Relative humidity of 95%
 - ITO Coatings on glass and plastic: MIL-STD-810F
- Shapes, profiles and resistance can tailored to customer requirements

Applications

- Defogging windows • Electronic devices
- LCD panels • Cockpit displays
- Automobile windshields and headlights
- Slides for microscopes • Camera security systems

TRANSPARENT HEATERS





ADVANCED
Technologies



HHV Advanced Technologies is India's lead thin film technology and optics company. We have multiple manufacturing facilities in Bengaluru, India. Our capability consists of a precision Optics Fabrication Lab, equipped with state-of-the-art technology for slitting, trepanning, curve generation, grinding, polishing, centering, and edging for high precision flat and spherical optics for visible and infrared light ranges. HHVAT has Single Point Diamond Turning (SPDT) ultra-precision machines to fabricate crystalline infrared materials like Silicon and Germanium. Our SPDT systems are used to manufacture spherical and aspherical optical components.



These manufacturing facilities are equipped with ISO 7, ISO 8 clean rooms to manufacture and coat high precision optical components. We produce over 100,000 optical components every year for domestic and international markets. With sales offices in the United Kingdom and global distributor presence HHVAT exports its products to the USA, UK, Germany, Italy, Turkey, Switzerland, South Korea, Singapore and China.



HHVAT's Thin Films production facility has over twenty-five systems with accessories and processes that are clean room compliant. We can handle substrate sizes of up to 600 mm for thermal evaporation and 1000 mm for sputtering deposition processes. We can build and design thin film equipment for a variety of coating purposes which adds to our capabilities and expertise.

HHVAT maintains close collaborative links with premier research institutions such as the Indian Institute of Science, the Indian Institutes of Technology, National University of Singapore, Northwestern University and the University of Oxford. We are an ISO 9001:2015, ISO 14001:2015 and ISO 45001 2018 certified company. We were awarded a 'Certification of Qualification' by the Indian Space Application Center, ISRO for its Thin Film Metalized substrates, and also received the prestigious National R&D award for the same.

CONTACT US

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