

Silicon

Sputtering Targets



Advanced Engineering Materials



Applications

- Alternating silicon layers in poly-silicon solar cells
 - p-n junction
- Optical coatings
 - Filters
 - Bandpass, dichroic, beamsplitter, etc. - Commercial, defense, aerospace, etc.
 - Optical data storage
- Reactively sputtered layers
 - Silicon dioxide (SiO_2), Silicon monoxide (SiO), Silicon nitride (Si_3N_4)
 - Anti-reflective SiN_xO_y

Features

- Low pricing
- Large diameter monocrystalline (single piece)
- Standard and custom resistivity ranges
- High purity
- High volume capacity

Manufacturing Process

- Czochralski (CZ) method for single crystal monocrystalline
- Bridgeman Furnace melting for polycrystalline
- Ingot testing
 - Resistivity measurements taken at numerous ingot locations
 - GDMS performed for chemical analysis
- Wire saw cutting and CNC grinding to final dimensions
- Inspection, Cleaning and Final Packaging
 - Targets inspected to ensure correct dimensions
 - Cleaned for use in vacuum
 - Protects from environmental contaminants and shipment

Options

- Monocrystalline or polycrystalline
- P or N type
- Standard low, medium, and high resistivity ranges available
- Up to 16" diameter for monocrystalline
- Virtually any linear target configuration
- In-house indium bonding service

Specifications

Typical Analysis - 99.999%+ (5N+) Purity

Metallic Impurities, ppm by weight

| Mg | Al | K | Ca | Ti | Au | Mn | Fe | Ni | Cu | Zn |
|--------|--------|--------|-------|--------|-------|--------|--------|--------|--------|--------|
| <0.001 | <0.005 | <0.005 | <0.01 | <0.001 | <0.01 | <0.001 | <0.005 | <0.005 | <0.002 | <0.005 |

| | |
|------------------------------|--|
| Doping | P-type Boron, N-type Phosphorus |
| Theoretical Density | 2.33 g/cm ³ |
| Relative Density | >99% |
| Grain Size (polycrystalline) | 1-15 mm |
| Electrical Resistivity | P-type (0.005-0.020 Ω-cm), N-type (<0.1 Ω-cm), Undoped (>1 Ω-cm) |
| Thermal Conductivity (20°C) | 150 W/m·K |
| Thermal Expansion (0°C) | 2.6 x 10 ⁻⁶ /K |
| Melting Point | 1410°C |
| Appearance | Dark Gray |

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