

# Germanium Single Crystal

**Formula:** Ge

**Percentage Purity:** 99.999%

**Length 1:** 10mm

**Length 2:** 10mm

**Electrical Type:** N-Type

**Orientation:** -111

**Thickness:** 0.5mm

**CAS Number:** 7440-56-4

**UOM Code:** 096-298-59

**SKU:** 1000013659-group

**Product Code:** GE00-SH-000153

## Material Properties for Metals

### Atomic Properties

Element	Value
Atomic number	32
Crystal structure	Diamond
Electronic structure	Ar 3d <sup>10</sup> 4s <sup>2</sup> 4p <sup>2</sup>
Valences shown	2,4
Atomic weight( amu )	72.59
Thermal neutron absorption cross-section( Barns )	2.3
Photo-electric work function( eV )	4.8
Natural isotope distribution( Mass No./% )	72/ 27.4
Natural isotope distribution( Mass No./% )	73/ 7.8
Natural isotope distribution( Mass No./% )	76/ 7.8
Natural isotope distribution( Mass No./% )	70/ 20.5
Natural isotope distribution( Mass No./% )	74/ 36.5
Atomic radius - Goldschmidt( nm )	0.139
Ionisation potential( No./eV )	4/ 45.7
Ionisation potential( No./eV )	3/ 34.22
Ionisation potential( No./eV )	1/ 7.90
Ionisation potential( No./eV )	5/ 93.5
Ionisation potential( No./eV )	2/ 15.93

## Mechanical Properties

Element	Value
Hardness - Mohs	6.25
Material condition	Polycrystalline
Poisson's ratio	0.32
Bulk modulus( GPa )	73.9
Tensile modulus( GPa )	79.9

## Electrical Properties

Element	Value
Electrical resistivity( $\mu\text{Ohmcm}$ )	$46 \times 10^{-8} @ 22^\circ\text{C}$
Thermal emf against Pt (cold 0C - hot 100C)( mV )	33.9

## Physical Properties

Element	Value
Boiling point( C )	2830
Density( $\text{gcm}^{-3}$ )	$5.32 @ 20^\circ\text{C}$

## Thermal Properties

Element	Value
Melting point( C )	937.4
Latent heat of evaporation( $\text{J g}^{-1}$ )	4516
Latent heat of fusion( $\text{J g}^{-1}$ )	465
Specific heat( $\text{J K}^{-1} \text{kg}^{-1}$ )	$322 @ 25^\circ\text{C}$
Thermal conductivity( $\text{W m}^{-1} \text{K}^{-1}$ )	$60.2 @ 0-100^\circ\text{C}$
Coefficient of thermal expansion( $\times 10^{-6} \text{K}^{-1}$ )	$5.75 @ 0-100^\circ\text{C}$