

### Some Properties of Natural Diamond

Knoop Hardness 5500-6950

Atomic Weight 12

Note, however, that researchers at General Electric have produced diamond of pure 12 composition and of 13 composition. It is claimed that the pure carbon 12 diamond has much greater thermal transfer properties than the natural isotropic composition

Continuing with the properties of natural diamond the following properties are of interest. Most measurements on diamond were carried out on natural diamond many years before the advent of manufactured diamonds.

Specific gravity 3.4-3.52

Thermal conductivity 0.35 g. cal./cm. sec. deg.

Thermal resistance 0.69 cm. deg./W

Thermal expansion  $1.45 \times 10^{-6}$  for 28 to 105 degrees C.

Relative hardness values:

dodecahedron parallel to axis	10.0
cube parallel to axis	8.5
octahedron towards dodecahedron	3.9
octahedron towards cube	2.1
dodecahedron 90 degrees to axis	1.8
cube 45 degrees to axis	1.1

Burning/decomposition point in air 650° C

Decomposition (reversion to graphite at atmospheric pressure) in argon plus 2% hydrogen at approximately 1,000° C

Refractive isotropic index 2.42, the highest value of all gemstones.