

# DIAMOND-LIKE CARBON

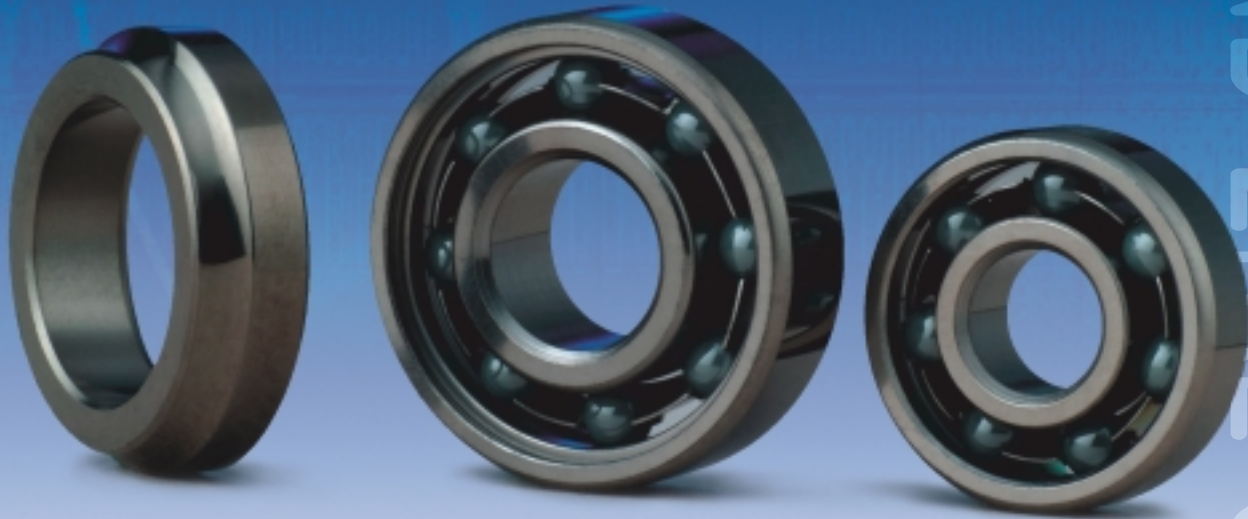
## Applications

Semiconductor Processing

Medical Handpieces

Flow Meters

Aircraft Instruments



## A proven technology to enhance bearing performance

NHBB continues to enhance miniature & instrument bearing performance with a new proven technology consisting of a Diamond-Like Carbon (DLC) coating. Diamond-Like Carbon (DLC), or amorphous diamond, is a major breakthrough in the surface treatment of load-bearing components. The carbon atoms in DLC are similar to those found in diamond, but without the rigid atomic arrangement. Carbon in this special form is hard, dense and slippery, and when applied to an ultra-precision bearing (through a proprietary process), provides increased wear resistance and a reduced coefficient of friction.

DLC has not only been proven to be impervious to repeated autoclaving, but is also non-corrosive (substrate will not rust) and is inert to acids, alkalis, solvents, salt, water, etc. This coating can extend bearing life in severe applications, therefore improving total operational performance.

### Mechanical Properties

*Thickness: DLC coating 40 to 120 micro-inch*

*Hardness: 1000 to 2000 kg/mm<sup>2</sup>*

*(Room temperature hardness Rc 78+)*

*Friction coefficient: 0.05 to 0.15*

*Color: Black*

*Processing temperature: 300° F*

*Working temperature: Limits based on bearing material*

The combination of DLC coated rings with ceramic (silicon nitride) balls, assures that the bearing can withstand harsh sterilizing environments, aggressive chemicals, in addition to having electrical resistance and biocompatibility. DLC has been widely used in the medical industry for non-bearing applications, such as surgical tools (forceps) and drills for dental implants. NHBB ultra-precision bearings with the DLC coating have been used for medical drills, flow meters and satellite applications.

*Bearings shown reflect DLC coated rings with ceramic (silicon nitride) balls*



24-hour Salt Spray Test (Pat Chem Laboratories, Chrome Bearing and DLC Coated Chrome Bearing)



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