



Advanced Hard Coatings

# Nitron DLC



**Nitron DLC (Diamolith) is a pure diamond-like carbon coating deposited by Plasma Enhanced Chemical Vapour Deposition (PECVD).**

Nitron DLC is deposited using a vacuum based process where precursor gases are introduced into the process chamber and broken down within the ionized plasma into various species of carbon, hydrogen and other dopants which are subsequently condensed as a solid entity onto the substrate surface.

The coating has a number of unique properties that can be imparted on the substrate to improve performance. DLC coatings are a family of coatings made up primarily of carbon chains in an amorphous structure with  $sp^2$  (triagonal graphite form) and  $sp^3$  tetrahedral DLC (diamond form) bondings.

Nitron DLC is widely used in highly loaded automotive applications such as cam followers, buckets and piston pins.

Nitron DLC is also used as a lubricating, hard wearing coating in all types of sliding applications.

Nitron DLC will reduce wear during the component break-in period and will provide outstanding lubricity to minimise potential wear developing which can result in the virtual elimination of the wear mechanism.

## Nitron DLC Guideline Characteristics

Hardness	2000 – 3000 VPN
Colour	Dark grey / black
Oxidation temperature	400°C
Coefficient of friction	0.4 – 0.8 $\mu$
Deposition temperature	180 to 350°C
Thickness	1 – 4 $\mu$ m



## FDA Compliance

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Wallwork Nitron DLC coating is non-reactive, non-absorbent, non-additive. It has a high resistance to abrasion, there is little or no likelihood that components of these materials would migrate in significant amounts. Therefore, these coatings satisfy the FDA regulatory guidelines.

### Nitron DLC is used on prosthesis components. See below benefits

#### Biocompatibility

Non toxic, non cyto-toxic, non-gentotoxic and non carcinotoxic.

#### Adhesion to Substrate

Lc1,10N / Lc2,25N / Lc3,60N  
Measured in scratch test.

#### Coefficient of Friction

0.04 - 0.08  $\mu\text{m}$  Dependent on surface finish.  
Test: 25N load non lubricated.



Medical implant coated with Nitron DLC

## Process Specification Development

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Wallwork Nitron DLC can be completed to pre-defined standard processing using Wallwork Process Specification PS327 with process acceptance criteria of coating thickness and adhesion per run.

Part specific Process Specifications to capture all unique cleaning, processing or testing requirements can be created and validated as required; contact Wallwork Cambridge for further details.

## REACH

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Nitron DLC is compliant to REACH regulations and is a very good replacement for components currently being hard chrome plated.