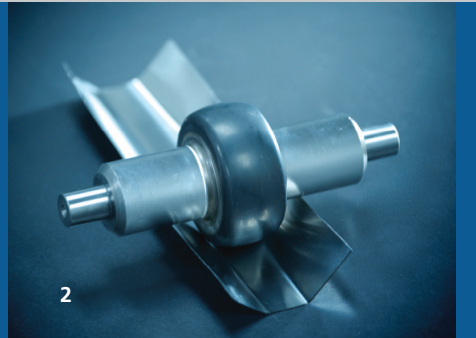
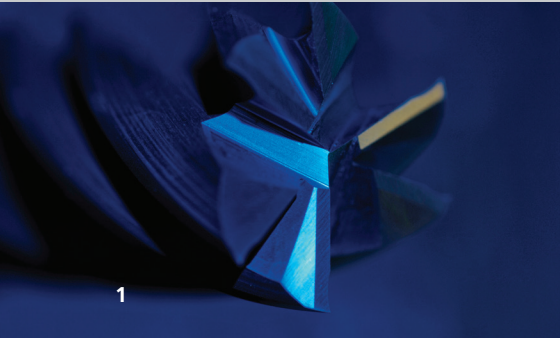


FRAUNHOFER USA CENTER FOR COATINGS AND DIAMOND TECHNOLOGIES



1. Diamor® coated end mill
2. Diamor® coated aluminum forming tool
3. Hip implant with Diamor® coated femoral head

DIAMOR®

Fraunhofer USA Center for Coatings and Diamond Technologies (CCD)

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Overview

Diamor® is a superhard, amorphous carbon film, which is deposited using laser controlled pulsed arc process.

This coating is the hardest and most wear resistant type among diamond-like carbon materials. Diamor® is purely composed of carbon atoms of which a large fraction forms tetrahedrally oriented diamond sp³ bonds. The coating is smooth, hard and dense. Its properties can be engineered to meet the demands of specific applications. For example, in addition to hardness and wear resistance, properties such as hydrophobicity or transparency can be achieved by doping the films.

Diamor® proves beneficial to numerous industrial applications where low friction, wear resistance and corrosion protection are essential.

Diamor® is deposited at room temperature, allowing heat sensitive materials such as plastics, polymers and alloys to be coated.

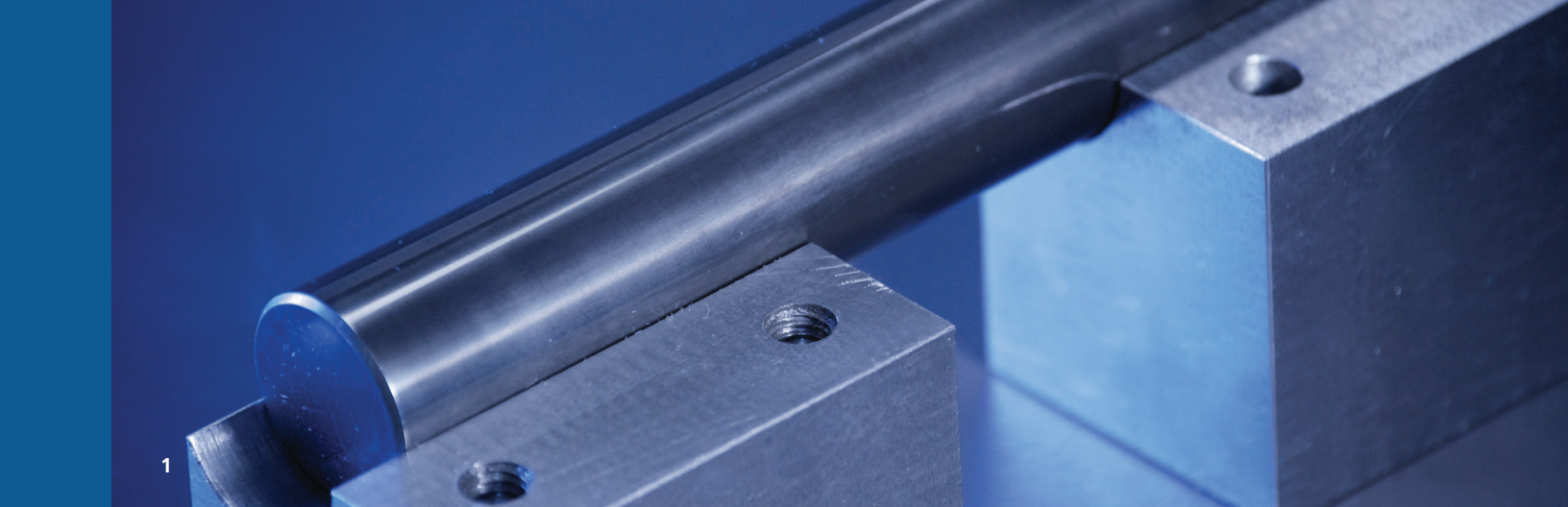
Diamor® is inert and biocompatible and therefore suitable for applications requiring environmentally safe surfaces such as food, beverage, pharmaceutical, medical etc.

Features

- High stiffness
- Extreme wear resistance
- Low residual stress
- Superb adhesion to the substrate
- Low chemical wear due to inertness of carbon material
- Low coefficient of friction
- Need for lubricants and coolants is greatly reduced or even eliminated
- Low temperature deposition
- Biocompatible

IN COOPERATION WITH

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Application

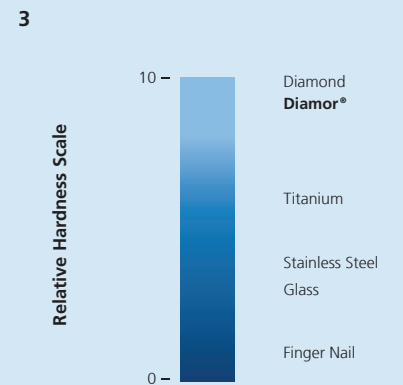
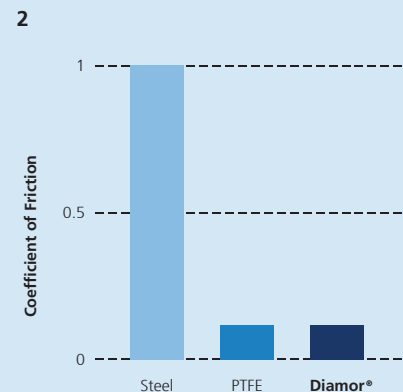
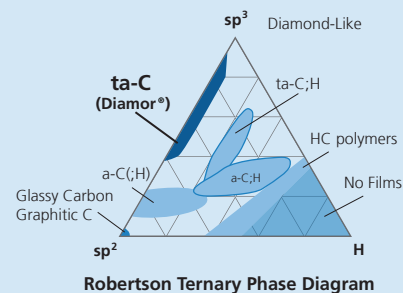
- Thanks to its properties of wear resistance and biocompatibility, Diamor® can enhance the performance and lifetime of biomedical products such as implantable devices and surgical instruments
- Increases life of machine components due to improved sliding behavior, wear and corrosion resistance of highly stressed surfaces of machine parts. This includes those made of a variety of materials such as steel, ceramic, plastics, aluminum alloys etc.
- Environmentally friendly packaging material, which does not react with food or beverage products
- Application of Diamor® allows the use of lightweight materials such as plastics and aluminum for automotive purposes.
- Reduces friction and wear of powertrain parts enabling greater fuel mileage and longer engine life
- Ensures a protective, scratch resistant coating for data storage yet measures only a few nanometers

How to Acquire Diamor

Diamor® is available to those who wish to have existing objects coated by Fraunhofer CCD to your specification.

The Laser-Arc® technology is conveniently available as a modular system. The technology can be retrofitted to an existing coating machine. The Laser-Arc® module is scalable in length to accommodate common chamber sizes enabling Diamor® deposition without investing in a completely new system.

It is possible to purchase the Laser-Arc® Module to integrate it into a conventional coating system from Fraunhofer CCD in the U.S. We will work with you to develop and implement the system and to optimize your coatings if required.



1. Diamor® coated shaft
2. Ternary Phase Diagram of bonding in amorphous carbons
3. Comparison of coefficient of friction
4. Hardness comparison of different materials