

# neoDiam®-Transparent

## Features and descriptions

## HFCVD diamond coatings on transparent substrates

*neoDiam® diamond coatings on transparent substrates find their applications various different domains*

Transparent substrates such as quartz or sapphire are very useful for a wide range of applications and for some specific and demanding ones, a high-quality CVD diamond layer is a very efficient solution to increase surface properties of such materials.

Due to their oxide nature and thermal expansion coefficients, diamond deposition is highly challenging on such materials. However thanks to its exclusive know-how NeoCoat is able to deposit well adherent neoDiam® CVD diamond coating on both quartz and sapphire.

### neoDiam® coatings on oxide-based transparent substrates

Thanks to a proprietary nanoseeding together with a dedicated Hot Filament CVD process and its extensive know-how in interface engineering, NeoCoat has developed a specific solution to grow its neoDiam® coatings on transparent substrates such as quartz and sapphire.

NeoCoat is able to deposit a homogeneous coating on various substrate shapes such as large plates, 3D shapes or tubes.

In NeoCoat's facility high quality thin diamond coatings are deposited on large-scale HFCVD reactors and to ensure customer's satisfaction with the highest quality diamond coatings, NeoCoat has implemented a strong Quality Assurance policy.

### neoDiam® coating data

|                          |   |
|--------------------------|---|
| Hardness                 | up to 10'000 HV                                 |
| Thickness                | from 100nm to 1µm                               |
| Microstructure           | Microcrystalline (MCD) or nanocrystalline (NCD) |
| Doping                   | From 10ppm to 10'000ppm boron                   |
| Light transmission range | 0.2µm - 100µm                                   |
| Transparency             | > 60% in UV-VIS range                           |

### Substrate data

Typical data of transparent substrates coated with neoDiam®

|                    |   |
|--------------------|---|
| Material           | Fused silica (quartz), sapphire                                   |
| Geometry           | 2D (plate or disk) / 3D (cylinder, dome, pyramid...)              |
| Dimensions         | Depends on customer requests (i.e. up to 400x400mm or 1100x100mm) |
| Height / thickness | Maximum 60mm  |

### neoDiam® potential applications

- Abrasion resistance coating
- Neutron guides (M=1)
- Antifouling coating in water media
- Decorative coating for luxury and watch industries

