

BALDIA Diamond Coatings

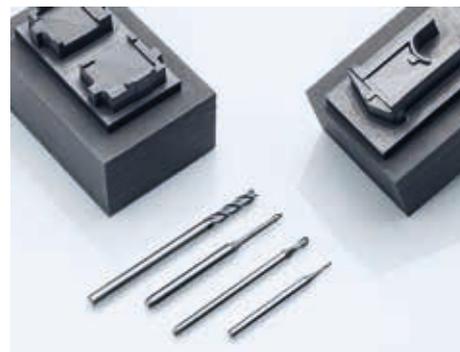
Highest wear resistance when
machining special materials



Advanced materials, advanced demands – our CVD diamond coatings make the difference

The growing use of advanced materials in industries such as aerospace, mobility, and medical technology is driving the need for higher cutting tool performance and reliability. CVD diamond coatings deliver exceptional hardness and wear resistance, making them the solution of choice for machining demanding materials – including lightweight

composites, stacked structures, high-silicon aluminum and compacted or sintered powders such as graphite or zirconia. Our BALDIA® portfolio offers diamond coatings designed to meet the challenges of these applications, enabling longer tool life, enhanced surface quality, and greater cost-effectiveness in production.



Composites

BALDIA® diamond coatings ensure tight tolerances and high efficiency when machining lightweight materials

Ceramics

BALDIA® diamond coatings protect tools and improve surface quality in dental machining

Graphite

BALDIA® diamond coatings enable high-precision manufacturing for mold and die applications

More than just a coating – trust in our diamond expertise



Coating technology for specific applications

Whether you have high volumes, demanding applications or extremely tight tolerance requirements, we offer the right plasma or hot filament-based coating solution to meet your needs.



Optimized pre-treatment for your carbide

Coating performance begins with the substrate. Our experts select and validate pre-treatments for specific applications to ensure reliable adhesion and optimum cutting performance across a wide range of carbide grades.



The right coating thickness – 4 to 15 μm

Coating thickness plays a critical role in tool performance. We work alongside you to define the optimum range, balancing wear resistance with the required cutting edge geometry.

Benefit from our portfolio of diamond coatings – the right solution for your machining challenge

BALDIA VARIA

Advanced diamond coating for a wide range of applications

- Nanocrystalline structure, can be applied to a wide range of tool sizes and types
- Extends tool service life in both roughing and finishing applications
- Progressive wear indicator for easier monitoring and maximized tool utilization

BALDIA COMPOSITE

Machining aerospace composites and stacks with top finish quality

- Nanocrystalline coating structure
- Allows perfect hole quality, especially for aerospace drilling applications with stringent part quality and reliability demands
- Ideal for high-precision graphite molds
- **The Diameter Controlled (DC) option:** for even more precise tool tolerances

BALDIA COMPACT

Tailored for tough-to-machine compacted materials

- Tough microcrystalline structure – making it ideal for roughing applications
- Preferred solution for micro tools in dental and graphite applications
- Helps increase process reliability and surface quality



BALDIA coating properties

Diamond – the hardest material known on earth

Coating material	carbon-based
Coating temperature [°C]	< 900
Max. service temperature [°C]	600
Coating hardness H_{IT} [GPa]	80 – 100
Available coating thicknesses [μm]*	4 – 15*
Coating color	dark gray

*Additional coating thicknesses on request

Benefit from our competence centers for diamond coatings around the world. Contact us now and get the perfect BALDIA coating!

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Find out more about our
BALDIA diamond coating portfolio:
www.oerlikon.com/balzers/baldia