COATING TECHNOLOGY FOR TOOLING

ARGOR-ALJBA

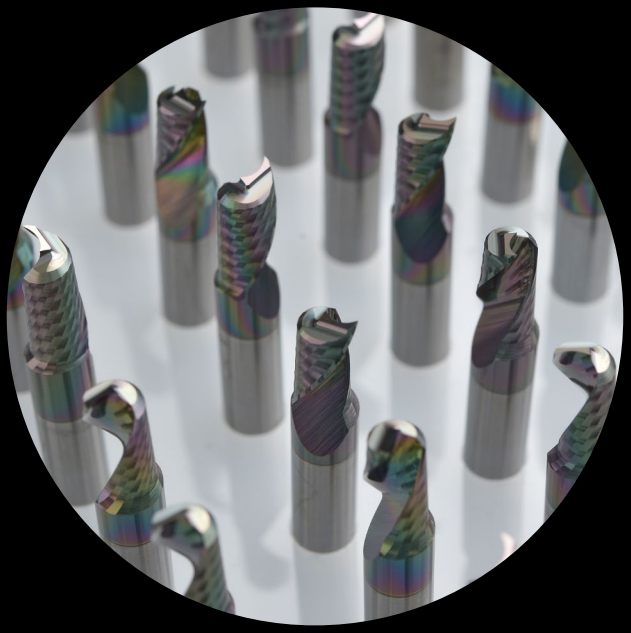
DLC & Superior coatings

BENEFITS OF DLC COATINGS

Discover the technical advantages of DLC coatings

Dialong® and Dropless® are the optimal solutions for the increased performance of tools and forms for many diverse applications.

The world of DLC coatings is vast and growing. Listing the fields of application risks being a limitation, since the intrinsic characteristics of reducing the coefficient of friction, resistance to abrasion and increasing hardness make it attractive for increasing the functional performance of several components and reducing energy consumption. DLC coatings offer a unique combination of high hardness and low coefficient of friction.



Machining (drilling, milling, turning, cutting, reaming, tapping, grooving, threading, hobbing)

- Higher cutting speed and inferior cutting forces thanks to extreme hardness and lower friction.
- Higher durability thanks to strong protection against wear: clear reduction of costs and increase of the installlation availability.
- Machining with less friction: reduction up to elimination of coolants and cooling solutions and therefore less production costs and environmental pollution.
- Etremely thin layers: the form stability and tool precision is conserved, no edge or blade rounding off.
- The low temperatures of the patented coating process (under 100°C) grant constant material properties of the tool.

Dropless®

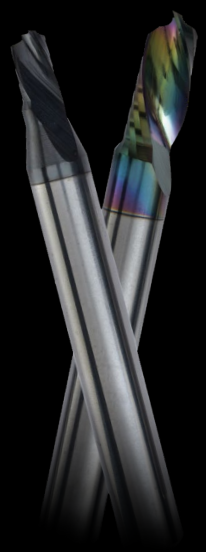
The high performance innovative coating for micro tooling

Dropless® coatings represent the benchmark in the range of ta-C DLC coatings.
Argor-Aljba, with its patented Dropless® proprietary technology, offers its customers state-of-the-art ta-C DLC coatings that guarantee extreme hardness, compactness of the deposited film and absence of surface droplets.
It is the market leader for ta-C DLC coatings for micro-tools. Dropless® is the ta-C DLC coating deposited using Argor-Aljba's patented Dropless® technology at a temperature of less than 100°C with a standard thickness of 0.5 µm.
The Dropless® coating has a very high sp3 percentage (typical of natural diamond) of about 85% and a hardness of about 68 GPa (7000 HV).

The Dropless® technology is the latest and pioneering development for the tooling market. The DLC layer layer produced with the new Dropless® technology brings the following performance improvements:

- Even higher diamond content in the DLC (sp3>80%)
- Hardness up to 7000 HV
- A reduction of the droplets and thus an improvement in the surface roughness values
- An extremely dense layer and it provides a better protection against corrosion of the base material.

Dropless® technology can be applied to a wide range of materials and the thickness can be customised according to the field of application.



Treatment performed on AISI 316	Before DLC		After DLC		Variation	
	Values [µm]		Values [µm]			
	Ra	Rz	Ra	Rz	DRa	DRz
Dialong®	0.035	0.473	0.040	0.736	0.005	0.263
Dropless 7000®	0.032	0.407	0.035	0.489	0.003	0.082

Dialong®

The coating solution to increase productivity, flexibility and to reduce production costs

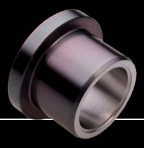
Dialong® is the ta-C DLC coating deposited at a temperature below 100°C with a standard thickness of 1 µm (customised thicknesses are available on request). The Dialong® coating has a sp3 percentage (typical of natural diamond) of about 75% and a hardness of about 52 GPa (5300 HV).

Advantages of Dialong® coating:

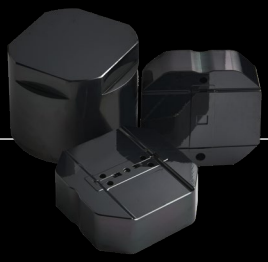
- **High hardness:** protection against abrasive wear, longer tool life, lower production costs.
- **High thermal stability** up to 500 °C: possibility of MQL and dry finishes.
- **Protection against adhesive wear**: longer tool life and better quality of the machined component.
- **Very low coefficient of friction**
- The low temperatures of the patented coating process (below 100° C) do **not modify the material properties**
- **Extremely thin layers:** the form stability and tool precision is preserved, no edge or blade rounding
- Dialong® has proven **effective on cutting tools** for turning, milling, drilling, countersinking, reaming operations of non-ferrous materials such as:
  - aluminium alloys up to 13% Si
  - brass, copper, bronze, silver, gold, platinum
  - some types of titanium
  - graphite, FR4 PCBs and composite materials
  - wood, plastics, epoxy resins

WIDE RANGE OF TECHNICAL APPLICATION

1. Mechanical and wear parts

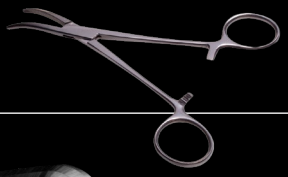


2. Forming & moulding

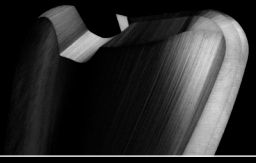


3. Inserts

4. Medical



5. Wood machining



6. Transmission components

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