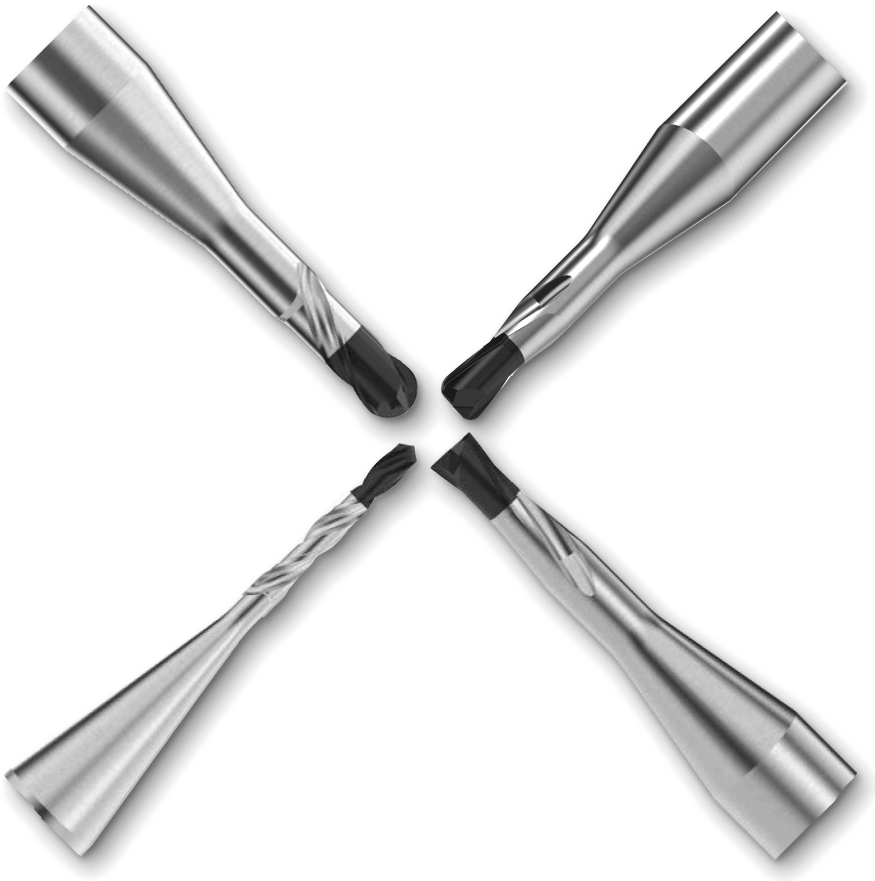
MICTU



DIAFORCE

DIAMOND HARDNESS. SUPERIOR LIFE.

PCD helical end mills and drills

For four decades, we have known exactly what you want.

Founded by Antonello Collavo in 1986 in Quero (BL), Mictu took its first steps serving the many eyewear manufacturers in the surrounding area.

Over the years, Mictu has expanded its expertise with new products and technologies, complementing its eyewear applications (which still account for a significant share of turnover) other promising markets, from the biomedical sector to high-precision micromechanics.

Today, Mictu can count on a team of 20 skilled people working in our modern 1,400 m^2 plant in Setteville (BL).

In 2024 a new chapter began: Mictu is now part of the Kintek Group, the Italian leader in toolholder manufacturing, owned by the investment fund Aksia.

In 2026 Mictu celebrates 40 years in business: four decades devoted to precision micro-tools.



Our technologies

All stages of the production process are carried out in-house.

20 CNC machines and a **metrology room** ensure great flexibility and the ability to meet every customer's needs.





Pioneers in micro-tool technology



In 2025, Mictu installed the **first laser sharpening machine in Italy with a femtosecond source** (10^{-15} seconds!).

This technology delivers **precision and surface finishes unattainable by any other manufacturing process** (grinding included) and is **ideal for producing micro-tools, with diameters from 0.05 mm.**

Machining precision is further enhanced by the ability to produce finished tools in a single clamping and by the virtually zero heat transferred to the workpiece.

Machinable materials: **carbide, PCD, P-CBN, CVD, ceramics, sapphire, glass.**

Tools
special and standard

When standard solutions are not enough, **we develop special tools for high-performance requirements** in specific machining operations.

Diamond



Precision Engineering



Medical Industry



Optics



Customer service

The experience gained over 40 years with tools and their application in the eyewear industry is available to our customers:

- Our technical department can design special tools, starting from a drawing or from general information on the application
- We are always available to support our customers at their production sites, sharing critical issues and potential solutions with operators
- We are happy to organise specific training sessions at our plant for our customers' staff, to deepen their understanding of the tools and improve their production process.

CONSULTING

DESIGN

MANUFACTURING

QUALITY CONTROL

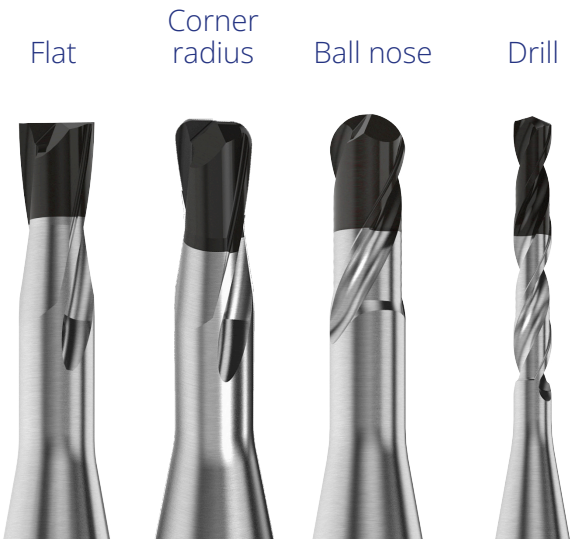
PCD helical end mills and drills

machined from solid with latest-generation laser technology

DIAFORCE range

- Diameters: from 0.1 mm to 3.0 mm
- Head geometries: flat, corner radius, ball nose
- PCD helical drills

DIAFORCE
DIAMOND HARDNESS. SUPERIOR LIFE.



Machinable materials

- Aluminium
- Bronze
- Brass
- Copper
- Gold
- Silver
- Composites
- Plastics

Why DIAFORCE

In micro-cutting of non-ferrous and precious materials, the limits of carbide are reached quickly: wear, stability, finish.

DIAFORCE was created to overcome them with **PCD** and **purpose-designed helical geometries**. **Machined from solid with latest-generation lasers, our PCD helical end mills and drills** combine hardness, dimensional consistency and superior surface quality.

We have optimised profiles, angles and cutting edges for diameters **from 0.1 to 3.0 mm**, maintaining the tight tolerances typical of the watchmaking and medical sectors.

Every batch is inspected on dedicated metrology instruments to ensure **longer tool life and lower surface roughness** on aluminium, brass, copper, bronze, gold, silver, plastics and composites.

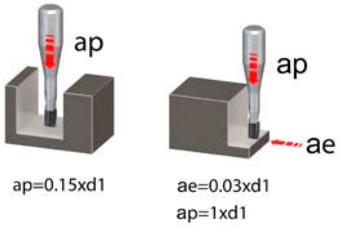
It is the result of close teamwork between design, production and quality control: advanced technologies, yes, but above all people who take care of every detail.

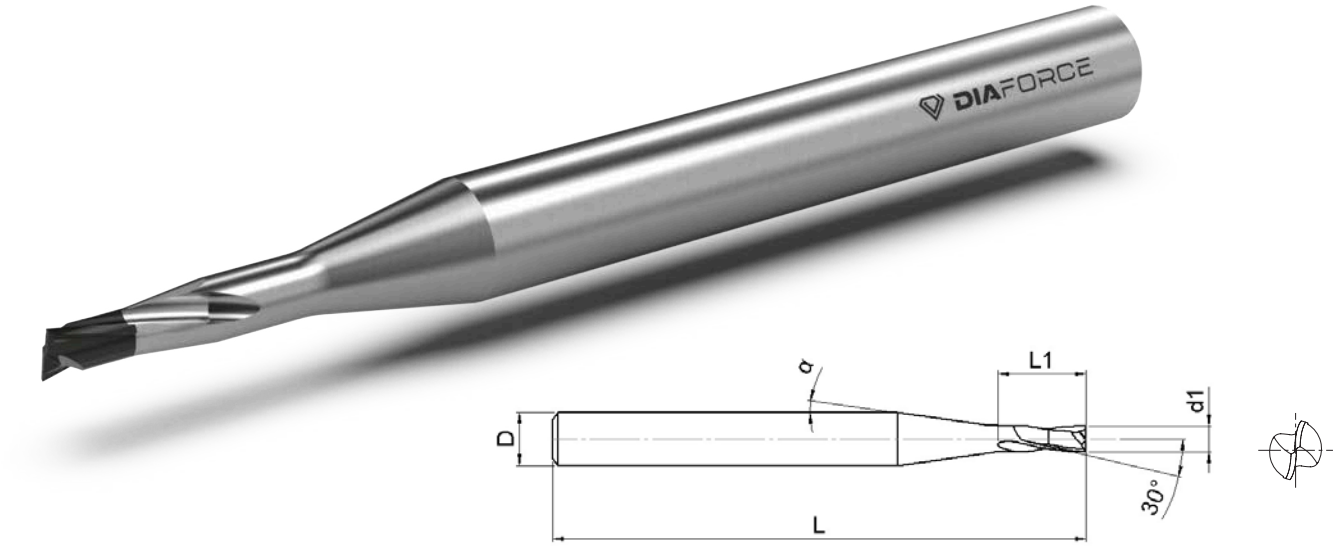
With DIAFORCE you put on your machine a micro-tool designed to **last and to deliver burr-free, repeatable machining.**

DFE-P

PCD helical end mills
FLAT END

Material	Cutting speed (Vc) (m/min)
Copper	350
Brass - Bronze	500
Aluminium	1000
Gold - Silver	300
Platinum - Palladium	130
Composites	200





D = 4 mm, h6 L = 42 mm Z = 2 α = 15°

Technical Data

Code	d1 mm	L1 mm
DFE-P-D010	0.1	0.2
DFE-P-D020	0.2	0.4
DFE-P-D030	0.3	0.6
DFE-P-D040	0.4	0.8
DFE-P-D050	0.5	1.0
DFE-P-D060	0.6	1.2
DFE-P-D070	0.7	1.4
DFE-P-D080	0.8	1.6
DFE-P-D090	0.9	1.8
DFE-P-D100	1.0	2.0
DFE-P-D110	1.1	2.2
DFE-P-D120	1.2	2.4
DFE-P-D130	1.3	2.6
DFE-P-D140	1.4	2.8
DFE-P-D150	1.5	3.0
DFE-P-D160	1.6	3.0
DFE-P-D170	1.7	3.0
DFE-P-D180	1.8	3.0
DFE-P-D190	1.9	3.0
DFE-P-D200	2.0	3.0

Code	d1 mm	L1 mm
DFE-P-D210	2.1	3.0
DFE-P-D220	2.2	3.0
DFE-P-D230	2.3	3.0
DFE-P-D240	2.4	3.0
DFE-P-D250	2.5	3.0
DFE-P-D260	2.6	3.0
DFE-P-D270	2.7	3.0
DFE-P-D280	2.8	3.0
DFE-P-D290	2.9	3.0
DFE-P-D300	3.0	3.0

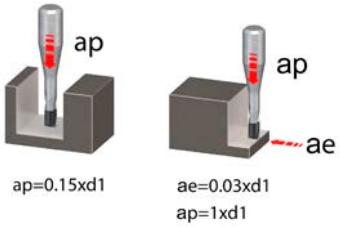
Other geometries and sizes available on request
Also available with coolant holes

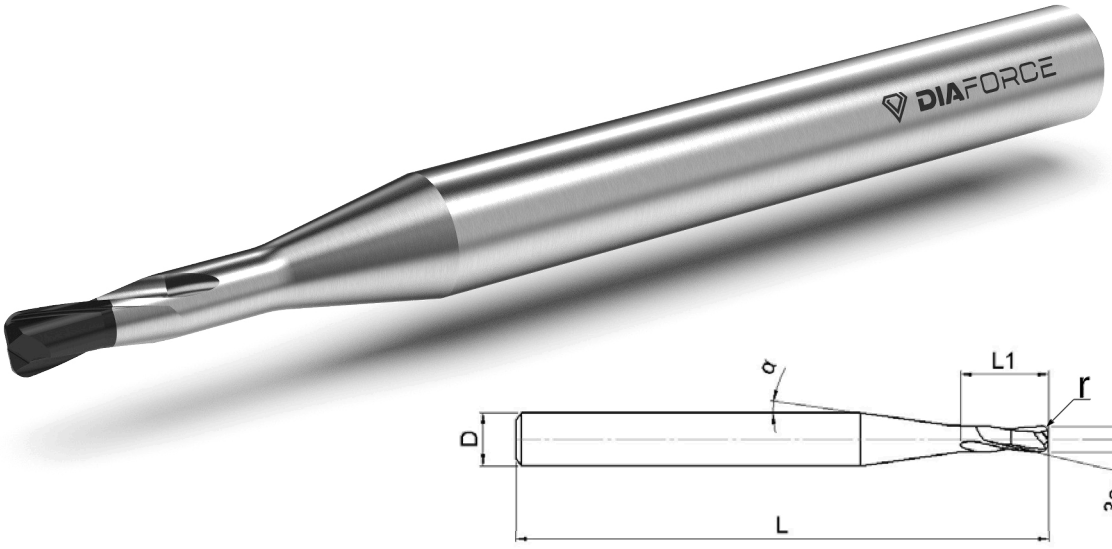


DFE-T

PCD helical end mills
CORNER RADIUS

Material	Cutting speed (Vc) (m/min)
Copper	350
Brass - Bronze	500
Aluminium	1000
Gold - Silver	300
Platinum - Palladium	130
Composites	200





D = 4 mm, h6 L = 42 mm Z = 2 α = 15° **r = of your choice**

Technical Data

* Example order code: for a corner radius end mill with diameter 0.3 mm and radius 0.05 mm, the code is **DFE-T-D030-005**

Code	d1 mm	r mm	L1 mm
DFE-T-D030-XXX	0.3	*	0.6
DFE-T-D040-XXX	0.4	*	0.8
DFE-T-D050-XXX	0.5	*	1.0
DFE-T-D060-XXX	0.6	*	1.2
DFE-T-D070-XXX	0.7	*	1.4
DFE-T-D080-XXX	0.8	*	1.6
DFE-T-D090-XXX	0.9	*	1.8
DFE-T-D100-XXX	1.0	*	2.0
DFE-T-D110-XXX	1.1	*	2.2
DFE-T-D120-XXX	1.2	*	2.4
DFE-T-D130-XXX	1.3	*	2.6
DFE-T-D140-XXX	1.4	*	2.8
DFE-T-D150-XXX	1.5	*	3.0
DFE-T-D160-XXX	1.6	*	3.0
DFE-T-D170-XXX	1.7	*	3.0
DFE-T-D180-XXX	1.8	*	3.0
DFE-T-D190-XXX	1.9	*	3.0
DFE-T-D200-XXX	2.0	*	3.0

Code	d1 mm	r mm	L1 mm
DFE-T-D210-XXX	2.1	*	3.0
DFE-T-D220-XXX	2.2	*	3.0
DFE-T-D230-XXX	2.3	*	3.0
DFE-T-D240-XXX	2.4	*	3.0
DFE-T-D250-XXX	2.5	*	3.0
DFE-T-D260-XXX	2.6	*	3.0
DFE-T-D270-XXX	2.7	*	3.0
DFE-T-D280-XXX	2.8	*	3.0
DFE-T-D290-XXX	2.9	*	3.0
DFE-T-D300-XXX	3.0	*	3.0

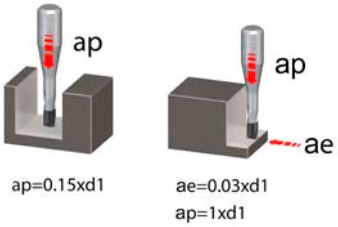
Other geometries and sizes available on request
Also available with coolant holes

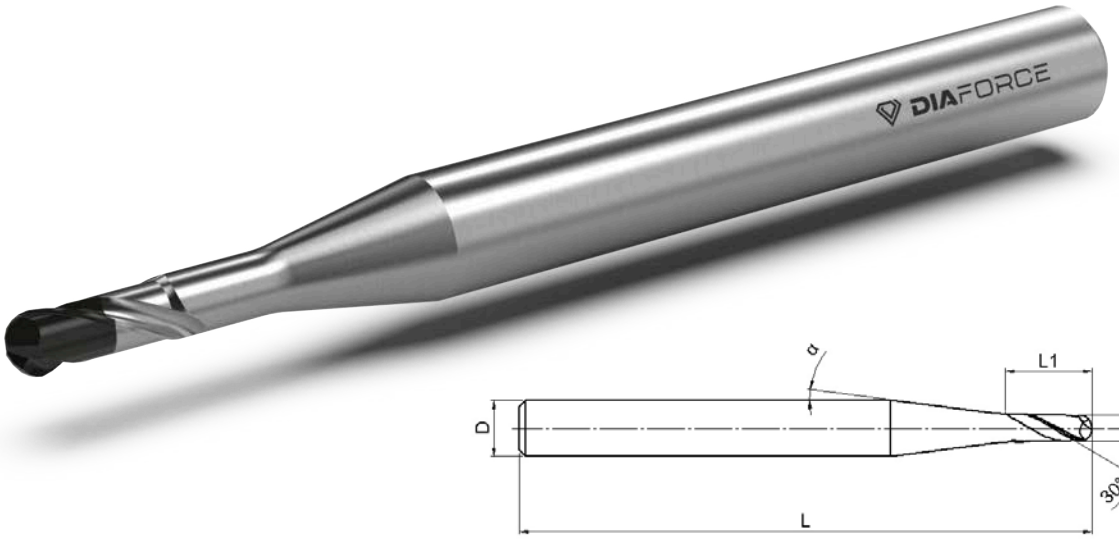


DFE-R

PCD helical end mills
BALL NOSE

Material	Cutting speed (Vc) (m/min)
Copper	350
Brass - Bronze	500
Aluminium	1000
Gold - Silver	300
Platinum - Palladium	130
Composites	200





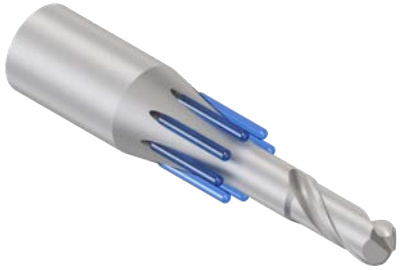
D = 4 mm, h6 L = 42 mm Z = 2 α = 15°

Technical Data

Code	d1 mm	L1 mm
DFE-R-D010	0.1	0.2
DFE-R-D020	0.2	0.4
DFE-R-D030	0.3	0.6
DFE-R-D040	0.4	0.8
DFE-R-D050	0.5	1.0
DFE-R-D060	0.6	1.2
DFE-R-D070	0.7	1.4
DFE-R-D080	0.8	1.6
DFE-R-D090	0.9	1.8
DFE-R-D100	1.0	2.0
DFE-R-D110	1.1	2.2
DFE-R-D120	1.2	2.4
DFE-R-D130	1.3	2.6
DFE-R-D140	1.4	2.8
DFE-R-D150	1.5	3.0
DFE-R-D160	1.6	3.0
DFE-R-D170	1.7	3.0
DFE-R-D180	1.8	3.0
DFE-R-D190	1.9	3.0
DFE-R-D200	2.0	3.0

Code	d1 mm	L1 mm
DFE-R-D210	2.1	3.0
DFE-R-D220	2.2	3.0
DFE-R-D230	2.3	3.0
DFE-R-D240	2.4	3.0
DFE-R-D250	2.5	3.0
DFE-R-D260	2.6	3.0
DFE-R-D270	2.7	3.0
DFE-R-D280	2.8	3.0
DFE-R-D290	2.9	3.0
DFE-R-D300	3.0	3.0

Other geometries and sizes available on request
Also available with coolant holes



DFD

PCD helical micro drills

Material	Cutting speed (Vc) (m/min)
Copper	180
Brass - Bronze	280
Aluminium	250
Gold - Silver	200
Platinum - Palladium	100
Composites	200



Fig.1

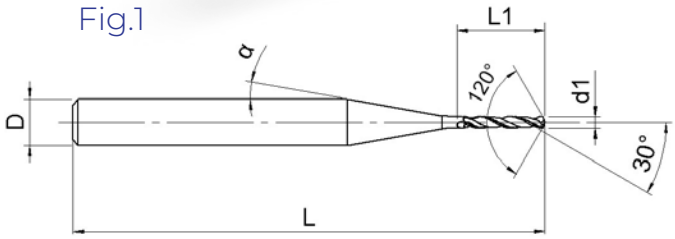
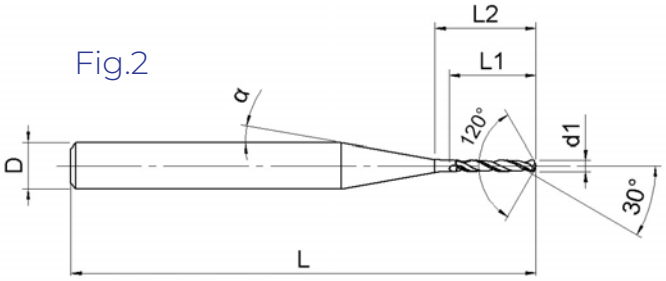


Fig.2



D = 3 mm, h6 L = 45 mm Z = 2 α = 15°

Technical Data

Code	d1 mm	L1 mm	L2 mm	FIG.
DFD-D010	0.10	0.80	-	1
DFD-D015	0.15	1.20	-	1
DFD-D020	0.20	1.60	-	1
DFD-D025	0.25	2.00	-	1
DFD-D030	0.30	2.40	-	1
DFD-D035	0.35	2.80	-	1
DFD-D040	0.40	3.20	-	1
DFD-D045	0.45	3.60	-	1
DFD-D050	0.50	4.00	-	1
DFD-D055	0.55	4.40	-	1
DFD-D060	0.60	4.80	-	1
DFD-D065	0.65	5.20	-	1
DFD-D070	0.70	5.60	-	1
DFD-D075	0.75	6.00	-	1
DFD-D080	0.80	6.40	-	1
DFD-D085	0.85	6.80	-	1
DFD-D090	0.90	7.00	7.20	2
DFD-D095	0.95	7.00	7.60	2
DFD-D100	1.00	7.00	8.00	2
DFD-D105	1.05	7.00	8.40	2

Code	d1 mm	L1 mm	L2 mm	FIG.
DFD-D110	1.10	7.00	8.80	2
DFD-D115	1.15	7.00	9.20	2
DFD-D120	1.20	7.00	9.60	2
DFD-D125	1.25	7.00	10.00	2
DFD-D130	1.30	7.00	10.00	2
DFD-D135	1.35	7.00	10.00	2
DFD-D140	1.40	7.00	10.00	2
DFD-D145	1.45	7.00	10.00	2
DFD-D150	1.50	7.00	10.00	2
DFD-D155	1.55	7.00	10.00	2
DFD-D160	1.60	7.00	10.00	2
DFD-D165	1.65	7.00	10.00	2
DFD-D170	1.70	7.00	10.00	2
DFD-D175	1.75	7.00	10.00	2
DFD-D180	1.80	7.00	10.00	2
DFD-D185	1.85	7.00	10.00	2
DFD-D190	1.90	7.00	10.00	2
DFD-D195	1.95	7.00	10.00	2
DFD-D200	2.00	7.00	10.00	2

Other geometries and sizes are available on request

Special tools
to customer drawing

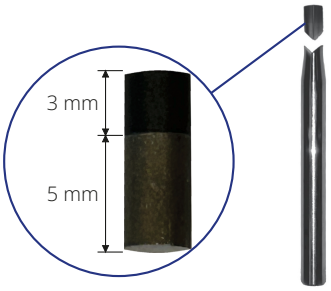
When standard geometry is not enough, our technical department designs the tool starting from the **part drawing** or from general information on the application. Every DIAFORCE special is made from the same blank and with the same laser technology as our catalogue tools: drills, flat end, corner radius or ball nose end mills, or **form cutters** with the required profile.

The blank

The PCD pin is **brazed** onto the carbide substrate.

The insert is made of **3 mm of solid PCD** on **5 mm of carbide**.

From the blank, the laser creates the final tool geometry.



Femtosecond laser

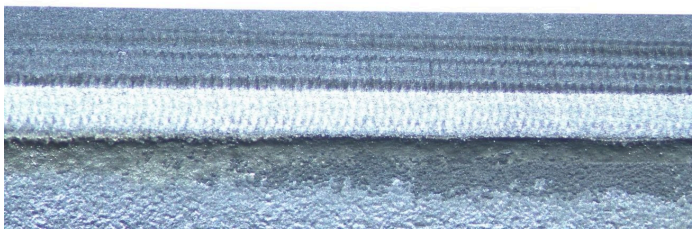
In 2025 Mictu installed the **first femtosecond laser sharpening machine in Italy** (10^{-15} s). The precision and finish achievable are superior to any other process, grinding included.

- finished tool **in a single clamping**
- virtually zero heat transferred to the workpiece
- micro-tools **from Ø 0.05 mm**

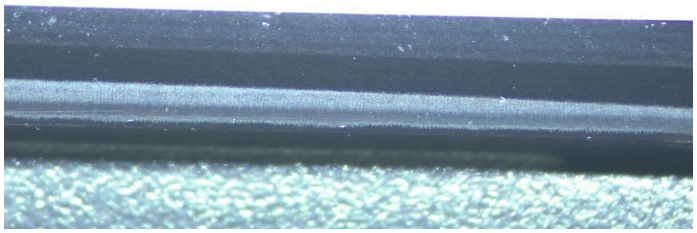


The cutting edge under the microscope

With the same tool, the femtosecond source leaves a sharp, regular cutting edge, without the micro-chipping typical of nanosecond lasers. Longer tool life and a better finish on the workpiece.



Nanosecond laser



Femtosecond laser

Micro-tools in different materials

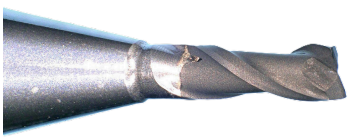
In addition to PCD, we use the same technology to machine **carbide, P-CBN, CVD, ceramics, sapphire and glass**.



PCD



Zirconium oxide



P-CBN



Carbide

Examples
of specials made by Mictu

Jewellery milling cutter



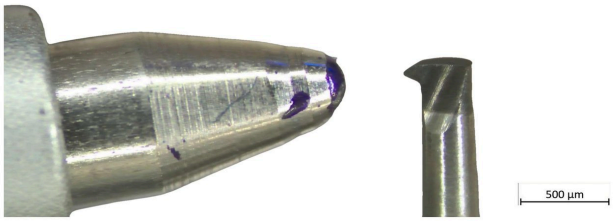
For machining **gold, silver and platinum**. Machined from solid PCD with latest-generation lasers: hardness, dimensional precision and superior surface finish.

Jewellery turning tool



For turning **precious metals** (silver, gold, platinum). The cutting edge profile is made to the drawing of the part to be produced.

Threading tool R0.025 60°



In **solid PCD**, machined with a femtosecond laser, shown here next to the tip of a ballpoint pen. For non-ferrous materials and precious metals.

Our applications

- **Jewellery**: milling and turning tools for gold, silver, platinum
- **Dental**: machining of zirconia and PMMA
- **Micromechanics**: precision threads and profiles
- **Non-ferrous**: copper, brass, bronze, aluminium, composites
- **Eyewear**, where Mictu was founded in 1986

How to request a special tool

1

Drawing or sample

Send us the part drawing, a sample or details of the machining operation.

2

Material

Tell us the material to be machined and the required finish.

3

Machine

Machine type, spindle interface and available cutting parameters.

4

Quantity

Number of parts to be produced and expected number of tools.

Our technical department proposes the geometry and produces the **test samples** for trials on your machine. For special tools, the lead time from order to delivery is **approximately 10-15 days**.

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Notes

apvd.it

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1986 - 2026

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www.mictu.com

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