GÜHRING

DIANOZ

MADE FOR ETERNITY

The world's only diamond nozzle
for unlimited 3D printing

infinite printing

DIAMONDS ARE FOR ETERNITY.

A new era is starting.

The DIANOZ Pro 3D printer nozzle ensures uniform material extrusion, smooths the component surface during printing and offers maximum wear protection, even with very abrasive filaments. This is thanks to the sophisticated geometry combined with the unique tip made from synthetic black diamond.

For over 40 years, the design and manufacture of diamond-tipped tools has been one of Gühring's core areas of expertise. With DIANOZ, polycrystalline diamond (PCD) is now also entering the world of additive manufacturing, marking a new milestone in FFF technology.

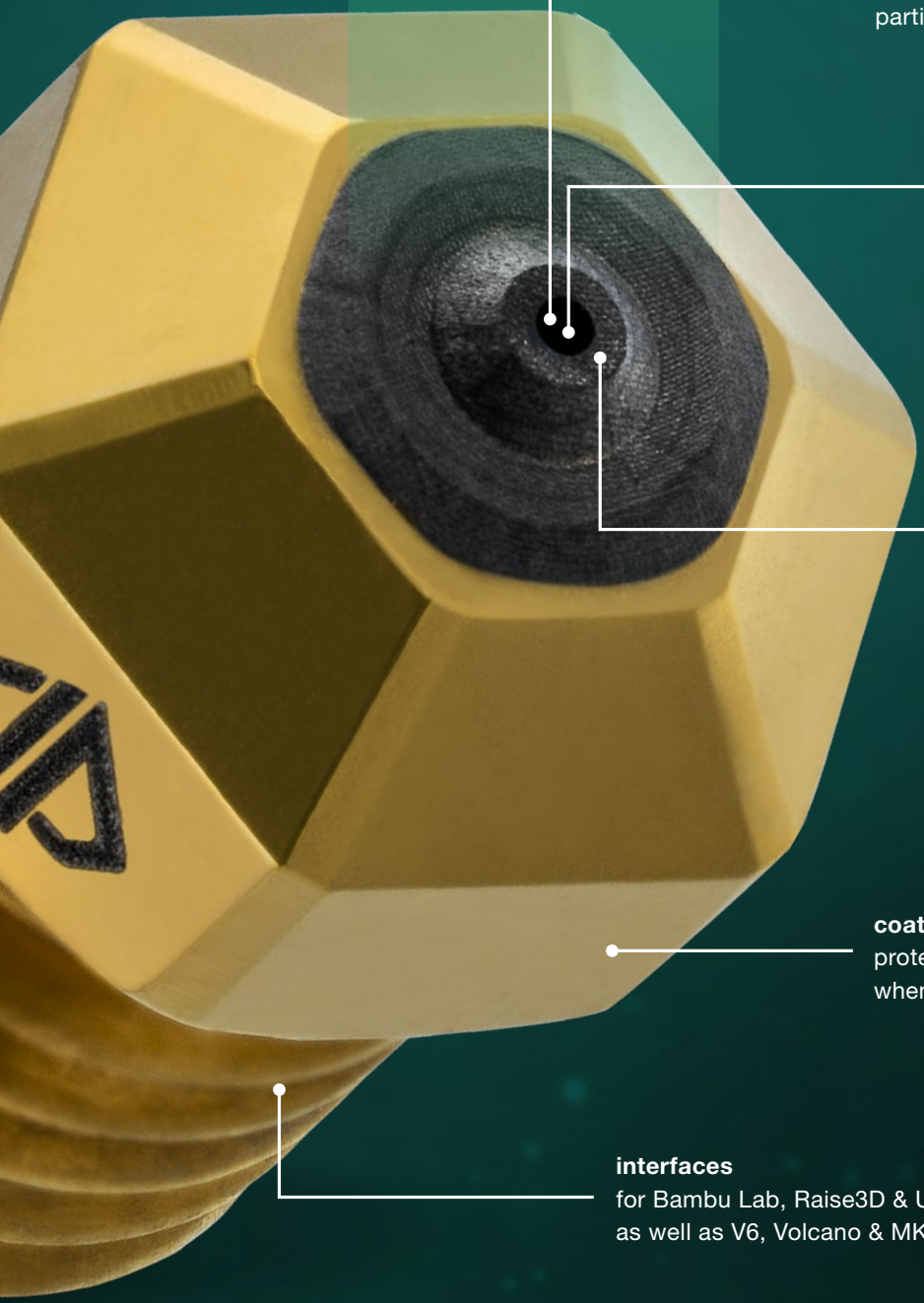
Made for eternity.

This is not just an advertising slogan, it is a promise. We promise this because we believe in the durability of our diamond tip, which is why we give you a lifetime warranty when you buy a DIANOZ Pro.

Infinite printing is now possible with our nozzle. Once you have made the switch, you'll never look back.

*For more information about the warranty, visit www.dianoz.com/lifetime_warranty

The heart of the design:
Black diamond conducts heat perfectly and provides the best possible protection against wear



diamond-reinforced filament channel
protects the nozzle's taper, which is particularly susceptible to wear

friction-optimised filament channel
in the standard outlet diameter sizes 0.2 / 0.4 / 0.6 / 0.8 / 1.0 mm

special ironing surface
smooths the component's surface during printing

coated base body
protects against wear and tear when printing

interfaces
for Bambu Lab, Raise3D & UltiMaker as well as V6, Volcano & MK8 hotends

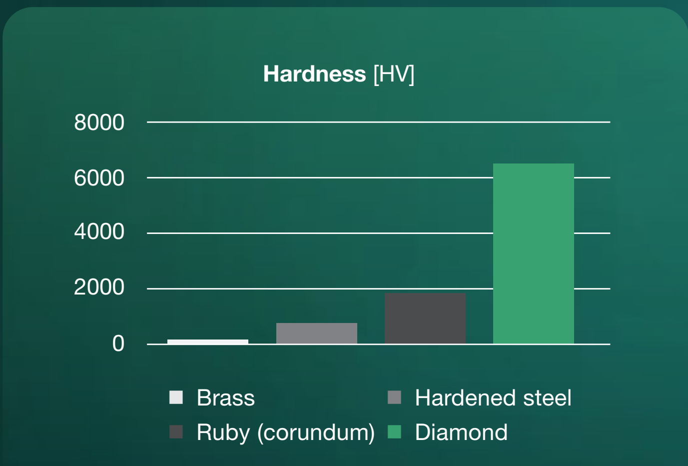
ultra wear-resistant

PERFORMANCE WITHOUT LIMITS.

Nozzles susceptible to wear disrupt the printing process.

Worn nozzle tips lead to poor print results and unclean surfaces with droplet-like excess material. To compensate for this wear, the nozzle spacing to the print bed has to be adjusted, a process that can take a long time.

In many cases, changing the nozzle will cause the printing process to be aborted because the parameters change after a nozzle replacement and printing cannot be continued without a loss of quality.



one nozzle for any material
boost your cost efficiency
maximum process reliability

The DIANOZ Pro is suitable **for a wide range of materials**, including glass and carbon fibre-reinforced plastics, ceramic and metal filled materials, and high-temperature filaments.

With its low susceptibility to wear, the DIANOZ Pro increases your cost efficiency: You don't need to buy new nozzles and you can **reduce your staffing costs for maintenance and nozzle replacement**.

In addition, the diamond nozzle offers maximum process reliability so that large components and high quantities can be produced in a **24/7 printing operation without changing the nozzle**.

DIANOZ X CR 3D

Christian Reil
Managing director of CR-3D

Ingenieurbüro Christian Reil | CR-3D

Headquarters:
Cham, Bayern

Size of the company:
15 employees

Target group & industries:
mechanical engineering, automotive, aerospace, electronics

Products:
printers, filaments, software & processes for industrial 3D printing

Size of production facilities:
20 additive manufacturing systems

Materials:
mainly ABS FibCR20, ASA-X FibCR20, PA12 Carbon & Flex FibCR20

Filament printed per year:
1,500 kilograms

Products printed per year:
8,500 units

One nozzle, 150 kilograms of carbon fibre filament – and no wear.

„We have been using the DIANOZ for over three years. Since then, 150 kilograms of carbon fibre filament have passed through this nozzle without it showing any signs of wear, let alone having to be replaced.

A standard steel nozzle would have called it quits after around ten kilograms, and a brass nozzle after just 30 grams. Since we have got to know the Gühring nozzle, we no longer use any 10-euro nozzles on the printers in our production facilities, which means they don't have to be constantly replaced any more.

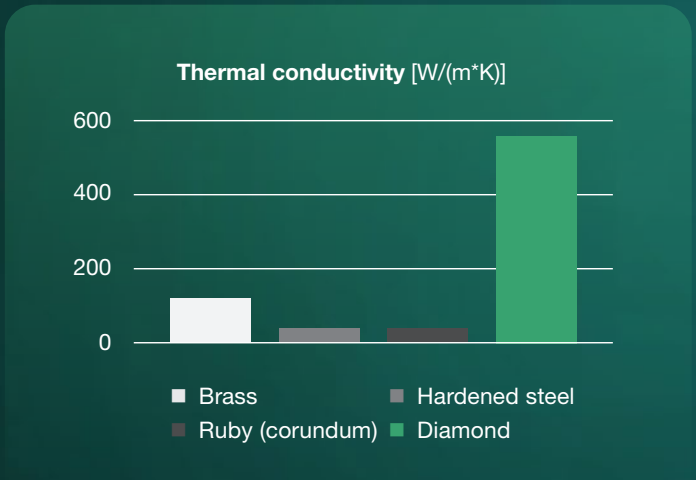
Whether I'm printing a standard filament or a highly abrasive one: The nozzle can handle both very well, so I don't just save myself a few nozzle changes a year, but also the time and frustration involved."

unbeatable thermal conductivity

PRECISE TO THE DEGREE.

Heat-insulating nozzles reduce process reliability.

After all, they cause the temperature set on the printer to deviate from the actual temperature at the tip. However, if the temperature cannot be precisely controlled and fluctuations occur, this will result in irregular extrusion, filament formation, or clogging. The only way to compensate for this insulating effect is to increase the printing temperature by up to 15°C. However, this means that energy consumption increases constantly, too.



optimum thermal conductivity
high process reliability
save on energy costs

The diamond tip of the DIANOZ Pro offers extremely high thermal conductivity. This results in a **particularly even filament flow** and **creates smooth surfaces** when printing.

With our nozzle, **reliable temperature adjustment** is now possible. As a result, you can rest assured that your print projects run smoothly.

You can also save on energy costs by **printing at lower temperatures**. As such, the DIANOZ Pro combines efficiency and quality in a single product.

DIANOZ X L.B. BOHLE

Sascha Lenze
Electrical engineering software developer

L.B. Bohle
Maschinen und Verfahren GmbH

Headquarters:
Ennigerloh, Nordrhein-Westfalen

Size of the company:
310 employees

Target group & industries:
pharmaceutical industry

Products:
innovative machines and processes for the global pharmaceutical industry

Size of production facilities:
5 additive manufacturing systems

Materials:
316L, 17-4PH, Hastelloy, Inconel
PLA, PET-G, ABS, ASA, TPU, PA

Filament printed per year:
metal FFF: approx. 25 kg, polymers: approx. 100 kg

Products printed per year:
more than 200 semi-finished products, devices, aids and semi-finished products

Say goodbye to deviating temperatures – for perfect green parts.

“For sinter-based FFF printing of metal, we used to always use hardened steel nozzles, but they have very poor thermal conductivity. This led to problems, especially with geometries with different print times per layer: Because the slicer dynamically adjusts the printing speed, we quickly reached high temperature ranges with the higher ‘reserve value’. The binder system we used reacted sensitively to this, which had a negative impact on the print quality of green parts.

Thanks to the better thermal conductivity of the DIANOZ, the temperatures set for the nozzle and its actual temperature are much closer. Here, we print at a temperature that is twelve degrees lower and thus achieve maximum process reliability.”

perfect print quality

PERFECTION IN EVERY LAYER.

Inferior nozzles reduce component precision.

After all, if the nozzle exhibits a high degree of wear, it will result in uneven extrusion. These filament inhomogeneities result in an irregular layer thickness and rough surfaces. Poor thermal conductivity amplifies this effect by causing a sudden change in material flow and deteriorating print quality. Uneven printing also often leads to unstable components.

Fraunhofer confirms an outstanding printing performance!

Fraunhofer IPA

"Our tests have shown that the diamond insert means that DIANOZ nozzles exhibit almost the same stable extrusion behaviour as brass nozzles but have the added advantage of abrasion resistance.

Compared to other wear-resistant nozzles, such as ruby ones, more uniform extrusion performance was exhibited over larger temperature extrusion speed ranges."

- **even material extrusion**
- **smooth print surface**
- **constant layer thickness**

With DIANOZ, you benefit from uniform material extrusion, which is guaranteed by a **friction-optimised filament channel.**

The **special ironing surface on the nozzle tip** ensures additional smoothing of the printing surfaces.

Wear-related readjustment is not necessary thanks to the **hard diamond insert**, which means that the layer thickness remains constant throughout the entire printing process. These properties make DIANOZ the ideal choice for precise and high-quality printing.

DIANOZ X PARTBOX

Moritz Schmitz
Head of Mechanical Development & Engineering

Partbox
Schubert Additive Solutions GmbH

Headquarters:
Crailsheim, Baden-Württemberg

Size of the company:
7 employees

Target group & industries:
mechanical engineering

Products:
3D printers for the packaging industry

Size of production facilities:
26 additive manufacturing systems

Materials:
polyamide plastics (PH6)

Filament printed per year:
750 kilograms

Products printed per year:
20,000 units

Consistently high quality surfaces – without the constant nozzle changes.

“Surface finish is an important factor in our quality standards. In the past, we only changed our coated brass nozzles when they were visibly worn or damaged. But wear and tear is usually a slow process and, as a result, the loss of quality creeps in very slowly. A small scratch at the nozzle outlet is sometimes enough to disturb the flow of material and the surface quality will suffer accordingly.

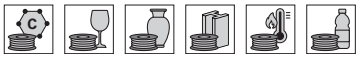
Other hardened nozzles have never convinced us when it comes to the surface finish.

Since we have been using the DIANOZ, I have seen a clear difference in the surfaces of our products: The quality improved immediately and since wear and tear has no longer been an issue, the standard is constantly high – even without constant nozzle checks and changes.”

DIANOZ Pro V6

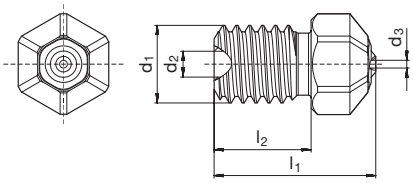
Article no. **9608/9609**

DIANOZ MADE FOR ETERNITY



High-end 3D printer nozzle made of stainless steel with PCD insert and TiN coating
compatible with all V6 hotend extrusion printers • special dimensions on enquiry • extremely wear-resistant with lifetime warranty

Particularly suitable for printing highly abrasive materials:
Filaments and granules containing components such as carbon fibre, glass fibre, ceramic or metal-filled elements. In addition, high-performance plastics such as PEEK, PEI, PEKK or ULTEM as well as all common plastics such as ABS, PETG, PLA, TPE.



Article no. **9608**

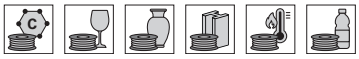
For filament Ø mm	d2 mm	d1	l2 mm	l1 mm	d3 mm	Order no.
1.75	2.0	M6	7.5	12.5	0.2	9608 175.020
1.75	2.0	M6	7.5	12.5	0.4	9608 175.040
1.75	2.0	M6	7.5	12.5	0.6	9608 175.060
1.75	2.0	M6	7.5	12.5	0.8	9608 175.080
1.75	2.0	M6	7.5	12.5	1.0	9608 175.100

Article no. **9609**

For filament Ø mm	d2 mm	d1	l2 mm	l1 mm	d3 mm	Order no.
2.85	3.0	M6	7.5	12.5	0.2	9609 285.020
2.85	3.0	M6	7.5	12.5	0.4	9609 285.040
2.85	3.0	M6	7.5	12.5	0.6	9609 285.060
2.85	3.0	M6	7.5	12.5	0.8	9609 285.080
2.85	3.0	M6	7.5	12.5	1.0	9609 285.100

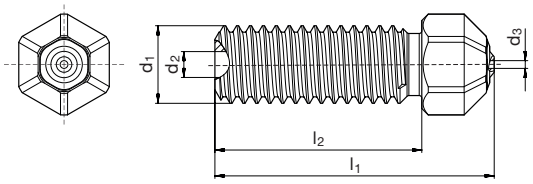
DIANOZ Pro Volcano

Article no. **9611/9612**



High-end 3D printer nozzle made of stainless steel with PCD insert and TiN coating
compatible with all material extrusion printers with Volcano hotend • Sother dimensions available on request • extremely wear-resistant with lifetime warranty

Particularly suitable for printing highly abrasive materials:
Filaments and granules containing components such as carbon fibre, glass fibre, ceramic or metal-filled elements. In addition, high-performance plastics such as PEEK, PEI, PEKK or ULTEM as well as all common plastics such as ABS, PETG, PLA, TPE.



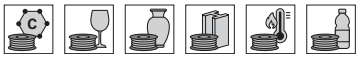
Article no.						9611
For filament Ø mm	d2 mm	d1	l2 mm	l1 mm	d3 mm	Order no.
1.75	2.0	M6	16.0	22.6	0.2	9611 175.020
1.75	2.0	M6	16.0	22.6	0.4	9611 175.040
1.75	2.0	M6	16.0	22.6	0.6	9611 175.060
1.75	2.0	M6	16.0	22.6	0.8	9611 175.080
1.75	2.0	M6	16.0	22.6	1.0	9611 175.100

Article no.						9612
For filament Ø mm	d2 mm	d1	l2 mm	l1 mm	d3 mm	Order no.
2.85	3.0	M6	16.0	22.6	0.2	9612 285.020
2.85	3.0	M6	16.0	22.6	0.4	9612 285.040
2.85	3.0	M6	16.0	22.6	0.6	9612 285.060
2.85	3.0	M6	16.0	22.6	0.8	9612 285.080
2.85	3.0	M6	16.0	22.6	1.0	9612 285.100

DIANOZ Pro MK8

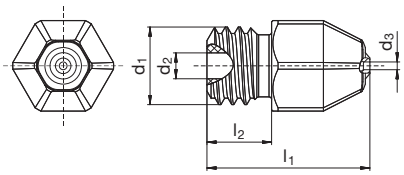
Article no. **9604/9605**

DIANOZ MADE FOR ETERNITY



High-end 3D printer nozzle made of stainless steel with PCD insert and TiN coating
compatible with all material extrusion printers with MK8 hotend • other dimensions available on request • extremely wear-resistant with lifetime warranty

Particularly suitable for printing highly abrasive materials:
Filaments and granules containing components such as carbon fibre, glass fibre, ceramic or metal-filled elements. In addition, high-performance plastics such as PEEK, PEI, PEKK or ULTEM as well as all common plastics such as ABS, PETG, PLA, TPE.



Article no. **9604**

For filament Ø mm	d2 mm	d1	l2 mm	l1 mm	d3 mm	Order no.
1.75	2.0	M6	5	12.6	0.2	9604 175.020
1.75	2.0	M6	5	12.6	0.4	9604 175.040
1.75	2.0	M6	5	12.6	0.6	9604 175.060
1.75	2.0	M6	5	12.6	0.8	9604 175.080
1.75	2.0	M6	5	12.6	1.0	9604 175.100

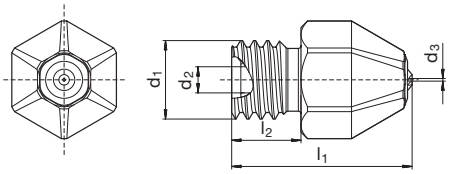
Article no. **9605**

For filament Ø mm	d2 mm	d1	l2 mm	l1 mm	d3 mm	Order no.
2.85	3.0	M6	5	13.4	0.2	9605 285.020
2.85	3.0	M6	5	13.4	0.4	9605 285.040
2.85	3.0	M6	5	13.4	0.6	9605 285.060
2.85	3.0	M6	5	13.4	0.8	9605 285.080
2.85	3.0	M6	5	13.4	1.0	9605 285.100

DIANOZ Pro for Raise3D Article no. **9607**

High-end 3D printer nozzle made of stainless steel with PCD insert and TiN coating
compatible with Raise3D material extrusion printers e.g. Pro2, Pro3, Pro3 HS and E2 series • other dimensions available on request • extremely wear-resistant with lifetime warranty

Particularly suitable for printing highly abrasive materials:
Filaments and granules containing components such as carbon fibre, glass fibre, ceramic or metal-filled elements. In addition, high-performance plastics such as PEEK, PEI, PEKK or ULTEM as well as all common plastics such as ABS, PETG, PLA, TPE.

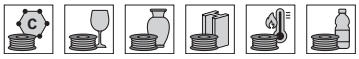


					Article no.	**9607**
For filament Ø mm	d2 mm	d1	l2 mm	l1 mm	d3 mm	Order no.
1.75	2.0	M6	5.3	13.8	0.2	9607 175.020
1.75	2.0	M6	5.3	13.8	0.4	9607 175.040
1.75	2.0	M6	5.3	13.8	0.6	9607 175.060
1.75	2.0	M6	5.3	13.8	0.8	9607 175.080
1.75	2.0	M6	5.3	13.8	1.0	9607 175.100

DIANOZ Pro for Bambu Lab

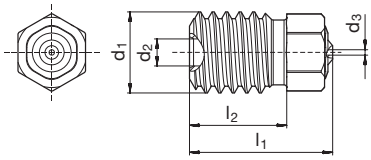
Article no. **9606**

DIANOZ MADE FOR ETERNITY



High-end 3D printer nozzle made of stainless steel with PCD insert and TiN coating
compatible with common hotend upgrades for Bambu Lab material extrusion printers, e.g. the X and P series • other dimensions available on request • extremely wear-resistant with lifetime warranty

Particularly suitable for printing highly abrasive materials:
Filaments and granules containing components such as carbon fibre, glass fibre, ceramic or metal-filled elements. In addition, high-performance plastics such as PEEK, PEI, PEKK or ULTEM as well as all common plastics such as ABS, PETG, PLA, TPE.

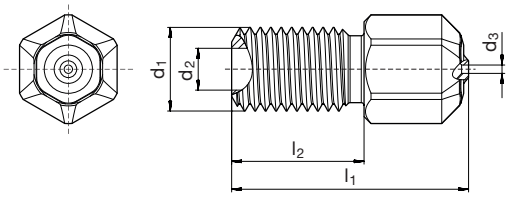


For filament Ø mm	d2 mm	d1	l2 mm	l1 mm	d3 mm	Article no. 9606 Order no.
1.75	2.0	M6	7.2	10.6	0.2	9606 175.020
1.75	2.0	M6	7.2	10.6	0.4	9606 175.040
1.75	2.0	M6	7.2	10.6	0.6	9606 175.060
1.75	2.0	M6	7.2	10.6	0.8	9606 175.080
1.75	2.0	M6	7.2	10.6	1.0	9606 175.100

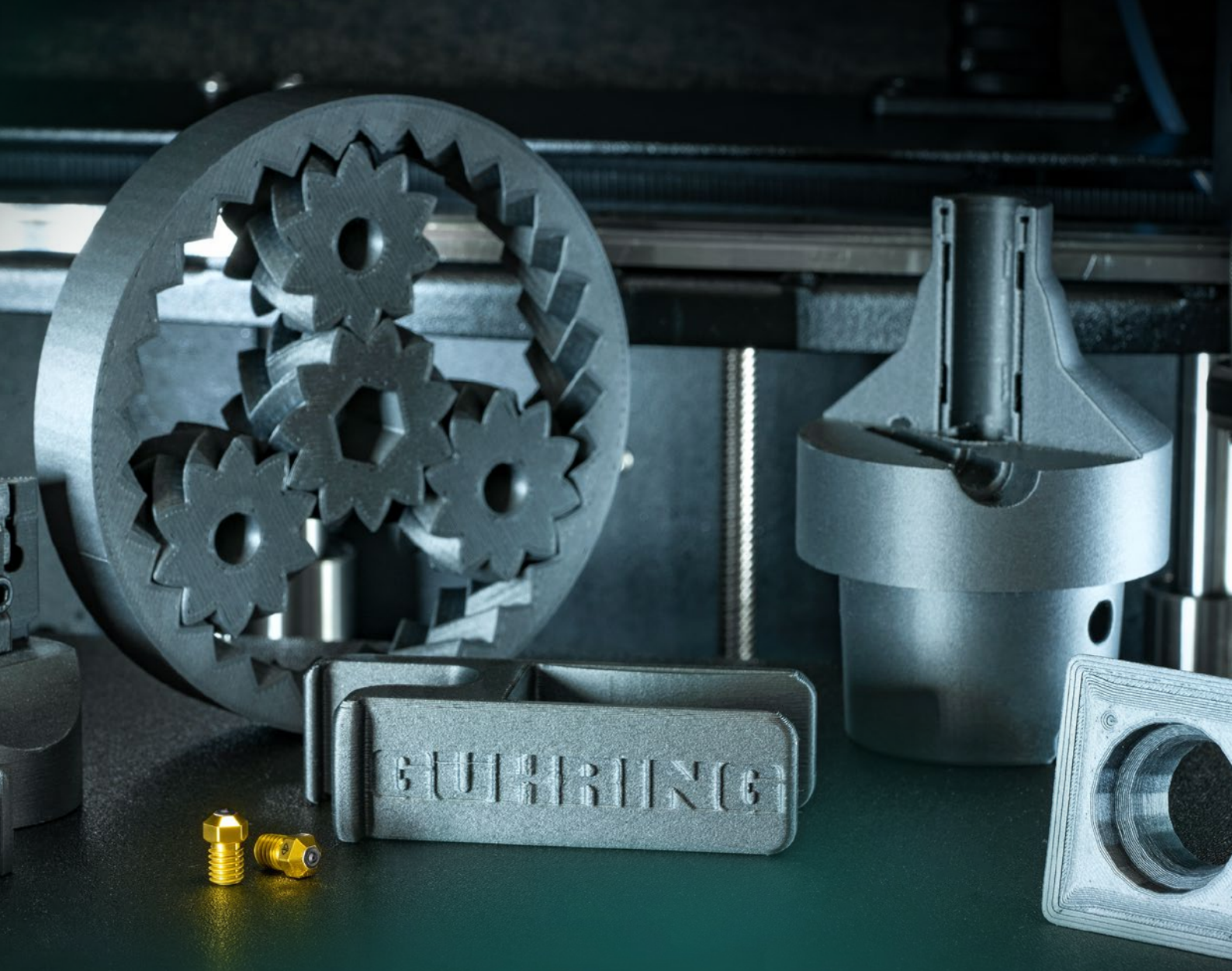
DIANOZ Pro for UltiMaker Article no. **9610**

High-end 3D printer nozzle made of stainless steel with PCD insert and TiN coating
compatible with UltiMaker material extrusion printers e.g. the S series • other dimensions available on request • extremely wear-resistant with lifetime warranty

Particularly suitable for printing highly abrasive materials:
Filaments and granules containing components such as carbon fibre, glass fibre, ceramic or metal-filled elements. In addition, high-performance plastics such as PEEK, PEI, PEKK or ULTEM as well as all common plastics such as ABS, PETG, PLA, TPE.



Article no.						9610
For filament Ø mm	d2 mm	d1	l2 mm	l1 mm	d3 mm	Order no.
2.85	3.0	M6X0.75	9.5	17.0	0.2	9610 285.020
2.85	3.0	M6X0.75	9.5	17.0	0.4	9610 285.040
2.85	3.0	M6X0.75	9.5	17.0	0.6	9610 285.060
2.85	3.0	M6X0.75	9.5	17.0	0.8	9610 285.080
2.85	3.0	M6X0.75	9.5	17.0	1.0	9610 285.100



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Marcel Schreiner: marcel.schreiner@guehring.de