

A close-up photograph of a Gühring Solid carbide tap, model SteelPro, positioned vertically above a metal workpiece. The tap has a long, polished silver-colored shank and a copper-colored cutting edge. The workpiece is a dark, machined metal plate with several pre-drilled holes. The background is a blurred industrial setting.

GÜHRING

Solid carbide tap
SteelPro

High-performance material specialist for blind hole machining in steel



Solid carbide tap SteelPro

Thread tapping in steel redefined

Cost-effective and durable:
Take advantage of the benefits
of solid carbide for thread
tapping in steel.

Thanks to its patent pending flute geometry, the SteelPro solid carbide tap ensures reliable chip removal and the secure cut of the chip root. The result is maximum process reliability, fewer tool breakages and flawless thread roots.

The SteelPro thus opens up the possibility, for the first time, of achieving process-reliable production of blind hole threads up to 2xD in steel using a solid carbide tap instead of a HSS tool. This offers considerable advantages, particularly in series production: longer tool lives and higher cutting data significantly reduce tool change cycles and machine downtime. With the combination of the wear-resistant ENDURUM-coating and central internal cooling, the SteelPro enables more cost-effective threading and reduces both tooling costs and machining times long term.

x **4-fold** tool life
x cycle times significantly reduced

-  **X** reliable manufacturing of blind hole threads without tool breakage thanks to innovative geometry
-  **X** with solid carbide for higher cutting speeds and significantly more productive machining
-  **X** up to 500% longer tool life reduces tool change cycles, machine downtime and costs

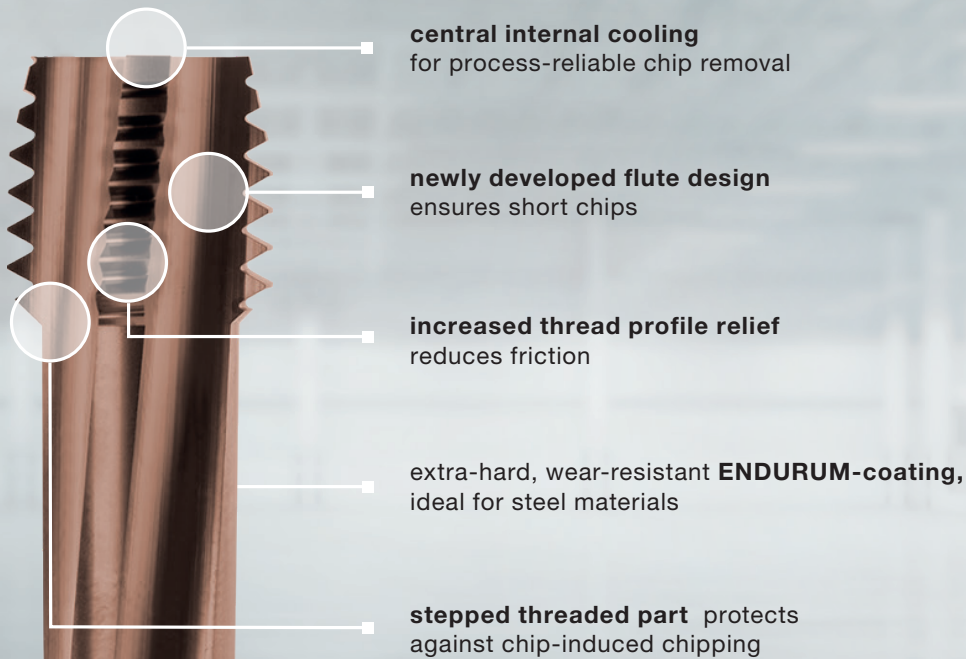
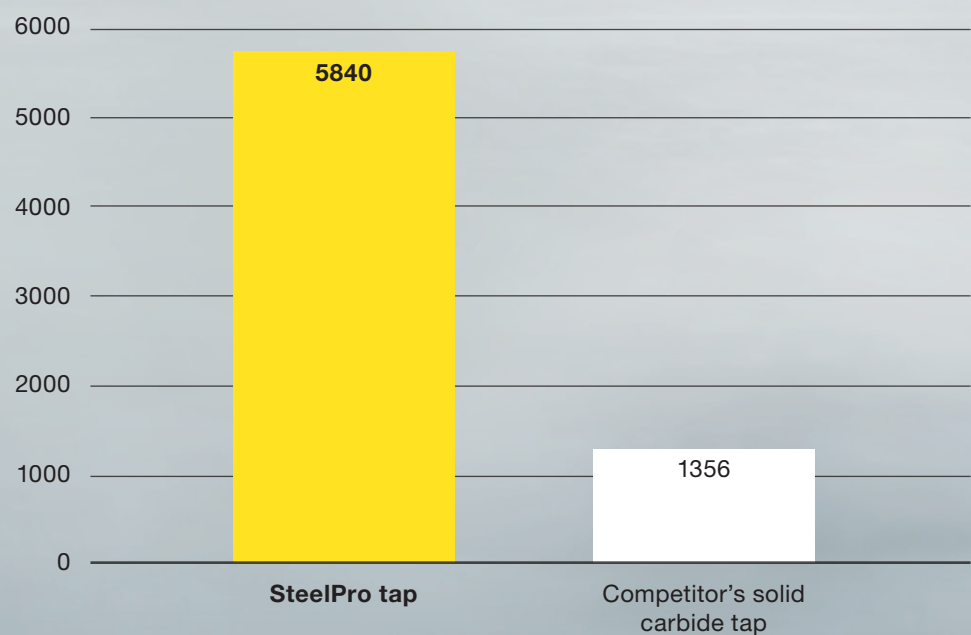


Chart showing tool life [number of threads] 42CrMo4





From left to right: Joachim Schultis of Gühring KG and Stefan Aberle of Kammerer Gewindetechnik.

Tool life redefined

When a thread is only created at the end of a long production chain, nothing can go wrong. This was precisely the challenge facing Kammerer as a manufacturer of high-precision rear-axle steering systems for premium vehicles. Together with Gühring, they succeeded in significantly improving a critical process step. The new solid carbide tap SteelPro quadruples tool life, enhances process reliability and enables higher cutting data.

Since 1938, Kammerer has been developing and manufacturing ball screws, trapezoidal screws and telescopic screws for applications in the automotive industry, mechanical engineering, the medical sector, lifting technology and aerospace. Whilst customised solutions are produced at the head office with lot sizes as small as one, Kammerer manufactures highly automated

threaded spindles at Plant 2 for the rear-axle steering systems of premium vehicles.

The components undergo numerous process steps. They are turned, swirled and milled before an internal thread is cut into the front face. This thread serves as a fastening thread for a clamping pin and ensures that the spindle can be clamped precisely in subsequent processes. Consequently, the requirements for dimensional accuracy and thread quality are extremely high. Errors at this stage result in high costs and jeopardise all the preparatory work. "If the thread doesn't fit, a great deal of added value is already invested in the part. That's why we need a stable and reliable process," explains Production Manager Stefan Aberle.

x tool life increased four times
x double the cutting speed



The fourfold increase in tool life was impressive. Even more important is process reliability.

Stefan Aberle, Production Manager
Kammerer Gewindetechnik

HSS tools reach their performance limits

But process reliability is not the only challenge Stefan Aberle faces in his production: the threads are cut in high-strength quenched and tempered steel. During machining, the material generates high temperatures and long chips, which accelerate the wear of the HSS taps used. At the same time, the length of the chips makes it difficult to remove chips from the blind hole. If they remain in the thread, they can become jammed and, in the worst case, lead to tool breakage.

Even minor signs of wear on the tool had an impact on thread quality. At the same time, as wear increases, so do concerns about scrap and unplanned machine downtime. “Our employees are very particular about the thread,” explains Stefan Aberle. “If the surface of the tool no longer looks perfect, it is replaced as a precaution.” The result: high tooling costs and additional effort due to frequent changes.

Solid carbide tool for four times the tool life

To solve this wear problem, Gühring has made the new solid carbide tap SteelPro available for testing. The tool has been specially developed for blind hole threads in steel. Its special flute geometry improves chip formation, whilst the internal cooling system reliably removes chips from the thread. The combination of carbide and an wear-resistant ENDURUM-coating delivers tool lives that far outstrip those of any HSS tool. The results at Kammerer were immediately convincing. Five test tools each completed around 2,000 threads. This enabled Kammerer to quadruple tool life compared to the previous solution. Higher cutting data also reduce the machining time per thread. Even more important for Stefan Aberle is the elimination of numerous tool change cycles: “We used to have to replace it several times a day. With the SteelPro, we now only change tools about once a week. That alone saves time and brings stability to the process.”

Tool Performance Report

Tool	HSS tap	Solid carbide tap SteelPro
Diameter (Ø) [mm]	M12x1	M12x1
Component	Drive shaft (rear-axle steering)	Drive shaft (rear-axle steering)
Material	31CrMoV9 QT	31CrMoV9 QT
Feed rate (v_f) [mm/min]	265	530
Cutting speed (v_c) [m/min]	10	20
Tool life (number of threads)	500	2000



Taps with coolant ducts for ISO metric threads

Article no. **8418**

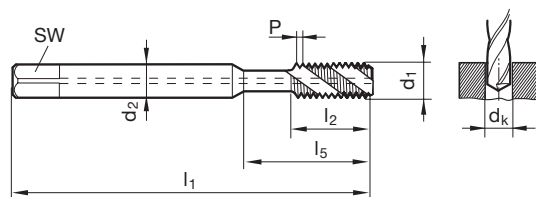


cutting data see page 7



maximum performance • for steel materials

P	M	K	N	S	H
•		○			



Standard
Article no.

DIN 371

8418

d1	P	d2	SW	dk	l1	l2	l5	Order no.
M5	0.800	6.00	4.90	4.20	70.00	7.20	25.00	8418 5.000
M6	1.000	6.00	4.90	5.00	80.00	9.00	30.00	8418 6.000
M8	1.250	8.00	6.20	6.80	90.00	11.25	35.00	8418 8.000
M10	1.500	10.00	8.00	8.50	100.00	13.50	39.00	8418 10.000
M12	1.750	9.00	7.00	10.20	110.00	15.75	49.00	8418 12.000
M14	2.000	11.00	9.00	12.00	110.00	18.00	53.00	8418 14.000
M16	2.000	12.00	9.00	14.00	110.00	18.00	54.00	8418 16.000

Taps with coolant ducts for ISO metric fine threads

Article no. **8419**

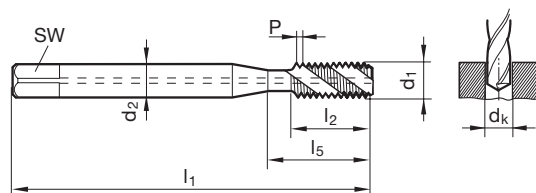


cutting data see page 7



maximum performance • for steel materials

P	M	K	N	S	H
•		○			



Standard
Article no.

DIN 371

8419

d1	P	d2	SW	dk	l1	l2	l5	Order no.
M8 x 1	1.000	8.00	6.20	7.00	90.00	9.00	35.00	8419 8.005
M10 x 1	1.000	10.00	8.00	9.00	90.00	9.00	35.00	8419 10.005
M12 x 1,5	1.500	9.00	7.00	10.50	100.00	13.50	40.00	8419 12.007
M14 x 1,5	1.500	11.00	9.00	12.50	100.00	13.50	40.00	8419 14.007
M16 x 1,5	1.500	12.00	9.00	14.50	100.00	13.50	44.00	8419 16.007



Solid carbide tap SteelPro



Machining group	Through-, blind holes
	VHM
	v_c (m/min)
P1.1.1 Unalloyed steel, annealed, 0.15 % C, Rm 420 N/mm ² , 125 HB	
P1.1.2 Unalloyed steel, heat-treated, 0.15 % C, Rm 420 N/mm ² , 125 HB	
P1.1.3 Unalloyed steel, annealed, 0.45 % C, Rm 640 N/mm ² , 190 HB	54
P1.1.4 Unalloyed steel, heat-treated, 0.45 % C, Rm 640 N/mm ² , 190 HB	54
P1.1.5 Unalloyed steel, heat-treated, 0.45 % C, Rm 850 N/mm ² , 250 HB	54
P1.1.6 Unalloyed steel, annealed, 0.75 % C, Rm 915 N/mm ² , 270 HB	46
P1.1.7 Unalloyed steel, heat-treated, 0.75 % C, Rm 1020 N/mm ² , 300 HB	38
P2.1.1 Low-alloy steel, annealed, Rm 610 N/mm ² , 180 HB	45
P2.1.2 Low-alloy steel, heat-treated, Rm 930 N/mm ² , 275 HB	38
P2.1.3 Low-alloy steel, heat-treated, Rm 1020 N/mm ² , 300 HB	32
P2.1.4 Low-alloy steel, heat-treated, Rm 1190 N/mm ² , 350 HB	27
P3.1.1 High-alloy steel and tool steel, annealed, Rm 680 N/mm ² , 200 HB	24
P3.1.2 High-alloy steel and tool steel, hardened and tempered, Rm 1100 N/mm ² , 325 HB	24
M1.1.1 Stainless steel, ferritic/martensitic, with machining additives	
M1.1.2 Stainless steel, ferritic/martensitic, annealed, Rm 680 N/mm ² , 200 HB	
M1.1.3 Stainless steel, ferritic/martensitic, heat-treated, Rm 810 N/mm ² , 240 HB	
M2.1.1 Stainless steel, austenitic, quenched, 180 HB	
M2.2.1 Duplex steel, high-strength stainless steels	
K1.1.1 Grey cast iron, pearlitic/ferritic, 180 HB	38
K1.1.2 Grey cast iron, pearlitic/martensitic, 260 HB	38
K1.2.1 Cast iron with spheroidal graphite, ferritic, 160 HB	38
K1.2.2 Cast iron with spheroidal graphite, pearlitic, 250 HB	38
K1.3.1 Malleable cast iron, ferritic, 130 HB	38
K1.3.2 Malleable cast iron, pearlitic, 230 HB	38
K2.1.1 Vermicular graphite cast iron (GJV)	18
K2.2.1 Austenitic-ferritic spheroidal graphite cast iron (ADI)	18
N1.1.1 Wrought aluminium alloys, non-hardened, 60 HB	
N1.1.2 Wrought aluminium alloys, hardened, 100 HB	
N2.1.1 Aluminium casting alloys, non-hardened, ≤ 12 % Si, 75 HB	
N2.1.2 Aluminium casting alloys, hardened, ≤ 12 % Si, 90 HB	
N2.1.3 Aluminium casting alloys, non-hardened, > 12 % Si, 130 HB	
N3.1.1 Copper and copper alloys: Free-machining alloy, Pb > 1 %	
N3.1.2 Copper and copper alloys: CuZn, CuSnZn	
N3.1.3 Copper and copper alloys: CuSn, lead-free copper and copper electrolyte	
N4.1.1 Non-metallic materials: Duroplastics, fibre-reinforced plastics	
N4.1.2 Non-metallic materials: Hard rubber, wood, etc.	
N4.1.3 Non-metallic materials: Graphite	
S1.1.1 Heat-resistant alloys, Fe-based, annealed, 200 HB	
S1.1.2 Heat-resistant alloys, Fe-based, hardened, 280 HB	
S1.1.3 Heat-resistant alloys, Ni- or Co-based, annealed, 250 HB	
S1.1.4 Heat-resistant alloys, Ni- or Co-based, hardened, 350 HB	
S1.1.5 Heat-resistant alloys, Ni- or Co-based, cast, 320 HB	
S2.1.1 Titanium alloys, pure titanium, Rm 400 N/mm ²	
S2.1.2 Titanium alloys, Alpha and Beta alloys, hardened, Rm 1050 N/mm ²	
H1.1.1 Hardened steel, hardened and tempered, < 55 HRC	
H1.1.2 Hardened steel, hardened and tempered, < 60 HRC	
H1.1.3 Hardened steel, hardened and tempered, > 60 HRC	
H2.1.1 Chilled cast iron, 400 HB	
H2.1.2 Chilled cast iron, hardened and tempered, < 55 HRC	



Solid carbide tap SteelPro

400204097/26046-VII-05 | Printed in Germany | 2026

GÜHRING

Gühring KG | P.O. Box 100247 | 72423 Albstadt | Germany
Gühring KG | Herderstrasse 50–54 | 72458 Albstadt | Germany
Telephone: +49 74 31 17-0 | info@guehring.de | www.guehring.com

No liability can be accepted for printing errors or technical changes of any kind.
Our Conditions of Sale and Terms of Payment apply. Available on request.