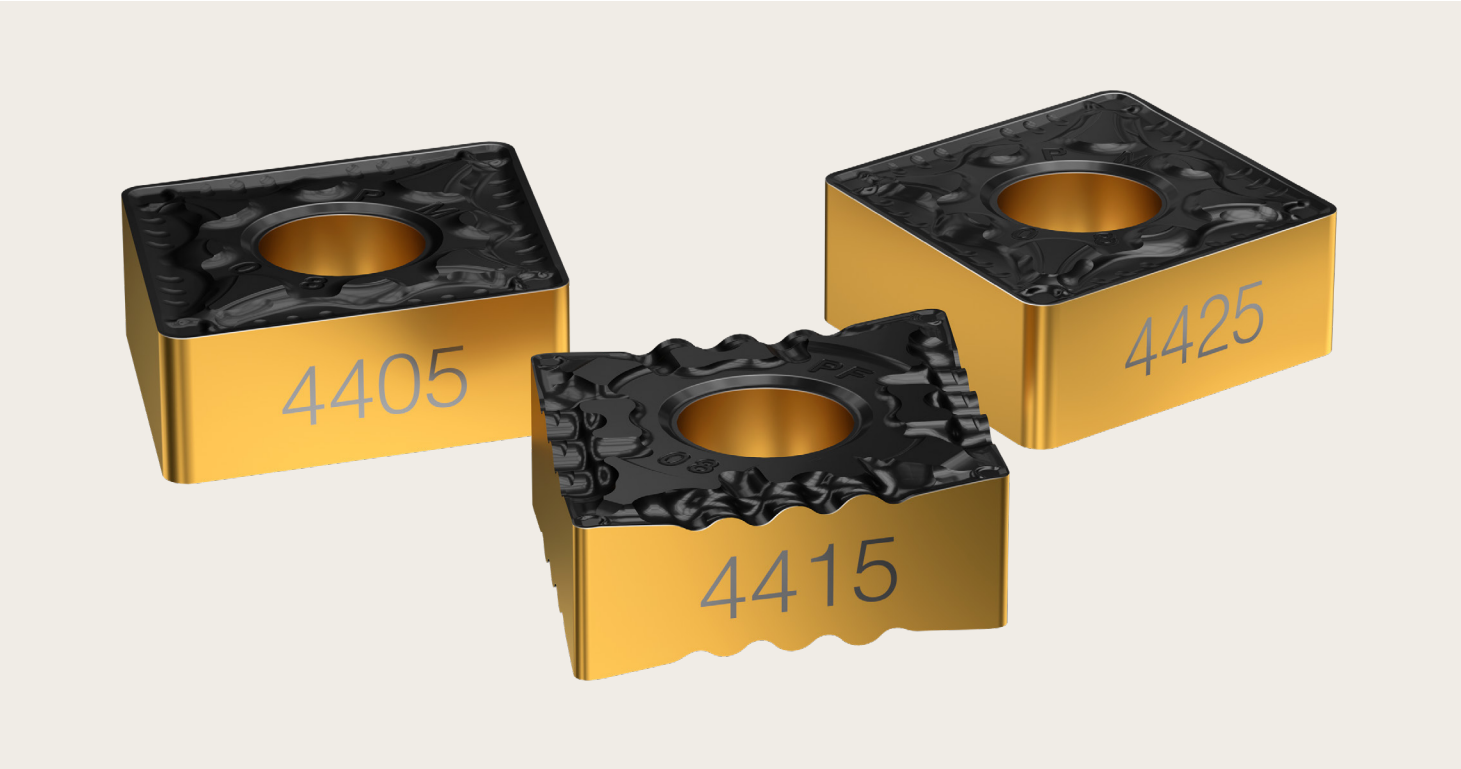
New steel turning grades GC4425, GC4415 and GC4405

Reducing production cost or increasing output is a top priority for making steel turning operations more efficient. Common challenges often involved are to increase metal removal rates, reduce cycle times and to minimize material waste, but can also include optimizing tool inventory and to operate at lower capacity without compromising process security.

Sandvik Coromant offers a complete, market-leading steel turning offer, developed to help your business thrive and production to reach new levels. The new generation steel turning grades are enhanced in every aspect, from tool life to wear and heat resistance, offering secure, efficient and productive steel turning.

SANDVIK
coromant



New post-treatment

Improved post-treatment lifts the performance in intermittent cutting operations. The bright yellow top TiN coating on the insert flank allows for easy wear detection.

Second generation Inveio® technology

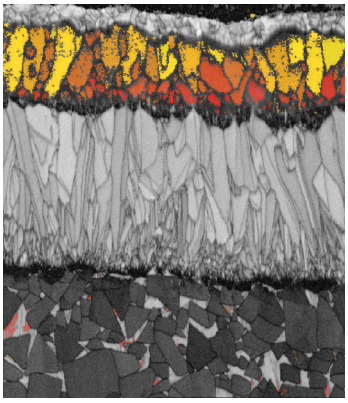
With the introduction of the second generation Inveio® technology, the benefits of uni-directional coating have been further developed. Improved crystal orientation makes for an even more consistent performance and significantly improved wear resistance and tool life.

Toughness and wear resistance combined

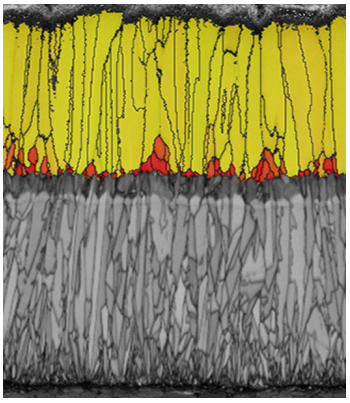
New substrates with a unique combination of good toughness and resistance against plastic deformation offer a reliable performance. The cobalt-enriched surface gradient adds to security.

Sustainable steel turning

An average of 25% tool life increase combined with a reliable and predictable performance helps minimize both insert and workpiece material waste, necessary preconditions for sustainable machining. Moreover, its carbide substrate contains a high proportion of recycled carbide material, making them one of the most environment-friendly grades.



Conventional CVD alumina coating with random crystal orientation.



With Inveio®, every crystal in the alumina coating is lined up in the same direction, creating a strong barrier towards the cutting zone.

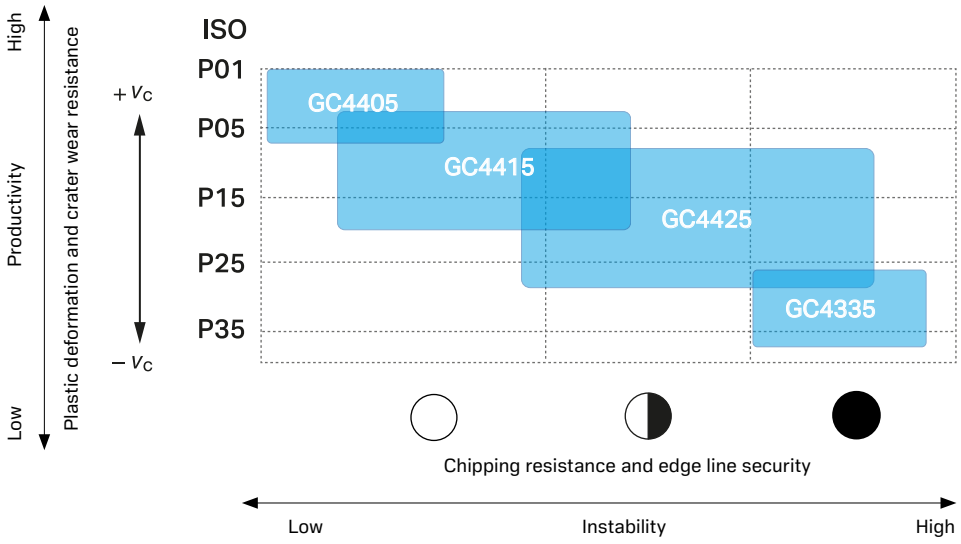
Inveio®
Uni-directional crystal orientation

First choice for steel turning

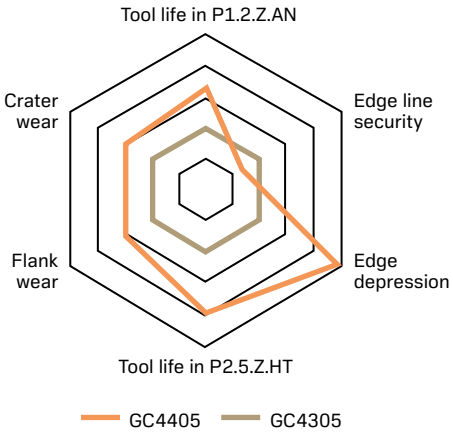
First choice grade GC4425 delivers improved wear resistance, heat resistance and toughness in a wide application range.

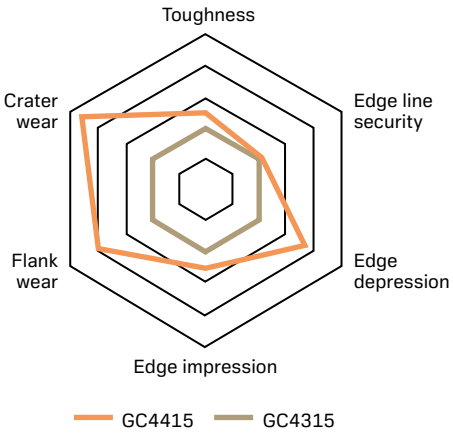
Grade GC4415 complements GC4425 with enhanced performance when more heat resistance is needed.

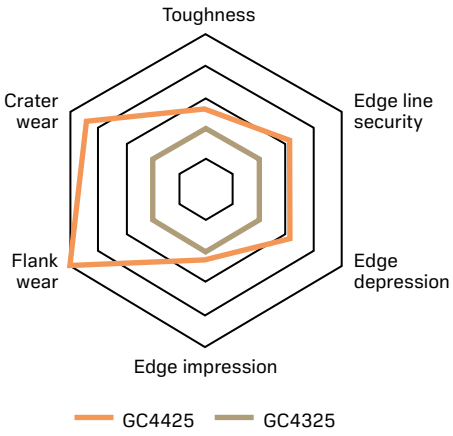
Use grade GC4405 as a high feed productivity optimizer with high metal removal rates in stable conditions where plastic deformation properties are demanding.



Refined in every aspect







Application

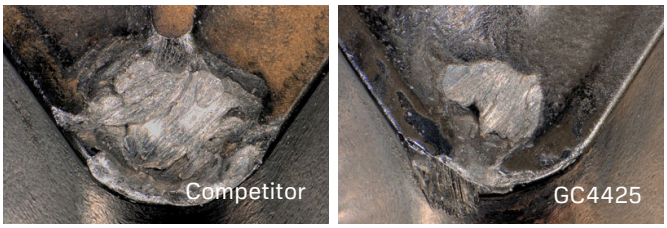
- Low-alloyed and unalloyed steels
- Suitable for mass and batch production
- External and internal machining
- Finishing to roughing in applications with continuous cuts and light interruptions

Performance case: Automotive

Component: Main shaft
Workpiece material: Forged, P1.1.Z.AN (SAE 1026), 172 HB
Operation: Continuous external turning, roughing and semi-finishing

Cutting data:
v_c, m/min (ft/min) 192 (630)
f_n, mm/rev (in/rev) 0.32 (0.013)
a_p, mm (inch) 1.2 (0.047)

	Competitor	Sandvik Coromant
Insert, ISO (ANSI)	-	TNMG160412 (TNMG 333) -PR
Grade	-	GC4425
Tool life, pcs	150	270



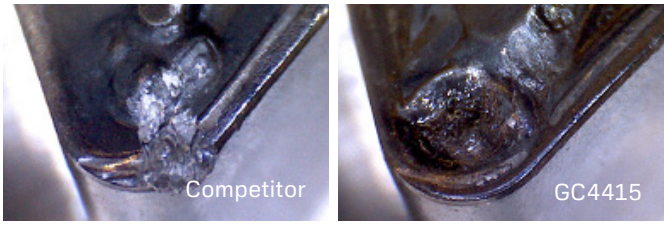
Result: The competitor insert has large crater wear, while GC4425 produced 80% more pieces with a stable and predictable flank wear.

Performance case: Automotive

Component: Idler shaft
Workpiece material: Unalloyed steel, P1.2.Z.AN (C45), 207 HB
Operation: OD turning, light roughing

Cutting data:
v_c, m/min (ft/min) 220 (722)
f_n, mm/rev (in/rev) 0.3 (0.0118)
a_p, mm (inch) 3 (0.118)

	P20 competitor	Sandvik Coromant
Insert, ISO (ANSI)	-	TNMG160412 (TNMG 333) -PM
Grade	-	GC4415
Time in cut, min	0.13	0.13
Tool life, pcs	200	300



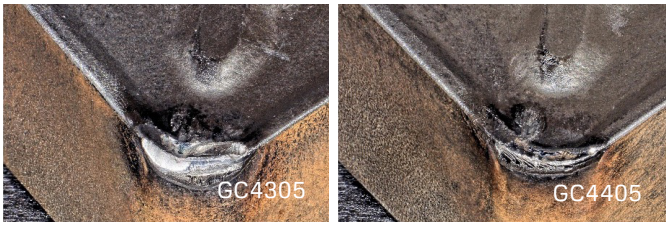
Result: Grade GC4415 provided a 50% increase in tool life compared to competitor grade based on better crater wear resistance and plastic deformation resistance.

Performance case: General engineering

Component: Pin
Workpiece material: Rolled, P2.5.Z.HT, 311 HB
Operation: Continuous external axial turning and facing, roughing (emulsion)

Cutting data:
v_c, m/min (ft/min) 331 (1086)
f_n, mm/rev (in/rev) 0.35 (0.0138)
a_p, mm (inch) 2.0 (0.787)

	GC4305	New GC4405
Insert, ISO (ANSI)	CNMG 120412-PR (CNMG 433-PR)	CNMG 120412-PR (CNMG 433-PR)
Tool life, pcs	21	48



Result: Grade GC4405 provided a 130% increase in tool life compared to existing grade GC4305 based on better plastic deformation resistance and crater wear resistance.

Learn more about the new grades
sandvik.coromant.com/steelturning

Authorized distributor

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