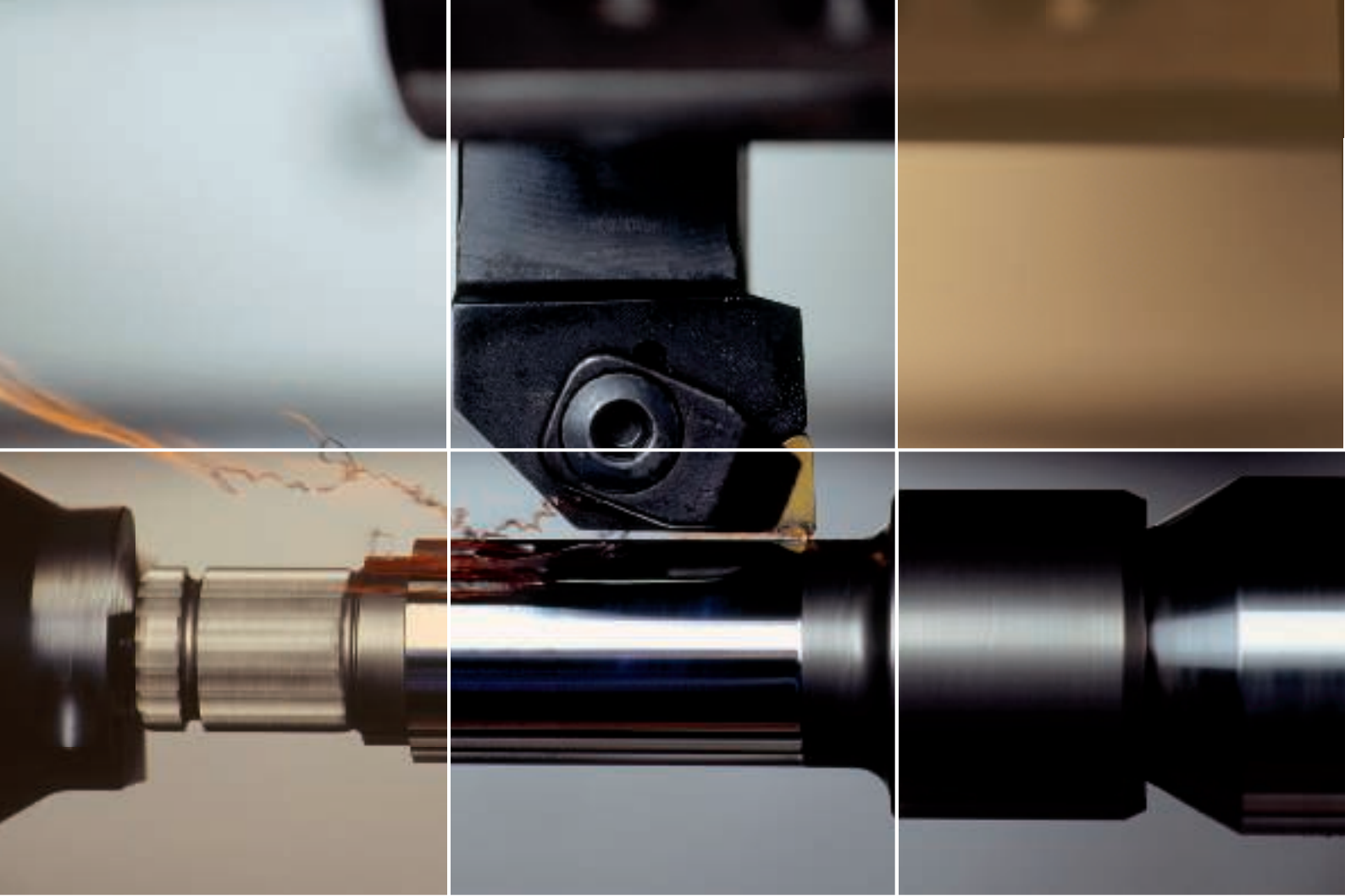


**HARD PART
TURNING**



**A POWERFUL CHAIN FOR
RAISING CHALLENGES**

SECO 



MANY CHALLENGES. ONE GRADE CHAIN FOR HARD PART TURNING.

Lighter. Stronger. Tougher.

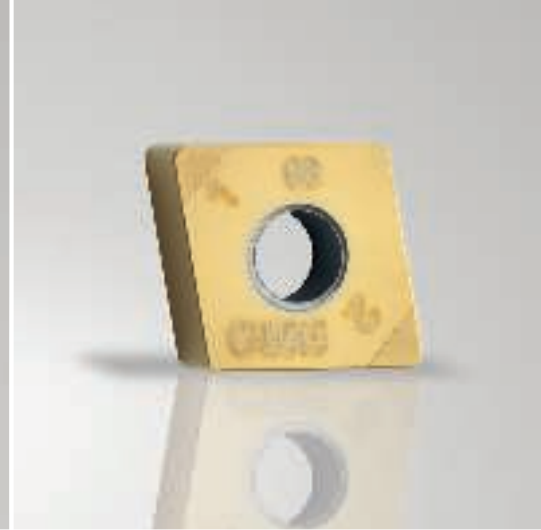
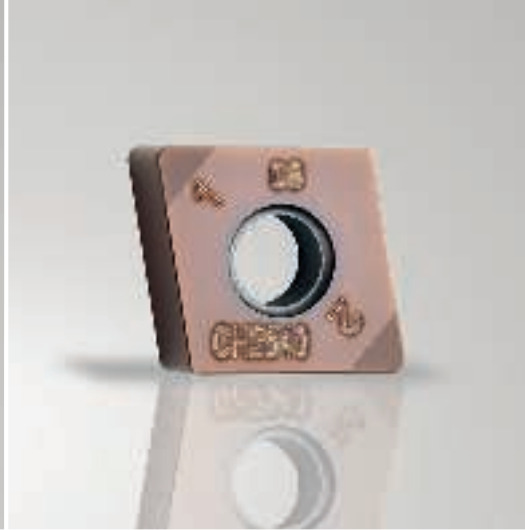
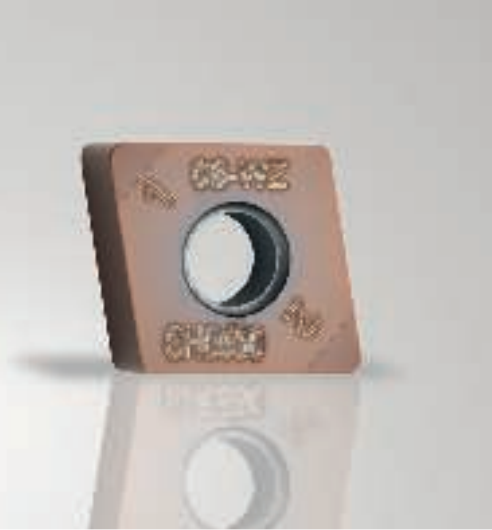
PCBN machining is evolving and requires new solutions to meet the continued demand for increased productivity.

Today's machining operations are increasingly varied with both interrupted and continuous cutting. Plus, common workpiece materials, such as vacuum hardened, high chrome steels, are very hard to machine. These challenges make it difficult to find solutions from the existing grades available from various toolmakers.

One grade chain for all applications.

With the addition of CH0550, CH2540 and CH3515 grades, Seco complements its existing CBN060K grade to create new grade chain that covers the entire application area from H05-H35.

This chain completes Seco's premium offering for precision machining of hardened steel workpiece materials and enables Seco easily to tailor a solution to meet any customer's needs to increase productivity and decrease costs.



CH0550

- Continuous machining in hardened steels, < 67 HRC
- Solid format and braced tips
- High precision finishing
- High speed capability (up to 300 m/min)
- High crater wear resistance due to new coating
- Improvement in tool life over competition

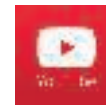
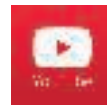
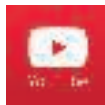
CH2540

- Interrupted machining in hardened steels, < 65 HRC
- Solid format and braced tips
- Moderate and high cutting speeds
- Improved tool life due to toughness and wear resistance
- Increased working window (speed & feed)
- Improved performance in mixed applications

CH3515

- Heavy interrupted machining in hardened steels, < 65 HRC
- Braced tips and full face layer
- Outstanding tool life regarding toughness and wear resistance
- Cutting speeds up to 200 m/min

FIND OUT MORE ON YOUTUBE:

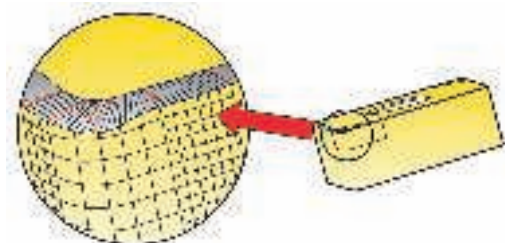


HELIX WIPER TECHNOLOGY

Our patented Helix™ Wiper concept is designed for optimisation in finish machining. It has a wiper on both sides of the corner radii (as the standard) but the protection chamfer is twisted from negative to positive or from positive to negative depending on the application. It is available in grade CH0550 and CBN060K. The following considerations apply when selecting the appropriate geometry:

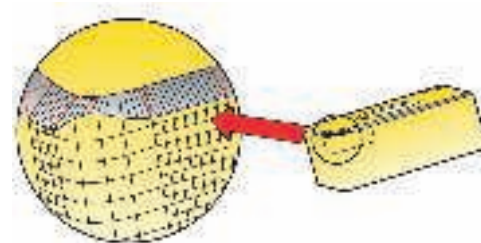
Positive Wiper, WZP

- Reducing vibrations in weak set-ups
- Lower radial cutting forces
- Used where standard wiper cannot be used










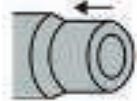
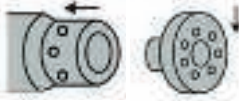




Negative Wiper, WZN

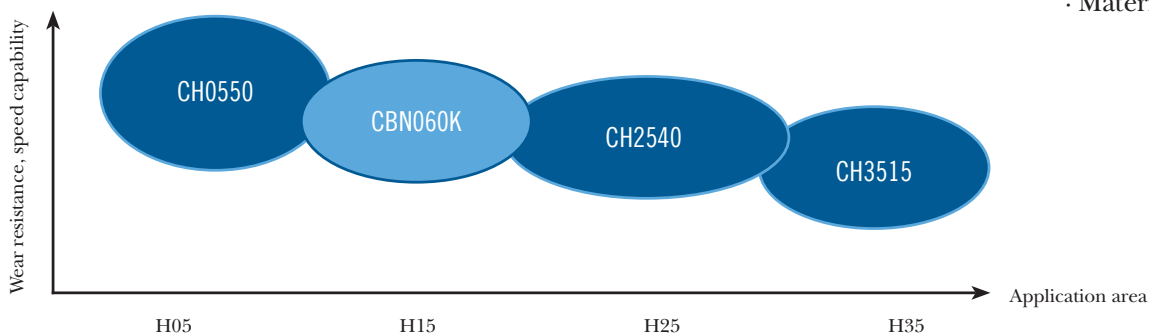
- Longer tool life
- Reducing vibrations in stable set-ups
- Increasing compressive stresses



CHARACTERISTICS

	ALLROUNDER			
				
Grade	CH0550	CBN060K	CH2540	CH3515
Chamfer	S-01015 S-01525	S-01525	S-01525	S-02020 S-00540
ISO	05	15	25	35
Level of interruption	Continuous	Continuous/light interruptions	Medium interruptions	Heavy interruptions
Stress at cutting edge				
	0%			100%
Operation / workpiece				
Process	High precision cutting	High speed cutting	High speed cutting	High performance cutting
Advantage	<ul style="list-style-type: none"> · Extreme wear and heat resistance · Chemical stability 	<ul style="list-style-type: none"> · Good balance between wear resistance and toughness 	<ul style="list-style-type: none"> · Improved toughness · Improved wear resistance 	<ul style="list-style-type: none"> · Extreme edge toughness
Benefits	<ul style="list-style-type: none"> · Longer tool life · Better part quality and accuracy · Higher cutting data · High metal removal rate 	<ul style="list-style-type: none"> · High metal removal rate · Longer tool life · High cutting data 	<ul style="list-style-type: none"> · Longer tool life · More secure edge toughness behaviour 	<ul style="list-style-type: none"> · More secure edge toughness behaviour · Longer tool life · Reliability · Stable cutting edge

SECOMAX™ HPT GRADE CHAIN THE TARGET – COMPLETE CHAIN



Many possibilities to optimise:

- Operation
- Level of interruption
- Material

NAMING STRUCTURE

IDENTIFY THE APPLICATION AT A GLANCE

The new grades for hard part turning will follow a new product naming structure that clearly indicates which grade to use for which application.

The existing grades as the CBN060K will keep their old name and logic.

C-H-25-4-0

INSERT MATERIAL

C=PCBN

MAIN SECO MATERIAL GROUP

H=hard materials

ISO AREA

05 = Continuous cuts

15 = Continuous cuts / light interruptions

25 = Medium interruptions

35 = Heavy interruptions

COATING

0 = uncoated

1 = P

3 = K

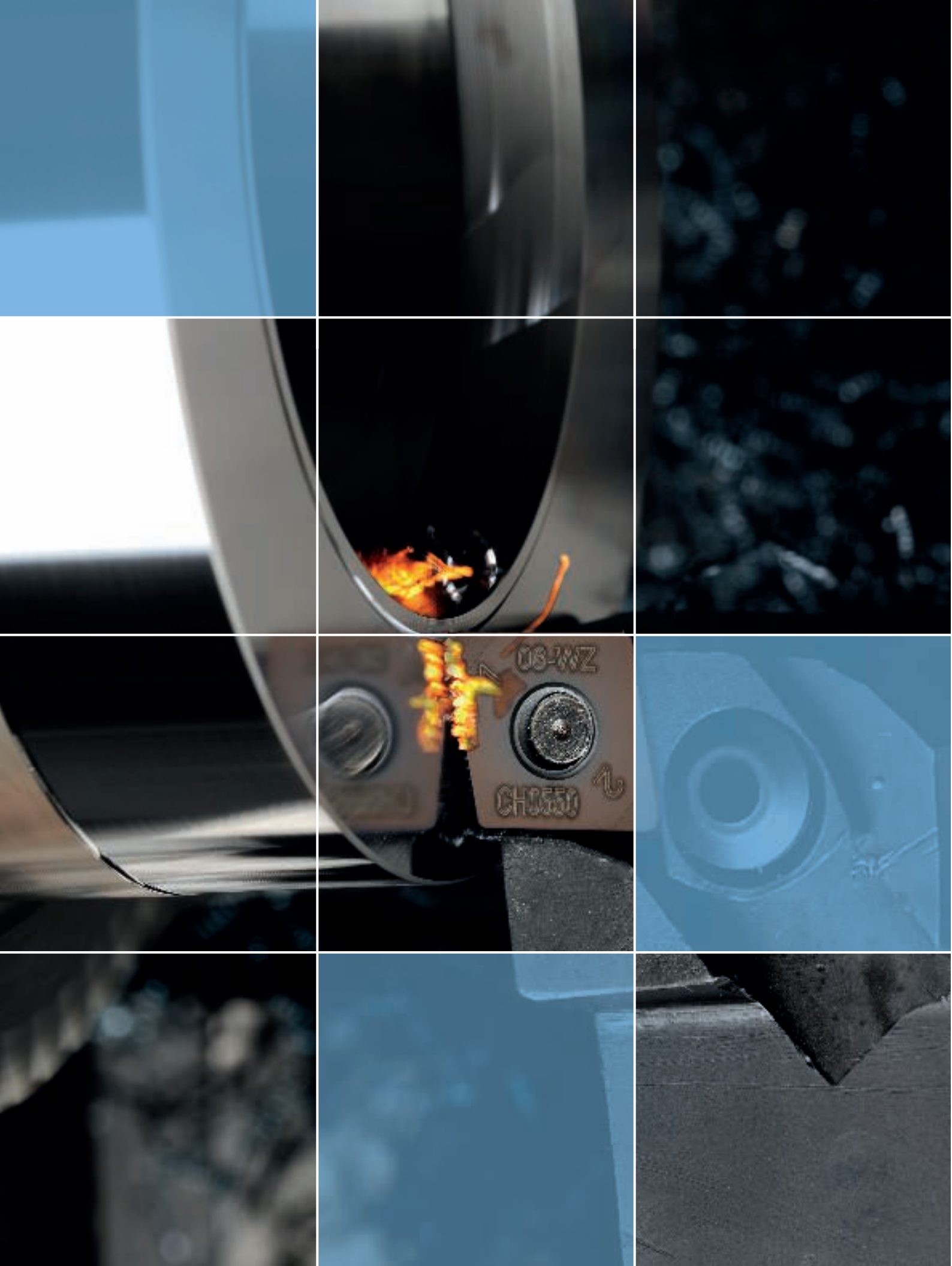
4 = C

5 = X, new nanolaminate





CBN CONTENT

0 - 4 = low

5 - 9 = high



FORMATS AND CUTTING DATA

				
Grade	CH0550	CBN060K	CH2540	CH3515
Formats	<ul style="list-style-type: none"> · Solid · Brazed tips (single & double sided) 	<ul style="list-style-type: none"> · Solid · Brazed tips (single & double sided) 	<ul style="list-style-type: none"> · Solid · Brazed tips (single & double sided) 	<ul style="list-style-type: none"> · Full faced layer · Brazed tips (single sided)
Composition	<ul style="list-style-type: none"> · 40% cBN · Average grain size 3 µm · Ti(C, N) binder · (Ti, Al, Cr) N nanolaminate coating 	<ul style="list-style-type: none"> · 60% cBN · Average grain size 2 µm · Ti(C, N) binder + super alloy · (Ti, Al, Si) N nanolaminate coating 	<ul style="list-style-type: none"> · 65% cBN · Average grain size 8 µm · Ti(C, N) binder · (Ti, Si) N coating 	<ul style="list-style-type: none"> · 90% cBN · Average grain size 4 µm · AlN binder · (Ti, Al) N coating
Edge preparations	<ul style="list-style-type: none"> · S-01525 - 0.15x25° · S01015 - 0.10x15° 	<ul style="list-style-type: none"> · S-01525 - 0.15x25° 	<ul style="list-style-type: none"> · S -01525 - 0.15x25° 	<ul style="list-style-type: none"> · S-02020 - 0.20x20° · S-00540 - 0.05x40°

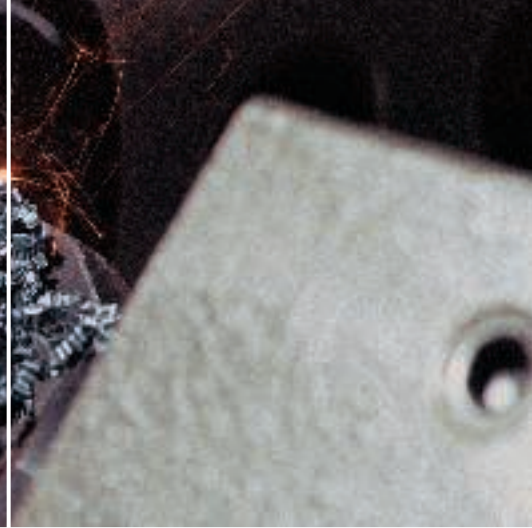
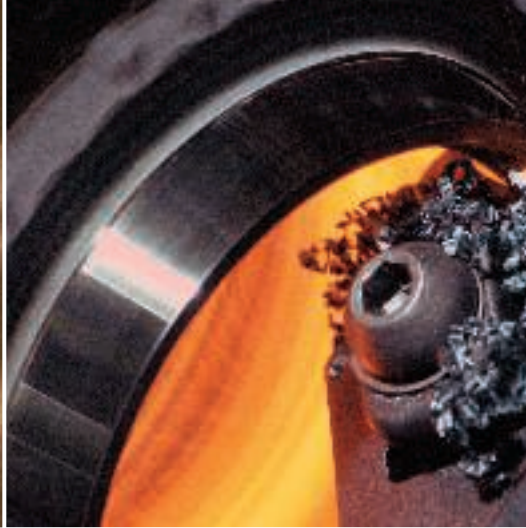
SMG	CH0550		CBN060K		CH2540		CH3515	
	v _c	f	v _c	f	v _c	f	v _c	f
K2	—	—	150 — 350	0,050 — 0,22	120 — 325	0,060 — 0,24	—	—
K5	—	—	—	—	80 — 500	0,050 — 0,20	—	—
H3	100 — 300	0,030 — 0,24	100 — 240	0,030 — 0,28	100 — 220	0,030 — 0,24	90 — 220	0,050 — 0,24
H5	100 — 250	0,030 — 0,24	90 — 220	0,030 — 0,28	90 — 200	0,030 — 0,24	90 — 220	0,050 — 0,24
H7	110 — 230	0,060 — 0,20	100 — 230	0,060 — 0,20	100 — 210	0,070 — 0,20	100 — 210	0,070 — 0,20
H8	100 — 220	0,010 — 0,20	90 — 220	0,010 — 0,20	70 — 200	0,020 — 0,17	70 — 200	0,020 — 0,17
H11	110 — 230	0,030 — 0,18	100 — 230	0,030 — 0,18	80 — 210	0,040 — 0,18	—	—
H21	—	—	—	—	—	—	150 — 230	0,10 — 0,60
H31	—	—	—	—	—	—	50 — 120	0,15 — 0,44
PM1	—	—	—	—	110 — 250	0,050 — 0,24	130 — 300	0,050 — 0,24
PM2	—	—	—	—	90 — 200	0,050 — 0,20	120 — 250	0,050 — 0,20
PM3	—	—	—	—	80 — 170	0,050 — 0,15	100 — 200	0,050 — 0,15
HF1	—	—	—	—	50 — 150	0,020 — 0,18	—	—
HF2	—	—	—	—	100 — 200	0,020 — 0,17	—	—





**A POWERFUL GRADE
CHAIN BACKED BY OUR
EXPERIENCE RESULTS IN
MAXIMUM PRODUCTIVITY**

SUCCESSFUL SOLUTIONS



CASE CH0550

WORKPIECE

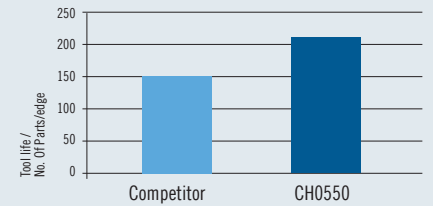
Component:	Pinion gear shaft
Material:	20MnCr5S, SMG-H3
Hardness:	57-62 HRC
Surface:	Pre-machined
Tool life crit.:	$R_z < 4.0 \mu\text{m}$

CONDITIONS

Operation:	OD turning, facing, continuous cut
Insert:	CNGA120408S-01525-L1-WZ-B
Cutting length:	28 mm
Coolant:	No
Cutting speed:	160 m/min
Feed rate:	OD turning: 0.30 mm/rev Facing: 0.25 mm/rev
Depth of cut:	0.20 mm

RESULTS

- 210 parts/edge
- Improved productivity



CASE CBN060K

WORKPIECE

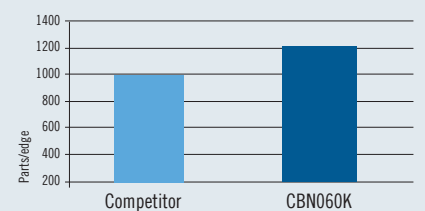
Component:	Gear Wheel
Material:	16MnCr5, SMG-H3
Hardness:	58-62 HRC
Surface:	Pre-machined
Tool life crit.:	$R_a 0.8 \mu\text{m}$

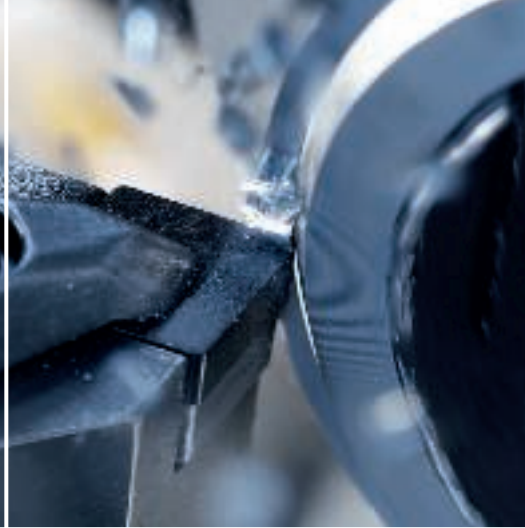
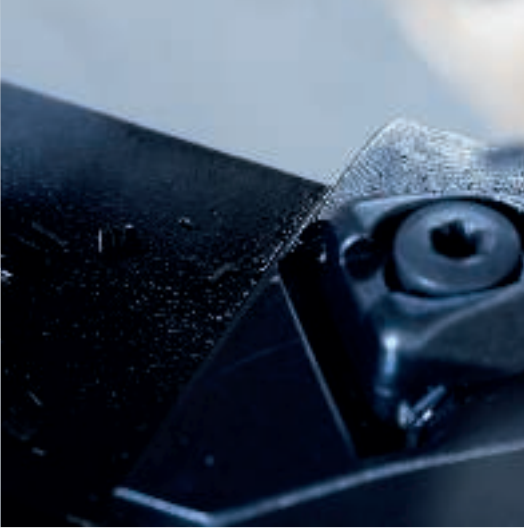
CONDITIONS

Operation:	ID turning, continuous cut
Insert:	TNGX110308S-01525-WZ
Coolant:	Yes
Cutting speed:	180 m/min
Feed rate:	0.38 mm/rev
Depth of cut:	0.03 mm

RESULTS

- 1,200 parts/edge
- Increased tool life and productivity





CASE CH2540

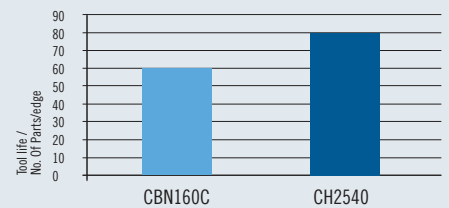
WORKPIECE

Component:	Gear wheel
Material:	20MnCr5S, SMG-H3
Hardness:	63 HRC
Surface:	Pre-machined

CONDITIONS

Operation:	ID Turning: $\varnothing 180$ mm, length 17 mm (2 passes) Facing: $\varnothing 124 - \varnothing 178$ mm
Insert:	DNGA150408S-01525-L1-B
Coolant:	No
Cutting speed:	Facing: 180 m/min ID Turning: 200 m/min
Feed rate:	Facing: 0.15 mm/rev ID Turning 0.16 mm/rev
Depth of cut:	Facing: 0.15 mm ID Turning: 0.05-0.15 mm

RESULTS	<ul style="list-style-type: none"> • Increased tool life • 80 parts/edge
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CASE CH3515

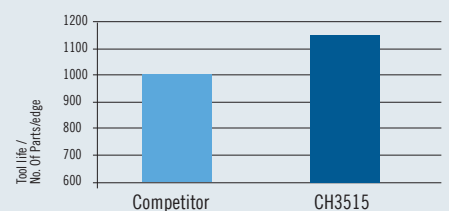
WORKPIECE

Component:	CV-Joint
Material:	SAE8620, SMG-H3
Hardness:	58-62 HRC
Surface:	Pre-machined
Tool life crit.:	$R_z < 4.0 \mu\text{m}$

CONDITIONS

Operation:	ID Turning (Heavy interrupted cut) $\varnothing 74.72$ mm
Cutting length:	35 mm/part
Insert:	SNGA 120412
Cutting speed:	180 m/min
Feed rate:	0.16 mm/rev
Depth of cut:	0.20 mm

RESULTS	<ul style="list-style-type: none"> • Increased tool life • 1.150 parts/edge
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