

AC405K / AC415K / AC420K

New Coated Carbide Grades for Cast Iron Turning



AC405K - For High Speed Turning



AC415K - For General Purpose Turning



AC420K - Interrupted Turning



SUMITOMO

CARBIDE - CBN - DIAMOND

ACE-Coat

AC405K / AC415K / AC420K



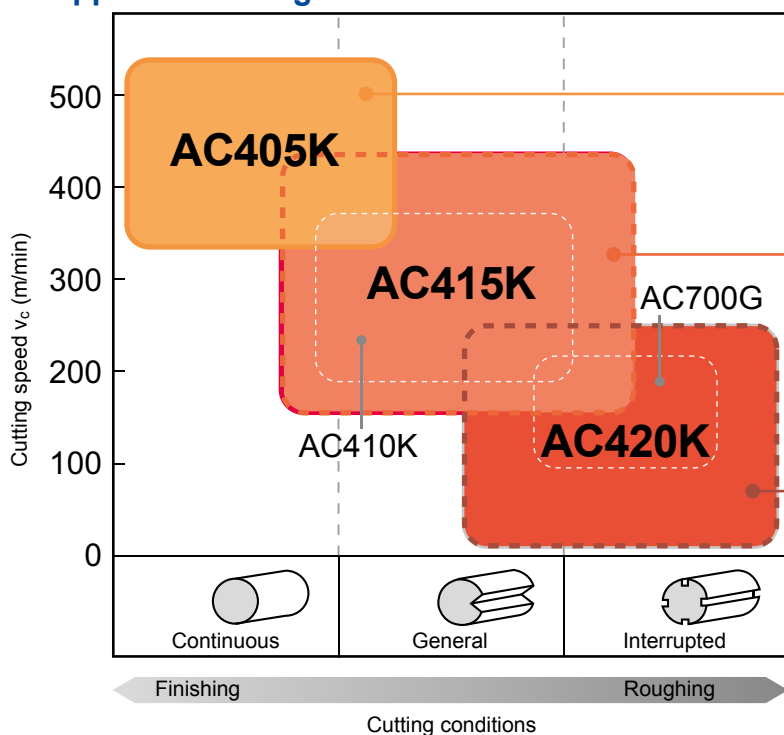
■ Features

The finer and harder Super FF TiCN layer has significantly improved wear resistance.

The newly developed stress control technology has strengthened the fine α -Alumina (FF- Al_2O_3) layer to provide excellent reliability.

It covers all ranges of machining application from high speed cutting to interrupted cutting.

■ Application Range



● AC405K

This grade has excellent wear and deformation resistance. It is suitable for high speed and continuous cutting.

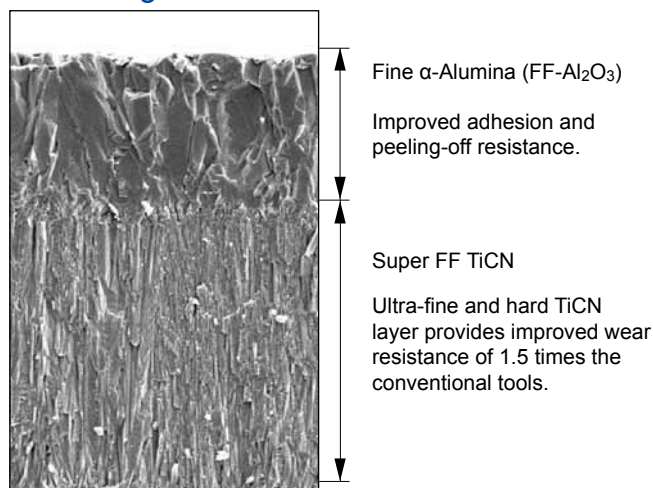
● AC415K

This grade is stable in a wide range of applications and achieves long tool life. It is the first recommendation for cast iron turning.

● AC420K

This grade is extremely stable and shows good performance against interrupted/unstable cutting or mill-scaled work due to its excellent fracture resistance.

● Coating Structure



● Coating Stress Control Technology

AC400K Series	Conventional Coating
The coating stress control technology reduces abnormal damages based on chipping.	

Insert Selection Negative Type

ACE-Coat AC405K / AC415K / AC420K



80° Diamond Type

Shape	Catalogue No.	Stock			Dimensions (mm)			
		AC405K	AC415K	AC420K	Cutting edge length	IC	Thick-ness	Nose radius
	CNMG 120404 NUZ	●	●	●	12,9	12,7	4,76	0,4
	CNMG 120408 NUZ	●	●	●				0,8
	CNMG 120412 NUZ	●	●	●				1,2
	CNMG 120416 NUZ	●	●	●	16,1	15,875	6,35	1,6
	CNMG 160612 NUZ	●	●	●				1,2
	CNMG 160616 NUZ	●	●	●				1,6
	CNMG 190612 NUZ	●	●	●	19,3	19,05		1,2
	CNMG 190616 NUZ	●	●	●				1,6
	CNMG 120404 NGZ	●	●	●	12,9	12,7	4,76	0,4
	CNMG 120408 NGZ	●	●	●				0,8
	CNMG 120412 NGZ	●	●	●				1,2
	CNMG 120416 NGZ	●	●	●	16,1	15,875	6,35	1,6
	CNMG 160612 NGZ	■	■	■				1,2
	CNMG 160616 NGZ	■	■	■				1,6
	CNMG 190612 NGZ	■	■	■	19,3	19,05		1,2
	CNMG 190616 NGZ	■	■	■				1,6
	CNMA 120404	●	●	●	12,9	12,7	4,76	0,4
	CNMA 120408	●	●	●				0,8
	CNMA 120412	●	●	●				1,2
	CNMA 120416	●	●	●	16,1	15,875	6,35	1,6
	CNMA 160612	●	●	●				1,2
	CNMA 160616	●	●	●				1,6
	CNMA 190612	●	●	●	19,3	19,05		1,2
	CNMA 190616	●	●	●				1,6
	CNMG 120404 NLUW	●	●	●	12,9	12,7	4,76	0,4
	CNMG 120408 NLUW	●	●	●				0,8
	CNMG 120412 NLUW	●	●	●				1,2
	CNMG 120408 NGUW	●	●	●	12,9	12,7	4,76	0,8
	CNMG 120412 NGUW	●	●	●				1,2
	CNMG 120416 NGUW	●	●	●				1,6



55° Diamond Type

Shape	Catalogue No.	Stock			Dimensions (mm)			
		AC405K	AC415K	AC420K	Cutting edge length	IC	Thick-ness	Nose radius
	DNMG 150608 NUZ	●	●	●	15,5	12,7	6,35	0,8
	DNMG 150612 NUZ	●	●	●				1,2
	DNMG 150604 NGZ	●	●	●	15,5	12,7	6,35	0,4
	DNMG 150608 NGZ	●	●	●				0,8
	DNMG 150612 NGZ	●	●	●				1,2
	DNMA 150608	●	●	●				0,8
	DNMA 150612	●	●	●	15,5	12,7	6,35	1,2



Square Type

Shape	Catalogue No.	Stock			Dimensions (mm)			
		AC405K	AC415K	AC420K	Cutting edge length	IC	Thick-ness	Nose radius
	SNMG 120408 NUZ	●	●	●	12,7	12,7	4,76	0,8
	SNMG 120412 NUZ	●	●	●				1,2
	SNMG 120416 NUZ	●	●	●				1,6
	SNMG 150612 NUZ	●	●	●	15,875	15,875	6,35	1,2
	SNMG 150616 NUZ	●	●	●				1,6
	SNMG 190612 NUZ	○	○	○				1,2
	SNMG 190616 NUZ	○	○	○	19,05	19,05		1,6
	SNMG 120408 NGZ	●	●	●	12,7	12,7	4,76	0,8
	SNMG 120412 NGZ	●	●	●				1,2
	SNMG 120416 NGZ	●	●	●				1,6
	SNMG 150612 NGZ	■	■	■	15,875	15,875	6,35	1,2
	SNMG 150616 NGZ	■	■	■				1,6
	SNMG 190612 NGZ	■	■	■				1,2
	SNMG 190616 NGZ	■	■	■	19,05	19,05		1,6
	SNMA 120408	●	●	●	12,7	12,7	4,76	0,8
	SNMA 120412	●	●	●				1,2
	SNMA 120416	●	●	●				1,6
	SNMA 190612	●	●	●	19,05	19,05	6,35	1,2
	SNMA 190616	●	●	●				1,6



Triangle Type

Shape	Catalogue No.	Stock			Dimensions (mm)			
		AC405K	AC415K	AC420K	Cutting edge length	IC	Thick-ness	Nose radius
	TNMG 160404 NUZ	●	●	●	16,5	9,525	4,76	0,4
	TNMG 160408 NUZ	●	●	●				0,8
	TNMG 160412 NUZ	●	●	●				1,2
	TNMG 220408 NUZ	●	●	●	22	12,7	4,76	0,8
	TNMG 220412 NUZ	●	●	●				1,2
	TNMG 220416 NUZ	●	●	●				1,6
	TNMG 160404 NGZ	●	●	●	16,5	9,525	4,76	0,4
	TNMG 160408 NGZ	●	●	●				0,8
	TNMG 160412 NGZ	●	●	●				1,2
	TNMG 220408 NGZ	■	■	■	22,0	12,7	4,76	0,8
	TNMG 220412 NGZ	■	■	■				1,2
	TNMG 220416 NGZ	■	■	■				1,6
	TNMA 160404	●	●	●	16,5	9,525	4,76	0,4
	TNMA 160408	●	●	●				0,8
	TNMA 160412	●	●	●				1,2
	TNMA 220408	●	●	●	22,0	12,7	4,76	0,8
	TNMA 220412	●	●	●				1,2
	TNMA 220416	●	●	●				1,6



35° Diamond Type

Shape	Catalogue No.	Stock			Dimensions (mm)			
		AC405K	AC415K	AC420K	Cutting edge length	IC	Thick-ness	Nose radius
	VNMG 160404 NUZ	●	●	●	16,6	9,525	4,76	0,4
	VNMG 160408 NUZ	●	●	●				0,8
	VNMG 160412 NUZ	●	●	●				1,2
	VNMG 160404 NGZ	●	●	●	16,6	9,525	4,76	0,4
	VNMG 160408 NGZ	●	●	●				0,8
	VNMG 160412 NGZ	●	●	●				1,2
	VNMA 160404	●	●	●	16,6	9,525	4,76	0,4
	VNMA 160408	●	●	●				0,8
	VNMA 160412	●	●	●				1,2



Trigon Type

Shape	Catalogue No.	Stock			Dimensions (mm)			
		AC405K	AC415K	AC420K	Cutting edge length	IC	Thick-ness	Nose radius
	WNMG 080404 NUZ	●	●	●	8,7	12,7	4,76	0,4
	WNMG 080408 NUZ	●	●	●				0,8
	WNMG 080412 NUZ	●	●	●				1,2
	WNMG 080404 NGZ	●	●	●	8,7	12,7	4,76	0,4
	WNMG 080408 NGZ	●	●	●				0,8
	WNMG 080412 NGZ	●	●	●				1,2
	WNMA 080408	●	●	●	8,7	12,7	4,76	0,8
	WNMA 080412	●	●	●				1,2
	WNMA 080416	●	●	●				1,6
	WNMG 060404 NLUW	●	●	●	6,5	9,525	4,76	0,4
	WNMG 060408 NLUW	●	●	●				0,8
	WNMG 080404 NLUW	●	●	●	8,7	12,7	4,76	0,4
	WNMG 080408 NLUW	●	●	●				0,8
	WNMG 080412 NLUW	●	●	●				1,2
	WNMG 080408 NGUW	●	●	●	8,7	12,7	4,76	0,8
	WNMG 080412 NGUW	●	●	●				1,2

● Euro stock

○ Japan stock

■ Delivery from autumn 2012



80° Diamond Type

Shape	Catalogue No.	Stock			Dimensions (mm)			
		AC405K	AC415K	AC420K	Cutting edge length	IC	Thick-ness	Nose radius
	CCMT 060202 NSU	●	●		6,4	6,35	2,38	0,2
	CCMT 060204 NSU	●	●					0,4
	CCMT 09T304 NSU	●	●		9,7	9,525	3,97	0,4
	CCMT 09T308 NSU	●	●					0,8
	CCMT 120404 NSU	●	●		12,9	12,7	4,76	0,4
	CCMT 120408 NSU	●	●					0,8
	CCMT 09T304 NMU	●	●	●				0,4
	CCMT 09T308 NMU	●	●	●	9,7	9,525	3,97	0,8
	CCMW 09T304	●	●					0,4
	CCMW 09T308	●	●		9,7	9,525	3,97	0,8
	CCMT 09T304 NLUW	●	●					0,4
	CCMT 09T308 NLUW	●	●		9,7	9,525	3,97	0,8



Triangle Type

Shape	Catalogue No.	Stock			Dimensions (mm)			
		AC405K	AC415K	AC420K	Cutting edge length	IC	Thick-ness	Nose radius
	TCMT 110204 NSU	●	●		11,0	6,35	2,38	0,4
	TCMT 110208 NSU	●	●					0,8
	TCMT 16T304 NSU	●	●		16,5	9,525	3,97	0,4
	TCMT 16T308 NSU	●	●					0,8
	TPMT 110304 NSU	●	●		11,0	6,35	3,18	0,4
	TPMT 110308 NSU	●	●					0,8
	TPMT 160404 NSU	●	●		16,5	9,525	4,76	0,4
	TPMT 160408 NSU	●	●					0,8
	TCMW 110204	●	●		11,0	6,35	2,38	0,4
	TCMW 110208	●	●					0,8
	TCMW 16T304	●	●		16,5	9,525	3,97	0,4
	TCMW 16T308	●	●					0,8



35° Diamond Type

Shape	Catalogue No.	Stock			Dimensions (mm)			
		AC405K	AC415K	AC420K	Cutting edge length	IC	Thick-ness	Nose radius
	VBMT 110304 NSU	●	●		11,1	6,35	3,18	0,4
	VBMT 110308 NSU	●	●					0,8
	VBMT 160404 NSU	●	●		16,6	9,525	4,76	0,4
	VBMT 160408 NSU	●	●					0,8
	VCMT 160404 NSU	●	●		16,6	9,525	4,76	0,4
	VCMT 160408 NSU	●	●					0,8
	VBW 160404	●	●		16,6	9,525	4,76	0,4
	VBW 160408	●	●					0,8

● Euro stock



55° Diamond Type

Shape	Catalogue No.	Stock			Dimensions (mm)			
		AC405K	AC415K	AC420K	Cutting edge length	IC	Thick-ness	Nose radius
	DCMT 070202 NSU	●	●					0,2
	DCMT 070204 NSU	●	●		7,7	6,35	2,38	0,4
	DCMT 070208 NSU	●	●					0,8
	DCMT 11T302 NSU	●	●					0,2
	DCMT 11T304 NSU	●	●		11,6	9,525	3,97	0,4
	DCMT 11T308 NSU	●	●					0,8
	DCMT 11T304 NMU	●	●	●				0,4
	DCMT 11T308 NMU	●	●	●	11,6	9,525	3,97	0,8
	DCMW 11T304	●	●					0,4
	DCMW 11T308	●	●		11,6	9,525	3,97	0,8



Square Type

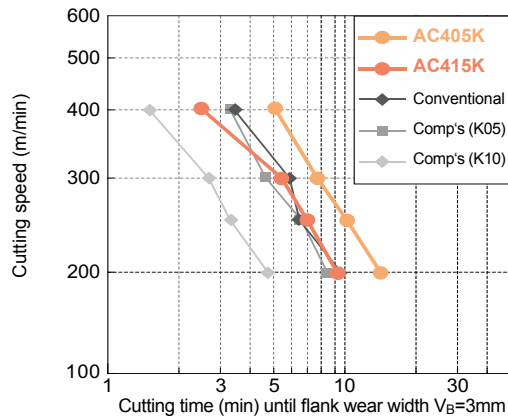
Shape	Catalogue No.	Stock			Dimensions (mm)			
		AC405K	AC415K	AC420K	Cutting edge length	IC	Thick-ness	Nose radius
	SCMT 09T304 NSU	●	●		9,525	9,525	3,97	0,4
	SCMT 09T308 NSU	●	●					0,8
	SCMT 120404 NSU	●	●		12,7	12,7	4,76	0,4
	SCMT 120408 NSU	●	●					0,8
	SCMT 09T308 NMU	●	●	●	9,525	9,525	3,97	0,8
	SCMT 120408 NMU	●	●	●				0,8
	SCMT 120412 NMU	●	●	●	12,7	12,7	4,76	1,2
		●	●	●				

ACE-Coat

AC405K / AC415K / AC420K

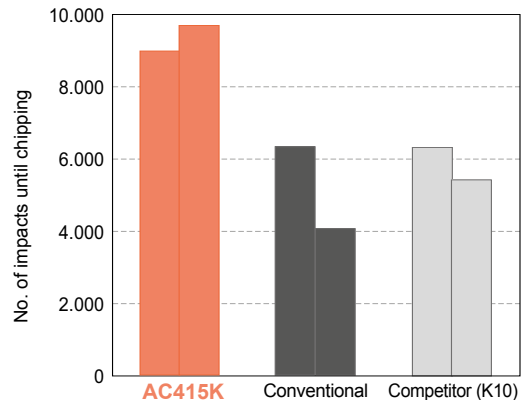
Cutting Performance

Wear Resistance of AC405K/AC415K



Work material: GGG-40
Insert: CNMG120408
Cutting data: $v_c=200\sim400\text{m/min}$, $f=0,3\text{mm/rev}$, $a_p=1,5\text{mm}$, wet

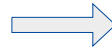
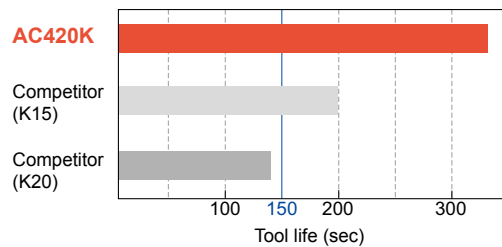
Chipping Resistance of AC415K



Work material: GGG-40
Insert: CNMG120408
Cutting data: $v_c=300\text{m/min}$, $f=0,25\text{mm/rev}$, $a_p=1,5\text{mm}$, wet

Fracture Resistance of AC420K

GGG-40 Grooved (heavy interrupted acceleration test)

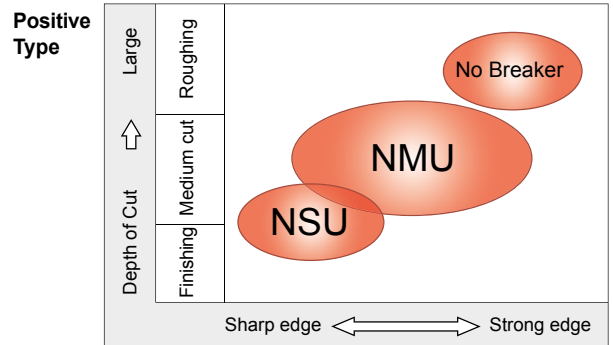
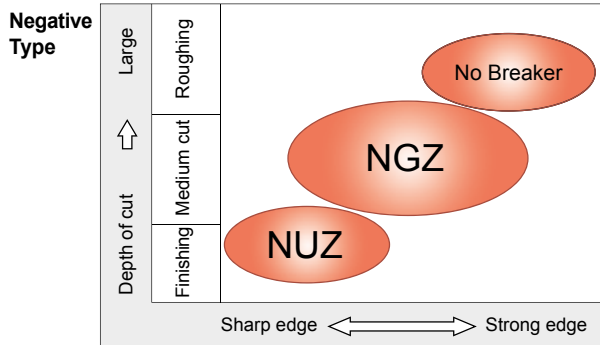


Edge comparison (150 sec)



Work material: GGG-40
Holder: PCLNR2525-43
Insert: CNMG120408
Cutting data: $v_c=450\text{m/min}$, $f=0,25\text{mm/rev}$, $a_p=1,5\text{mm}$, wet

Chipbreaker Selection



Recommended Cutting Conditions

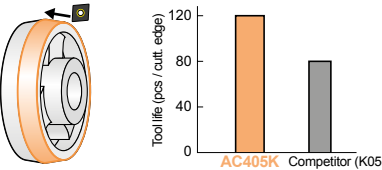
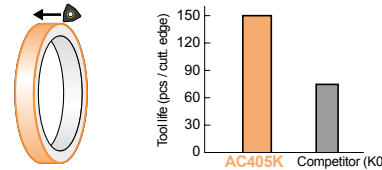
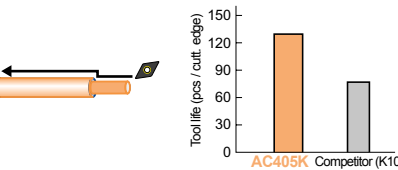
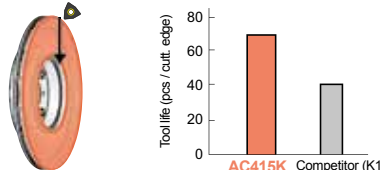
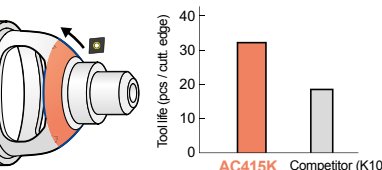
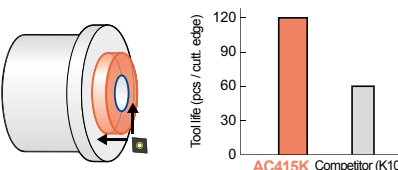
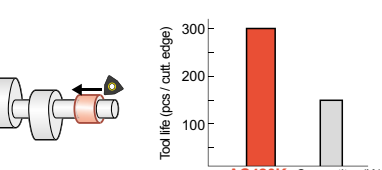
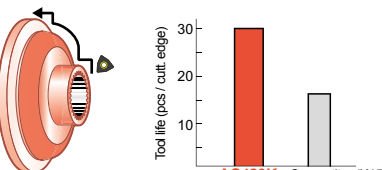
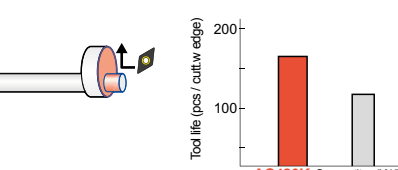
(min.-optimum-max.)

Application	Type of Cut	Grade	Chip-breaker	Grey Cast Iron		Ductile Cast Iron	
				v_c (m/min)	f (mm/rev)	v_c (m/min)	f (mm/rev)
Finishing	Continuous	AC405K	UZ	230 - 400 - 570	0,1 - 0,25 - 0,4	170 - 350 - 500	0,1 - 0,25 - 0,4
	General	AC415K	UZ	200 - 350 - 500	0,1 - 0,25 - 0,4	150 - 300 - 450	0,1 - 0,25 - 0,4
	Interrupted	AC415K	GZ	250 - 275 - 400	0,1 - 0,30 - 0,5	150 - 250 - 350	0,1 - 0,30 - 0,5
Medium Cut	Continuous	AC405K	GZ	170 - 315 - 460	0,1 - 0,30 - 0,5	170 - 285 - 400	0,1 - 0,30 - 0,5
	General	AC415K	GZ	150 - 275 - 400	0,1 - 0,30 - 0,5	150 - 250 - 350	0,1 - 0,30 - 0,5
	Interrupted	AC420K	GZ	100 - 200 - 300	0,1 - 0,30 - 0,5	80 - 150 - 220	0,1 - 0,30 - 0,5
Roughing, Casted work cutting	Continuous	AC415K	GZ	150 - 275 - 400	0,1 - 0,30 - 0,5	150 - 250 - 350	0,1 - 0,30 - 0,5
	General	AC420K	GZ	100 - 200 - 300	0,1 - 0,30 - 0,5	80 - 150 - 220	0,1 - 0,30 - 0,5
	Interrupted	AC420K	flat	100 - 175 - 250	0,1 - 0,35 - 0,6	80 - 130 - 180	0,1 - 0,35 - 0,6

ACE-Coat

AC405K / AC415K / AC420K

Application Examples

GG-25, Compressor Part  Tool life (pcs / cutt. edge) AC405K Competitor (K05) Insert: CNMG120412NGZ (AC405K) Cutting data: $v_c=500\text{m/min}$, $f=0,25\text{mm/rev}$ $a_p=0,2\text{mm}$, dry AC405K has improved the wear resistance achieving 1.5 times the tool life of conventional tools.	GG-65, Ring  Tool life (pcs / cutt. edge) AC405K Competitor (K05) Insert: WNMG080408NUZ (AC405K) Cutting data: $v_c=340\text{m/min}$, $f=0,3\text{mm/rev}$ $a_p=0,2\text{mm}$, wet AC405K has reduced chipping and improved wear resistance for stable tool life. It has achieved longer and stable tool life of 2.5 times the conventional tools.	GGG-70, Shaft  Tool life (pcs / cutt. edge) AC405K Competitor (K10) Insert: DNMG150408NUZ (AC405K) Cutting data: $v_c=200\text{m/min}$, $f=0,45\text{mm/rev}$ $a_p=0,25 \sim 0,40\text{mm}$, dry AC405K has reduced chipping and improved wear resistance achieving 1.8 times tool life of the conventional tools.
GG-25, Brake Disc  Tool life (pcs / cutt. edge) AC415K Competitor (K10) Insert: WNMG080412 (AC415K) Cutting data: $v_c=450\text{m/min}$, $f=0,25\text{mm/rev}$ $a_p=1,5\text{mm}$, dry AC415K has improved wear resistance to achieve 1.4 times tool life of the conventional tools.	GGG-45, Differential Gear Case  Tool life (pcs / cutt. edge) AC415K Competitor (K10) Insert: CNMG120408NGZ (AC415K) Cutting data: $v_c=240\text{m/min}$, $f=0,3\text{mm/rev}$ $a_p=2,0 \sim 3,0\text{mm}$, wet AC415K has reduced chipping and improved wear resistance for stable tool life. It has achieved longer and stable tool life of 1.6 times the conventional tools.	GGG-50, Hub  Tool life (pcs / cutt. edge) AC415K Competitor (K10) Insert: CNMA120408 (AC415K) Cutting data: $v_c=230\text{m/min}$, $f=0,2 \sim 0,3\text{mm/rev}$ $a_p=1,5 \sim 0,2\text{mm}$, wet AC415K has achieved 2 times tool life by improving chipping resistance and wear resistance in some interrupted cutting and mill-scaled work.
GGG-70, Cam Shaft  Tool life (pcs / cutt. edge) AC420K Competitor (K15) Insert: WNMG080408 (AC420K) Cutting data: $v_c=100 \sim 250\text{m/min}$, $f=0,25\text{mm/rev}$ $a_p=1,0\text{mm}$, wet 200% increase in tool life using AC420K Application: roughing OD turning of high hardness and casted work	GGG-45, Drive Sprocket  Tool life (pcs / cutt. edge) AC420K Competitor (K15) Insert: WNMA080412 (AC420K) Cutting data: $v_c=200\text{m/min}$, $f=0,32\text{mm/rev}$ $a_p=3,0\text{mm}$, wet 200% increase in tool life using AC420K Application: unstable and casted work cutting	GGG-50, Shaft  Tool life (pcs / cutt. edge) AC420K Competitor (K15) Insert: DNMG150412NGZ (AC420K) Cutting data: $v_c=100 \sim 270\text{m/min}$, $f=0,15 \sim 0,4\text{mm/rev}$ $a_p=1,5\text{mm}$, wet 130% increase in tool life using AC420K Application: light interrupted cut



(Germany)
SUMITOMO ELECTRIC Hartmetall GmbH
Siemensring 84, D - 47877 Willich

Tel. +49(0)2154 4992-0, Fax +49(0)2154 41072
e-Mail: Info@SumitomoTool.com
Internet: www.sumitomoTool.com



(UK and Ireland)
SUMITOMO ELECTRIC Hardmetal Ltd.
Summerleys Road, Princes Risborough
Buckinghamshire HP27 9PW, UK

Tel. +44(0)1844 342081, Fax: +44(0)1844 342415
e-Mail: enquiries@sumitomo-hardmetal.co.uk
Internet: www.sumitomo-hardmetal.co.uk



Distributed by: