

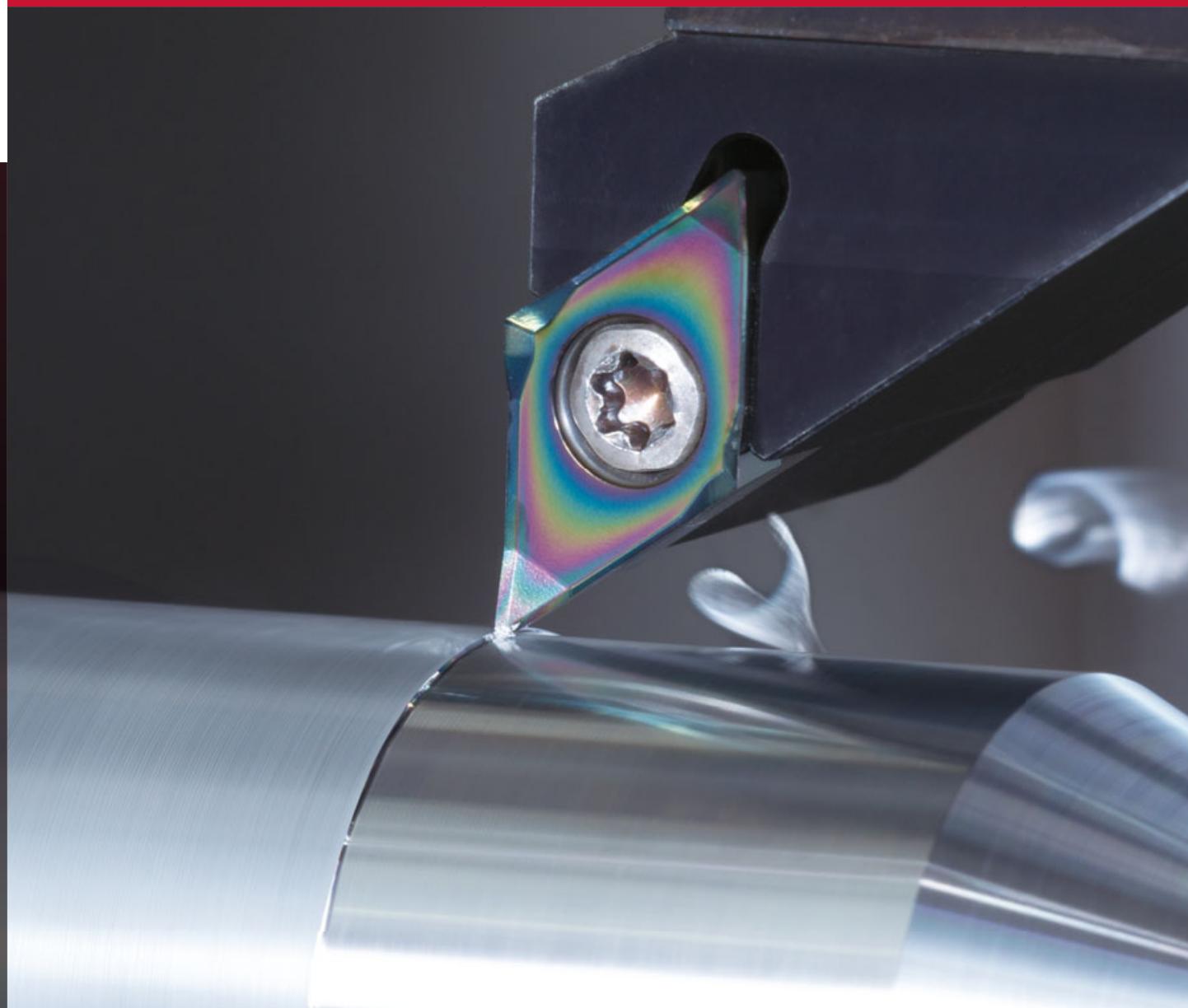


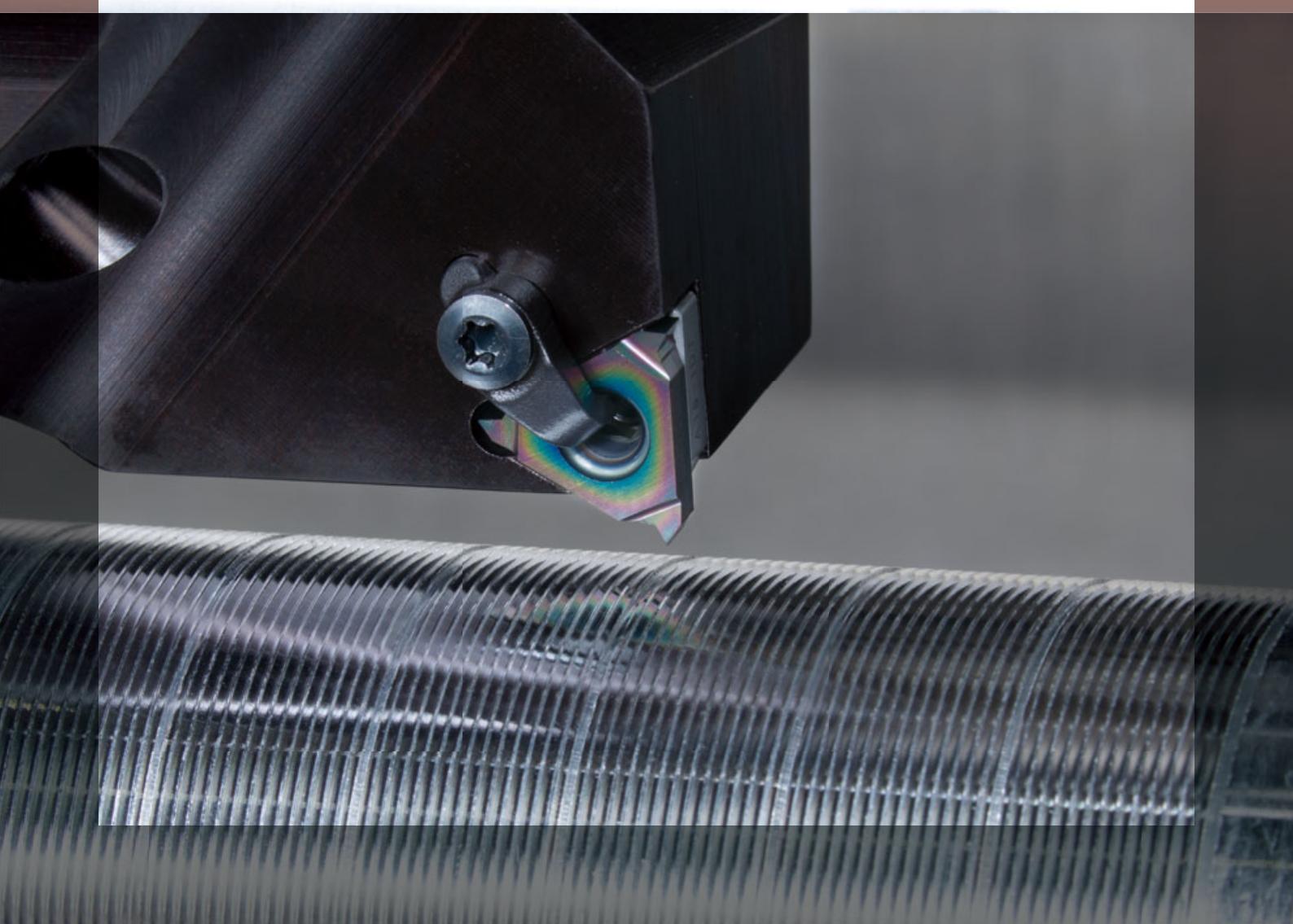
For more information

# DS2000 SERIES

Tungaloy Report No. 572-US

## New DLC coating grade for Turning & Threading

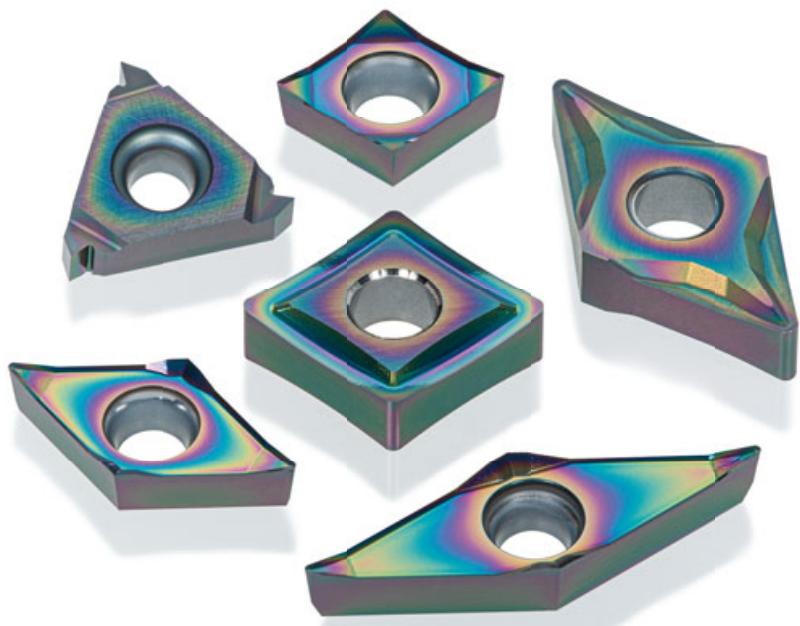






## DS2000 SERIES

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Tungaloy's original DLC coated grade for non-ferrous alloys,  
Now available for Turning and Threading applications.

# DS2000 SERIES

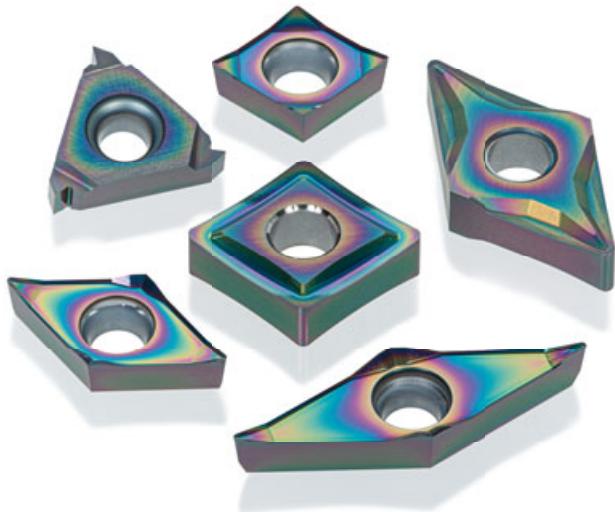
## Excellent built-up edge resistance and high surface quality

### DLC coated inserts

## DS2000 SERIES

### Tungaloy's original DLC coating grade for non-ferrous alloys

- Excellent built-up edge resistance achieves high quality glossy machined surface.
- The coating offers high hardness and excellent heat resistance, helping to reduce wear.
- Outstanding coating adhesion technology provides stable and reliable machining.



New

### DS2005

- Excellent wear resistance ensures stable long life in high-speed machining of non-ferrous metals.

New

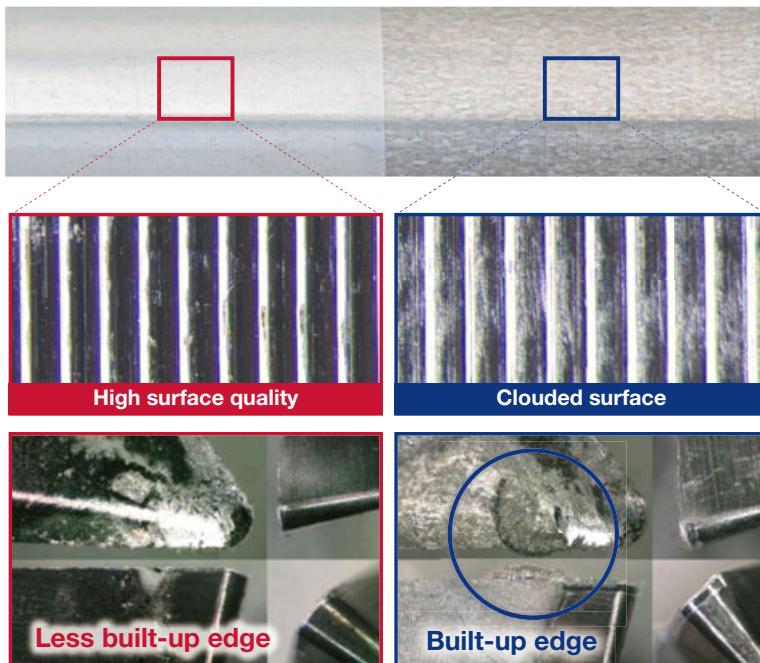
### DS2015

- Well balanced wear and chipping resistance deliver stable and reliable machining across a wide range of applications.

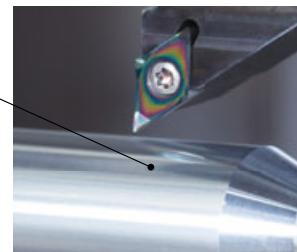
### Application areas



## ■ Excellent built-up edge resistance and high surface quality



External turning



**N** 6061

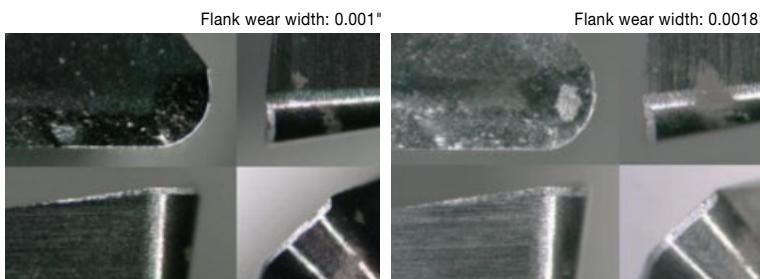
Insert : DCGT 32.50.5  
Cutting speed :  $V_c = 1,640$  sfm  
Feed :  $f = 0.004$  ipr  
Depth of cut :  $ap = 0.020"$   
Coolant : Dry  
Machining time : 17 min

**DS2000 SERIES**

Non-coated carbide grade

- Excellent built-up edge resistance achieves high quality glossy machined surface.

## ■ Excellent wear resistance



**N** A356-T6

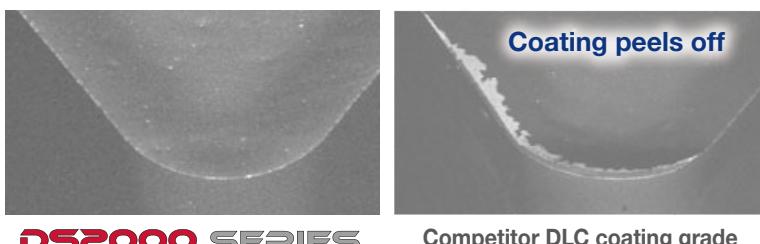
Insert : DCGT 32.50.5  
Cutting speed :  $V_c = 1,312$  sfm  
Feed :  $f = 0.008$  ipr  
Depth of cut :  $ap = 0.039"$   
Coolant : Wet  
Cutting length : 1,837 ft (1.4 min)

**DS2000 SERIES**

Non-coated carbide grade

- The coating with high hardness and excellent heat resistance reduce wear progress.

## ■ Stable and reliable machining



**N** A356-T6

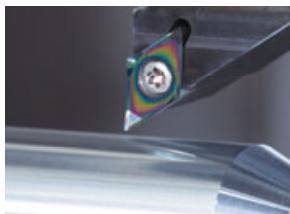
Insert : DCGT 32.50.5  
Cutting speed :  $V_c = 1,312$  sfm  
Feed :  $f = 0.008$  ipr  
Depth of cut :  $ap = 0.039"$   
Coolant : Wet  
Cutting length : 131 ft (0.1 min)

- Outstanding coating adhesion technology provides stable and reliable machining.

# DS2000 SERIES

## CUTTING PERFORMANCE

### External turning

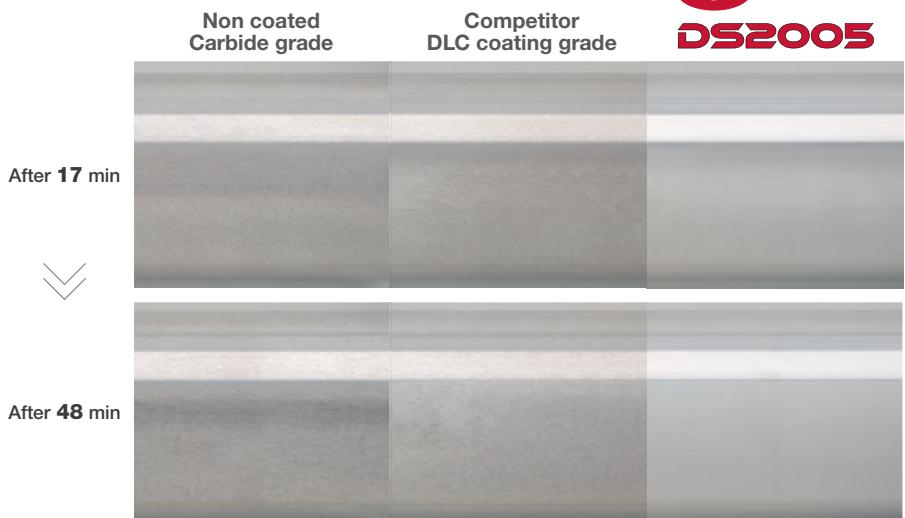


### ■ Surface quality

New  
**DS2005**

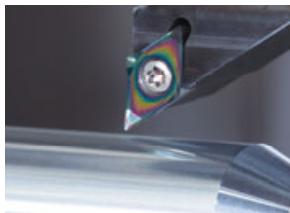
**N** 6061

Insert : DCGT 32.50.5  
Cutting speed :  $V_c = 1,640$  sfm  
Feed :  $f = 0.004$  ipr  
Depth of cut :  $ap = 0.020"$   
Coolant : Dry



- DS2005 delivers excellent surface quality not only compared with uncoated carbide grade, but also competitors DLC coated grade!

### External turning

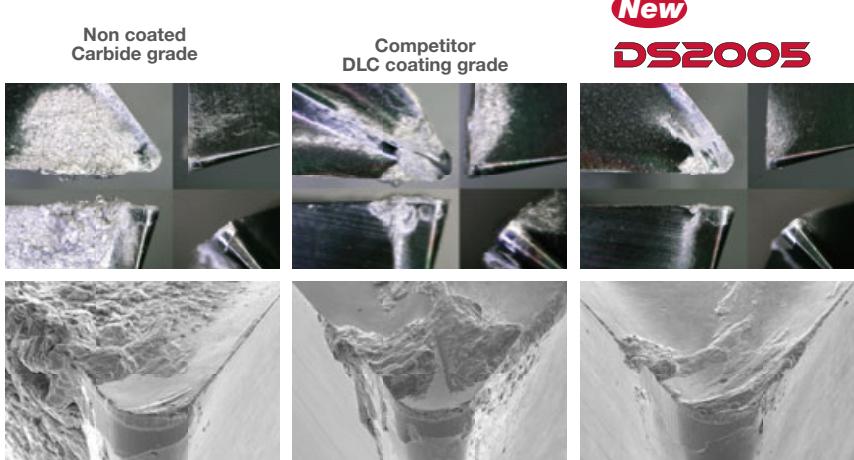


### ■ Built-up edge resistance

New  
**DS2005**

**N** A383

Insert : DCGT 32.50.5  
Cutting speed :  $V_c = 984$  sfm  
Feed :  $f = 0.004$  ipr  
Depth of cut :  $ap = 0.020"$   
Coolant : Dry  
Machining time : 69 min



- DS2005 delivers superior built-up edge resistance not only compared with uncoated carbide grade, but also competitors DLC coated grade!

## External threading

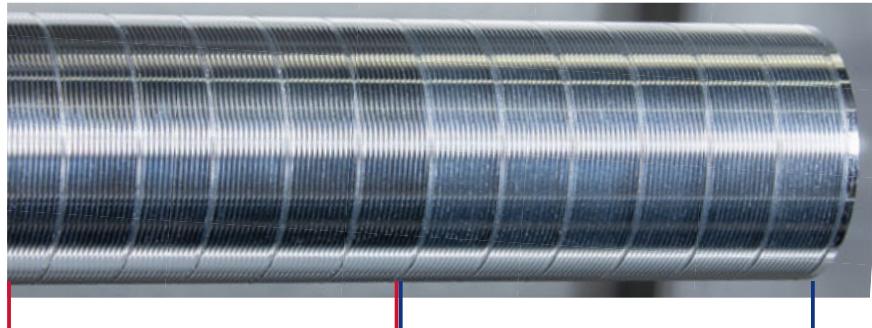


**N**

6061

Insert : 16ERA60  
Cutting speed :  $V_c = 984$  sfm  
Pitch : 1 mm  
Number of pass : 8  
Coolant : Dry

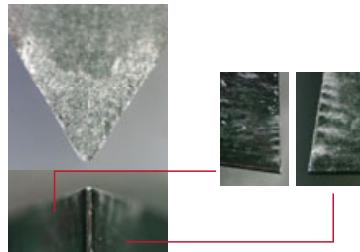
### ■ Surface quality



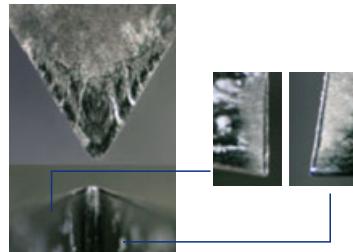
**New DS2015**

Non-coated carbide grade

### ■ Wear and built-up edge resistance



Frank wear width : 0.0006"



Frank wear width : 0.0012"

**New DS2015**

Non-coated carbide grade

- DS2015 delivers excellent surface quality in threading operation!
- Significantly suppresses built-up edge on the rake and flank faces, reducing wear progress.

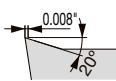
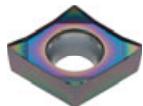
# DS2000 SERIES

Chipbreakers for non-ferrous alloy machining

## AL/28

No more chip nesting in non-ferrous alloy machining

For positive insert

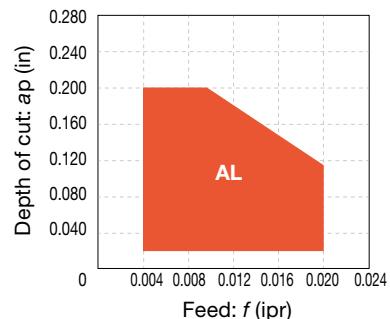


First choice geometry for non-ferrous applications

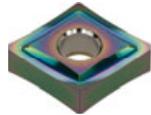
**AL**

- Provides excellent chip control and resistance to wear and built-up edge
- Low cutting forces generated by a large rake angle and sharp cutting edge
- Superb chip control enabled by large inclination angle of the cutting edge

### ■ Chip control range



For negative insert

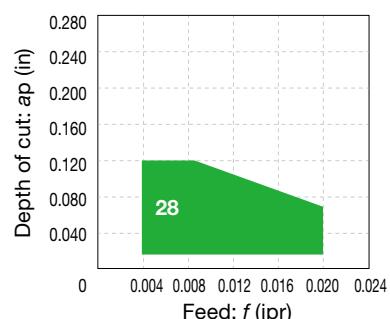


Press-in chipbreaker ideal for medium to finish operations

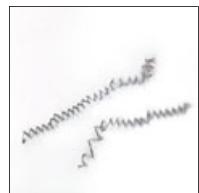
**28**

- Versatile geometry with a large inclination angle of the cutting edge. Ideal for medium to finishing operations
- Provides superior surface finish and chip control

### ■ Chip control range



### ■ Chip control



**N**

Insert : CNGG 431-28  
Workpiece material: 6061  
Cutting speed :  $V_c = 1,640$  sfm  
Feed :  $f = 0.008$  ipr  
Depth of cut :  $ap = 0.040"$   
Application : External turning, continuous cut  
Coolant : Wet



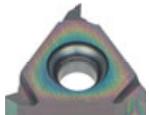
**N**

Insert : CNGG 431-28  
Workpiece material: 6061  
Cutting speed :  $V_c = 1,640$  sfm  
Feed :  $f = 0.012$  ipr  
Depth of cut :  $ap = 0.080"$   
Application : External turning, continuous cut  
Coolant : Wet

**28** chipbreaker provides excellent chip control in a wide range of applications.

## TUNGTHREAD

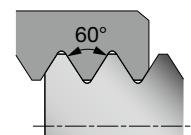
For threading insert



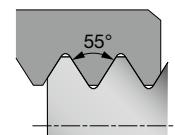
60° and 55° partial profile insert for external and internal threading

- High-precision threading with a grinding type insert
- Provides a high-quality thread surface

### ■ Applicable thread



ISO metric (M)  
Unified (UN)



Whitworth (W)  
Parallel pipe thread (G)

## STANDARD CUTTING CONDITIONS

ISO	Workpiece materials	Chipbreaker	Grade	Cutting speed <i>V<sub>c</sub></i> (sfm)	Feed <i>f</i> (ipr)	Depth of cut <i>a<sub>p</sub></i> (in)
<b>N</b>	Aluminum alloys (Si ≤ 12%)	AL	DS2005	328 - 3937	0.004 - 0.020	0.020 - 0.197
		28	DS2005	328 - 3937	0.004 - 0.020	0.020 - 0.118
	Aluminum alloys (Si ≥ 12%)	AL	DS2005	328 - 984	0.004 - 0.020	0.020 - 0.197
		28	DS2005	328 - 984	0.004 - 0.020	0.020 - 0.118
	Copper and copper alloys	AL	DS2005	328 - 984	0.004 - 0.020	0.020 - 0.197
		28	DS2005	328 - 984	0.004 - 0.020	0.020 - 0.118

## TUNGTHREAD

ISO	Workpiece materials	Grade	Cutting speed <i>V<sub>c</sub></i> (sfm)
<b>N</b>	Non-ferrous metal	DS2015	328 - 1640

# Insert POSITIVE TYPE

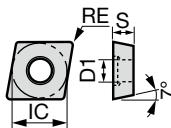
● : Continuous cutting  
 ● : Light interrupted cutting  
 \* : Heavy interrupted cutting

## CC

Rhombic, 80°  
 with hole  
 Positive 7°



P	Steel	Coated	RE	IC	S	D1
M	Stainless					
K	Cast iron					
N	Non-ferrous					
S	Superalloy					
H	Hard material					



Application	Designation	Inch	Metric	DS2005	Dimension (in)			
					RE	IC	S	D1
Finishing to medium cutting	AL	CCGT 32.50.5 AL	CCGT09T302-AL	●				0.008 0.375 0.156 0.173
		CCGT 32.51 AL	CCGT09T304-AL	●				0.016 0.375 0.156 0.173
		CCGT 32.52 AL	CCGT09T308-AL	●				0.031 0.375 0.156 0.173

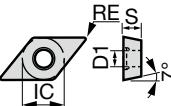
● : New product

## DC

Rhombic, 55°  
 with hole  
 Positive 7°



P	Steel	Coated	RE	IC	S	D1
M	Stainless					
K	Cast iron					
N	Non-ferrous					
S	Superalloy					
H	Hard material					



Application	Designation	Inch	Metric	DS2005	Dimension (in)			
					RE	IC	S	D1
Finishing to medium cutting	AL	DCGT 32.50.5 AL	DCGT11T302-AL	●				0.008 0.375 0.156 0.173
		DCGT 32.51 AL	DCGT11T304-AL	●				0.016 0.375 0.156 0.173
		DCGT 32.52 AL	DCGT11T308-AL	●				0.031 0.375 0.156 0.173

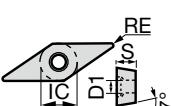
● : New product

## VC

Rhombic, 35°  
 with hole  
 Positive 7°



P	Steel	Coated	RE	S	D1
M	Stainless				
K	Cast iron				
N	Non-ferrous				
S	Superalloy				
H	Hard material				



Application	Designation	Inch	Metric	DS2005	Dimension (in)			
					RE	IC	S	D1
Finishing to medium cutting	AL	VCGT 331 AL	VCGT160404-AL	●				0.016 0.375 0.156 0.173
		VCGT 332 AL	VCGT160408-AL	●				0.031 0.375 0.156 0.173
		VCGT 333 AL	VCGT160412-AL	●				0.047 0.375 0.156 0.173

● : New product

# Insert NEGATIVE TYPE

● : Continuous cutting  
 ● : Light interrupted cutting  
 \* : Heavy interrupted cutting

## CN



Rhombic, 80° with hole

P	Steel	Coated	RE	S	IC	D1
M	Stainless					
K	Cast iron					
N	Non-ferrous	●				
S	Superalloy					
H	Hard material					

Application	Designation	Inch	Metric	DS2005	Coated				Dimension (in)			
					RE	IC	S	D1	RE	IC	S	D1
Finishing to medium cutting (sharp edge)	CNMG 430.5-28	CNMG120402-28	●						0.008	0.500	0.187	0.203
	CNMG 431-28	CNMG120404-28	●						0.016	0.500	0.187	0.203
	CNMG 432-28	CNMG120408-28	●						0.031	0.500	0.187	0.203
Finishing to medium cutting	CNMG 431-28	CNMG120404-28	●						0.008	0.500	0.187	0.203
	CNMG 432-28	CNMG120408-28	●						0.016	0.500	0.187	0.203

● : New product

## DN



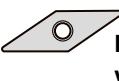
Rhombic, 55° with hole

P	Steel	Coated	RE	S	IC	D1
M	Stainless					
K	Cast iron	●				
N	Non-ferrous					
S	Superalloy					
H	Hard material					

Application	Designation	Inch	Metric	DS2005	Coated				Dimension (in)			
					RE	IC	S	D1	RE	IC	S	D1
Finishing to medium cutting	DNMG 431-28	DNMG150404-28	●						0.016	0.500	0.187	0.203
	DNMG 432-28	DNMG150408-28	●						0.031	0.500	0.187	0.203
	DNMG 441-28	DNMG150604-28	●						0.016	0.500	0.25	0.203
	DNMG 442-28	DNMG150608-28	●						0.031	0.500	0.25	0.203

● : New product

## VN



Rhombic, 35° with hole

P	Steel	Coated	RE	S	IC	D1
M	Stainless					
K	Cast iron	●				
N	Non-ferrous					
S	Superalloy					
H	Hard material					

Application	Designation	Inch	Metric	DS2005	Coated				Dimension (in)			
					RE	IC	S	D1	RE	IC	S	D1
Finishing to medium cutting	VNMG 331-28	VNMG160404-28	●						0.016	0.375	0.187	0.150
	VNMG 332-28	VNMG160408-28	●						0.031	0.375	0.187	0.150

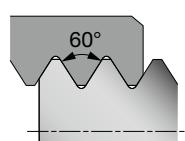
● : New product

# Insert Threading (Partial-profile insert)

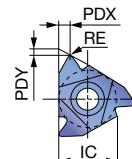
**TUNGTHREAD**

● : Continuous cutting  
● : Light interrupted cutting  
● : Heavy interrupted cutting

60° thread angle



P	Steel	Coated								
M	Stainless									
K	Cast iron									
N	Non-ferrous	●								
S	Superalloy									
H	Hard material									



Right hand (R) for external threading.

Application	Insert type	Designation		Coated	DS2015	Pitch (mm)	TPI	Hand	IC (in)	PDX (in)	PDY (in)	RE (in)	Fig.
		Inch	Metric										
External threading		-	16ERA60	●		0.5 - 1.5	48 - 16	R	0.375	0.035	0.028	0.0024	-
Internal threading		-	11IRA60	●		0.5 - 1.5	48 - 16	R	0.250	0.035	0.028	0.0016	-
		-	16IRA60	●		0.5 - 1.5	48 - 16	R	0.375	0.035	0.028	0.0016	-

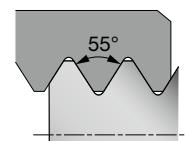
● : New product

# Insert Threading (Partial-profile insert)

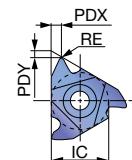
**TUNGTHREAD**

● : Continuous cutting  
● : Light interrupted cutting  
● : Heavy interrupted cutting

55° thread angle  
(General purpose)



P	Steel	Coated								
M	Stainless									
K	Cast iron									
N	Non-ferrous	●								
S	Superalloy									
H	Hard material									



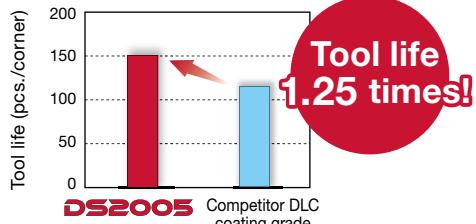
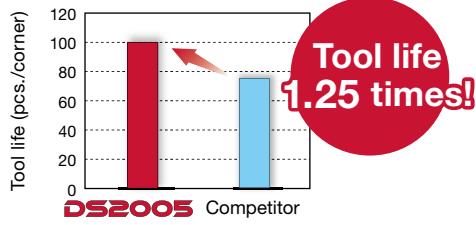
Right hand (R) for external threading.

Application	Insert type	Designation		Coated	DS2015	Pitch (Reference) (in)	TPI	Hand	IC (in)	PDX (in)	PDY (in)	RE (in)	Fig.
		Inch	Metric										
External threading		-	16ERA55	●		0.020 - 0.059	48 - 16	R	0.375	0.035	0.028	0.0028	-
Internal threading		-	11IRA55	●		0.020 - 0.059	48 - 16	R	0.250	0.035	0.028	0.0028	-
		-	16IRA55	●		0.020 - 0.059	48 - 16	R	0.375	0.035	0.028	0.0028	-

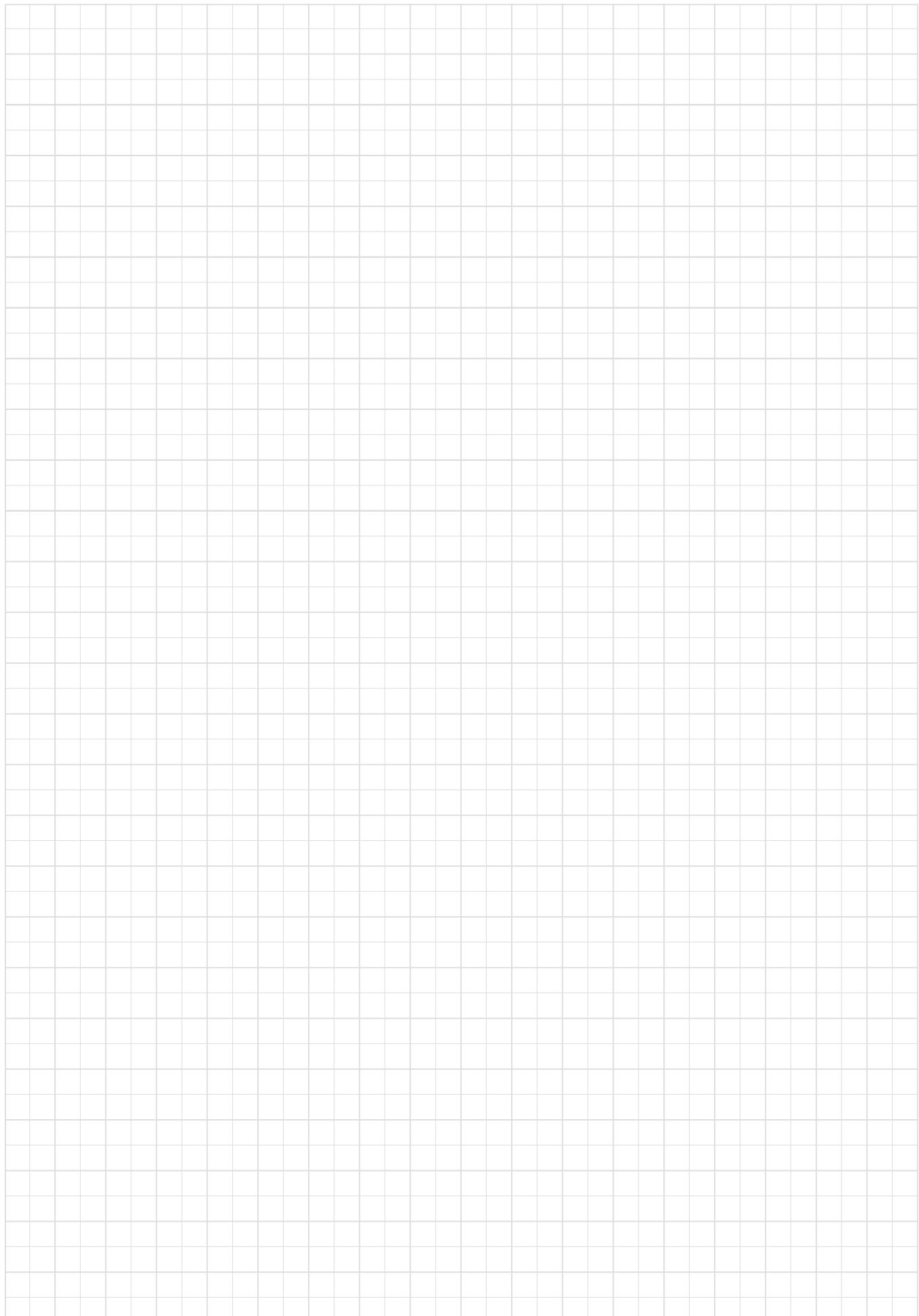
● : New product



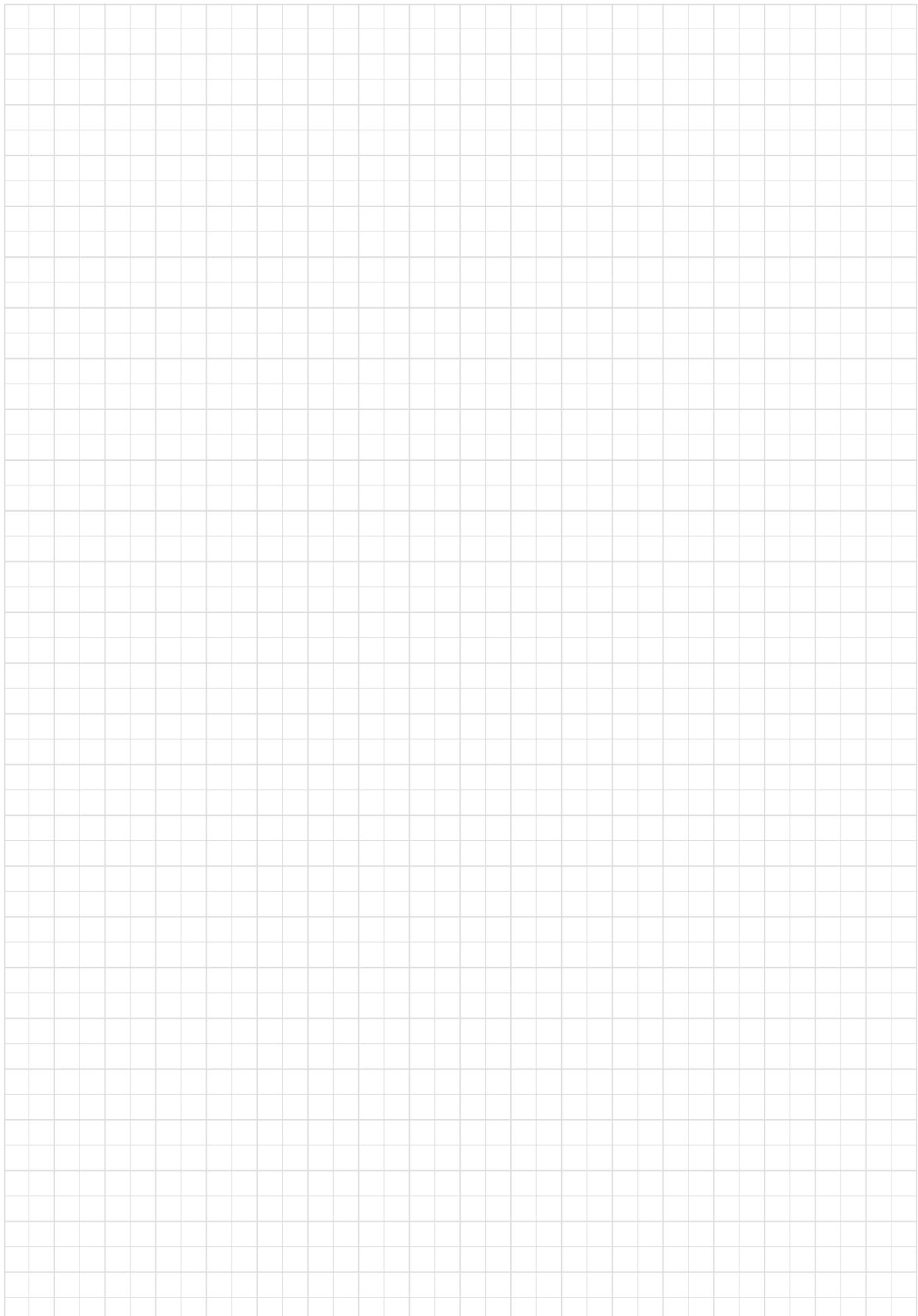
## PRACTICAL EXAMPLES

Workpiece type		Vacuum pump part		Machine part	
Insert	CNCG 431-28			CNCG 432-28	
Grade	DS2005			DS2005	
	6061			C10100 / Copper	
Workpiece material					
Cutting conditions	Cutting speed : $V_c$ (sfm)	1083		886	
	Feed : $f$ (ipr)	0.014		0.006	
	Depth of cut : $ap$ (in)	0.079		0.039	
	Coolant	Wet		Wet	
Results		 <p>Tool life 1.25 times!</p> <p>DS2005 suppresses built-up edge, delivers a high quality machined surface, and achieves 1.25 times longer tool life against competitors DLC coating grade.</p>		 <p>Tool life 1.5 times!</p> <p>DS2005 achieves 1.5 times longer tool life against competitors while maintaining high machined surface quality.</p>	
Workpiece type		Shaft			
Insert	16IRA60				
Grade	DS2015				
	5052				
Workpiece material					
Cutting conditions	Cutting speed : $V_c$ (sfm)	492			
	Pitch (mm)	1			
	Coolant	Wet			
Results		 <p>Tool life 1.25 times!</p> <p>Non-coated inserts are susceptible to built-up edge, leading to poor surface finish. The excellent built-up edge resistance of DS2015 achieved 1.25 times longer tool life.</p>			

# MEMO



# MEMO



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Feb. 2026 (TJ)