

CC1500 / CC2500



Cermet Solution for High Speed Steel Turning

The next generation coated cermet with higher wear and chipping resistance in high speed machining

- **High Resistance to Welding and Oxidation**

Improved welding and oxidation resistance due to a reaction inhibiting coating film

- **Excellent Surface Finish**

Preventing chemical reactions between inserts and object materials decreases surface roughness.



High Performance Coated Cermet Grade for Machining Carbon Steel, Alloy Steel and Sintered Ferrous Alloy



CC1500

For high speed and continuous cutting



CC2500

For high feed and interrupted cutting

CC1500, the new P15 coated cermet grade, was engineered to provide improved stability in continuous turning applications at high speeds and low depths of cut. Wear resistance has been significantly improved and crater wear(Kt) on the rake surface of insert is largely prevented in the continuous machining of carbon steel and alloy steel.

Its highly lubricative coating layer shows excellent wear resistance and extended tool life.

To expand on the excellent performance of CC1500 at high speed and continuous cutting of a wide range of steels, CC2500 was developed for machining forged steels and sintered ferrous alloy at high feed and interrupted cutting.

CC2500, the new P25 coated cermet grade has a specially sintered uniformed micro grain matrix to improve stability even in the toughest machining conditions, like heavy interruptions, high feed or severe vibrations. A lubricative multi-layer coating results in largely prolonged tool life due to excellent wear resistance and toughness.

The next generation cermet series CC1500 / CC2500 will consistently produce successful result without compromise.

- Minimum tolerance

→ **Stable tool life**

- Optimal cutting edge design

→ **Excellent surface finish**

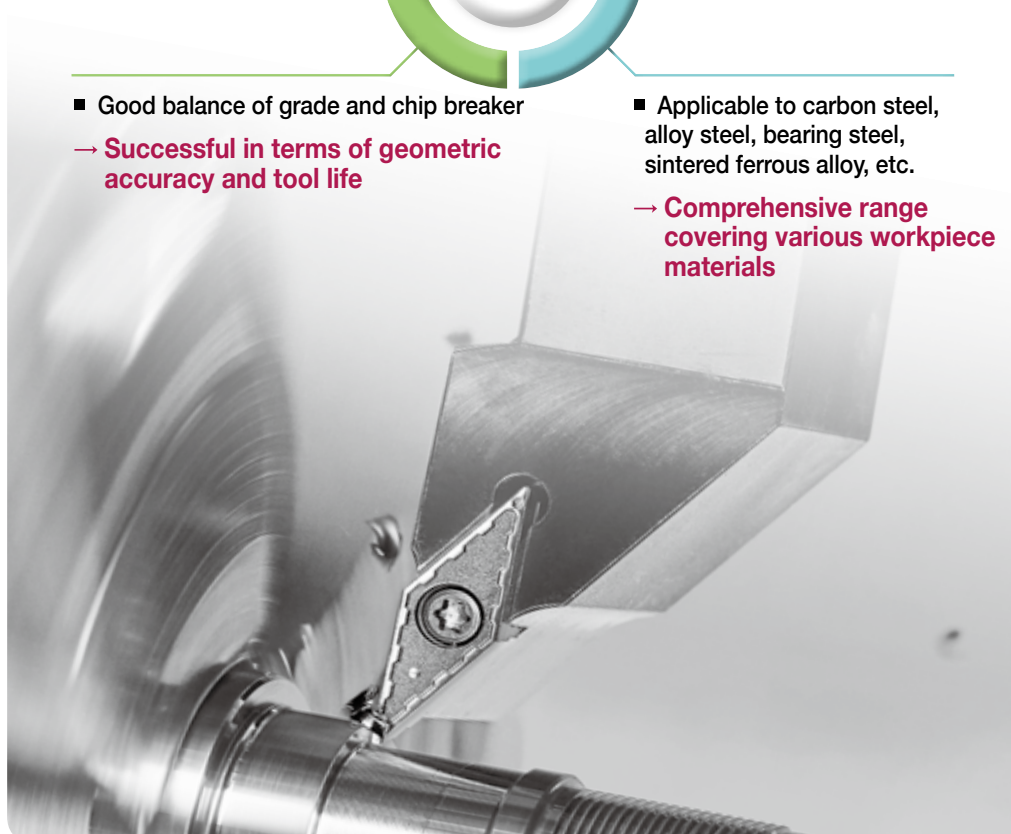
Advantages

- Good balance of grade and chip breaker

→ **Successful in terms of geometric accuracy and tool life**

- Applicable to carbon steel, alloy steel, bearing steel, sintered ferrous alloy, etc.

→ **Comprehensive range covering various workpiece materials**



CC1500 (For high speed and continuous cutting)

- Improved performance in finish & continuous machining of hot/cold forging steel and sintered ferrous alloy.
- Excellent wear resistance and crater resistance.
- Optimized cutting edge to improve surface finish.

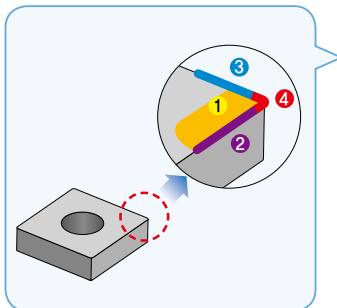
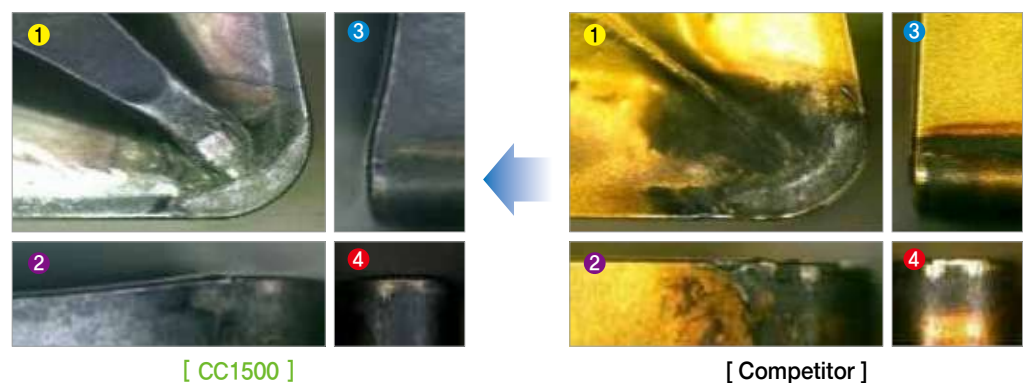
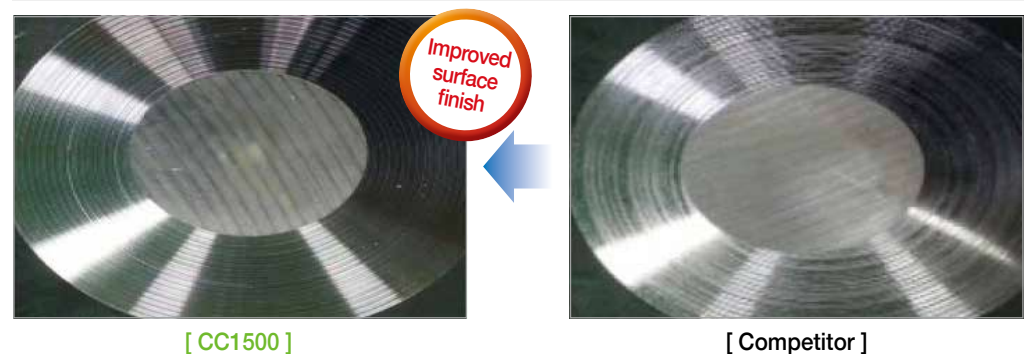
Features

High wear resistance
in high speed machining
over $vc(m/min) = 300$
(little secondary action
on workpiece)

**Increased surface
roughness** with optimal
cutting edge geometries

**Cutting Performance (Evaluation of impact resistance)**

- Workpiece SM45C(KS), 1045(AISI), C45(ISO), $\varnothing=100$ (Interrupted workpiece), $L=130$
- Cutting conditions $vc(m/min) = 300$, $fn(mm/rev) = 0.25$, $ap(mm) = 2.0$, wet
- Cutting time After 2nd passes of 63mm, both the rake surface and major cutting edge of insert showed no excessive wear or other problem indicators.
- Tools Insert CNMG120408-GM(CC1500) Holder MCKNR/L2020-K12

**Comparison of Wear****Comparison of Surface Roughness**

CC2500 (For high feed and interrupted cutting)



- Improved performance in high feed and high interrupted machining of hot/cold forging steel and sintered ferrous alloy.
- Excellent anti-chipping, anti-fracture and thermal crack resistance.
- Optimized cutting edge to improve surface finish.

Features

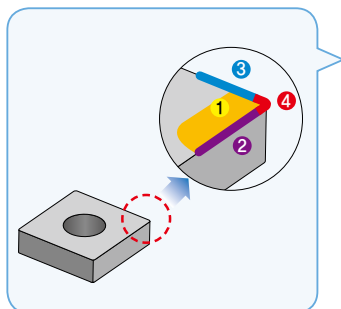
High chipping resistance
in high feed machining
over $f_n(\text{mm/rev}) = 0.25$

Stability of cutting edge remains in high interrupted cutting

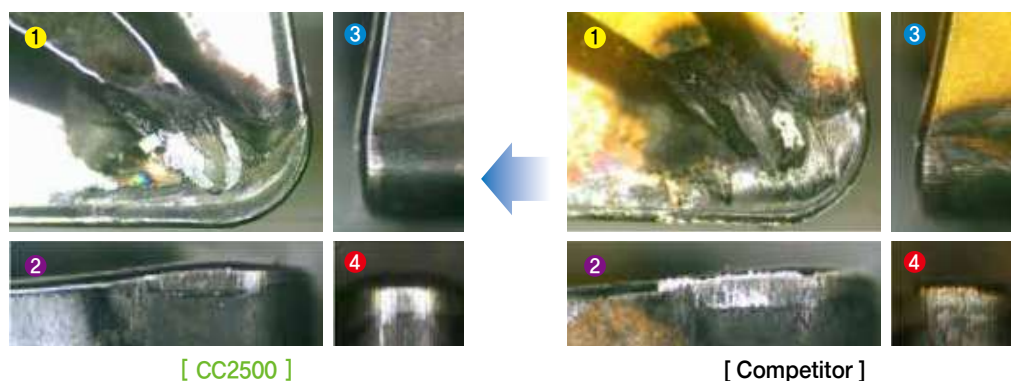


Cutting Performance (Evaluation of impact resistance)

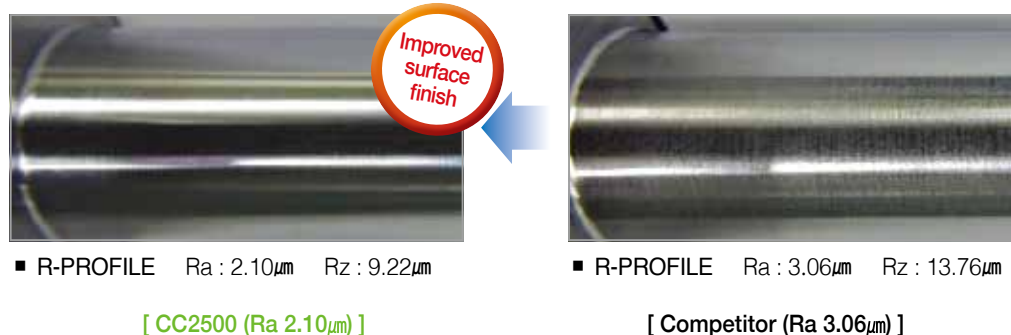
- Workpiece SCM435(KS), 4135(AISI), 34CrMo4(ISO), $\varnothing=100$ (Interrupted workpiece), $L=130$
- Cutting conditions $vc(\text{m/min}) = 314$, $f_n(\text{mm/rev}) = 0.25$ $ap(\text{mm}) = 1.5$, wet
- Cutting time After 10 minutes of machining, both the rake surface and major cutting edge of insert showed no excessive wear or other problem indicators.
- Tools Insert CNMG120408-GM(CC2500) Holder MCKNR/L2020-K12



Comparison of Wear



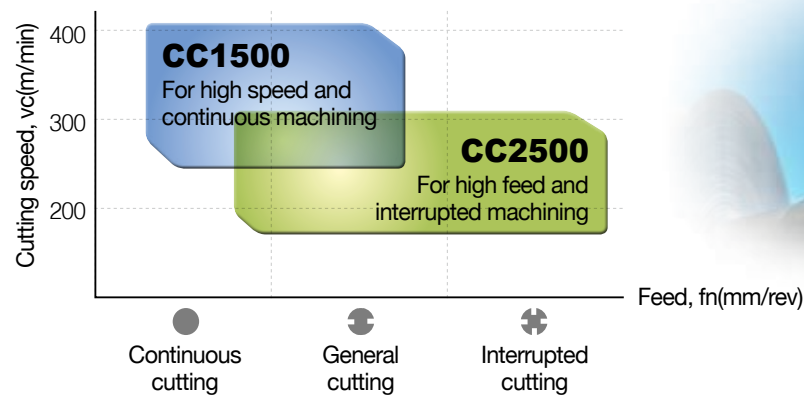
Comparison of Surface Roughness



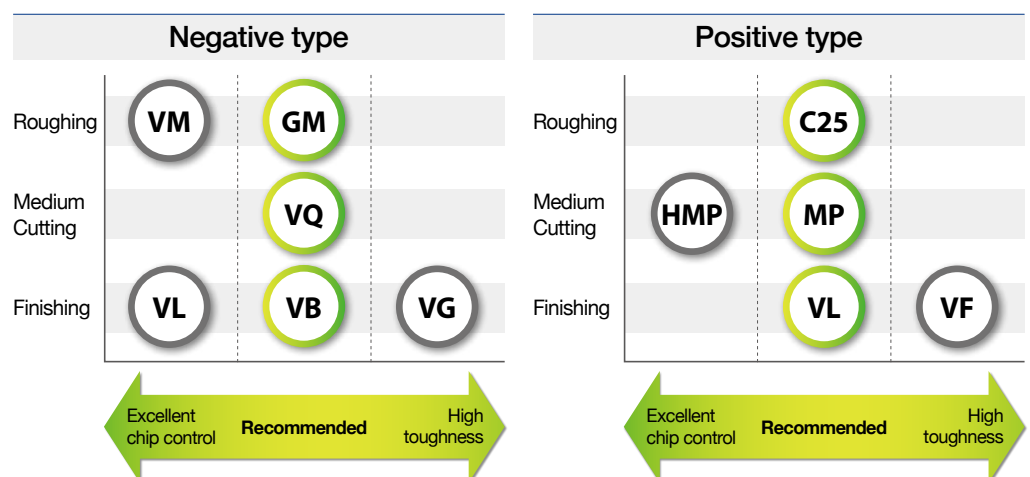
➤ Recommended Cutting Conditions

Division	Workpiece	Grade	Recommended cutting speed (m/min)		
			Minimum	Recommended	Maximum
Turning	C10 St44-2 (DIN)	CC1500	200	350	450
		CC2500	180	290	400
	C45	CC1500	200	300	400
		CC2500	180	270	350
	42CrMo4	CC1500	180	270	350
		CC2500	150	250	300

➤ Grade Lineup



➤ Chip Breaker Lineup



➤ Grade Comparison Chart

KORLOY	Competitor A	Competitor B	Competitor C	Competitor D
CC1500	PV3010	PV7010	T1500Z	-
CC2500	PV3030	PV7020 PV90	T2000Z	KT315

Application Examples (CC1500)



Alloy steel (42CrMo4)

- Workpiece Plate carrier
- Cutting conditions $vc(m/min) = 450$, $n(rpm) = 2,500$, $fn(mm/rev) = 0.2$, $ap(mm) = 0.2$, wet
- Tools Insert DCMT11T304-HMP (CC1500) Holder SDJCR2525-M11

CC1500	1000ea
Competitor	700ea

45%
more

➔ 45% longer tool life than competitor's



Carbon steel (C20)

- Workpiece Nipple
- Cutting conditions $vc(m/min) = 170$, $n(rpm) = 2,000$, $fn(mm/rev) = 0.12$, $ap(mm) = 0.12$, wet
- Tools Insert TPMT110304-MP (CC1500) Holder S20R-STWPR-11

CC1500	800ea
Competitor	600ea

30%
more

➔ 30% longer tool life than competitor's



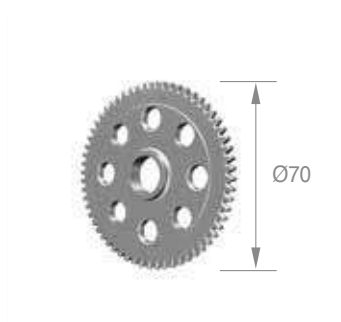
Alloy steel (18CrMo4)

- Workpiece Pinion
- Cutting conditions $vc(m/min) = 250$, $n(rpm) = 2,500$, $fn(mm/rev) = 0.2$, $ap(mm) = 0.5$, wet
- Tools Insert DNMG150604-VL (CC1500) Holder PDJNR2525-M15

CC1500	450ea
Competitor	350ea

30%
more

➔ 30% longer tool life than competitor's



Sintered ferrous metal

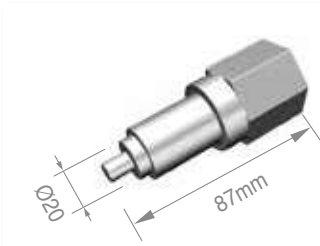
- Workpiece Gear
- Cutting conditions $vc(m/min) = 300$, $n(rpm) = 2,500$, $fn(mm/rev) = 0.3$, $ap(mm) = 0.4$, wet
- Tools Insert CCMT09T304-MP (CC1500) Holder SCLCR2020-K09

MP (CC1500)	600ea
Competitor	500ea

20%
more

➔ 20% longer tool life than competitor's

Application Examples (CC1500)



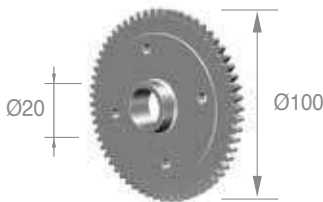
Alloy steel (25CrMo4)

- Workpiece Valve
- Cutting conditions $vc(m/min) = 230$, $n(rpm) = 2200$, $fn(mm/rev) = 0.8$, $ap(mm) = 0.12$, wet
- Tools Insert TNMG160404-VQ (CC1500) Holder PTTNR1616-H16

CC1500	1300ea
Competitor	830ea

60%
more

➔ 60% longer tool life than competitor's



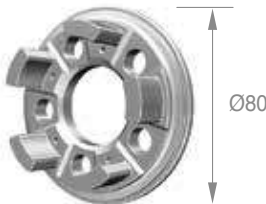
Sintered ferrous alloy

- Workpiece Sprocket
- Cutting conditions $vc(m/min) = 160$, $n(rpm) = 500$, $fn(mm/rev) = 0.17$, $ap(mm) = 0.2$, wet
- Tools Insert SNMG120408-VM (CC1500) Holder MSKNR3232-P12

CC1500	90ea
Competitor	60ea

50%
more

➔ 50% longer tool life than competitor's



Carbon steel (C45)

- Workpiece Cup plate carrier
- Cutting conditions $vc(m/min) = 300$, $n(rpm) = 2,500$, $fn(mm/rev) = 0.3$, $ap(mm) = 0.4$, wet
- Tools Insert CCMT09T304-C25 (CC1500) Holder SCACR1212-F09

CC1500	60ea
Competitor	40ea

50%
more

➔ 50% longer tool life than competitor's



Carbon steel (C45)

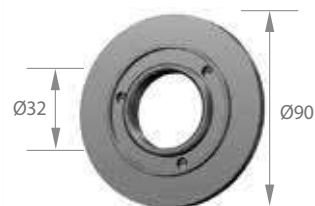
- Workpiece Bush
- Cutting conditions $vc(m/min) = 200$, $n(rpm) = 1400$, $fn(mm/rev) = 0.1$, $ap(mm) = 0.3$, wet
- Tools Insert CCMT09T304-HMP (CC1500) Holder SCLCR2020-K09

CC1500	600ea
Competitor	485ea

30%
more

➔ 30% longer tool life than competitor's

Application Examples (CC2500)



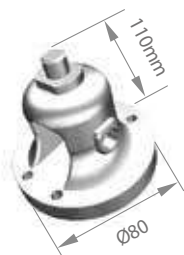
Carbon steel (C45)

- Workpiece Swash-Plate
- Cutting conditions $vc(m/min) = 250$, $n(rpm) = 890$, $fn(mm/rev) = 0.06$, $ap(mm) = 0.1$, wet
- Tools Insert DNMG110404-VQ (CC2500) Holder SDJCR2525-M11

CC2500	200ea
Competitor	140ea

40% more

➔ 40% longer tool life than competitor's



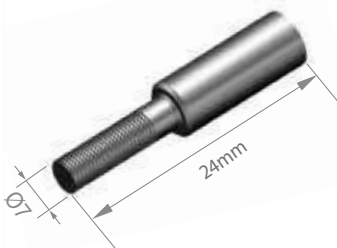
Ductile cast iron (600-3)

- Workpiece Diff. case
- Cutting conditions $vc(m/min) = 150$, $n(rpm) = 600$, $fn(mm/rev) = 0.15$, $ap(mm) = 0.3$, wet
- Tools Insert VBMT160404-MP (CC2500) Holder SVJBR2525-M16

CC2500	100ea
Competitor	70ea

40% more

➔ 40% longer tool life than competitor's



Carbon steel (C35)

- Workpiece Piston Rod
- Cutting conditions $vc(m/min) = 122$, $n(rpm) = 4800$, $fn(mm/rev) = 0.15$, $ap(mm) = 2.0$, wet
- Tools Insert DNMG150604-GM (CC2500) Holder MDQNR2525-M15

CC2500	600ea
Competitor	400ea

30% more

➔ 30% longer tool life than competitor's



Alloy steel (36Mn5)

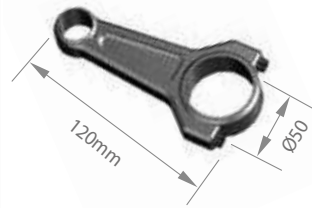
- Workpiece SHAFT
- Cutting conditions $vc(m/min) = 206$, $n(rpm) = 800$, $fn(mm/rev) = 0.3$, $ap(mm) = 0.15$, wet
- Tools Insert TCMT090204-C25 (CC2500) Holder S10M-STFCR-09

CC2500	800ea
Competitor	600ea

30% more

➔ 30% longer tool life than competitor's

Application Examples (CC2500)



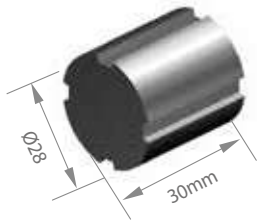
Alloy steel (18CrMo4)

- Workpiece Connecting Rod
- Cutting conditions $vc(m/min) = 340$, $n(rpm) = 2100$, $fn(mm/rev) = 0.15$, $ap(mm) = 0.07$, wet
- Tools Insert TPMT110304-MP (CC2500) Holder S10M-STFPR-11

CC2500	1820ea
Competitor	1400ea

30%
more

➔ 30% longer tool life than competitor's



Alloy steel (15CrMo4)

- Workpiece Bush
- Cutting conditions $vc(m/min) = 314$, $n(rpm) = 3500$, $fn(mm/rev) = 1$, $ap(mm) = 0.2$, wet
- Tools Insert CNMG120408-VQ (CC2500) Holder MCLNR2525-M12

CC2500	1275ea
Competitor	850ea

50%
more

➔ 50% longer tool life than competitor's



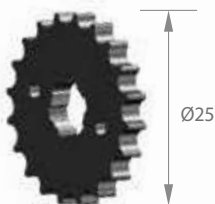
Alloy steel (36Mn5)

- Workpiece SHAFT
- Cutting conditions $vc(m/min) = 367$, $n(rpm) = 5800$, $fn(mm/rev) = 0.02$, $ap(mm) = 1.55$, wet
- Tools Insert TBT4405R-D38-R0.25 (CC2500) Holder TGTER25-4-47

CC2500	1000ea
Competitor	600ea

65%
more

➔ 65% longer tool life than competitor's



Alloy Steel (18CrMo4)

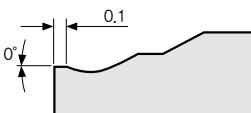
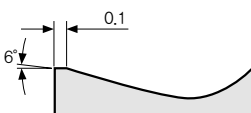
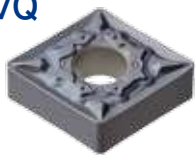
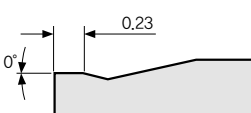
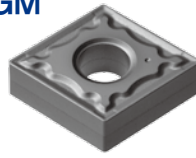
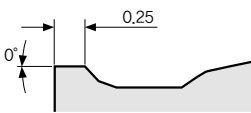
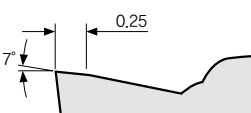
- Workpiece Sprocket
- Cutting conditions $vc(m/min) = 340$, $n(rpm) = 4300$, $fn(mm/rev) = 0.15$, $ap(mm) = 0.07$, wet
- Tools Insert TPMT110304-MP (CC2500) Holder STFPR-11

CC2500	1820ea
Competitor	1400ea

30%
more

➔ 30% longer tool life than competitor's

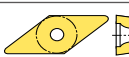
Chip Breaker Features

Type	Chip breaker	Machining type	Cutting edge	Features
Negative type	VL 	Finishing		■ Excellent chip control when machining tough materials such as low carbon steel, pipe, steel plate, etc. ■ Improved chip control at low depth of cut
	VB 	Finishing		■ Universal chip breaker with strong chip control at low depth of cut ■ Excellent chip control on copying application and corner R machining
	VQ 	Medium cutting		■ Improved chip control with optimized cutting edge design for medium to finish cutting
	GM 	Roughing		■ Excellent for interrupted and high feed machining with strong cutting edge
Positive type	VL 	Finishing		■ Improved chip control when machining low carbon steel, pipe, steel plate, etc.
	MP 	Medium cutting		■ Special chip breaker geometry designed for various cutting conditions
	C25 	Roughing		■ Strong cutting edge produces excellent cutting performance in interrupted cutting and cast iron machining

Available Stock

Positive type

Insert shape	Designation		Machining type	Stock	
				CC1500	CC2500
	CCMT	060204-VL	Finishing	●	●
		09T304-VL		●	●
		09T308-VL		●	●
		060202-C25	Medium cutting	●	●
		060204-C25		●	●
		060208-C25		●	●
		09T304-C25		●	●
		09T308-C25		●	●
		120408-C25		●	●
		060202-MP		●	●
		060204-MP		●	●
		09T302-MP		●	●
		09T304-MP		●	●
		09T308-MP		●	●
	DCMT	070204-VL	Finishing	●	●
		11T304-VL		●	●
		11T308-VL		●	●
		070202-C25	Medium cutting	●	●
		070204-C25		●	●
		070208-C25		●	●
		11T302-C25		●	●
		11T304-C25		●	●
		11T308-C25		●	●
		070202-MP		●	●
		070204-MP		●	●
		070208-MP		●	●
		11T302-MP		●	●
		11T304-MP		●	●
		11T308-MP		●	●
	SCMT	09T304-VL	Finishing	●	●
		09T308-VL		●	●
		09T304-C25	Medium cutting	●	●
		09T308-C25		●	●
		120404-C25		●	●
		120408-C25		●	●
	TCMT	16T304-VL	Finishing	●	●
		16T308-VL		●	●
		090204-C25	Medium cutting	●	●
		090208-C25		●	●
		110202-C25		●	●
		110204-C25		●	●
		110208-C25		●	●

Insert shape	Designation		Machining type	Stock	
				CC1500	CC2500
	TCMT	16T304-C25	Medium cutting	●	●
		16T308-C25		●	●
		16T304-MP		●	●
		16T308-MP		●	●
	TPMT	110304-VL	Finishing	●	●
		110304-MP	Medium cutting	●	●
	VBMT	160404-VL	Finishing	●	●
		160408-VL	Medium cutting	●	●
		160408-MP		●	●

Negative type

Insert shape	Designation		Machining type	Stock	
				CC1500	CC2500
	CNMG	120404-VB	Finishing	●	●
		120408-VB		●	●
		120404-VQ	Medium to finish cutting	●	●
		120408-VQ		●	●
	DNMG	150404-VB	Finishing	●	●
		150408-VB		●	●
		150604-VB		●	●
		150608-VB		●	●
		150404-VQ	Medium to finish cutting	●	●
		150408-VQ		●	●
		150604-VQ		●	●
		150608-VQ		●	●
	SNMG	120404-VB	Finishing	●	●
		120408-VB		●	●
	TNMG	160404-VB	Medium to finish cutting	●	●
		160408-VB		●	●
		160404-VQ		●	●
		160408-VQ		●	●
	VNMG	160404-VB	Finishing	●	●
		160408-VB		●	●
		160404-VQ	Medium to finish cutting	●	●
		160408-VQ		●	●
		160408-VQ		●	●
	WNMG	080404-VQ	Medium to finish cutting	●	●
		080408-VQ		●	●

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