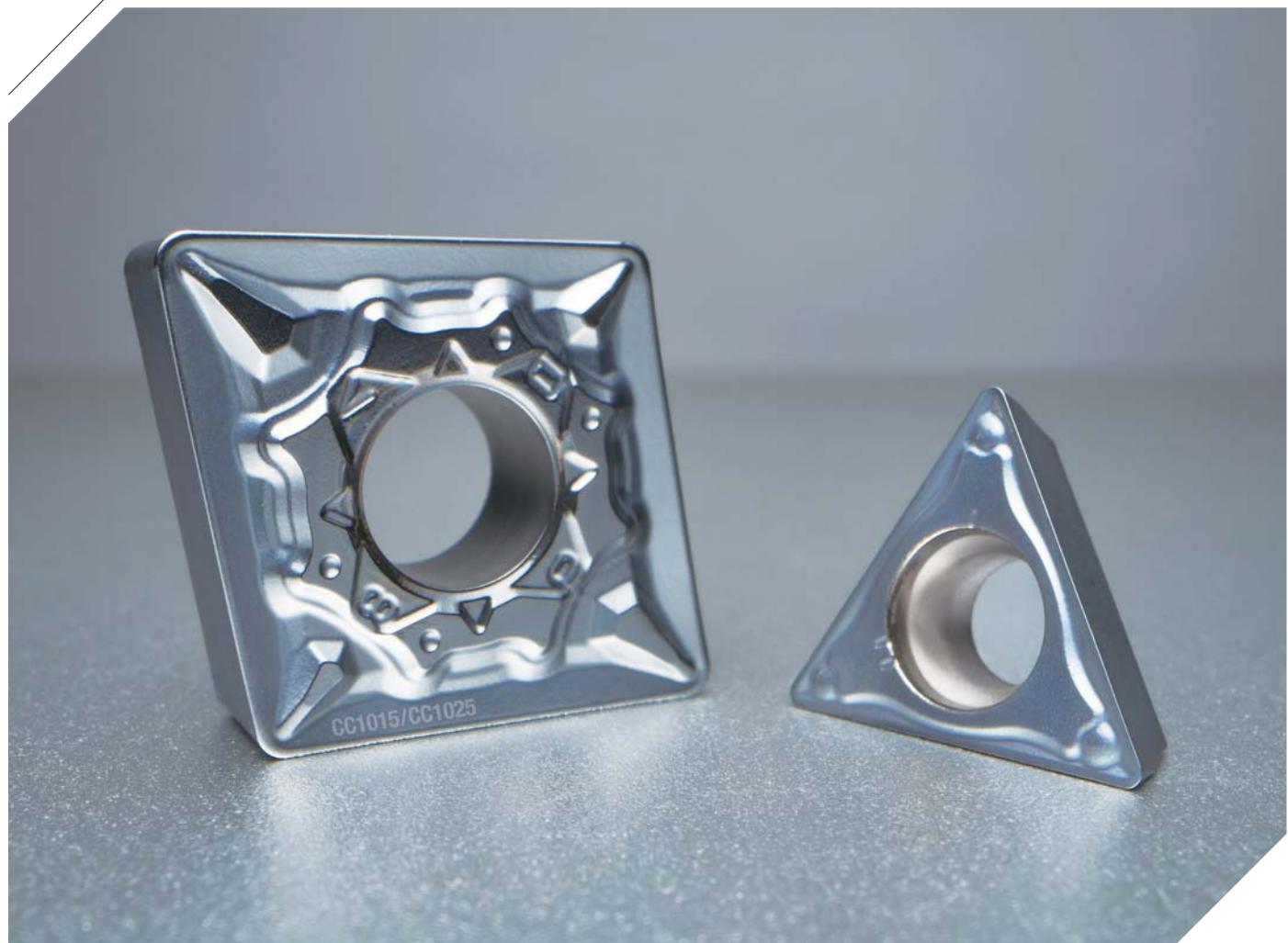


CC1015/CC1025

PVD Cermet for Steel Turning

- Stable cutting performance and good surface finish due to applying the PVD Lubrix-Tech™ and Edge-Tech™
- Coated Cermet grade optimized for medium and finishing Steel parts which requires high quality surface roughness



PVD Cermet for Steel Turning

CC1015/CC1025

With its excellent surface roughness performance, Cermet is widely applied for medium cutting and finishing of various Steel parts in Automotive and Ship building industries and the tool life stability demand keeps increasing with the generalization of the unmanned line and automation of the facilities.

KORLOY launched new grades, CC1015 and CC1025 for various Steel (Carbon steel, Alloy steel, Sintered metal and so on) workpieces with the increased surface finish and cutting stability.

CC1015/CC1025 applied the exclusive Lubrix-Tech™ (high hardness lubrication PVD coating technology) and Edge-Tech™ (high lubrication cutting edge treatment technology) on the Cermet substrate with the high hardness surface and high toughness microstructure which functions inclination. It has excellent flank wear resistance and shows high quality surface roughness with its superior coating with welding resistance and chipping resistance especially when it does Steel Turning.

The CC1015 and CC1025 provide customers' higher productivity and cutting stability in finishing of Steel Turning.

» High quality of surface finish

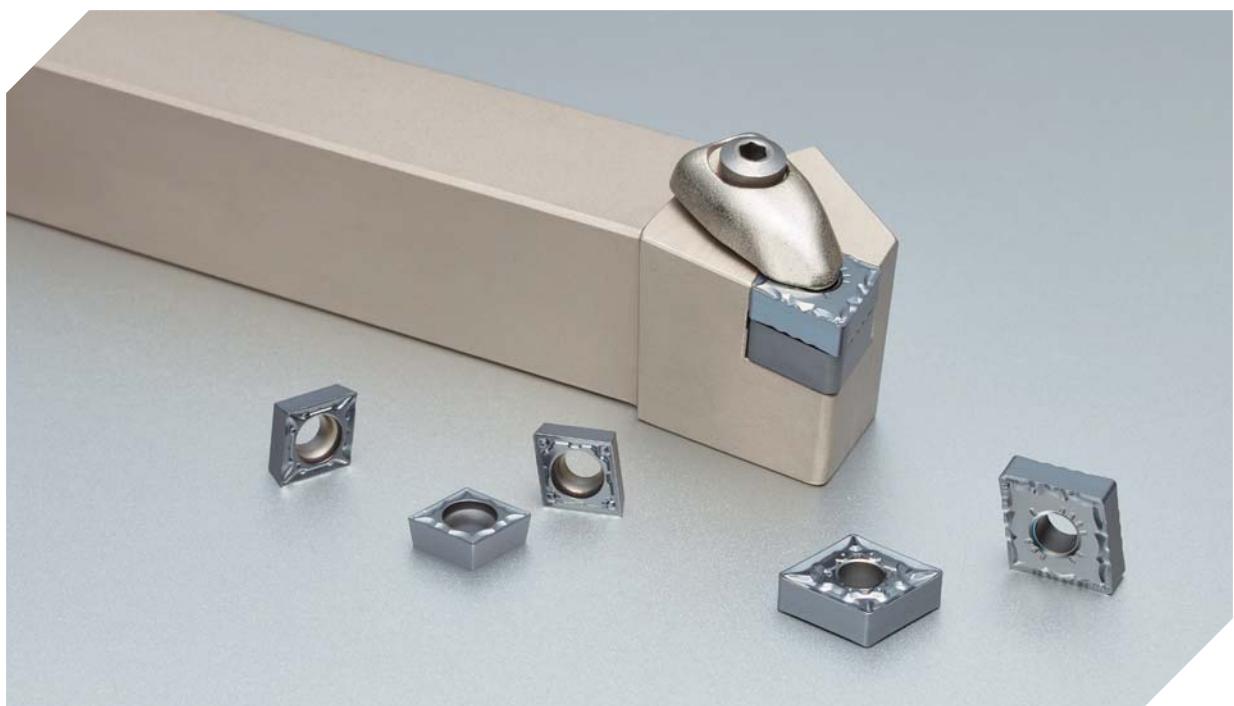
- Ensured high quality of surface finish and stable tool life due to applying exclusive Lubrix-Tech™ and Edge-Tech™

» Applicable for non-coated Cermet range

- Available for cutting range of non-coated Cermet due to keeping surface finish from beginning of cutting to end of cutting

» Optimal for finishing of various workpiece cutting

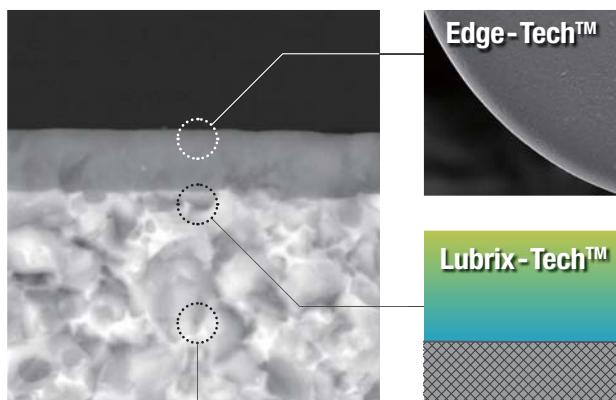
- Optimal for medium cutting and finishing of automobile and ship parts from its excellent surface finish and stable cutting



Features

- Optimally designed PVD coated Cermet grade for turning of various medium and small parts
- Ensured stable tool life from applying Lubrix-Tech™ (high hardness and lubrication PVD coating technology) for increasing flank wear resistance on nose radius
- Smooth cutting surface from applying Edge-Tech™ (high lubrication cutting edge treatment technology) to prevent welding and chipping

Applying exclusive PVD Lubrix-Tech™ and Edge-Tech™ technology



Edge-Tech™

- High lubrication cutting edge treatment technology
- Reducing welding, chipping and unexpected fracture and increasing tool life and stability



Lubrix-Tech™

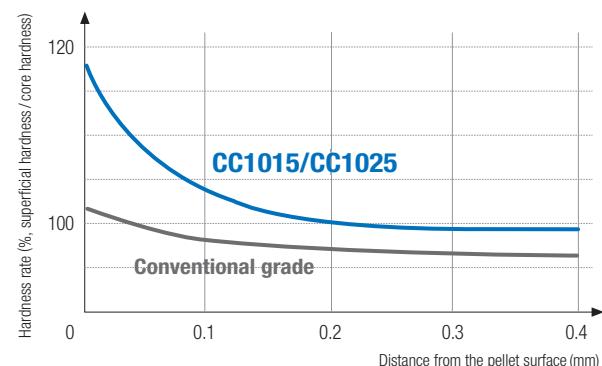
- AlCrN series high hardness lubrication coating technology
- Coating layer's growth direction controlling technology

Inclination functional substrate



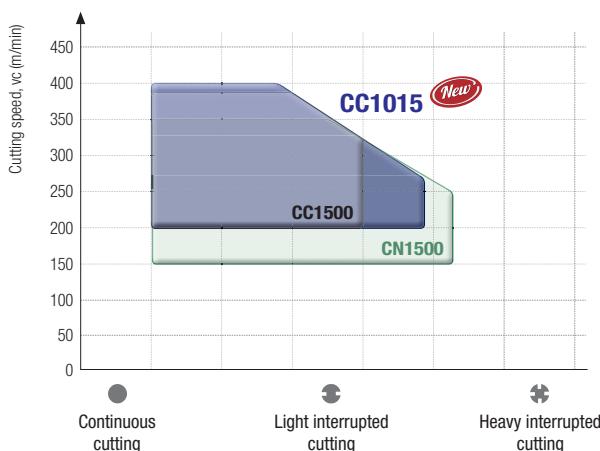
- Inclination functional layer creation with the surface and internal composition's microstructure control
- High chipping resistance and stable tool life

Hardness rate comparison chart

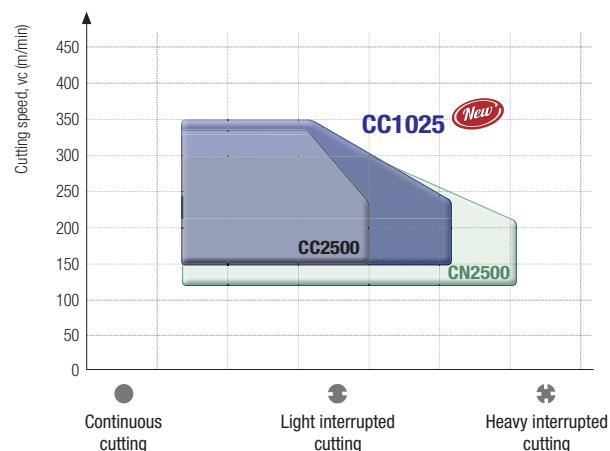


Application range

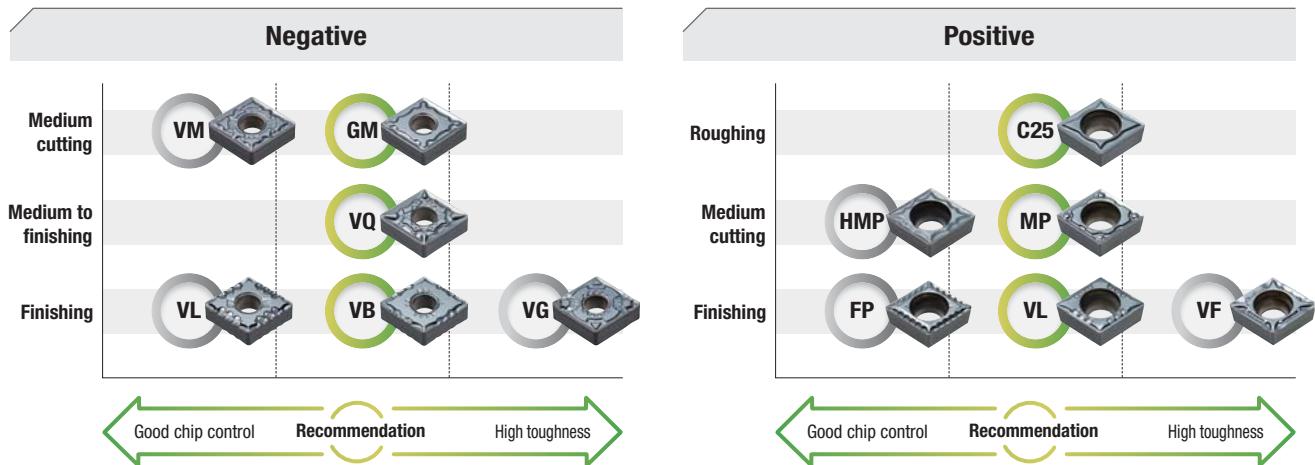
P Steel (P10~P20)



P Steel (P15~P25)



Chip breaker line-up



Recommended cutting conditions

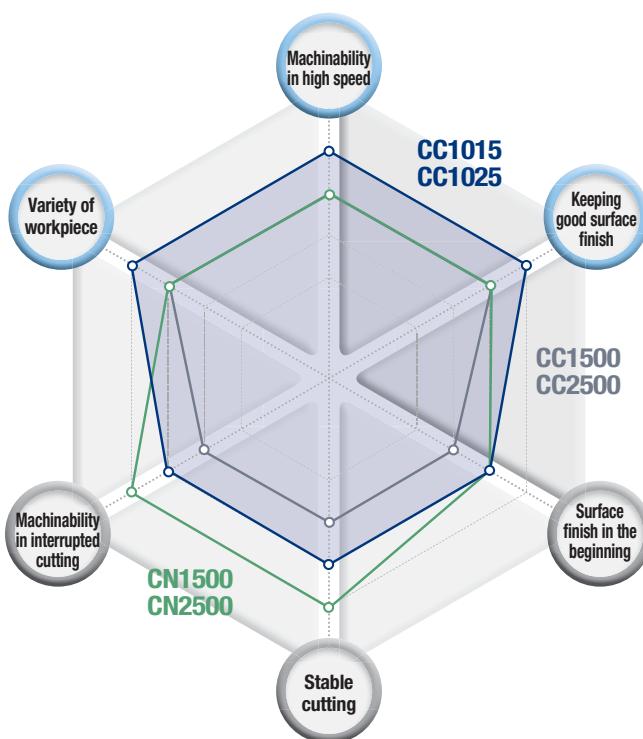
* Quenching + tempering heat treatment

ISO	Workpiece			Specific cutting force (N/mm²)	Brinell hardness (HB)	HRC	Recommended cutting condition					
	Workpiece material	ISO (DIN)	AISI				CC1015	CC1025	fn (mm/rev)			
							vc (m/min)	vc (m/min)	fn (mm/rev)			
P	Low carbon steel	C15	1015	1500	120~210	3~16	200	150	0.25			
		C25	1025				350	270	0.15			
		C35	1035				450	400	0.05			
	High carbon steel	C45	1045	1700 1820*	140~250 200~290*	4~24 13~30*	200	150	0.25			
		C53	1050				300	250	0.15			
		C55	1055				400	350	0.05			
	Alloy steel	20Cr4	5120	1700 2000*	170~270 220~360*	6~27 18~39*	180	120	0.25			
		42CrMo4	4140				270	220	0.15			
		21NiCrMo2	8615				350	300	0.05			
	Bearing steel (Alloy tool steel)	(X100CrMoV5 1)	D2	1950 3100*	200~320 480~650*	13~34 49~60*	200	150	0.25			
		X40CrMoV5-1	H13				250	200	0.15			
		HS6-5-2	M2				300	250	0.05			
	Sintered metal	-	-	-	-	HRB30 HRB83 HRB50	150	130	0.25			
		-	-				200	180	0.15			
		-	-				250	230	0.05			

Application industries

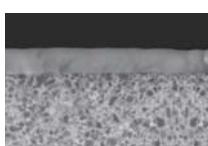


Cermet Turning grade selection guide



CC1015/CC1025

- Good wear resistance and high cutting performance in high speed cutting
- Keeping good surface finish



CN1500/CN2500

- High cutting performance in interrupted cutting
- Good surface finish in the beginning of cutting



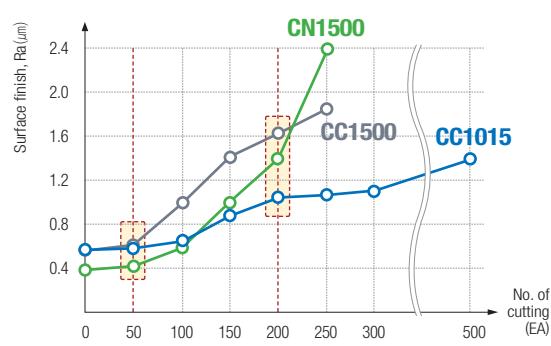
Type	Coated Cermet CC1015/CC1025	Coated Cermet CC1500/CC2500	Cermet CN1500/CN2500
Machinability in high speed	★★★★	★★★☆	★★★
Keeping good surface finish	★★★★	★★★	★★★★
	★★★★ (V _b less wear)	★★★ (V _b more wear)	★★ (V _b more wear)
Stable cutting	★★★	★★	★★★
Surface finish in the beginning	★★★	★★	★★★★
Machinability in interrupted cutting	★★★	★★	★★★★
Variety of workpiece	★★★★ (Carbon steel, Alloy steel, Sintered metal)	★★★ (Carbon steel, Alloy steel)	★★★★ (Carbon steel, Alloy steel)

Performance evaluation

Surface finish of workpiece

Workpiece	Carbon steel (C45)
Cutting condition	vc (m/min) = 200, fn (mm/rev) = 0.2, ap (mm) = 0.5, wet
Tool	Insert CNMG120408-VQ (CC1015) Holder PCLNR2525-M12

Type	CC1015	CC1500	CN1500
After cutting 50EA			
After cutting 200EA			



Performance evaluation

Wear resistance

Workpiece

Carbon steel(C45)

Cutting condition

vc (m/min) = 200, fn (mm/rev) = 0.12, ap (mm) = 0.4, wet

Tool

Insert CCMT09T304-MP (CC1015)

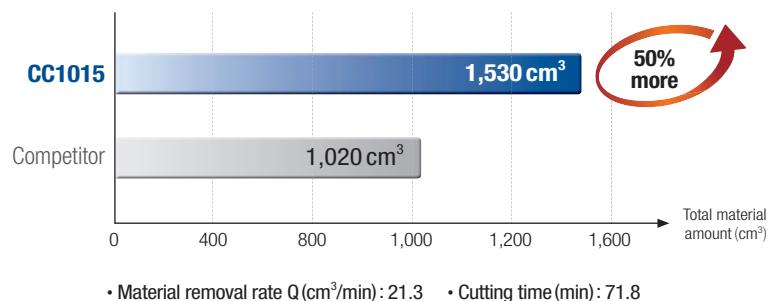
Holder SCLCR1616-H09



[CC1015]



[Competitor]



Workpiece

Alloy steel(SMF4040)

Cutting condition

vc (m/min) = 250, fn (mm/rev) = 0.1, ap (mm) = 0.5, wet

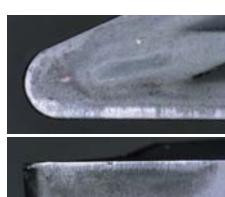
Tool

Insert VBMT160404-VL (CC1015)

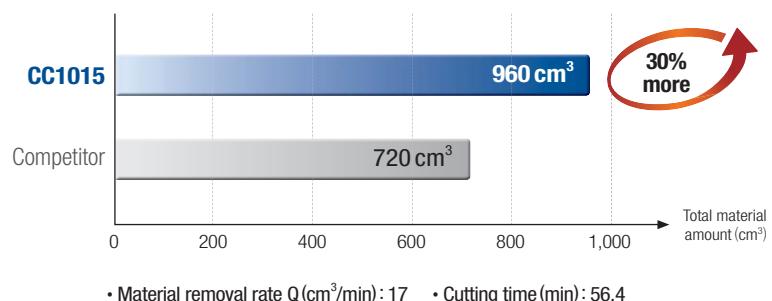
Holder SVJBL2020-K16



[CC1015]



[Competitor]



Workpiece

Sintered metal(SMF4040)

Cutting condition

vc (m/min) = 160, fn (mm/rev) = 0.12, ap (mm) = 0.2, wet

Tool

Insert SCMT09T308-HMP (CC1025)

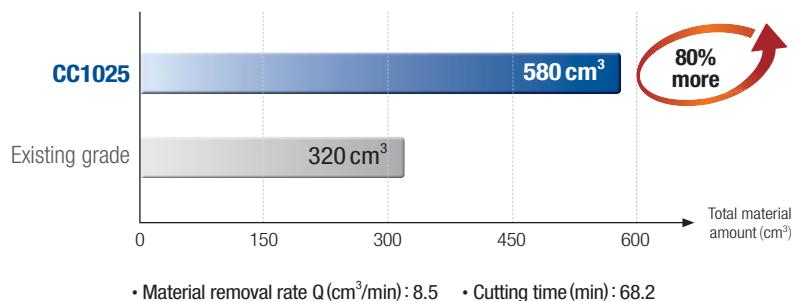
Holder SSBCR1616-H09



[CC1025]



[Existing grade]



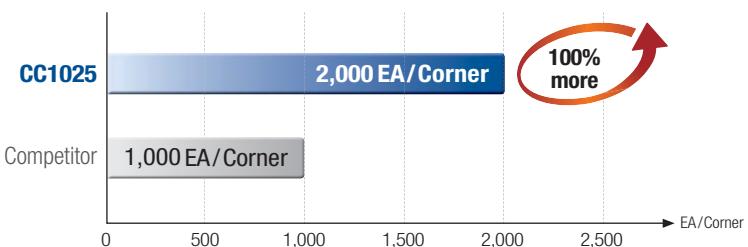
Application examples

Carbon steel (C20)

Workpiece use Pocket

Cutting condition vc(m/min) = 240, fn(mm/rev) = 0.18, ap(mm) = 0.5, wet

Tool Insert WNMG080408-VQ (CC1025) Holder MWLNR3232-P08

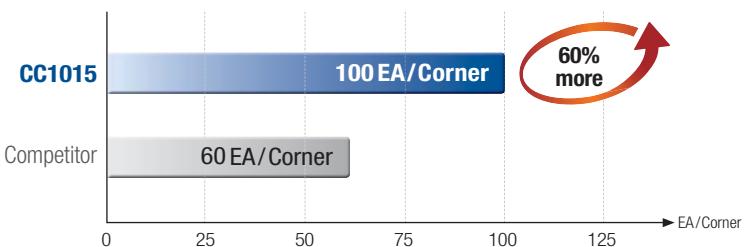


Alloy steel (42CrMo4)

Workpiece use Valve

Cutting condition vc(m/min) = 200, fn(mm/rev) = 0.2, ap(mm) = 1.0, wet

Tool Insert CCMT09T304-VF (CC1015) Holder SCLCR1616-H09

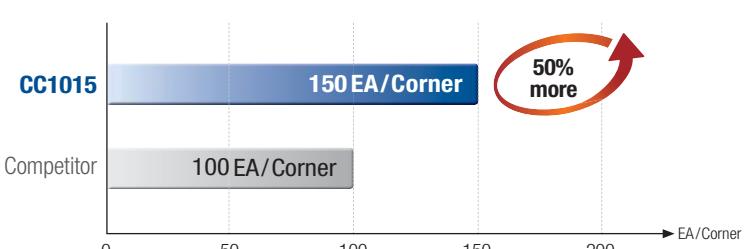


Sintered metal (SMF4040)

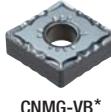
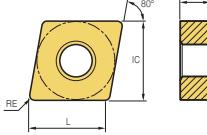
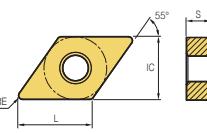
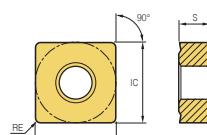
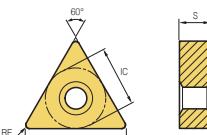
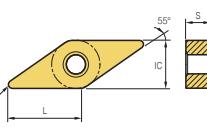
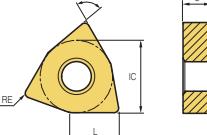
Workpiece use Sprocket

Cutting condition vc(m/min) = 200, fn(mm/rev) = 0.12, ap(mm) = 0.4, wet

Tool Insert TPMT110304-MP (CC1015) Holder S12M-STFPR-11



Stock items (Negative)

Shape	Designation	Coated		Dimension(mm)				Cutting condition		Geometry
		CC1015	CC1025	L	IC	S	RE	fn (mm/rev)	ap (mm)	
	CNMG 120404-VB	●	●	12.8959	12.7	4.76	0.397	0.12(0.20~0.05)	1.00(0.50~1.50)	 Diagram showing a square insert with a central hole. The side length is L, the corner radius is IC, and the thickness is S. The rear edge is labeled RE.
	120408-VB	●	●	12.8959	12.7	4.76	0.397	0.15(0.25~0.10)	1.20(0.50~2.00)	
	120404-VQ	●	●	12.8959	12.7	4.76	0.397	0.12(0.20~0.05)	1.20(0.50~2.00)	
	120408-VQ	●	●	12.8959	12.7	4.76	0.397	0.15(0.25~0.10)	1.50(0.50~2.50)	
	DNMG 150404-VB	●	●	15.5083	12.7	4.76	0.397	0.15(0.25~0.05)	1.00(0.30~1.50)	 Diagram showing a triangular insert with a central hole. The side length is L, the corner angle is 55°, and the thickness is S. The rear edge is labeled RE.
	150408-VB	●	●	15.5083	12.7	4.76	0.794	0.20(0.30~0.10)	1.20(0.50~2.00)	
	150604-VB	●	●	15.5083	12.7	6.35	0.397	0.15(0.25~0.05)	1.00(0.30~1.50)	
	150608-VB	●	●	15.5083	12.7	6.35	0.794	0.20(0.30~0.10)	1.20(0.50~2.00)	
	150404-VQ	●	●	15.5083	12.7	4.76	0.397	0.15(0.25~0.05)	1.20(0.30~2.00)	
	150604-VQ	●	●	15.5083	12.7	6.35	0.397	0.20(0.30~0.10)	1.20(0.50~2.00)	
	150608-VQ	●	●	15.5083	12.7	6.35	0.794	0.20(0.30~0.10)	1.50(0.50~2.50)	
	SNMG 120404-VB	●	●	12.7	12.7	4.76	0.397	0.15(0.25~0.05)	1.50(0.50~2.50)	 Diagram showing a square insert with a central hole. The side length is L, the corner angle is 90°, and the thickness is S. The rear edge is labeled RE.
	TNMG 160404-VB	●	●	16.498	9.525	4.76	0.397	0.15(0.25~0.05)	1.00(0.50~1.50)	 Diagram showing a triangular insert with a central hole. The side length is L, the corner angle is 60°, and the thickness is S. The rear edge is labeled RE.
	160408-VB	●	●	16.498	9.525	4.76	0.794	0.17(0.30~0.05)	1.00(0.50~1.50)	
	160404-VQ	●	●	16.498	9.525	4.76	0.397	0.15(0.25~0.05)	1.20(0.50~2.00)	
	160408-VQ	●	●	16.498	9.525	4.76	0.794	0.17(0.30~0.05)	1.50(0.50~2.50)	
	VNMG 160404-VC	●	●	16.606	9.525	4.76	0.397	0.12(0.20~0.05)	1.20(0.50~2.00)	 Diagram showing a triangular insert with a central hole. The side length is L, the corner angle is 55°, and the thickness is S. The rear edge is labeled RE.
	160404-VB	●	●	16.606	9.525	4.76	0.397	0.12(0.20~0.05)	1.50(0.50~2.50)	
	160408-VB	●	●	16.606	9.525	4.76	0.794	0.17(0.25~0.10)	1.50(0.50~2.50)	
	160404-VQ	●	●	16.606	9.525	4.76	0.397	0.20(0.30~0.10)	1.70(0.50~3.00)	
	WNMG 080408-VQ	●	●	8.687	12.7	4.76	0.794	0.17(0.30~0.05)	1.50(0.50~2.50)	 Diagram showing a triangular insert with a central hole. The side length is L, the corner angle is 80°, and the thickness is S. The rear edge is labeled RE.

* : Standard insert shape

● : Stock item

Stock items (Positive)

Shape	Designation	Coated		Dimension(mm)				Cutting condition		Geometry
		CC1015	CC1025	L	IC	S	RE	fn (mm/rev)	ap (mm)	
CCMT-MP*	CCMT 060204-FP	●		6.448	6.35	2.38	0.397	0.05(0.10~0.01)	0.06(0.05~0.08)	
	060204-VL	●		6.448	6.35	2.38	0.397	0.05(0.10~0.01)	0.50(0.10~1.00)	
	09T304-VL	●		9.6719	9.525	3.97	0.397	0.12(0.20~0.05)	1.20(0.50~2.00)	
	09T308-VL	●		9.6719	9.525	3.97	0.794	0.16(0.25~0.07)	1.20(0.50~2.00)	
	060204-MP	●	●	6.448	6.35	2.38	0.397	0.10(0.15~0.05)	0.50(0.10~1.00)	
	09T304-MP	●	●	9.6719	9.525	3.97	0.397	0.16(0.25~0.08)	1.50(0.50~2.50)	
	09T308-MP	●		9.6719	9.525	3.97	0.794	0.20(0.30~0.10)	1.50(0.50~2.50)	
	060204-C25	●	●	6.448	6.35	2.38	0.397	0.10(0.15~0.05)	0.90(0.60~1.50)	
DCMT-MP*	DCMT 070204-FP	●		7.7519	6.35	2.38	0.397	0.05(0.10~0.01)	0.40(0.10~0.90)	
	11T304-FP	●		11.6279	9.525	3.97	0.397	0.05(0.10~0.01)	0.50(0.10~1.00)	
	070204-VL	●	●	7.7519	6.35	2.38	0.397	0.12(0.20~0.05)	0.50(0.20~1.00)	
	11T304-VL	●	●	11.6279	9.525	3.97	0.397	0.14(0.20~0.08)	0.70(0.30~1.20)	
	11T308-VL	●	●	11.6279	9.525	3.97	0.794	0.16(0.22~0.10)	0.90(0.30~1.50)	
	070202-MP	●		7.7519	6.35	2.38	0.198	0.10(0.18~0.03)	0.90(0.30~1.50)	
	070204-MP	●		7.7519	6.35	2.38	0.397	0.12(0.20~0.05)	0.90(0.30~1.50)	
	070208-MP	●	●	7.7519	6.35	2.38	0.794	0.15(0.22~0.07)	1.20(0.50~2.00)	
	11T302-MP	●	●	11.6279	9.525	3.97	0.198	0.10(0.15~0.05)	1.20(0.50~2.00)	
	11T304-MP	●	●	11.6279	9.525	3.97	0.397	0.12(0.17~0.08)	1.20(0.50~2.00)	
	11T308-MP	●		11.6279	9.525	3.97	0.794	0.15(0.20~0.10)	1.20(0.50~2.00)	
	070204-C25	●		7.7519	6.35	2.38	0.397	0.12(0.20~0.05)	1.00(0.50~1.50)	
	11T304-C25	●		11.6279	9.525	3.97	0.397	0.15(0.22~0.08)	1.50(0.50~2.50)	
	11T308-C25	●		11.6279	9.525	3.97	0.794	0.17(0.24~0.10)	1.50(0.50~2.50)	
SCMT	09T308-C25		●	9.525	9.525	3.97	0.794	0.12(0.20~0.05)	1.10(0.30~2.00)	
TCMT-MP*	TCMT 16T304-VL	●		16.498	9.525	3.97	0.397	0.15(0.20~0.08)	1.10(0.30~2.00)	
	16T308-MP	●		16.498	9.525	3.97	0.794	0.17(0.25~0.10)	1.50(0.50~2.50)	
	090204-C25	●	●	9.63	5.56	2.38	0.397	0.12(0.18~0.06)	1.50(0.40~2.50)	
	110204-C25	●	●	10.999	6.35	2.38	0.397	0.15(0.20~0.10)	1.70(1.00~2.50)	
	110208-C25	●		10.999	6.35	2.38	0.794	0.18(0.25~0.12)	1.70(1.00~2.50)	
	16T308-C25	●		16.498	9.525	3.97	0.794	0.17(0.25~0.10)	2.00(1.00~3.00)	
TPMT-MP*	TPMT 110304-VL	●	●	10.999	6.35	3.18	0.397	0.12(0.20~0.05)	0.50(0.10~1.00)	
	110304-MP	●		10.999	6.35	3.18	0.397	0.15(0.20~0.08)	0.70(0.10~1.50)	
VBMT-MP*	VBMT 160404-FP		●	16.606	9.525	4.76	0.397	0.05(0.10~0.01)	0.40(0.10~0.80)	
	160404-VL	●	●	16.606	9.525	4.76	0.397	0.07(0.10~0.05)	0.50(0.10~1.00)	
	160408-VL	●		16.606	9.525	4.76	0.794	0.10(0.13~0.08)	0.70(0.30~1.20)	
	160404-MP	●	●	16.606	9.525	4.76	0.397	0.10(0.15~0.05)	0.80(0.30~1.50)	
	160408-MP	●	●	16.606	9.525	4.76	0.794	0.13(0.18~0.08)	1.00(0.50~1.50)	

*: Standard insert shape

●: Stock item

For the safe metalcutting

- Use safety supplies such as protective gloves to prevent possible injury while touching the edge of tools.
- Use safety glasses or safety cover to hedge possible dangers. Inappropriate usage or excessive cutting condition may lead tool's breakage or even the fragment's scattering.
- Clamp the workpiece tightly enough to prevent its movement while its machining.
- Properly manage the tool change phase because the inordinately used tool can be easily broken under the excessive cutting load or severe wear, and it may threaten the operator's safety.
- Use safety cover because chips evacuated during cutting are hot and sharp and may cause burns and cuts. To remove chips safely, stop machining, put on protective gloves, and use a hook or other tools.
- Prepare for fire prevention measures as the use of the non-water soluble cutting oil may cause fire.
- Use safety cover and other safety supplies because the spare parts or the inserts can be pulled out due to centrifugal force while high speed machining.



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