

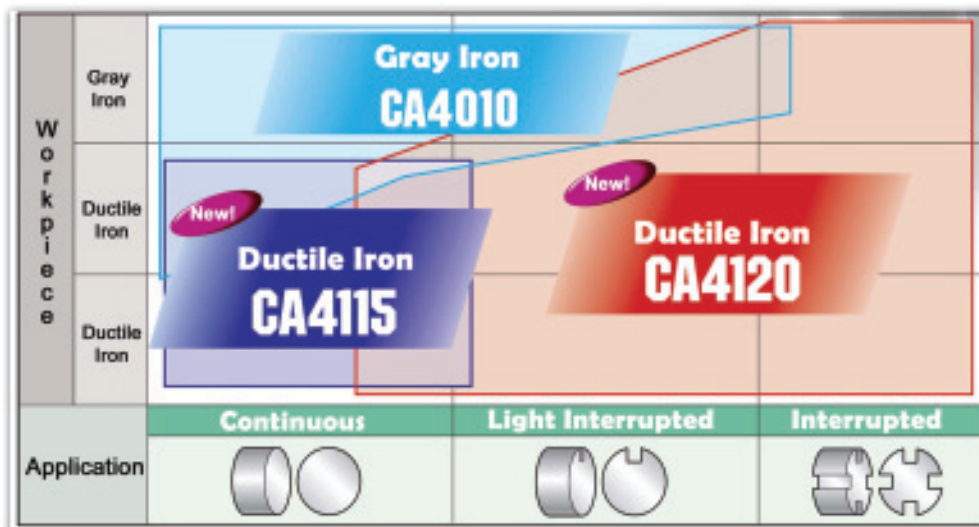
CA4115 / CA4120

CVD Coated Carbide Grades for Ductile Iron

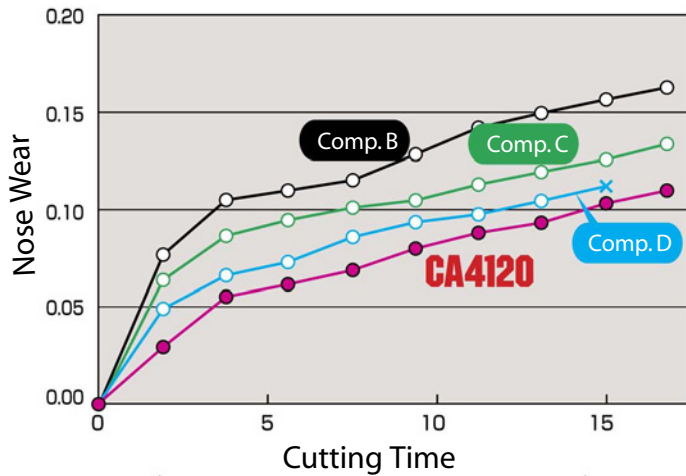
CA4115 - Ideal for high speed continuous machining of ductile iron due to the thick multi-layered coating.

CA4120 - Excellent choice for interrupted cutting of gray or ductile iron due to a new crack-free coating and tough carbide substrate.

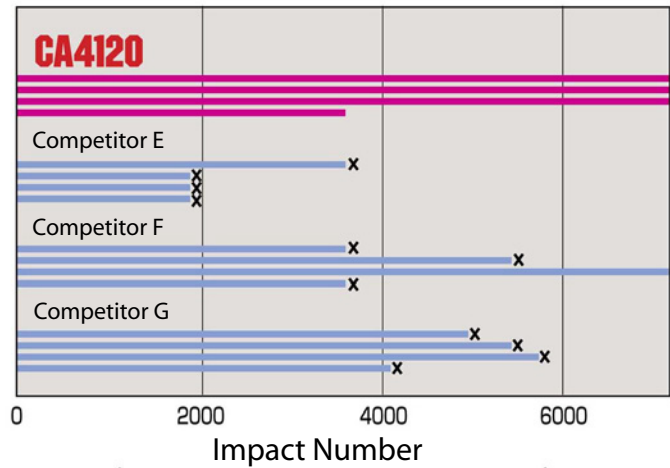
Application Range



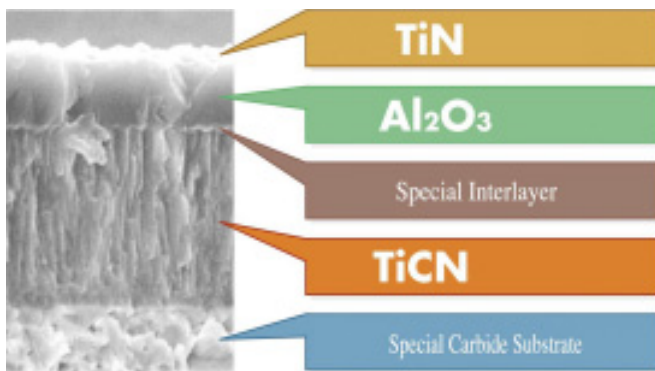
Wear Resistance



Fracture Resistance



Coating Layer Composition



Coating Layer Comparison

Grade	SEM Structure	Crack within coating layer	
		Hv Indentation Test	Rolling Friction Test
CA4120	 Fine columnar structure with high aspect ratio	 Cracks are small and the coating film is intact	 Crack resistant coating
Conventional A	 Coarse structure	 Note: Hv indentation by diamond point of micro Vickers hardness test machine	 Micrograph of the rolling friction test results

CA4120 Case Study

100-70-03 Camshaft Chamfering

V= 1082 sfm
 d= .060"
 f= .012 ipr
 Coolant
 DNMG 432 ZS

CA4120 150 pcs/edge
 Competitor 100 pcs/edge

- CA4120 tool life was 50% better than that of the competitor.
- After machining, the CA4120 insert edge showed less wear than the competitor's.

Competitor insert edge | CA4120 insert edge

CA4115 Case Study

60-40-8 Facing, no interruptions

V= 656 sfm
 d= .080"
 f= .010 ipr
 Coolant
 WNMG 433 ZS

- CA4115 machined 120 pieces per edge
- CA4115 edge wear was less than half that of the competitor's

Competitor insert nose wear .46mm | CA4115 insert nose wear .22mm

Image	Description	I.C.	THK	Hole Dia.	Corner R	Stock				
						CA4115	CA4120			
	CCMT 32.52	0.375	0.156	0.173	0.031	●				
	CNMA 431	0.5	0.187	0.203	0.016	●	●			
	CNMA 432				0.031	●	●			
	CNMA 433				0.047	●	●			
	CNMA 434				0.063	●	●			
	CNMG 431	0.5	0.187	0.203	0.016	●	●			
	CNMG 432				0.031	●	●			
	CNMG 433				0.047	●	●			
	CNMG 434				0.063	●	●			
	CNMG 642				0.031	●				
	CNMG 643				0.047	●				
	CNMG 643	0.75	0.25	0.313	0.047	●				
	CNMG 644				0.063	●				
	CNMG 431C				0.016	●	●			
	CNMG 432C				0.031	●	●			
	CNMG 433C	0.5	0.187	0.203	0.047	●	●			
	CNMG 434C				0.063	●	●			
	CNMG 543C				0.625	0.25	0.25	0.047	●	●
	CNMG 432GC				0.5	0.187	0.203	0.031	●	●
	CNMG 433GC				0.047	●	●			
	CNMG 543HS	0.625	0.25	0.25	0.047	●	●			
	CNMG 432ZS	0.5	0.187	0.203	0.031	●	●			
	CNMG 433ZS				0.047	●	●			
	CNMM 643HX	0.75	0.25	0.312	0.047	●				
	CPMH 321	0.375	0.125	0.173	0.016	●	●			
	CPMH 322				0.031	●	●			
	DCMT 32.52	0.375	0.156	0.173	0.031	●				
	DCMT 2151GK				0.016	●				
	DCMT 2152GK	0.25	0.094	0.11	0.031	●				
	DCMT 2151GK				0.016	●				
	DNMA 431	0.5	0.187	0.203	0.016	●	●			
	DNMA 432				0.031	●	●			
	DNMG 431	0.5	0.187	0.203	0.016	●	●			
	DNMG 432				0.031	●	●			
	DNMG 433				0.047	●	●			
	DNMG 431C	0.5	0.187	0.203	0.016	●	●			
	DNMG 432C				0.031	●	●			
	DNMG 433C				0.047	●	●			
	DNMG 432GC	0.5	0.187	0.203	0.031	●	●			
	DNMG 433GC				0.047	●	●			

Image	Description	I.C.	THK	Hole Dia.	Corner R	Stock	
						CA4115	CA4120
	DNMG 432ZS	0.5	0.187	0.203	0.031	●	●
	DNMG 433ZS				0.047	●	●
	RNMG 43	0.5	0.187	0.203	-	●	●
	RNMG 54				0.625	0.25	0.25
	SNMA 431	0.5	0.187	0.203	0.016	●	●
	SNMA 432				0.031	●	●
	SNMA 433				0.047	●	●
	SNMA 434				0.063	●	●
	SNMG 431	0.5	0.187	0.203	0.016	●	●
	SNMG 432				0.031	●	●
	SNMG 433				0.047	●	●
	SNMG 434				0.063	●	●
	SNMG 432C	0.5	0.187	0.203	0.031	●	●
	SNMG 433C				0.047	●	●
	SNMG 432GC	0.5	0.187	0.203	0.031	●	●
	SNMG 433GC				0.047	●	●
	SNMG 432ZS	0.5	0.187	0.203	0.031	●	●
	SNMG 433ZS				0.047	●	●
	SPM 421	0.5	0.125	-	0.016	●	●
	SPM 422				0.031	●	●
	SPM 432				0.031	●	●
	SPM 433				0.047	●	●
	TNMA 331	0.375	0.187	0.15	0.016	●	●
	TNMA 332				0.031	●	●
	TNMA 333				0.047	●	●
	TNMA 334				0.063	●	●
	TNMG 331	0.375	0.187	0.15	0.016	●	●
	TNMG 332				0.031	●	●
	TNMG 333				0.047	●	●
	TNMG 334				0.063	●	●
	TNMG 432				0.031	●	●
TNMG 433	0.047	●	●				
	TNMG 331C	0.375	0.187	0.15	0.016	●	●
	TNMG 332C				0.031	●	●
	TNMG 333C				0.047	●	●
	TNMG 332GC	0.375	0.187	0.15	0.031	●	●
	TNMG 333GC				0.047	●	●
	TNMG 332ZS	0.375	0.187	0.15	0.031	●	●
	TNMG 333ZS				0.047	●	●
	TPM 221	0.25	0.125	-	0.016	●	●
	TPM 222				0.031	●	●
	TPM 321				0.016	●	●
	TPM 322				0.031	●	●
	TPM 323				0.047	●	●

	Description	I.C.	THK	Hole Dia.	Corner R	Stock	
						CA4115	CA4120
	TPMR 222	0.25	0.125		0.031	●	●
	TPMR 322	0.375	0.125		0.031	●	●
	VNM G 331	0.375	0.187	0.15	0.016	●	●
	VNM G 332				0.031	●	●
	WNMA 432	0.5	0.187	0.203	0.031	●	●
	WNMA 433				0.047	●	●
	WNM G 431	0.5	0.187	0.203	0.016	●	●
	WNM G 432				0.031	●	●
	WNM G 433				0.047	●	●
	WNM G 431C	0.5	0.187	0.203	0.016	●	●
	WNM G 432C				0.031	●	●
	WNM G 433C				0.047	●	●
	WNM G 432GC	0.5	0.187	0.203	0.031	●	●
	WNM G 433GC				0.047	●	●
	WNM G 432ZS	0.5	0.187	0.203	0.031	●	●
	WNM G 433ZS				0.047	●	●

Chipbreaker Chart

