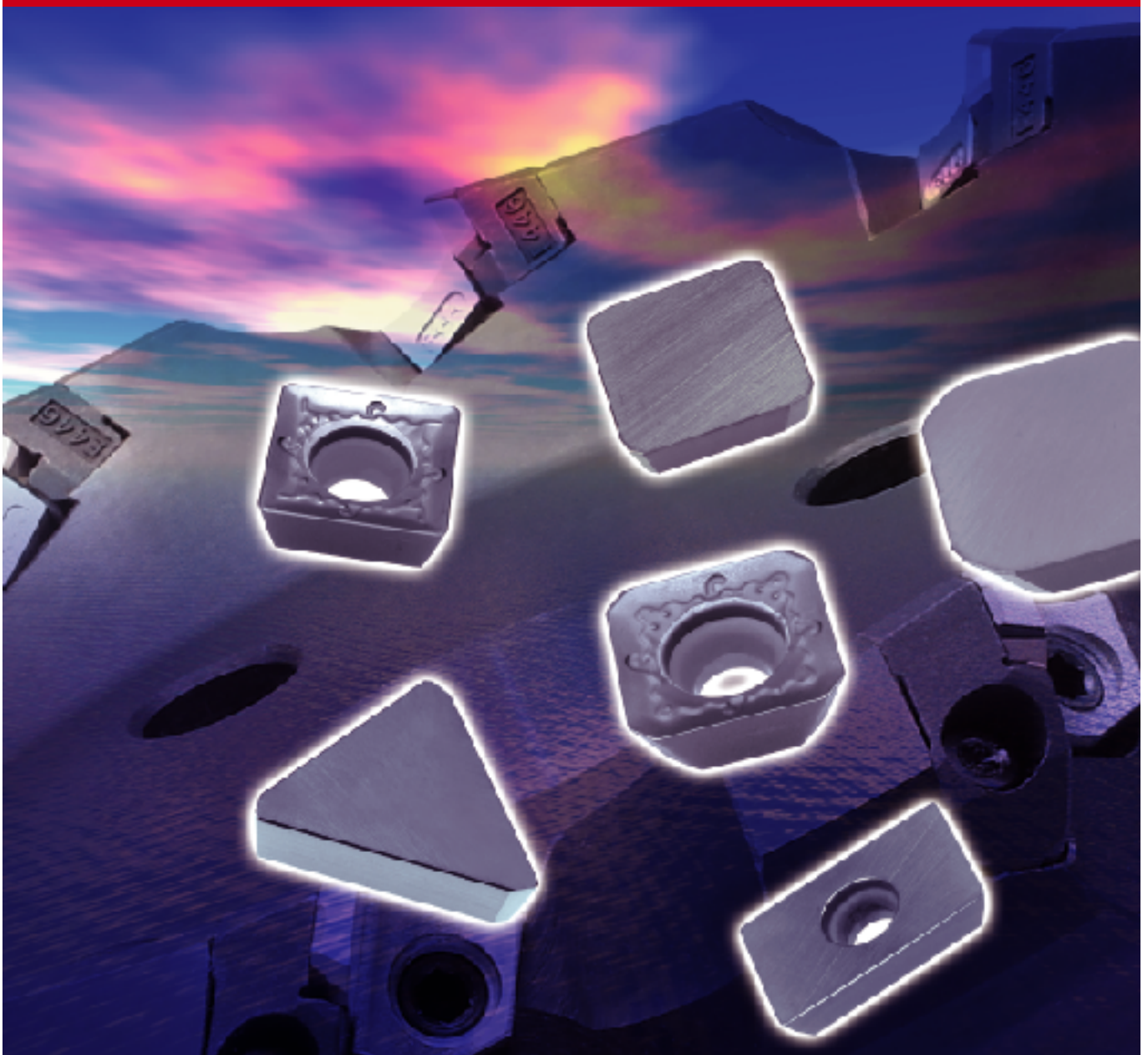




New Highly Tough Cermet for Milling

NS740

Highly Impact Resistant Grade for Excellent Surface Finish



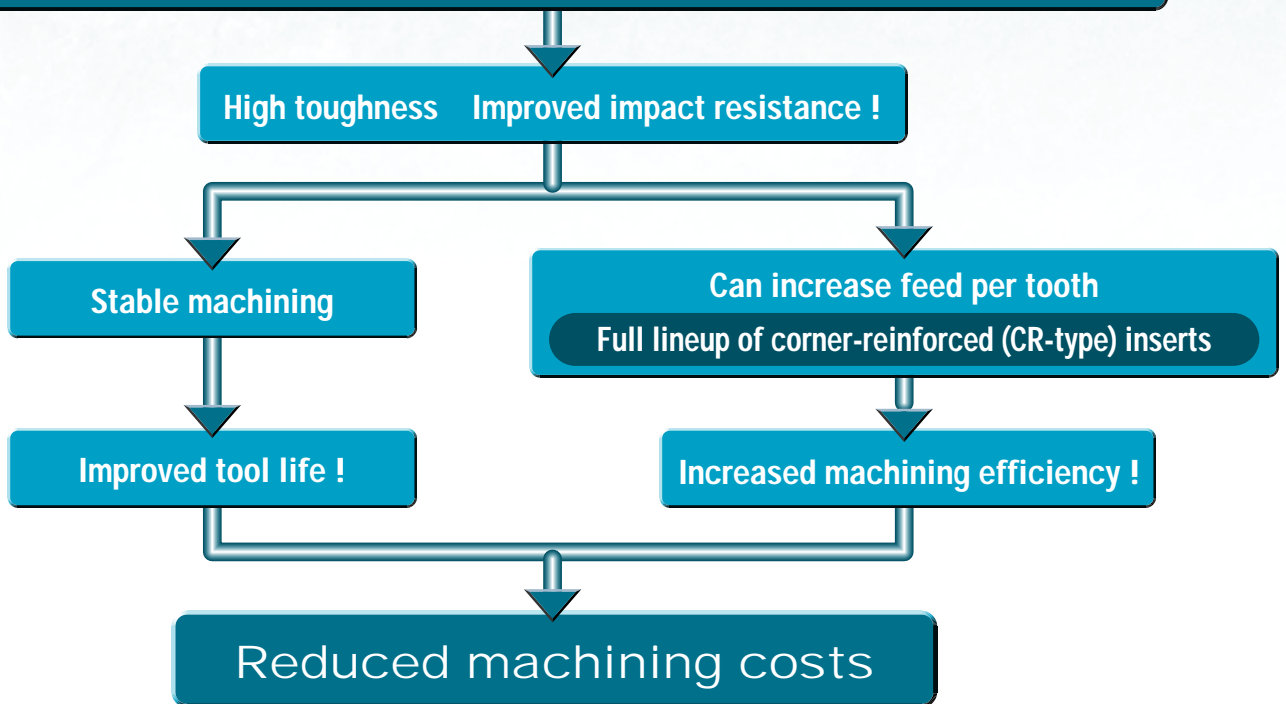
New Highly Tough Cermet for Milling

NS740

Applicable for a Wide Range of Work Materials

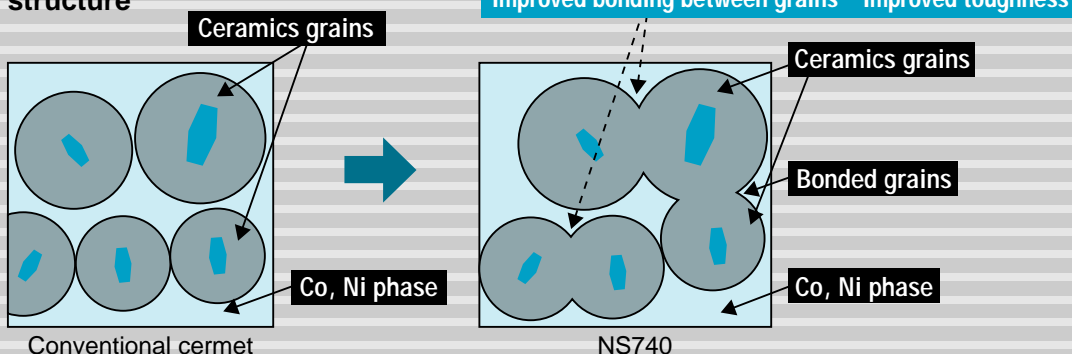
Skeleton-Reinforced Cermet

Improved bonding between ceramic grains which form the skeleton of cermet



The secret of high toughness of skeleton-reinforced cermet NS740

Schematic drawings of cermet structure



Microstructure of NS740

Tools from General Steels to Die Steels.

Impact resistance

Cutting conditions

Work material: JIS SCM440 (105x 200mm 275HB)

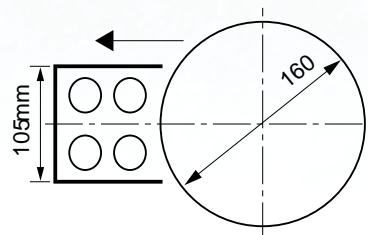
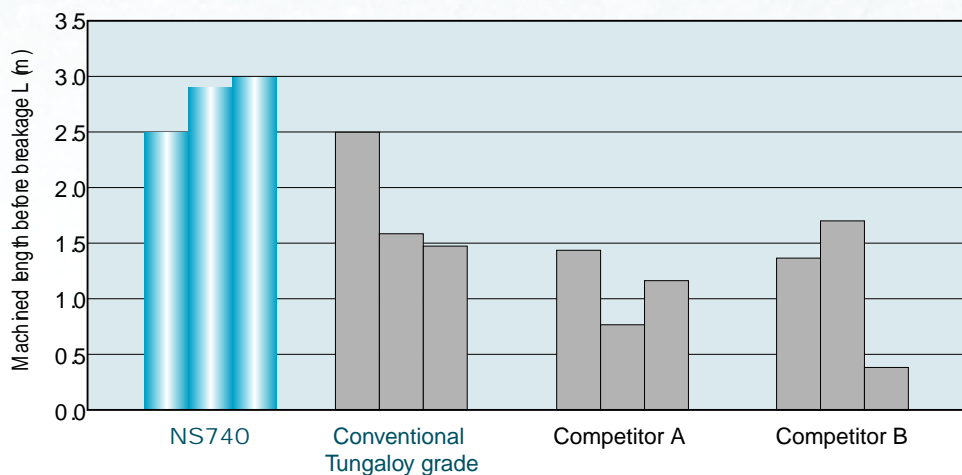
Cutting speed $V_c = 150 \text{ m/min}$ Depth of cut $a_p = 2.0 \text{ mm}$

Tool: TMD4406R (8 teeth)

Feed per tooth $f_z = 0.27 \text{ mm/t}$

Insert: SDEN42ZTN

Cutting fluid Dry



Comparison of tool failure

Cutting conditions

Work material: JIS S50C

Depth of cut $a_p = 2.0 \text{ mm}$

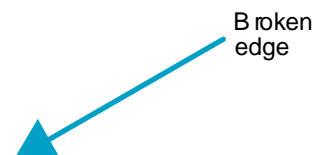
Tool: TMD4408R (10 teeth)

Feed per tooth $f_z = 0.1 \text{ mm/t}$

Insert: SDKN42ZTN

Cutting fluid Dry

Cutting speed $V_c = 250 \text{ m/min}$



Comparison of finished surfaces

Cutting conditions

Insert: SDKN42ZTN Work material: JIS SCM440 (260HB) Cutting speed $V_c = 200 \text{ m/min}$
Depth of cut $a_p = 2.0 \text{ mm}$ Feed per tooth $f_z = 0.15 \text{ mm/t}$ Tool: TMD4406R (Used with single tooth)
Dry cutting

NS740



$R_z = 0.67 \mu\text{m}$

Coated cemented carbide grade

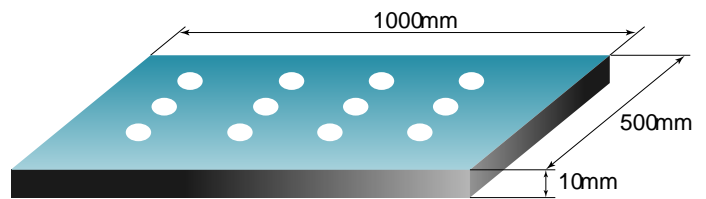


$R_z = 2.58 \mu\text{m}$

NS740 Practical example

Work material: Mild steel (JIS SS400)
Tool: TME4410R I (12 teeth)
Insert: SEEN1203AGTNCR-14 (NS740)
Cutting conditions: Cutting speed $V_c = 200 \text{ m/min}$
Depth of cut $a_p = 1.5 \text{ mm}$
Feed per tooth $f_z = 0.15 \text{ mm/t}$

Cutting fluid: Dry



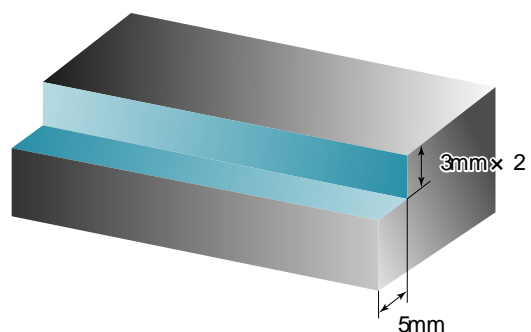
Results

Although the workpiece has many holes on the surface, NS740 insert produced superior surface finish without insert breakage compared with competitors' cement.

NS740 Practical example

Work material: Carbon steel (JIS S45C)
Tool: EPS11025RS (3 teeth)
Insert: ASMT11T304PDPR MJ (NS740)
Cutting conditions: Cutting speed $V_c = 120 \text{ m/min}$
Depth of cut $a_p = 3 \text{ mm} \times 2$
Cutting width $a_e = 5 \text{ mm}$
Feed per tooth $f_z = 0.15 \text{ mm/t}$

Cutting fluid: Dry



Results

Compared with conventional coated grades, NS740 insert produced improved surface finish and reduced cutting forces.

Stock list

InsertCat.No.	ISO code	Accuracy	Stocked grade	App licab le m illing cutters
			NS740	
AECW 1403PESR	AECW 1403PESR	C		EPE4000
AEMW 1403PETR	AEMW 1403PETR	M		
AECW 16T3PESR	AECW 16T3PESR	C		EPE5000
AEMW 16T3PETR	AEMW 16T3PETR	M		
AECW 1804PESR	AECW 1804PESR	C		EPE6000
AEMW 1804PETR	AEMW 1804PETR	M		
ASMT11T304PDPR M J	ASMT11T304PDPR M J	M		T EPS11
ASMT170508PDPR M J	ASMT170508PDPR M J	M		T EPS17
SDCN42ZTN	SDCN 1203AETN -12	C		TMD4400J TGD4400-A TFD4400-A, EMD4403R IS32, EGD4000
SDCN42ZTN20	SDCN 1203AETN -20	C		
SDEN42ZTN	SDEN 1203AETN -12	E		
SDEN42ZTNCR	SDEN 1203AETNCR	E		
SDKN42ZTN	SDKN 1203AETN -12	K		
SDKN42ZTNCR	SDKN 1203AETN -CR	K		
SDEN42EFTR24	SDEN 1203EFTR -24	E		
SDKN42EFTR	SDKN 1203EFTR -16	K		TMD4100 (Former product)
SDCN53ZTN	SDCN 1504AETN	C		TMD5400I
SDEN53ZTN	SDEN 1504AETN	E		
SDEN53ZTNCR	SDEN 1504AETNCR	E		
SDKN53ZTN	SDKN 1504AETN	K		
SDKN53ZTNCR	SDKN 1504AETNCR	K		
SDGT1204AFTN M J	SDGT 1204AFTN M J	G		T EAD12
SDMT1204AFTN M J	SDMT 1204AFTN M J	M		T EPD12
SDGT1204PDTR M J	SDGT 1204PDTR M J	G		
SDMT1204PDTR M J	SDMT 1204PDTR M J	M		TMD4400J TGD4400-A, EMD4403R IS32 EGD4000
SDKR 1203AETN M J	SDKR 1203AETN M J	K		
SDMR 1203AETN M J	SDMR 1203AETN M J	M		
SECN422TN	SECN 120308TN	C		EGE4000 (Former product)
SEEN422TN	SEEN 120308TN	E		EGE4100 (Former product)
SECN42EFTRCR	SECN 1203EFTRCR	C		
SEEN42EFTRCR	SEEN 1203EFTRCR	E		TGE4400 (Former product), EGE4400 (Former product)
SEKN42EFTR	SEKN 1203EFTR	K		
SEEN 1203AFTNCR -14	SEEN 1203AFTNCR -14	E		TME4400J, TME4400B, EME4400
SEKN42AFTN16	SEKN 1203AFTN -16	K		
SEKR 1203AFTN M J	SEKR 1203AFTN M J	K		
SEMR 1203AFTN M J	SEMR 1203AFTN M J	M		
SEEN 1203AG TN	SEEN 1203AG TN	E		
SEEN 1203AG TNCR -14	SEEN 1203AG TNCR -14	E		
SEEN 1203AG TN -T	SEEN 1203AG TN -T	E		
SEKN 1203AG TN	SEKN 1203AG TN	K		
SEKN 1203AG TNCR	SEKN 1203AG TNCR	K		
SEKN 1203AG TN -T	SEKN 1203AG TN -T	K		TME5400I
SEEN 1504AG TN	SEEN 1504AG TN	E		
SEKN 1504AG TN	SEKN 1504AG TN	K		
SEKN 1504AG TN -T	SEKN 1504AG TN -T	K		TGN4200-A
SNCN43ZTN	SNCN 1204ZNTN	C		
SNKN43ZTN	SNKN 1204ZNTN	K		

Stock list

Insert Cat.No.	ISO code	Accuracy	Stocked grade	Applicable milling cutters	
			NS740		
SPCN42STR	SPCN1203EDTR	C		TGP4100A, TGP4100BA	
SPEN42STR	SPEN1203EDTR	E			
SPKN42STL	SPKN1203EDTL	K			
SPKN42STR	SPKN1203EDTR	K			
SPCN42ZTR	SPCN1203ZPTR	C		TGP4200-A	
SPEN42ZTR	SPEN1203ZPTR	E			
SPKN42ZTR	SPKN1203ZPTR	K			
SPEN423TN	SPEN120312TN	E		TGP4100A, TGP4100BA, TGP4200-A	
SPKN53STR	SPKN1504EDTR	K		TGP5100A	
SPMA422TN	SPMB120308TN	M		ECP4400R	
TECN32ZTR	TECN1603PETR	C		TSE3000A, ESE3000	
TEEN32ZTR	TEEN1603PETR	E			
TECN43ZTR	TECN2204PETR	C		TSE4000A, ESE4000A	
TEEN43ZTR	TEEN2204PETR	E			
TPCN43ZTR	TPCN2204PPTR	C		TSP4000A, TFP4000A	
TPEN43ZTR	TPEN2204PPTR -16	E			
TPKN43ZTR	TPKN2204PPTR	K			
TPMA432TNW 1	TPMB220408TN W 1	M		PES1500	
TPMN110304TN	TPMN110304TN	M			
TPMN110308TN	TPMN110308TN	M			
TPMN160308TN	TPMN160308TN	M			
TPMN160312TN	TPMN160312TN	M			
TPMN220408TN	TPMN220408TN	M			
TPMN220412TN	TPMN220412TN	M			
XCET310404ER	XCET310404ER	E			ECC31



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