

Tungaloy

Member IMC Group

Keeping the Customer First

Tungaloy Report No. 387-E

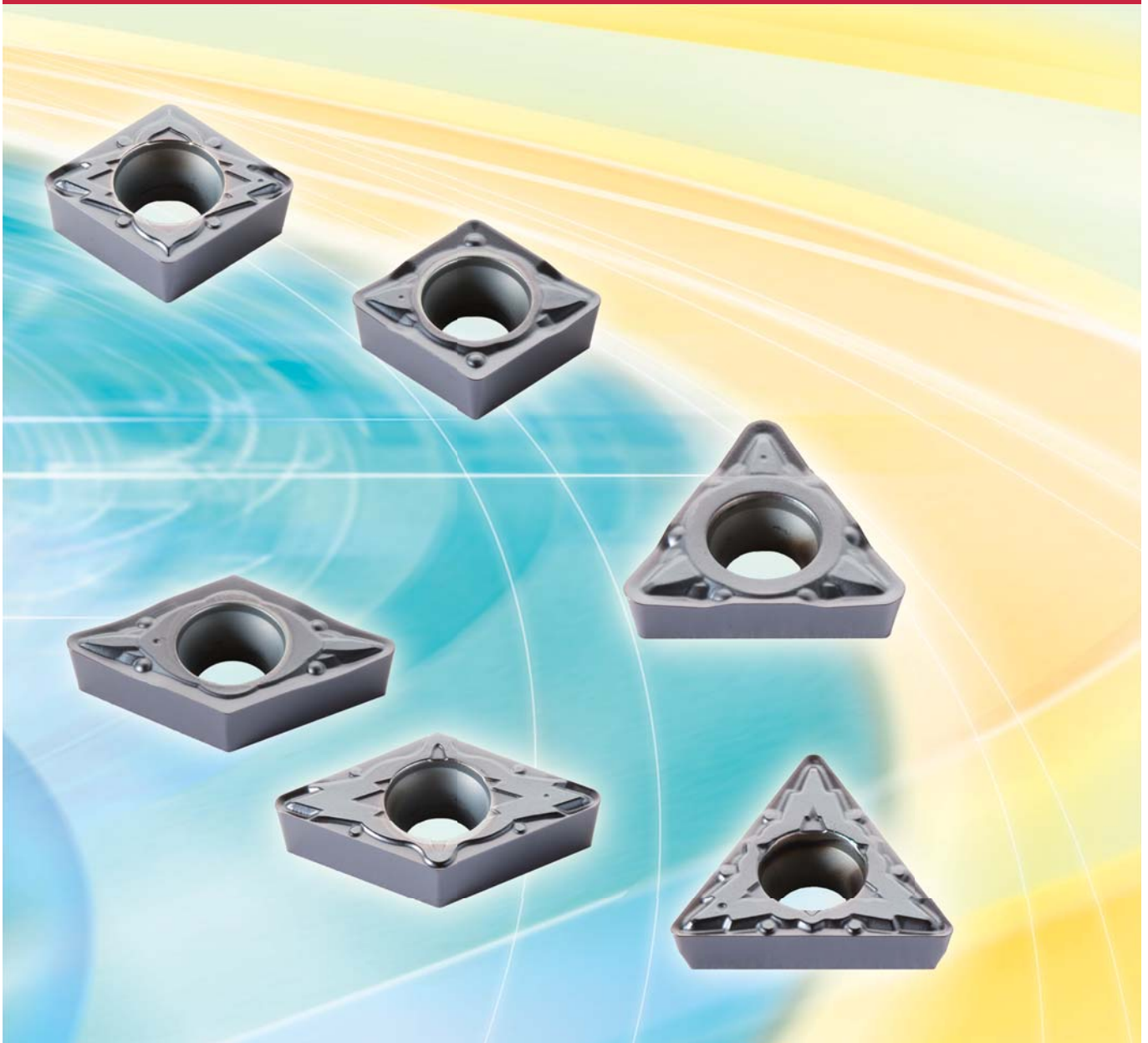
ISO TOOL™

Chipbreaker inserts for steel and stainless steel machining

PSF & PSS type

PREMIUMTEC
TUNGALOY

Lower cutting force, less chattering & excellent chip control!



PSF & PSS Features

PSF chipbreaker



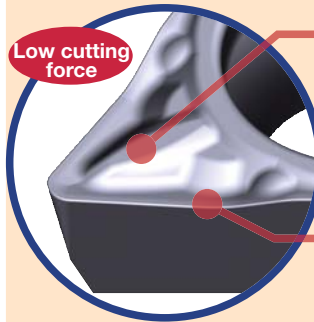
Steep protrusion

Ensures a stable and optimal chip control

Unique 2-step rake angle

Creates a steady curl of chips credit to its reduced contact area on the rake face.

PSS chipbreaker



Arc shaped protrusion

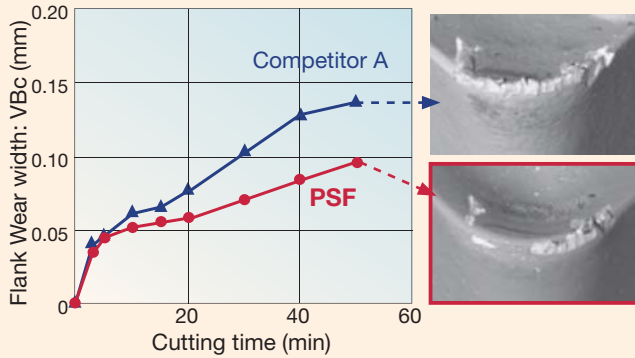
Excellent chip control with a sharpened cutting edge that prevents swarf adhesion.

Well-designed inclination

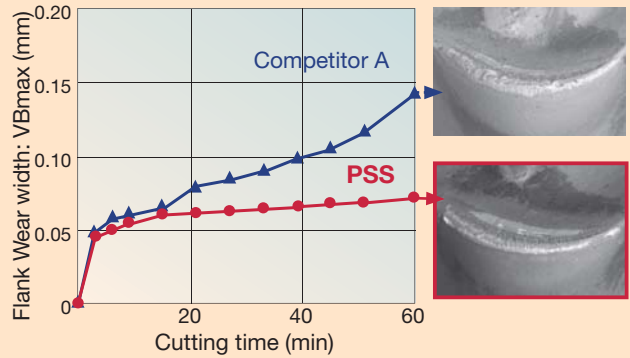
Provides stable cutting performance due to the low cutting force

Cutting Performance

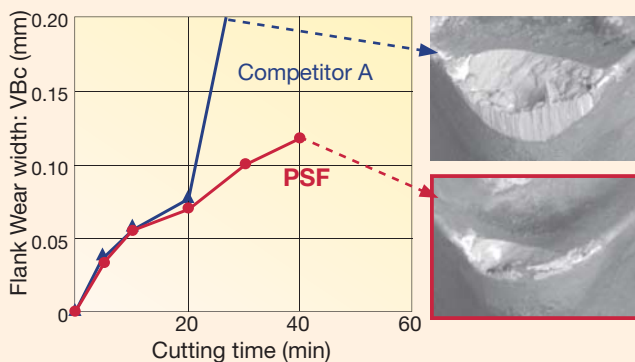
Highly productive steels and stainless steel machining



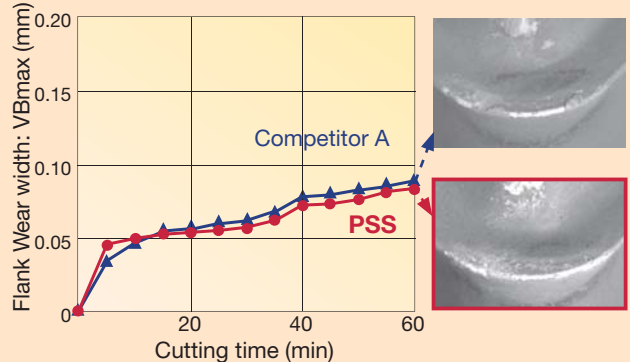
Insert : CPMT090304-PSF AH725
 Toolholder : A16Q-SCLPR09-D180
 Work material : S45C (220HB)
 Cutting speed : $V_c = 150$ m/min
 Feed : $f = 0.1$ mm/rev
 Depth of cut : $a_p = 0.3$ mm
 Coolant : Wet



Insert : CCMT09T308-PSS AH725
 Toolholder : A20R-SCLCR09-D220
 Work material : S45C (220HB)
 Cutting speed : $V_c = 200$ m/min
 Feed : $f = 0.15$ mm/rev
 Depth of cut : $a_p = 1$ mm
 Coolant : Wet



Insert : CPMT090304-PSF AH725
 Toolholder : A16Q-SCLPR09-D180
 Work material : SUS304 (170HB)
 Cutting speed : $V_c = 100$ m/min
 Feed : $f = 0.1$ mm/rev
 Depth of cut : $a_p = 0.3$ mm
 Coolant : Wet

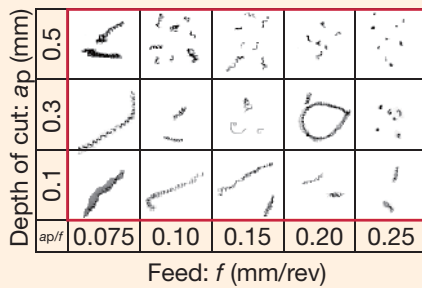


Insert : CCMT09T308-PSS AH725
 Toolholder : A20R-SCLCR09-D220
 Work material : SUS304 (170HB)
 Cutting speed : $V_c = 100$ m/min
 Feed : $f = 0.1$ mm/rev
 Depth of cut : $a_p = 0.5$ mm
 Coolant : Wet

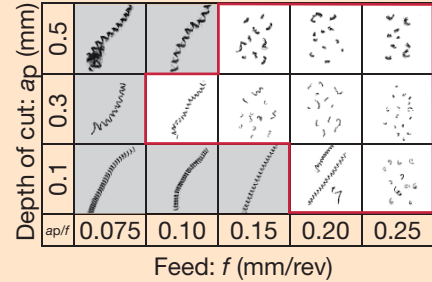
PSF chipbreaker

PSS chipbreaker

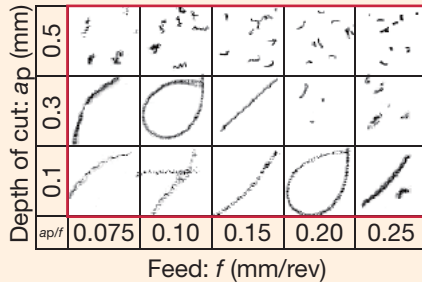
Stable chip control credit to a well balanced geometry



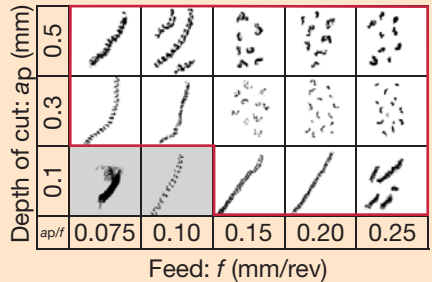
Insert : CPMT09T304-PSF AH725
 Toolholder : A16Q-SCLPR09-D180
 Work material : S45C (220HB)
 Cutting speed : Vc = 150 m/min
 Coolant : Wet



Insert : CCMT09T308-PSS AH725
 Toolholder : A20R-SCLCR09-D220
 Work material : S45C (240HB)
 Cutting speed : Vc = 150 m/min
 Coolant : Wet



Insert : CPMT09T304-PSF AH725
 Toolholder : A16Q-SCLPR09-D180
 Work material : SUS304 (172HB)
 Cutting speed : Vc = 100 m/min
 Coolant : Wet



Insert : CCMT09T308-PSS AH725
 Toolholder : A20R-SCLCR09-D220
 Work material : SUS304 (160HB)
 Cutting speed : Vc = 100 m/min
 Coolant : Wet

Grade

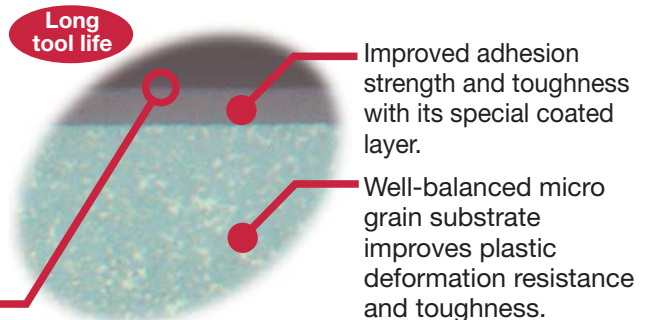
AH725 New PVD coated grade

The special (Ti,Al)N coated layer and cemented carbide substrate deliver remarkable wear resistance, tool life, hardness and toughness. This grade is highly recommended for steel and stainless steel machining.

Special surface technology

PREMIUMTEC

TUNGALOY



Application	Grade	Substrate			Coating layer		Features
	Application code	Specific gravity	HRA	GPa	Main Composition	Thickness (μm)	
P Steel	AH725	14.4	91.5	3	(Ti,Al)N	2	General grade Excellent wear resistance and toughness
	P20 - P30						
M Stainless	AH725						
	M20 - M30						

80° Rhombic, 7° positive

Application	Chipbreaker Appearance (Cross section)	$f - a_p$	Insert Cat. No. (Metric)	Dimensions (mm)				Grade
				I.C.dia ϕd	Thick-ness s	Hole dia ϕd_1	Corner R r_ϵ	Coated AH725
Finishing	PSF 		CCMT060202-PSF	6.35	2.38	2.8	0.2	●
			CCMT060204-PSF				0.4	●
			CCMT09T302-PSF	9.525	3.97	4.4	0.2	●
			* CCMT09T304-PSF				0.4	●
			CCMT09T308-PSF				0.8	●
Finishing to medium cutting	PSS 		CCMT060204-PSS	6.35	2.38	2.8	0.4	●
			CCMT060208-PSS				0.8	●
			* CCMT09T304-PSS	9.525	3.97	4.4	0.4	●
			CCMT09T308-PSS				0.8	●
			CCMT120404-PSS	12.7	4.76	5.5	0.4	●
			CCMT120408-PSS				0.8	●
CCMT120412-PSS	1.2	●						

80° Rhombic, 11° positive

Application	Chipbreaker Appearance (Cross section)	$f - a_p$	Insert Cat. No. (Metric)	Dimensions (mm)				Grade
				I.C.dia ϕd	Thick-ness s	Hole dia ϕd_1	Corner R r_ϵ	Coated AH725
Finishing	PSF 		CPMT060202-PSF	6.35	2.38	2.8	0.2	●
			CPMT060204-PSF				0.4	●
			CPMT080202-PSF	7.94	2.38	3.4	0.2	●
			CPMT080204-PSF				0.4	●
			CPMT090302-PSF	9.525	3.18	4.4	0.2	●
			* CPMT090304-PSF				0.4	●
			CPMT09T302-PSF				0.2	●
Finishing to medium cutting	PSS 		CPMT09T304-PSF	9.525	3.97	4.4	0.4	●
			CPMT060204-PSS	6.35	2.38	2.8	0.4	●
			CPMT080204-PSS				0.4	●
			CPMT080208-PSS	7.94	2.38	3.4	0.8	●
			* CPMT090304-PSS				9.525	3.18
			CPMT090308-PSS	0.8	●			
			CPMT09T304-PSS	9.525	3.97	4.4	0.4	●
			CPMT09T308-PSS				0.8	●

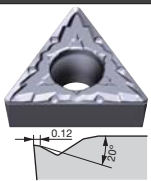
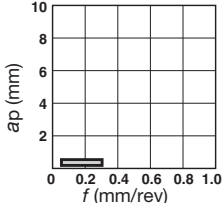
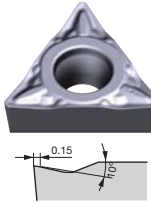
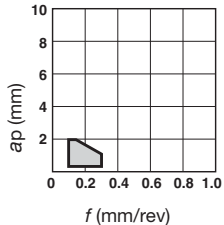
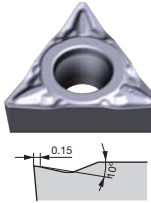
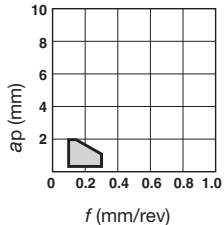
55° Rhombic, 7° positive

Application	Chipbreaker Appearance (Cross section)	$f - a_p$	Insert Cat. No. (Metric)	Dimensions (mm)				Grade
				I.C.dia ϕd	Thick-ness s	Hole dia ϕd_1	Corner R r_ϵ	Coated AH725
Finishing	PSF 		DCMT070202-PSF	6.35	2.38	2.8	0.2	●
			DCMT070204-PSF				0.4	●
			DCMT11T302-PSF	9.525	3.97	4.4	0.2	●
			* DCMT11T304-PSF				0.4	●
			DCMT11T308-PSF				0.8	●
Finishing to medium cutting	PSS 		DCMT070204-PSS	6.35	2.38	2.8	0.4	●
			DCMT070208-PSS				0.8	●
			* DCMT11T304-PSS	9.525	3.97	4.4	0.4	●
			DCMT11T308-PSS				0.8	●
			DCMT11T312-PSS	1.2	●			

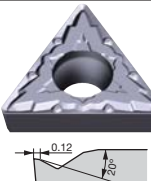
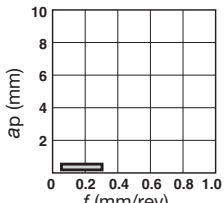
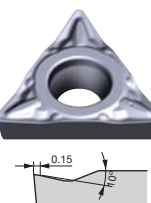
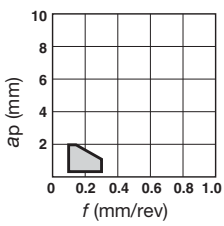
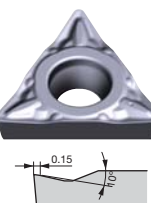
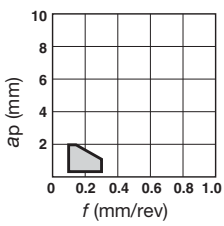
Note: The chipbreaker cross-section marked * is shown under the photographs of inserts.

● : Stocked items

60° Triangular, 7° positive

Application	Chipbreaker Appearance (Cross section)	$f - a_p$	Insert Cat. No. (Metric)	Dimensions (mm)				Grade			
				I.C.dia ϕd	Thick- ness s	Hole dia ϕd_1	Corner R r_ϵ	Coated AH725			
Finishing	PSF 		TCMT090202-PSF	5.56	2.38	2.5	0.2	●			
			TCMT090204-PSF				0.4	●			
			TCMT110202-PSF				0.2	●			
			Finishing to medium cutting	PSS 		* TCMT110204-PSF	6.35	2.38	2.8	0.4	●
						TCMT110302-PSF				0.2	●
						TCMT110304-PSF	0.4	●			
						TCMT16T304-PSF	9.525	3.97	4.4	0.4	●
Finishing to medium cutting	PSS 					TCMT090204-PSS	5.56	2.38	2.5	0.4	●
						TCMT090208-PSS				0.8	●
			* TCMT110204-PSS	6.35	2.38	2.8	0.4	●			
			TCMT110208-PSS				0.8	●			
			TCMT110304-PSS	6.35	3.18	2.8	0.4	●			
			TCMT110308-PSS				0.8	●			
			TCMT16T304-PSS	9.525	3.97	4.4	0.4	●			
TCMT16T308-PSS	0.8	●									
TCMT16T312-PSS	1.2	●									

60° Triangular, 11° positive

Application	Chipbreaker Appearance (Cross section)	$f - a_p$	Insert Cat. No. (Metric)	Dimensions (mm)				Grade			
				I.C.dia ϕd	Thick- ness s	Hole dia ϕd_1	Corner R r_ϵ	Coated AH725			
Finishing	PSF 		TPMT090202-PSF	5.56	2.38	2.5	0.2	●			
			TPMT090204-PSF				0.4	●			
			TPMT110202-PSF				0.2	●			
			Finishing to medium cutting	PSS 		* TPMT110204-PSF	6.35	2.38	2.8	0.4	●
						TPMT110302-PSF				0.2	●
						TPMT110304-PSF	0.4	●			
						TPMT130304-PSF	7.94	3.18	3.4	0.4	●
TPMT16T304-PSF	9.525	3.97				4.4	0.4	●			
Finishing to medium cutting	PSS 					TPMT090204-PSS	5.56	2.38	2.5	0.4	●
			TPMT090208-PSS	0.8	●						
			* TPMT110204-PSS	6.35	2.38	2.8	0.4	●			
			TPMT110208-PSS				0.8	●			
			TPMT110304-PSS	6.35	3.18	3.4	0.4	●			
			TPMT110308-PSS				0.8	●			
			TPMT130304-PSS	7.94	3.18	3.4	0.4	●			
TPMT130308-PSS	0.8	●									
TPMT16T304-PSS	9.525	3.97	4.4	0.4	●						
TPMT16T308-PSS				0.8	●						

Note: The chipbreaker cross-section marked * is shown under the photographs of inserts.

● : Stocked items

35° Rhombic, 7° positive

Application	Chipbreaker Appearance (Cross section)	$f - a_p$	Insert Cat. No. (Metric)	Dimensions (mm)				Grade
				I.C.dia ϕd	Thick- ness s	Hole dia $\phi d1$	Corner R r_ϵ	Coated AH725
Finishing	PSF 		VCMT080202-PSF	4.76	2.38	2.3	0.2	●
			VCMT080204-PSF				0.4	●
			VCMT110302-PSF	6.35	3.18	2.8	0.2	●
			VCMT110304-PSF				0.4	●
			* VCMT160404-PSF	9.525	4.76	4.4	0.4	●
			VCMT160408-PSF				0.8	●
Finishing to medium cutting	PSS 		VCMT110304-PSS	6.35	3.18	2.8	0.4	●
			VCMT110308-PSS				0.8	●
			* VCMT160404-PSS	9.525	4.76	4.4	0.4	●
			VCMT160408-PSS				0.8	●

35° Rhombic, 5° positive

Application	Chipbreaker Appearance (Cross section)	$f - a_p$	Insert Cat. No. (Metric)	Dimensions (mm)				Grade
				I.C.dia ϕd	Thick- ness s	Hole dia $\phi d1$	Corner R r_ϵ	Coated AH725
Finishing	PSF 		VBMT110302-PSF	6.35	3.18	2.8	0.2	●
			VBMT110304-PSF				0.4	●
			VBMT160402-PSF	9.525	4.76	4.4	0.2	●
			* VBMT160404-PSF				0.4	●
			Finishing to medium cutting	PSS 		VBMT110304-PSS	6.35	3.18
VBMT110308-PSS	0.8	●						
* VBMT160404-PSS	9.525	4.76				4.4	0.4	●
VBMT160408-PSS							0.8	●
VBMT160412-PSS							1.2	●

Note: The chipbreaker cross-section marked * is shown under the photographs of inserts.

● : Stocked items

Standard cutting conditions

Work material	Chip-breaker	Grades	Cutting Speed V_c (m/min)	Depth of cut a_p (mm)	Feed f (mm/rev)			
					$r_\epsilon = 0.2$	$r_\epsilon = 0.4$	$r_\epsilon = 0.8$	$r_\epsilon = 1.2$
Steels S45C, SCM415 etc. (C45, 15CrMo5 etc.)	PSF	AH725	50 - 120 - 180	0.1 - 0.5	0.05 ~ 0.07 ~ 0.1	0.08 ~ 0.12 ~ 0.2	0.08 ~ 0.15 ~ 0.3	-
	PSS			0.3 - 2.0	-			0.1 ~ 0.2 ~ 0.3
Stainless steels SUS304, SUS316 etc. (X5CrNi189, X5CrNiMo18 10 etc.)	PSF		50 - 120 - 150	0.1 - 0.5	0.05 ~ 0.07 ~ 0.1	0.08 ~ 0.12 ~ 0.2	0.08 ~ 0.15 ~ 0.3	-
	PSS			0.3 - 2.0	-			0.1 ~ 0.2 ~ 0.3

Practical Examples

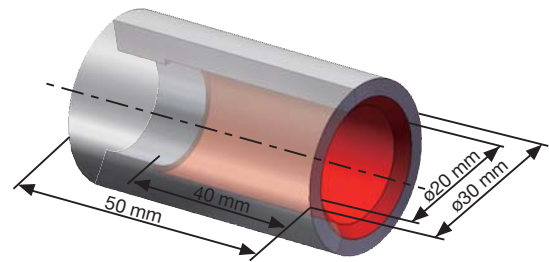
Tool life improved by 70%

Insert : TPMT110304-PSF AH725
Toolholder : A16Q-STUPR1103-D180
Work material : SCM415
Cutting speed : $V_c = 125$ m/min
Depth of cut : $a_p = 0.4$ mm
Feed : $f = 0.12$ mm/rev
Coolant : Wet

Results

AH725 has excellent wear resistance, so the grade can achieve 70% longer tool life than competitor grades. The PSF chipbreaker reduces the chip evacuation problems and machine downtime.

Internal finish turning



● Number of parts per insert corner



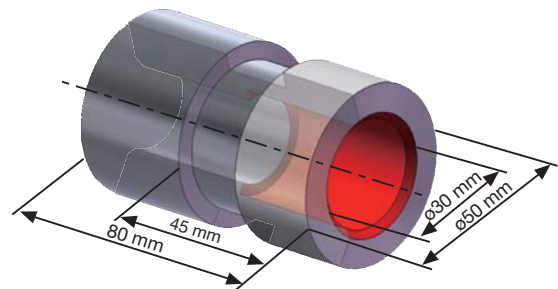
Reducing cutter chatter

Insert : CCMT09T304-PSS AH725
Toolholder : A25S-SCLCR09-D270
Work material : SUS304
Cutting speed : $V_c = 110$ m/min
Depth of cut : $a_p = 1.2$ mm
Feed : $f = 0.15$ mm/rev
Coolant : Wet

Results

The PSS chipbreaker reduces tool chatter and the AH725 grade achieves 2 times longer tool life than competitor products due to excellent wear resistance.

Internal semi-finish turning



● Number of parts per insert corner





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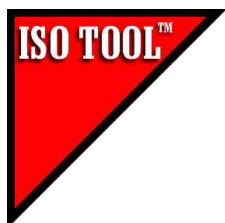
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