

MillLine



TUNGREC

www.tungaloy.com/us

Tungaloy Report No. 380S1-US

New grades lineup for a wide range of materials



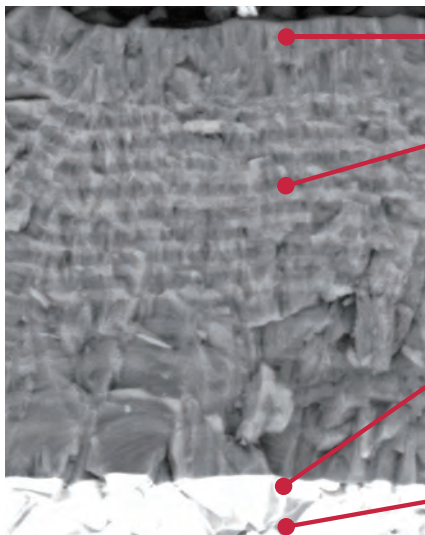
INDUSTRY 4.0
FEED the SPEED!



Grades with long tool life for a wide range of materials



- Nano multi-layer coating technology with three major properties for optimal cutting edge integrity
- Increased resistance to wear, fracture, oxidation, built-up edge and delamination



Technology 1 - Resistance to built-up edge

The coating surface prevents built-up edge

Technology 2 - Resistance to wear, oxidation, and fracture

Multi-layered coating is designed to resist wear and oxidation, while preventing micro-cracks from propagating in the coating layer for improved resistance to edge chipping

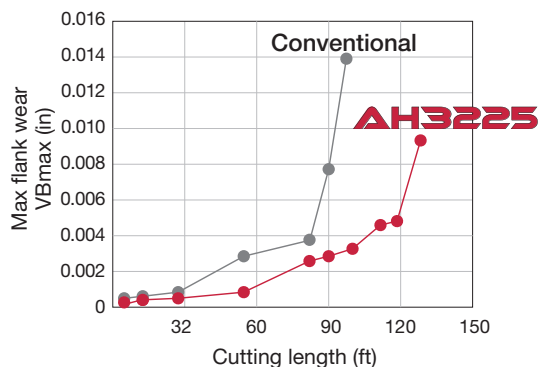
Technology 3 - Strong coating/substrate adhesion

Coating is optimized for strong adhesion property with substrate to maintain strong cutting edge integrity

Carbide substrate

High resistance to fracture

Tool life comparison of AH3225



P	Cutter	: EPS11100RSBU ($\phi 1''$, z = 4)
	Insert	: ASMT11T308PDPR-MJ AH3225
	Workpiece material	: 1055
	Cutting speed	: $V_c = 660$ sfm
	Feed per tooth	: $f_z = 0.004$ ipt
	Depth of cut	: $a_p = 0.118''$
	Cutting width	: $a_e = 0.8''$
	Coolant	: Dry
	Machine	: Vertical M/C, HSK63

Updated grade selection lineup

It's possible to select the optimal grade for each workpiece material.

ISO	Workpiece material	First choice	Fracture resistance	Wear resistance	Surface quality
P	Steel	New AH3225		New T3225	NS740
M	Stainless	New AH3225		AH130	
K	Grey cast irons	AH120		New T1215	
	Ductile cast irons	AH120	New AH3225	New T1215	
N	Non-ferrous	DS1100 KS05F			
S	Titanium alloys	AH130	New AH3225		
	Heat resisting alloys	AH725			
H	Hard materials	AH725			

AH3225
PREMIUMTEC



- PVD grade for high fracture resistance
- Most suitable for steel and stainless steel in general cutting parameters

New
T3225
PREMIUMTEC



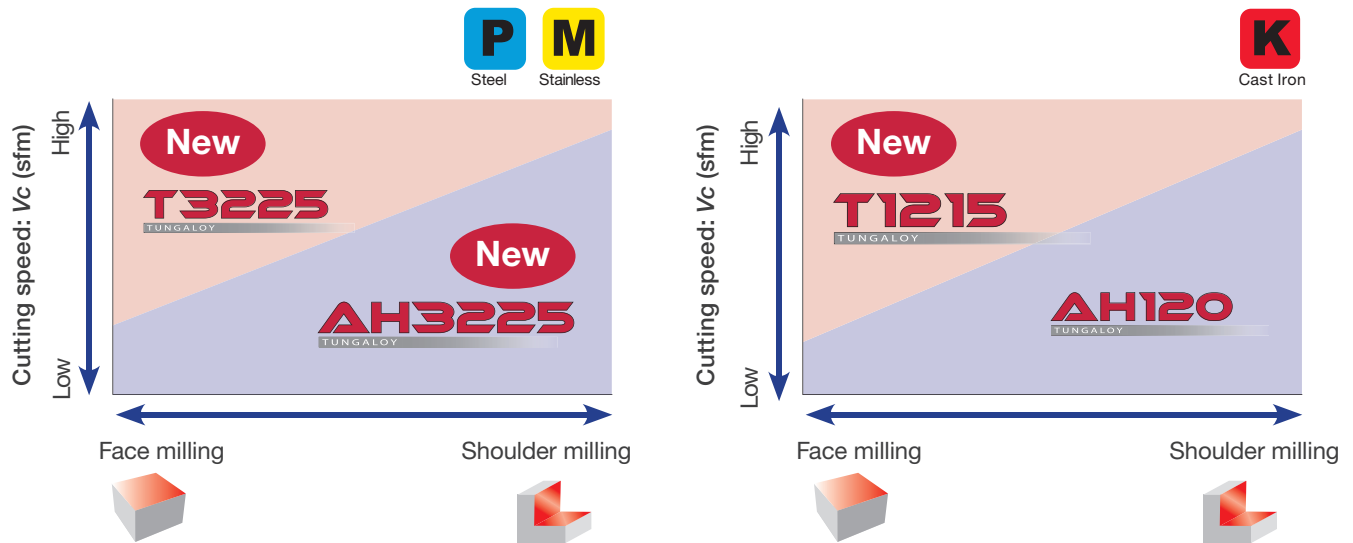
- CVD grade with superior resistance to chipping and fracture
- Ideal for high speed machining of steel and stainless steel

New
T1215
PREMIUMTEC



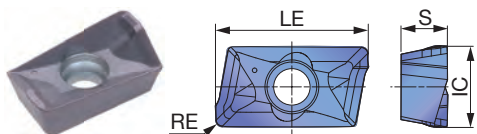
- CVD grade with superior resistance to wear and chipping
- Ideal for high speed machining of cast iron

Application area

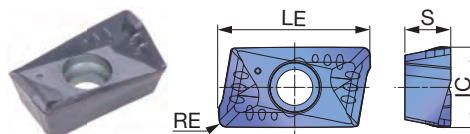


INSERT

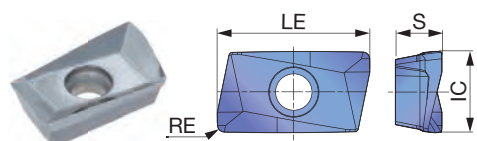
ASMT11-MJ



ASMT11-MS



ASGT11-AJ



P	Steel	☆			☆	★	☆			★								
M	Stainless		☆	☆	☆	★	☆											
K	Cast iron	★			☆	☆		☆										
N	Non-ferrous									★								
S	Superalloys		★		★	☆												
H	Hard materials				★													

★ : First choice
☆ : Second choice

Designation	RE	APMX	Coated							Cermet	Uncoated	LE	IC	S		
			AH120	AH130	AH140	AH725	AH3225	T3225	T1215						DS1100	
ASMT11T304PDPR-MJ	0.016	0.417	●	●		●	●	●	●	●				0.457	0.264	0.146
ASMT11T308PDPR-MJ	0.031	0.417	●	●		●	●	●	●	●				0.457	0.264	0.146
ASMT11T312PDPR-MJ	0.047	0.417	●	●		●	●	●	●	●				0.457	0.264	0.146
ASMT11T316PDPR-MJ	0.063	0.417	●	●		●	●	●	●	●				0.457	0.264	0.146
ASMT11T320PDPR-MJ	0.079	0.417	●				●	●						0.457	0.264	0.146
ASMT11T330PDPR-MJ	0.118	0.417	●	●			●	●						0.457	0.264	0.146
ASMT11T304PDPR-MS	0.016	0.417		●	●		●							0.457	0.264	0.146
ASGT11T304PDPR-AJ	0.016	0.417							●		●			0.457	0.264	0.146
ASGT11T308PDPR-AJ	0.031	0.417							●		●			0.457	0.264	0.146

Caution : The contour radius when using the tool is smaller than the RE value.
If RE is 0.047" or more, it will be about 10% smaller than RE.

● : New
● : Line up

STANDARD CUTTING CONDITIONS

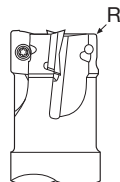
TPO11 / EPO11 / HPO11 type

ISO	Workpiece material	Hardness HB	Priority	Grade	Cutting speed Vc (sfm)	Feed per tooth: fz (ipt)		
						MJ	MS	AJ
P	Low carbon steel 1018, 1020, 1026, etc.	< 200	First choice	AH3225	330 - 820	0.004 - 0.008	-	-
		< 200	For wear resistance	T3225	330 - 820	0.004 - 0.008	-	-
		< 200	Surface quality	NS740	330 - 820	0.002 - 0.006	-	-
	High carbon steel and alloy steel 1045, 4140, etc.	200 - 300	First choice	AH3225	330 - 660	0.004 - 0.006	-	-
		200 - 300	For wear resistance	T3225	330 - 660	0.004 - 0.006	-	-
		200 - 300	Surface quality	NS740	330 - 660	0.002 - 0.005	-	-
Tool steel H13, etc.	150 - 300	First choice	AH3225	330 - 500	0.004 - 0.006	-	-	
	150 - 300	For wear resistance	T3225	330 - 500	0.004 - 0.006	-	-	
M	Stainless steel 304SS, 316SS, 17-4 PH, etc.	-	First choice	AH3225	260 - 660	-	0.003 - 0.008	-
		-	For wear resistance	AH130	260 - 660	-	0.003 - 0.008	-
K	Gray cast iron Class 25, Class 30, etc.	150 - 250	First choice	AH120	330 - 820	0.005 - 0.008	-	-
		150 - 250	For wear resistance	T1215	330 - 820	0.005 - 0.008	-	-
	Ductile cast iron 60-40-18, 60-55-06, etc.	150 - 250	First choice	AH120	260 - 660	0.005 - 0.008	-	-
		150 - 250	For wear resistance	T1215	260 - 660	0.005 - 0.008	-	-
N	Aluminum alloys Si < 13%	-	First choice	DS1100	1000 - 3300	-	-	0.002 - 0.008
	Aluminum alloys Si ≥ 13%	-	First choice	DS1100	330 - 660	-	-	0.002 - 0.008
	Copper alloys	-	First choice	KS05F	660 - 1650	-	-	0.002 - 0.008
S	Titanium alloys Ti-6Al-4V, etc.	-	First choice	AH130	60 - 200	0.003 - 0.005	-	-
		-	For fracture resistance	AH3225	60 - 200	0.003 - 0.005	-	-
	Superalloys Inconel718, etc.	-	First choice	AH725	60 - 130	0.003 - 0.005	-	-
		-	For fracture resistance	AH130	60 - 130	0.003 - 0.005	-	-
		-	For wear resistance	AH120	60 - 130	0.003 - 0.005	-	-
H	Hardened steel	H13, etc.	40 - 50 HRC	First choice	AH725	150 - 230	0.002 - 0.003	-
		D2, etc.	50 - 60 HRC	First choice	AH725	130 - 220	0.002 - 0.002	-

CAUTIONARY POINT IN MODIFYING CUTTER BODIES

When using inserts with corner radius RE ≥ 0.079" (2 mm), standard cutter bodies have to be modified "R". (Only for TPO11, EPO11, TLS11, ELS11, HPO11)

About roughing type TLS11, ELS11
From 2nd row onwards, please use insert with RE = 0.016" or 0.031"



Corner radius RE (in)	The dimension of modifying (in)
0.016 - 0.063	Unnecessary
0.079 - 0.126	0.080

Roughing type TLS11 / ELS11

ISO	Workpiece material	Hardness HB	Priority	Grade	Cutting speed Vc (sfm)	Feed per tooth: fz (ipt)		
						MJ	MS	AJ
P	Low carbon steel 1018, 1020, 1026, etc.	< 200	First choice	AH3225	330 - 820	0.004 - 0.007	-	-
		< 200	For wear resistance	T3225	330 - 820	0.004 - 0.007	-	-
	High carbon steel and alloy steel 1045, 4140, etc.	200 - 300	First choice	AH3225	330 - 660	0.003 - 0.006	-	-
		200 - 300	For wear resistance	T3225	330 - 660	0.003 - 0.006	-	-
	Tool steel H13, etc.	150 - 300	First choice	AH3225	330 - 660	0.003 - 0.006	-	-
		150 - 300	For wear resistance	T3225	330 - 660	0.003 - 0.006	-	-
M	Stainless steel 304SS, 316SS, 17-4 PH, etc.	-	First choice	AH3225	330 - 500	-	0.003 - 0.006	-
		-	For wear resistance	AH130	330 - 500	-	0.003 - 0.006	-
K	Gray cast iron Class 25, Class 30, etc.	150 - 250	First choice	AH120	330 - 820	0.004 - 0.007	-	-
		150 - 250	For wear resistance	T1215	330 - 820	0.004 - 0.007	-	-
	Ductile cast iron 60-40-18, 60-55-06, etc.	150 - 250	First choice	AH120	260 - 660	0.004 - 0.007	-	-
		150 - 250	For wear resistance	T1215	260 - 650	0.004 - 0.007	-	-
N	Aluminum alloys Si < 13%	-	First choice	DS1100	660 - 1640	-	-	0.002 - 0.007
	Aluminum alloys Si ≥ 13%	-	First choice	DS1100	330 - 660	-	-	0.002 - 0.007
S	Titanium alloys Ti-6Al-4V, etc.	-	First choice	AH130	66 - 200	-	0.003 - 0.006	-
		-	For fracture resistance	AH3225	66 - 200	-	0.003 - 0.006	-
	Superalloys Inconel718, etc.	-	First choice	AH725	66 - 130	0.002 - 0.005	-	-
		-	For wear resistance	AH130	66 - 130	0.002 - 0.005	-	-
		-	For wear resistance	AH3225	66 - 130	0.002 - 0.005	-	-
		-	For wear resistance	AH3225	66 - 130	0.002 - 0.005	-	-

- To remove excessive chip accumulation use an air blast.
- To avoid built up edge on the cutting edges (aluminum machining), use a water soluble coolant.
- When cutting an interrupted surface or a casted skin, the feed per tooth (fz) should be reduced to the lower recommended value shown in the above table.

- Cutting conditions are limited by machine power, workpiece rigidity and spindle output. When the cutting width, depth or overhang length is large, set Vc and fz to the lower recommended values and check the machine power and vibration.

Tungaloy America, Inc.

3726 N Ventura Drive, Arlington Heights, IL 60004, U.S.A.

Inside Sales: +1-888-554-8394

Technical Support: +1-888-554-8391

Fax: +1-888-554-8392

www.tungaloy.com/us

Tungaloy Canada

432 Elgin St. Unit 3, Brantford, Ontario N3S 7P7, Canada

Phone: +1-519-758-5779 Fax: +1-519-758-5791

www.tungaloy.com/ca

Tungaloy de Mexico S.A.

C Los Arellano 113, Parque Industrial Siglo XXI

Aguascalientes, AGS, Mexico 20290

Phone:+52-449-929-5410 Fax:+52-449-929-5411

www.tungaloy.com/mx



Scan for instant
web access



www.tungaloy.com/us

follow us at:

facebook.com/tungaloyamerica

twitter.com/tungaloy

instagram.com/tungaloyamerica

linkedin.com/company/tungaloy-america

To see this product in action visit:

Tung-TV

www.youtube.com/tungaloycorporation

Distributed by:



FIND US ON THE CLOUD!
machingcloud.com

