

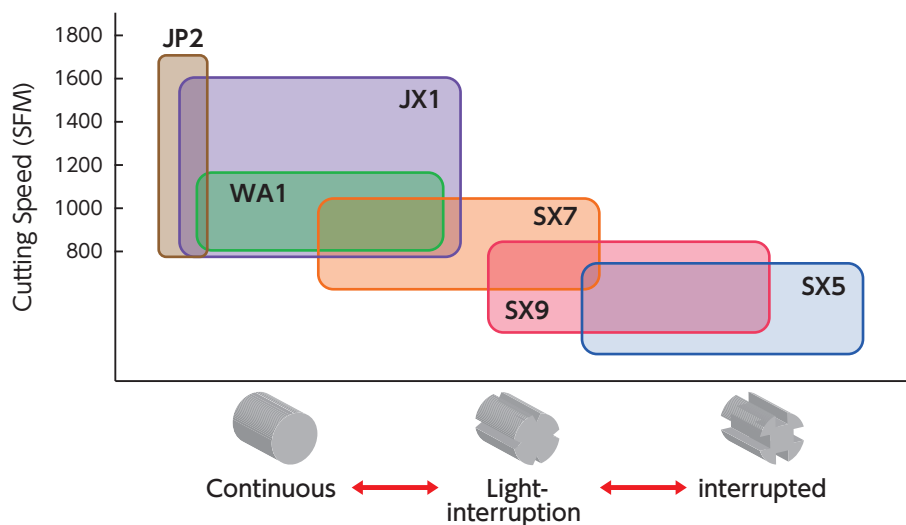
# Guidelines for Machining HRSA Materials

## Insert Grade

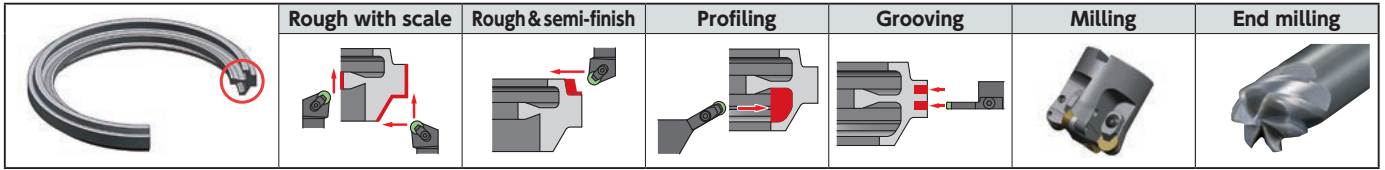
Category	Grade	Applications	Scale	No scale	Profiling	Finishing	Grooving	Milling	End milling
									
BIDEMICS	JX1	Special grade with higher speed and longer tool life potential		●	●		●		
	JP2	Special grade for finish turning				●			
Whisker	WA1	General versatile grade for turning		●	●		●		
SiALON	SX5	Best grade for scale of Waspaloy	●				●		
	SX7	General versatile grade for turning Best grade for milling	●	●	●		●	●	
	SX9	Best grade for scale of Inco718	●					●	●

● 1st Choice      ● 2nd Choice











## Grade Map







## Applications



## Applications

Application	Grade	Work material	Cutting speed					Feed					Depth of cut					Coolant
			600	800	1000	1200	1400	1600	.004	.008	.012	.016	.020	.020	.040	.060	.080	
Rough with Scale 	<b>SX5</b>	Waspalloy	650 (600-800) SFM					.012 (.008-.014) IPR					.080 (.040-.200)"					WET 
	<b>SX9</b>	Inco718	650 (600-800) SFM					.012 (.008-.014) IPR					.080 (.040-.200)"					
	<b>SX7</b>	Overall	800 (600-900) SFM					.008 (.004-.009) IPR					.080 (.040-.200)"					
Rough no Scale 	<b>JX1</b>	Overall	700-1300 (600-1600) SFM					.008 (.005-.011) IPR					.070 (.040-.100)"					WET 
	<b>SX7</b>	Overall	700 (600-900) SFM					.009 (.006-.012) IPR					.080 (.040-.100)"					
	<b>WA1</b>	Overall	800 (600-1000) SFM					.008 (.005-.010) IPR					.070 (.040-.100)"					
Profiling & Semi-Finish 	<b>JX1</b>	Overall	700-1500 (600-1600) SFM					.008 (.004-.010) IPR					.060 (.040-.080)"					WET 
	<b>SX7</b>	Overall	800 (600-900) SFM					.008 (.005-.010) IPR					.060 (.040-.080)"					
	<b>WA1</b>	Overall	800 (600-1100) SFM					.008 (.004-.010) IPR					.060 (.040-.080)"					
Finishing 	<b>JP2</b>	Overall	700-1600 (600-1700) SFM					.004 (.002-.007) IPR					.010 (.005-.030)"					WET 
Grooving 	<b>JX1</b>	Overall	1200 (600-1600) SFM					.003 (.002-.004) IPR										WET 
	<b>SX5</b>	Waspalloy	700 (600-800) SFM					.006 (.003-.007) IPR					When using SX7 / SX5, increase feed rates 100% vs. Whisker Ceramics					
	<b>SX7</b>	Overall	750 (600-900) SFM					.0045 (.003-.006) IPR										
	<b>WA1</b>	Overall	800 (600-1100) SFM					.003 (.002-.004) IPR										

Application	Grade	Work material	Cutting speed							Feed					Depth of cut					Coolant
			1500	2000	2500	3000	3500	4000	.002	.003	.004	.005	.006	.020	.040	.060	.080	.100		
Milling 	<b>SX7</b>	Overall	2700 (2000-4000) SFM							.004 (.003-.005) IPT					.070 (.040-.100)"					DRY 
	<b>SX9</b>	Overall	2500 (1500-3500) SFM							.005 (.004-.006) IPT					.080 (.040-.100)"					<del>DRY</del> 
End milling 	<b>SX9</b>	Overall	2000 (980-3300) SFM							.0008-.0013 IPT										DRY 