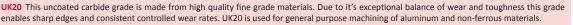


ORION 2 & 3 FluteIssue 26Solid Carbide End Mills for Aluminum

- Effective in a full range of machine speeds from 3,000 to 50,000 RPM's
- Use only one tool for roughing and finishing operations
- Slotting is effective up to full 1 x D axial depth, side milling (profiling) is effective up to 0.5 x D radial by 1.5 x D axial depth
- Multiple corner radii and extended neck configurations are available on request
- 3 Flute series uses unequal flute spacing for chatter free performance
- Especially useful in airframe construction and other aerospace applications
- Also used in General Engineering, Machine Tool, and Vehicle markets
- Designed for customers machining a large volume of aluminum products
- Effective in high-speed machining, conventional milling, and MQL applications
- The high shear flute design and high polished flutes allow for extremely high cutting rates, rapid chip removal, and long tool life





CK20 A special fine grain carbide that has exceptional toughness and wear resistance. This ZrTiN (zirconium titanium nitride) coating is a hard thin coating with good lubricity compared to uncoated carbide. It is particularly suited for machining non-ferrous materials including aluminum, brass, copper alloys, graphite, and plastic. CK20 is also the first choice grade for machining aluminum with high silicon content.

DL15 This DLC diamond coating is one of the hardest available and has the lowest friction coefficient and is one of the best abrasive wear resistant coatings available. DL15 is used in graphite, aluminum and non-ferrous materials with little or no filler. Coolant must be used with DL15.

Speeds & Feeds are suggested starting points and may be increased or decreased depending on actual material & machining conditions. The speeds & feeds values listed are conservative in most cases.

Recommended Cutting Parameters		Application										
		Side Milling		Slotting	Uncoated	Cutting Speed (Vc) Maximum Feed per Tooth for Side Milling Operations*						
		Axial Depth	Radial Depth	Max. Axial Depth	& Coated	Cutting Diameter						
Tool Series	Material	ар	ae	ар	SFM	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"
ORION	Aluminum Alloys	1.5 x D	0.5 x D	1 x D	1000 - 2000 SFM	.0023 - .0043	.0028 - .0055	.0034 - .006	.0045 - .008	.0056 - .0095	.0068 - .011	.0090 - .013
	Aluminum with High Silicon	1.5 x D	0.5 x D	1 x D	700 - 2000 SFM	.0018 - .0043	.0023 - .0050	.0027 - .0052	.0036 - .0061	.0045 - .0075	.0054 - .0081	.0072 - .0110
	other Non-Ferrous materials	1.5 x D	0.5 x D	1 x D	750 - 1500 SFM	.0018 - .0043	.0023 - .0050	.0027 - .0052	.0036 - .0061	.0045 - .0075	.0054 - .0081	.0072 - .0110

* Feed per tooth in slotting applications should not exceed 80% of feed per tooth for side milling

Use adequate coolant. We recommended using good quality balanced toolholders.



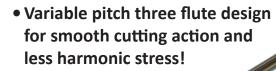


Available From:	

Specifications are subject to change without notice. No responsibility for errors and/or printing errors will be accepted.

ORION 2 & 3 Flute Solid Carbide End Mills for Aluminum

- Two flute design for extremely high chip loads!
- Produces excellent surface finishes!



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End Mills	Cutter Length Dia. of Cut		OAL	Rad.	Grades		
OR2EC-SQ0125	1/8	1/2	1-1/2	-			
OR2LC-SQ0125	1/8	3/4	2-1/2	-			
OR2RC-SQ0125	1/8	3/8	1-1/2	-			
OR2EC-SQ0187	3/16	9/16	2	-		П	
OR2RC-SQ0187	3/16	5/16	2	-			
OR2EC-SQ0250	1/4	3/4	2-1/2	-			
OR2EC-SQ0250-015	1/4	3/4	2-1/2	0.015			
OR2LC-SQ0250	1/4	1-1/8	2-1/2	-			
OR2LC-SQ0250-015	1/4	1-1/8	2-1/2	0.015			
OR2RC-SQ0250	1/4	1/2	2-1/2	-			
OR2RC-SQ0250-015	1/4	1/2	2-1/2	0.015			
OR2RC-SQ0250-030	1/4	1/2	2-1/2	0.030			
OR2RC-SQ0250-060	1/4	1/2	2-1/2	0.060			
OR2XC-SQ0250	1/4	2	4	-			
OR2LC-SQ0312	5/16	1-1/8	3	-			
OR2RC-SQ0312	5/16	5/8	2-1/2	-			
OR2RC-SQ0312-030	5/16	5/8	2-1/2	0.030			
OR2EC-SQ0375	3/8	1-1/8	3	-			
OR2EC-SQ0375-030	3/8	1-1/8	3	0.030			
OR2LC-SQ0375	3/8	2	4	-			
OR2LC-SQ0375-030	3/8	2	4	0.030			
OR2RC-SQ0375	3/8	3/4	2-1/2	-			
OR2RC-SQ0375-030	3/8	3/4	2-1/2	0.030			
OR2EC-SQ0500	1/2	1-1/4	3	-			
OR2EC-SQ0500-030	1/2	1-1/4	3	0.030			
OR2EC-SQ0500-060	1/2	1-1/4	3	0.060			
OR2LC-SQ0500	1/2	2	4	-			
OR2LC-SQ0500-030	1/2	2	4	0.030			
OR2RC-SQ0500	1/2	1	3	-			
OR2RC-SQ0500-030	1/2	1	3	0.030			
OR2EC-SQ0625	5/8	1-5/8	3-1/2	-			
OR2EC-SQ0625-030	5/8	1-5/8	3-1/2	0.030			
OR2LC-SQ0625	5/8	2	4	-			
OR2RC-SQ0625	5/8	1-1/4	3-1/2	-			
OR2RC-SQ0625-030	5/8	1-1/4	3-1/2	0.030			
OR2RC-SQ0625-060	5/8	1-1/4	3-1/2	0.060			
OR2EC-SQ0750	3/4	1-3/4	4	-			
OR2EC-SQ0750-030	3/4	1-3/4	4	0.030			
OR2LC-SQ0750	3/4	3	6	-			
OR2RC-SQ0750	3/4	1-1/2	4	-			
OR2RC-SQ0750-030	3/4	1-1/2	4	0.030			
OR2EC-SQ1000	1	2	4	-			
OR2EC-SQ1000-030	1	2	4	0.030			
OR2LC-SQ1000	1	3	6	-			
OR2RC-SQ1000	1	1-1/2	4	-			

End Mills	Cutter Length		OAL	Rad.	Grades		
	Dia.	of Cut	UAL	ndu.	UK20	СК20	
OR3EC-SQ0125	1/8	1/2	1-1/2	-			
OR3LC-SQ0125	1/8	3/4	2-1/2	-			
OR3RC-SQ0125	1/8	3/8	1-1/2	-			
OR3EC-SQ0187	3/16	9/16	2	-			
OR3RC-SQ0187	3/16	5/16	2	-			
OR3EC-SQ0250	1/4	3/4	2-1/2	-			
OR3EC-SQ0250-015	1/4	3/4	2-1/2	0.015			
OR3LC-SQ0250	1/4	1-1/8	2-1/2	-			
OR3LC-SQ0250-015	1/4	1-1/8	2-1/2	0.015			
OR3RC-SQ0250	1/4	1/2	2-1/2	-			
OR3RC-SQ0250-015	1/4	1/2	2-1/2	0.015			
OR3LC-SQ0312	5/16	1-1/8	3	-			
OR3LC-SQ0312-030	5/16	1-1/8	3	0.030			
OR3RC-SQ0312	5/16	5/8	2-1/2	-			
OR3RC-SQ0312-030	5/16	5/8	2-1/2	0.030			
OR3EC-SQ0375	3/8	1-1/8	3	-			
OR3EC-SQ0375-030	3/8	1-1/8	3	0.030			
OR3LC-SQ0375	3/8	2	4	-			
OR3LC-SQ0375-030	3/8	2	4	0.030			
OR3RC-SQ0375	3/8	3/4	2-1/2	-			
OR3RC-SQ0375-030	3/8	3/4	2-1/2	0.030			
OR3EC-SQ0500	1/2	1-1/4	3	-			
OR3EC-SQ0500-030	1/2	1-1/4	3	0.030			
OR3LC-SQ0500	1/2	2	4	-			
OR3LC-SQ0500-030	1/2	2	4	0.030			
OR3RC-SQ0500	1/2	1	3	-			
OR3RC-SQ0500-030	1/2	1	3	0.030		_	
OR3EC-SQ0625	5/8	1-5/8	3-1/2	-			
OR3EC-SQ0625-030	5/8	1-5/8	3-1/2	0.030			
OR3LC-SQ0625	5/8	2	4	-			
OR3LC-SQ0625-030	5/8	2	4	0.030			
OR3RC-SQ0625	5/8	1-1/4	3-1/2	-			
OR3RC-SQ0625-030	5/8	1-1/4	3-1/2	0.030			
OR3EC-SQ0750	3/4	1-3/4	4	-			
OR3EC-SQ0750-030	3/4	1-3/4	4	0.030		_	
OR3LC-SQ0750	3/4	3	6	-			
OR3LC-SQ0750-030	3/4	3	6	0.030		-	
OR3RC-SQ0750	3/4	1-1/2	4	-			
OR3RC-SQ0750-030	3/4	1-1/2	4	0.030			
OR3EC-SQ1000	1	2	4	-			
OR3EC-SQ1000-030	1	2	4	0.030			
OR3LC-SQ1000	1	3	6	-			
OR3LC-SQ1000-030	1	3	6	0.030			
OR3RC-SQ1000	1	1-1/2	4	-			
OR3RC-SQ1000-030	1	1-1/2	4	0.030			