



CDACR Series Recommended Cutting Data - Inch 5xD, Coolant-Fed Drilling

Workpiece Material Group	ISO	Hardness	vc - SFM			Drill Diameter (inch)						
			Min	Starting Value	Max	1/8	3/16	1/4	5/16	3/8	1/2	
						f - IPR						
Aluminum & Aluminum Wrought Alloys	N	10	60-100 Brinell HB	390	750	1480	.005-.010	.006-.011	.007-.014	.008-.017	.011-.020	.013-.022
Cast Aluminum Alloys		20	75-90 Brinell HB	390	720	1150	.006-.009	.006-.011	.007-.013	.009-.015	.011-.018	.013-.021
Aluminum Alloys Cast 13-22% Si		30		330	590	1310	.005-.007	.006-.007	.006-.010	.008-.012	.011-.015	.013-.017
Copper and Copper Alloys, Brass, Bronze, Copper		40	90-110 Brinell HB	330	430	980	.004-.006	.005-.007	.006-.009	.006-.011	.007-.013	.008-.014

Definition

This group contains non-ferrous, soft metals with hardness under 130 HB, except for high strength bronzes (>225HB)
 Aluminum (Al) alloys comprising less than 12-13% silicon (Si) represent the largest part
 MMC: Metal Matrix Composite: Al + SiC (20-30%)
 Magnesium based alloys
 Copper, electrolytic copper with 99.95% Cu
 Bronze: Copper with Tin (Sn) (10-14%) and/or aluminum (3-10%)
 Brass: Copper (60-85%) with Zinc (Zn) (40-15%)

Machinability of Aluminum

Long-chipping material
 Relatively easy chip control, if alloyed
 Pure Al is sticky and requires sharp cutting edges and high cutting speeds (Vc), consider Fordlube coating.
 Specific cutting force: 350-700 N/mm²
 Cutting forces, and thus the power required to machine them, are low.
 For Cast Aluminum with Si-content above 13%, consider CERAedge® coating.
 Over eutectic Al with higher Si-content > 12% is very abrasive, consider an engineered custom tool solution with GemX coating or PCD diamond tipped.

Common components

Engine block, cylinder head, transmission housings, casings, aerospace frame components.

Technical data provided should be considered advisory only as variations may be necessary depending on the particular application.



CDACR Series Recommended Cutting Data - Metric 5xD, Coolant-Fed Drilling

Workpiece Material Group	I S O	Hardness	vc - m/min			Drill Diameter (mm)						
			Min	Starting Value	Max	3.0	4.0	6.0	8.0	10.0	12.0	
			f - mm/Rev									
Aluminum & Aluminum Wrought Alloys	N	10	60-100 Brinell HB	120	230	450	0.13-0.25	0.14-0.29	0.17-0.35	0.21-0.42	0.27-0.50	0.33-0.57
Cast Aluminum Alloys		20	75-90 Brinell HB	120	220	350	0.14-0.23	0.15-0.28	0.17-0.34	0.22-0.39	0.29-0.46	0.34-0.54
Aluminum Alloys Cast 13-22% Si		30		100	180	400	0.13-0.18	0.14-0.19	0.16-0.25	0.20-0.30	0.28-0.37	0.33-0.42
Copper and Copper Alloys, Brass, Bronze, Copper		40	90-110 Brinell HB	100	130	300	0.10-0.16	0.12-0.18	0.14-0.24	0.16-0.28	0.18-0.32	0.20-0.36

Definition

This group contains non-ferrous, soft metals with hardness under 130 HB, except for high strength bronzes (>225HB) Aluminum (Al) alloys comprising less than 12-13% silicon (Si) represent the largest part

MMC: Metal Matrix Composite: Al + SiC (20-30%)

Magnesium based alloys

Copper, electrolytic copper with 99.95% Cu

Bronze: Copper with Tin (Sn) (10-14%) and/or aluminum (3-10%)

Brass: Copper (60-85%) with Zinc (Zn) (40-15%)

Machinability of Aluminum

Long-chipping material

Relatively easy chip control, if alloyed

Pure Al is sticky and requires sharp cutting edges and high cutting speeds (Vc), consider Fordlube coating.

Specific cutting force: 350-700 N/mm²

Cutting forces, and thus the power required to machine them, are low.

For Cast Aluminum with Si-content above 13%, consider Ceraedge® coating.

Over eutectic Al with higher Si-content > 12% is very abrasive, consider an engineered custom tool solution with GemX coating or PCD diamond tipped.

Common components

Engine block, cylinder head, transmission housings, casings, aerospace frame components.



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