Recommended Cutting Data CDACR - Inch

Workpiece Material Group	ISO	Hardness	vc - SFM			Drill Diameter					
			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	N 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	N 30		330	**590**	1310	.005–.007	.006–.007	.006–.010	.008–.012	.011–.015	.013–.017
Copper and Copper Alloys, Brass, Bronze, Copper	N 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.

Made in USA

Recommended Cutting Data CDACR - Metric

Workpiece Material Group	ISO		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

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Common components

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