Being the best through innovation

SOLID CARBIDE

ALU-POWER HPC
END MILLS

- For Aluminium, Aluminum Die Cast, Non-ferrous Alloys and Plastics

ALU-POWER HPC END MILLS

RECOMMENDED CUTTING CONDITIONS

JAG96, JAG98, JAG95, JAG97 SERIES — DLC Coated

E5G95, E5G97, E5G96, E5G98 SERIES — Uncoated

SFM(Vc) = ft./min.
IPT(fz) = in./tooth
RPM = rev./min.
IPM(Feed) = in./min.

3 FLUTE - SLOTTING

ISO	VDI 3323	Material Description	Hardness (HB)	Ae	Ap	Parameter	Mill Diameter (Ø) 1/8	1/4	3/8	1/2	5/8	3/4	1
N	21-22	Aluminum-wrought alloy	60 / 100	1.0D	1.0D	SFM (Vc)	2000	2000	2000	2000	2000	2000	2000
						IPT (fz)	.0010	.0030	.0045	.0060	.0066	.0075	.0100
						RPM	61100	30500	20400	15300	12200	10200	7600
						IPM (FEED)	183	275	275	275	242	230	228
	23-25	Aluminum-cast, alloyed	75 / 90 / 130	1.0D	1.0D	SFM (Vc)	600	600	600	600	600	600	600
						IPT (fz)	.0010	.0030	.0045	.0060	.0066	.0075	.0100
						RPM	18340	9170	6110	4580	3670	3060	2290
						IPM (FEED)	55	83	83	83	73	69	69
	26-28	Copper and Copper Alloys (Bronze / Brass)	110 / 90 / 100	1.0D	1.0D	SFM (Vc)	880	880	880	880	880	880	880
						IPT (fz)	.0008	.0020	.0040	.0050	.0055	.0060	.0070
						RPM	26890	13450	8960	6720	5380	4480	3360
						IPM (FEED)	65	81	108	101	89	81	71
	29.1	Non Metallic Materials (Duroplastic)	-	1.0D	1.0D	SFM (Vc)	1670	1670	1670	1670	1670	1670	1670
						IPT (fz)	.0015	.0040	.0075	.0100	.0110	.0120	.0140
						RPM	51040	25520	17010	12760	10210	8510	6380
						IPM (FEED)	230	306	383	383	337	306	268

3 FLUTE - SIDE CUTTING

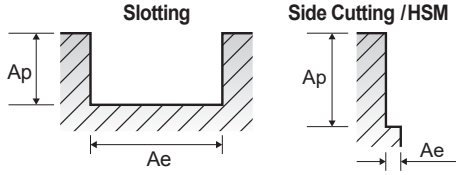
ISO	VDI 3323	Material Description	Hardness (HB)	Ae	Ap	Parameter	Mill Diameter (Ø) 1/8	1/4	3/8	1/2	5/8	3/4	1
N	21-22	Aluminum-wrought alloy	60 / 100	1.5D	0.5D	SFM (Vc)	3000	3000	3000	3000	3000	3000	3000
						IPT (fz)	.0010	.0030	.0045	.0060	.0066	.0075	.0100
						RPM	91700	45800	30600	23000	18300	15300	11500
						IPM (FEED)	275	412	413	414	362	344	345
	23-25	Aluminum-cast, alloyed	75 / 130	1.5D	0.5D	SFM (Vc)	800	800	800	800	800	800	800
						IPT (fz)	.0010	.0030	.0045	.0060	.0066	.0075	.0100
						RPM	24450	12220	8150	6110	4890	4080	3060
						IPM (FEED)	73	110	110	110	97	92	92
	26-28	Copper and Copper Alloys (Bronze / Brass)	110 / 90 / 100	1.5D	0.5D	SFM (Vc)	1150	1150	1150	1150	1150	1150	1150
						IPT (fz)	.0008	.0020	.0040	.0050	.0055	.0060	.0070
						RPM	35140	17570	11720	8790	7030	5860	4390
						IPM (FEED)	84	105	141	132	116	105	92
	29.1	Non Metallic Materials (Duroplastic)	-	1.5D	0.5D	SFM (Vc)	2070	2070	2070	2070	2070	2070	2070
						IPT (fz)	.0015	.0040	.0075	.0100	.0110	.0120	.0140
						RPM	63260	31630	21090	15820	12650	10540	7910
						IPM (FEED)	285	380	474	474	418	380	332

3 FLUTE - SIDE CUTTING HSM (Light)

ISO	VDI 3323	Material Description	Hardness (HB)	Ae	Ap	Parameter	Mill Diameter (Ø) 1/8	1/4	3/8	1/2	5/8	3/4	1
N	21-22	Aluminum-wrought alloy	60 / 100	2.0D	0.05D	SFM (Vc)	8000	8000	8000	8000	8000	8000	8000
						IPT (fz)	.0021	.0055	.0105	.0140	.0150	.0165	.0195
						RPM	244500	122200	81500	61100	48900	40700	30600
						IPM (FEED)	1540	2016	2567	2566	2201	2015	1790
	23-25	Aluminum-cast, alloyed	75 /130	2.0D	0.05D	SFM (Vc)	1200	1200	1200	1200	1200	1200	1200
						IPT (fz)	.0021	.0055	.0105	.0140	.0150	.0165	.0195
						RPM	36670	18340	12220	9170	7330	6110	4580
						IPM (FEED)	231	303	385	385	330	303	268
	26-28	Copper and Copper Alloys (Bronze / Brass)	110 / 90 / 100	2.0D	0.05D	SFM (Vc)	1850	1850	1850	1850	1850	1850	1850
						IPT (fz)	.0017	.0045	.0085	.0115	.0130	.0140	.0160
						RPM	56540	28270	18850	14130	11310	9420	7070
						IPM (FEED)	288	382	481	488	441	396	339
	29.1	Non Metallic Materials (Duroplastic)	-	2.0D	0.05D	SFM (Vc)	3350	3350	3350	3350	3350	3350	3350
						IPT (fz)	.0034	.0090	.0170	.0230	.0250	.0275	.0320
						RPM	102380	51190	34130	25590	20480	17060	12800
						IPM (FEED)	1044	1382	1740	1766	1536	1408	1229

NOTES:

- All cutting data are target values
- Maximum recommended depth shown
- Finish cuts typically require reduced feed rates and/or higher spindle speed, with radial width of 2% x D or less
- Reduce speed and feed recommendations for materials harder than listed
- Reduce cut depth and feed by 50% for long-flute or long-reach tools
- Above recommendations are based on ideal conditions. Adjust parameters accordingly for smaller taper machining centers or less rigid conditions
- HSM = high-speed machining



ALU-POWER HPC END MILLS

RECOMMENDED CUTTING CONDITIONS

JAI38, JAI39 SERIES — **DLC Coated**

E5I36, E5I38, E5I37, E5I39 SERIES — **Uncoated**

SFM(Vc) = ft./min.
IPT(fz) = in./tooth
RPM = rev./min.
IPM(Feed) = in./min.

3 FLUTE CHIP BREAKER - SLOTTING

ISO	VDI 3323	Material Description	Hardness (HB)	Ae	Ap	Parameter	Outside Diameter (Ø) 1/8	1/4	3/8	1/2	5/8	3/4	1
N	21-22	Aluminum-wrought alloy	60 / 100	1.0D	1.0D	SFM (Vc)	2000	2000	2000	2000	2000	2000	2000
						IPT (fz)	.0010	.0030	.0045	.0060	.0066	.0075	.0100
						RPM	61100	30500	20400	15300	12200	10200	7600
						IPM (FEED)	183	275	275	275	242	230	228
	23-25	Aluminum-cast, alloyed	75 /130	1.0D	1.0D	SFM (Vc)	600	600	600	600	600	600	600
						IPT (fz)	.0010	.0030	.0045	.0060	.0066	.0075	.0100
						RPM	18340	9170	6110	4580	3670	3060	2290
						IPM (FEED)	55	83	83	83	73	69	69
	26-28	Copper and Copper Alloys (Bronze / Brass)	110 / 90 / 100	1.0D	1.0D	SFM (Vc)	880	880	880	880	880	880	880
						IPT (fz)	.0008	.0020	.0040	.0050	.0055	.0060	.0070
						RPM	26890	13450	8960	6720	5380	4480	3360
						IPM (FEED)	65	81	108	101	89	81	71
	29.1	Non Metallic Materials (Duroplastic)	-	1.0D	1.0D	SFM (Vc)	1670	1670	1670	1670	1670	1670	1670
						IPT (fz)	.0015	.0040	.0075	.0100	.0110	.0120	.0140
						RPM	51040	25520	17010	12760	10210	8510	6380
						IPM (FEED)	230	306	383	383	337	306	268

3 FLUTE CHIP BREAKER - SIDE CUTTING

ISO	VDI 3323	Material Description	Hardness (HB)	Ae	Ap	Parameter	Outside Diameter (Ø) 1/8	1/4	3/8	1/2	5/8	3/4	1
N	21-22	Aluminum-wrought alloy	60 / 100	1.5D	0.5D	SFM (Vc)	3000	3000	3000	3000	3000	3000	3000
						IPT (fz)	.0010	.0030	.0045	.0060	.0066	.0075	.0100
						RPM	91700	45800	30600	23000	18300	15300	11500
						IPM (FEED)	275	412	413	414	362	344	345
	23-25	Aluminum-cast, alloyed	75 /130	1.5D	0.5D	SFM (Vc)	800	800	800	800	800	800	800
						IPT (fz)	.0010	.0030	.0045	.0060	.0066	.0075	.0100
						RPM	24450	12220	8150	6110	4890	4080	3060
						IPM (FEED)	73	110	110	110	97	92	92
	26-28	Copper and Copper Alloys (Bronze / Brass)	110 / 90 / 100	1.5D	0.5D	SFM (Vc)	1150	1150	1150	1150	1150	1150	1150
						IPT (fz)	.0008	.0020	.0040	.0050	.0055	.0060	.0070
						RPM	35140	17570	11720	8790	7030	5860	4390
						IPM (FEED)	84	105	141	132	116	105	92
	29.1	Non Metallic Materials (Duroplastic)	-	1.5D	0.5D	SFM (Vc)	2070	2070	2070	2070	2070	2070	2070
						IPT (fz)	.0015	.0040	.0075	.0100	.0110	.0120	.0140
						RPM	63260	31630	21090	15820	12650	10540	7910
						IPM (FEED)	285	380	474	474	418	380	332

NOTES:
- All cutting data are target values
- Maximum recommended depth shown
- Finish cuts typically require reduced feed rates and/or higher spindle speed, with radial width of 2% x D or less
- Reduce speed and feed recommendations for materials harder than listed
- Reduce cut depth and feed by 50% for long-flute or long-reach tools
- Above recommendations are based on ideal conditions. Adjust parameters accordingly for smaller taper machining centers or less rigid conditions
- HSM = high-speed machining

Tech Tip : The tables above are based on common machining calculations.
We realize that shops may not have RPM capability shown in the tables
To adapt the tables to machining conditions available, use the following calculation:
(Recommended Feed (IPM) / Recommended RPM) X Available RPM = IPM
Example for 1/8" Side Milling in N21-22 WorkPiece Materials:
(275 IPM / 91700 RPM) X 15,000 = 45 IPM