LAMINA TECHNOLOGIES

NEW PRODUCT HIGHLIGHTS

SUMMER 2016

HIGH FEED MILLING Introducing SDKW for High Feed | T-SLOTTING New T-Slotting Cutters | 90° SHOULDER MILLING Introducing APKT 060204 | SOLID CARBIDE END MILLS Addition of 90° 4 Flute with Corner Radius to our End Mill Line

HIGH FEED MILLING

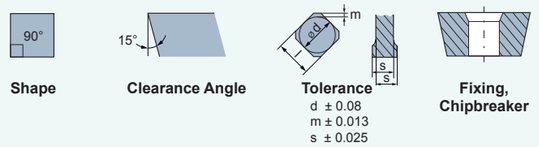
SDKW 0904-HF | SDKW 1205-HF

LT 3000

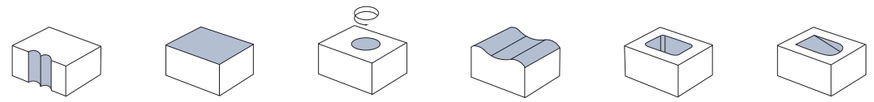
BOOST PRODUCTIVITY.

Lamina Technologies introduces our NEW SDKW high feed insert with reinforced geometry for material groups P, K and H.

S D K W



Shape | **Clearance Angle** | **Tolerance** d ± 0.08, m ± 0.013, s ± 0.025 | **Fixing, Chipbreaker**



DESIGNATION	L	S	$R_{prog.}$	DIRECTION	CATALOG #
SDKW 0904-HF LT 3000	9.52	4.76	2.0	Neutral	M0004263
SDKW 1205-HF LT 3000	12.70	5.56	2.5	Neutral	M0004224

FEATURES

- Specially developed for K, P and H material groups
- Stronger cutting edge, reliable geometry
- Predictable wear
- Maximum productivity increase due to high metal removal rate per cutting edge

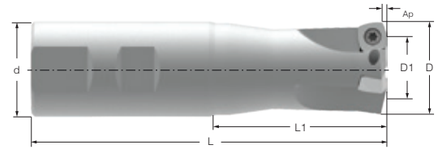
Check our SDKX positive insert for high feed. Suitable for universal machining, particularly soft and exotic materials.

MULTI-MAT™

magia

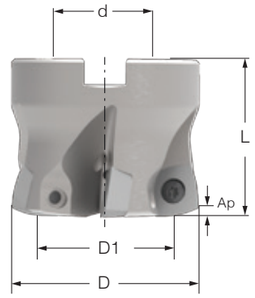
CUTTER RANGE

SDKW 0904-HF



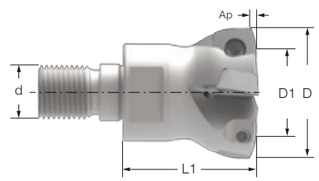
END MILLS

DESIGNATION	D	D1	d	L	L1	Ap	Z	α Ramp°	CATALOG #
LT 902 WL-W-D025/2	25	9.6	25	200	60	1.5	2	3.5	M2003350
LT 902 W-W-D025/2	25	9.6	25	120	60	1.5	2	3.5	M2003351
LT 902 WL-W-D032/3	32	16.6	32	200	60	1.5	3	2.0	M2003352
LT 902 W-W-D032/3	32	16.6	32	120	60	1.5	3	2.0	M2003353



SHELL MILLS

DESIGNATION	D	D1	d	L	Ap	Z	α Ramp°	CATALOG #
LT 902 M-W-D040/5	40	24.6	16	40	1.5	5	0.8	M2003341
LT 902 M-W-D042/5	42	26.6	16	40	1.5	5	0.8	M2003342
LT 902 M-W-D050/6	50	34.6	22	40	1.5	6	0.7	M2003343
LT 902 M-W-D052/6	52	36.6	22	40	1.5	6	0.7	M2003344
LT 902 M-W-D063/6*	63	47.6	22	40	1.5	6	0.6	M2003345
LT 902 M-W-D066/6*	66	50.6	22	40	1.5	6	0.6	M2003346



SCREW COUPLING

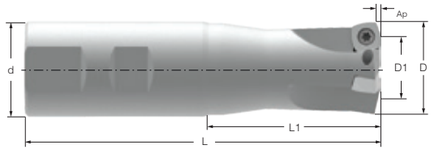
DESIGNATION	D	D1	d	L	Ap	Z	α Ramp°	CATALOG #
LT 902 S-W-D025/2	25	9.6	M12	35	1.5	2	3.5	M2003347
LT 902 S-W-D032/3	32	16.6	M16	35	1.5	3	2.0	M2003348
LT 902 S-W-D035/4	35	19.6	M16	35	1.5	4	1.5	M2003349

Replacement parts — Key: M2000602 Screw: M2001420

* On request

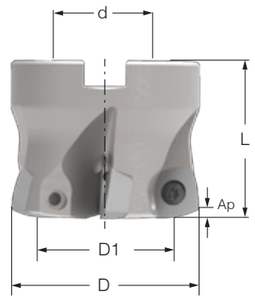
CUTTER RANGE

SDKW 1205-HF



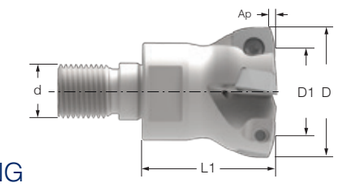
END MILLS

DESIGNATION	D	D1	d	L	L1	Ap	Z	α Ramp°	CATALOG #
LT 903 W-W-D032/2	32	11	32	120	60	2	2	2.0	M2003366
LT 903 WL-W-D032/2	32	11	32	200	60	2	2	2.0	M2003365



SHELL MILLS

DESIGNATION	D	D1	d	L	Ap	Z	α Ramp°	CATALOG #
LT 903 M-W-D050/4	50	29	22	40	2	4	0.8	M2003661
LT 903 M-W-D050/5	50	29	22	40	2	5	0.8	M2003357
LT 903 M-W-D052/5	52	31	22	40	2	5	0.8	M2003358
LT 903 M-W-D063/5	63	42	22	40	2	5	0.6	M2003662
LT 903 M-W-D063/6	63	42	22	40	2	6	0.6	M2003360
LT 903 M-W-D066/6	66	45	22	40	2	6	0.6	M2003361
LT 903 M-W-D080/8	80	59	27	50	2	8	0.4	M2003452



SCREW COUPLING

DESIGNATION	D	D1	d	L	Ap	Z	α Ramp°	CATALOG #
LT 903 S-W-D032/2	32	11	M16	35	2	2	2.0	M2003362
LT 903 S-W-D035/2	35	14	M16	35	2	2	1.5	M2003364
LT 903 S-W-D040/4	40	19	M16	40	2	4	0.8	M2003354
LT 903 S-W-D042/4*	42	21	M16	35	2	4	0.8	M2003356

Replacement parts — Key: M2000602 Screw: M2001420

* On request

MACHINING CONDITIONS

SDKW 0904 HF – **LT 3000**

Material	Group	Gr. N°	VDI Group	Material Examples	Hardness	D.O.C [mm] min	D.O.C [mm] max	Feed [mm/tooth] min	Feed [mm/tooth] max	V_c [m/min] min	V_c [m/min] max	Suggested Starting Parameters D.O.C	Suggested Starting Parameters Feed	Suggested Starting Parameters V_c
P	Non Alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.3	1.5	0.3	1.50	190	330	1.1	1.3	250
			2		190 HB						300	1.0		220
			3		250 HB						250			200
	Low Alloyed	2	4,6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr06	230 HB	0.3	1.3	0.3	1.36	150	210	0.8	1.1	180
			5,7		280 HB					130	190		1.0	150
			6		180 HB					150	240		1.1	200
			8		350 HB					130	170		1.0	140
	High Alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.3	1.3	0.3	1.20	90	150	0.7	0.9	130
			10		280 HB		1.2				130			120
			11		320 HB					60	110		0.7	100
			11		350 HB		1.1				90			80
K	Grey	7	15	GG20, GG40, EN-GJL-250	150 HB	0.3	1.5	0.3	2.26	150	240	1.2	1.3	200
			15		200 HB				1.50		220			180
			16		250 HB						190			160
	Malleable & Nodular	8	17,19	GG20, GG70, 50005	150 HB	0.3	1.5	0.3	1.36	100	200	1.2	1.1	180
			17,19		200 HB						180			150
			18,20		250 HB						150			130
H	Steel	11	38	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.3	0.6	0.3	0.90	40	80	0.6	0.6	60
			38		50 HRc				0.76		70	0.5	0.5	55
			38		55 HRc		0.5		0.60		60	0.4	0.4	50
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.3	0.6				80		0.5	50
	White Cast Iron		41	G-X300CrMo15	55 HRc		0.5			30	60			40

SDKW 1205 HF – **LT 3000**

Material	Group	Gr. N°	VDI Group	Material Examples	Hardness	D.O.C [mm] min	D.O.C [mm] max	Feed [mm/tooth] min	Feed [mm/tooth] max	V_c [m/min] min	V_c [m/min] max	Suggested Starting Parameters D.O.C	Suggested Starting Parameters Feed	Suggested Starting Parameters V_c
P	Non Alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.3	2.0	0.3	2.70	190	330	1.3	1.7	250
			2		190 HB						300			220
			3		250 HB						250			200
	Low Alloyed	2	4,6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr06	230 HB	0.3	1.6	0.3	2.50	150	210	1.0	1.5	180
			5,7		280 HB					130	190		1.4	150
			6		180 HB					150	240		1.5	200
			8		350 HB				2.25	130	170		1.4	140
	High Alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.3	1.6	0.3	2.25	90	150	0.8	1.2	130
			10		280 HB		1.3		2.00		130			120
			11		320 HB		1.1		1.80	60	110		1.0	100
			11		350 HB		1.1		1.60		90			80
K	Grey	7	15	GG20, GG40, EN-GJL-250	150 HB	0.3	2.0	0.3	2.70	150	240	1.6	1.7	200
			15		200 HB						220			180
			16		250 HB						190			160
	Malleable & Nodular	8	17,19	GG20, GG70, 50005	150 HB	0.3	2.0	0.3	2.25	100	200	1.6	1.6	180
			17,19		200 HB						180			150
			18,20		250 HB						150			130
H	Steel	11	38	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.3	0.8	0.3	1.25	40	80	0.7	0.8	60
			38		50 HRc		0.7		1.10		70	0.5	0.7	55
			38		55 HRc		0.6		0.90		60	0.4	0.6	50
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.3	0.7		0.80		80			50
	White Cast Iron		41	G-X300CrMo15	55 HRc		0.6			30	60			40

T - SLOTTING

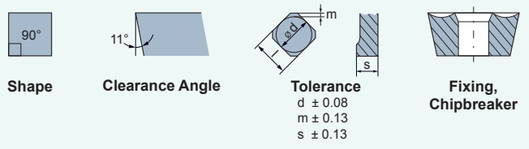
SPMT 06304-TN | SPMT 09T308-TN | SPMT 120408-TN

LT 3000

MORE VERSATILITY WITH MULTI-MAT™.

Lamina Technologies introduces t-slotting cutters with versatile SPMT indexable inserts.

S P M T



Shape | **Clearance Angle** | **Tolerance** d ± 0.08, m ± 0.13, s ± 0.13 | **Fixing, Chipbreaker**

t slotting

slotting

DESIGNATION	L	S	R	DIRECTION	CATALOG #
SPMT 060304-TN LT 3000	6.35	3.2	0.40	Neutral	M0003416
SPMT 09T308-TN LT 3000	9.53	3.71	0.80	Neutral	M0003417
SPMT 120408-TN LT 3000	12.70	4.80	0.80	Neutral	M0003419

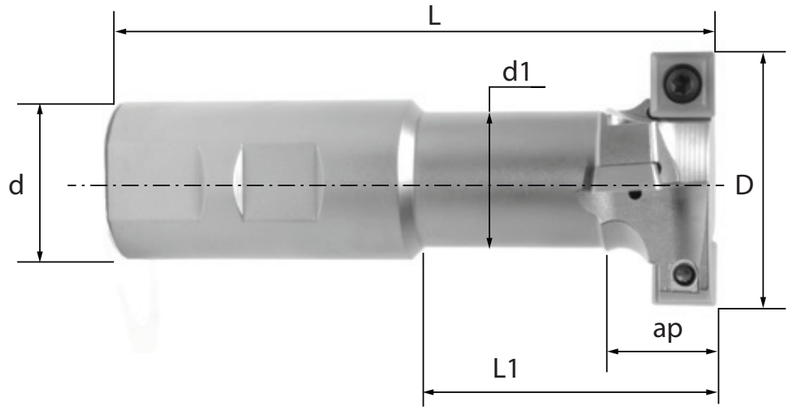
FEATURES

- Soft cutting due to the positive geometry
- Internal coolant supply
- For T slot cutters according to DIN 650-UNI4788-ISO 299 norms

MULTI-MAT™

magia

CUTTER RANGE



CUTTERS – SPMT 060304-TN

DESIGNATION	D	d	d1	L	L1	Ap	Z	Z eff	CATALOG #
LT 400-06 W-W-D021/1	21	16	11	76	23	9	2	1	M2004218
LT 400-06 W-W-D025/2	25	16	13	82	31	11	4	2	M2004219

CUTTERS – SPMT 09T308-TN

DESIGNATION	D	d	d1	L	L1	Ap	Z	Z eff	CATALOG #
LT 400-09 W-W-D032/2	32	20	17	88	38	14	4	2	M2004220
LT 400-09 W-W-D040/2	40	25	21	108	50	17	4	2	M2004221

CUTTERS – SPMT 120408-TN

DESIGNATION	D	d	d1	L	L1	Ap	Z	Z eff	CATALOG #
LT 400-12 W-W-D050/2	50	32	27	120	56	22	4	2	M2004222

MACHINING CONDITIONS

SPMT 060304 TN – LT 3000

Material Group		Gr. N°	VDI Group	Material Examples	Hardness	D.O.C [mm]		Feed [mm/tooth]		V_c [m/min]		Suggested Starting Parameters		
						min	max	min	max	min	max	D.O.C	Feed	V_c
P	Non Alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.3	6.0	0.06	0.12	190	330	2.4	0.10	250
			2		190 HB				0.10		300		0.08	220
			3		250 HB						250			200
	Low Alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr06	180 HB	0.3	6.0	0.06	0.12	150	240	2.4	0.10	200
			4,6		230 HB				0.10		210		0.08	180
			5,7		280 HB			0.05		130	190			150
			8		350 HB						170			140
	High Alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.3	4.3	0.06	0.08	90	150	1.8	0.07	130
			10		280 HB			0.05	0.10		130		0.08	120
			11		320 HB				0.08	60	110		0.06	100
			11		350 HB						90			80
M	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.3	6.0	0.06	0.08	190	250	2.4	0.07	220
			14		240 HB			0.05		160	210			190
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.3	4.3	0.05	0.08	70	130	1.8	0.07	100
			14		310 HB				0.07		120		0.06	90
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4PH, 430	200 HB	0.3	6.0	0.05	0.08	150	210	2.4	0.07	190
			13		42 HRc		4.3		0.07	90	150	1.8	0.06	130
K	Grey	7	15	GG20, GG40, EN-GJL-250	150 HB	0.3	6.0	0.05	0.14	150	240	2.4	0.12	200
			15		200 HB				0.12		220		0.10	180
			16		250 HB						190			160
	Malleable & Nodular	8	17,19	GG20, GG70, 50005	150 HB	0.3	6.0	0.05	0.14	100	200	2.4	0.12	180
			17,19		200 HB				0.12		180		0.10	150
			18,20		250 HB						150			130
S	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.3	4.3	0.04	0.08	25	45	1.8	0.06	32
			33	Inconel 700	250 HB									30
			34	Stellite 21	350 HB									30
	Ti based	10	36	TiAl6V4	-	0.3	4.3	0.04	0.08	40	65	1.8	0.06	55
			37	T40	-					30	55			40
H	Steel	11	38	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.3	2.1	0.04	0.10	40	80	1.2	0.08	60
			38		50 HRc		1.3		0.08		70	0.9	0.06	55
			38		55 HRc		0.9		0.06		60	0.6		50
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.3	1.7		0.06		80	0.9	0.05	50
	White Cast Iron		41	G-X300CrMo15	55 HRc		0.9			30	60	0.6		40
NF	Aluminium	12	25	AlSi12	130 HB	0.3	6.0	0.08	0.14	200	400	2.4	0.12	280

SPMT 09T308 TN – LT 3000

Material Group		Gr. N°	VDI Group	Material Examples	Hardness	D.O.C [mm]		Feed [mm/tooth]		V_c [m/min]		Suggested Starting Parameters		
						min	max	min	max	min	max	D.O.C	Feed	V_c
P	Non Alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.5	9.0	0.07	0.17	190	330	2.4	0.15	250
			2		190 HB			0.06	0.15				0.13	220
			3		250 HB						250			200
	Low Alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr06	180 HB	0.5	9.0	0.07	0.17	150	240	2.4	0.15	200
			4,6		230 HB			0.06	0.15		210		0.13	180
			5,7		280 HB			0.05	0.13	130	190		0.11	150
			8		350 HB						170			140
	High Alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.5	6.5	0.07	0.15	90	150	1.8	0.13	130
			10		280 HB			0.05	0.13		130		0.11	120
			11		320 HB				0.10	60	110		0.08	100
			11		350 HB						90			80
M	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.5	9.0	0.07	0.12	190	250	2.4	0.10	220
			14		240 HB			0.05	0.10	160	210		0.08	190
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.5	6.5	0.05	0.10	70	130	1.8	0.08	100
			14		310 HB				0.08		120		0.07	90
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4PH, 430	200 HB	0.5	9.0	0.05	0.08	150	210	2.4	0.07	190
			13		42 HRc		6.5			90	150	1.8		130
K	Grey	7	15	GG20, GG40, EN-GJL-250	150 HB	0.5	9.0	0.06	0.22	150	240	2.4	0.18	200
			15		200 HB						220			180
			16		250 HB				0.20		190		0.16	160
	Malleable & Nodular	8	17,19	GG20, GG70, 50005	150 HB	0.5	9.0	0.06	0.22	100	200	2.4	0.18	180
			17,19		200 HB			0.05			180			150
			18,20		250 HB				0.20		150		0.16	130
S	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.5	6.5	0.04	0.12	25	45	1.8	0.10	32
			33	Inconel 700	250 HB									30
			34	Stellite 21	350 HB									30
	Ti based	10	36	TiAl6V4	-	0.5	6.5	0.04	0.12	40	65	1.8	0.10	55
			37	T40	-					30	55			40
H	Steel	11	38	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.5	3.2	0.04	0.12	40	80	1.2	0.10	60
			38		50 HRc		1.9		0.10		70	0.9	0.08	55
			38		55 HRc		1.3		0.08		60	0.6		50
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.5	2.6		0.08		80	0.9	0.06	50
	White Cast Iron		41	G-X300CrMo15	55 HRc		1.3			30	60	0.6		40
NF	Aluminium	12	25	AlSi12	130 HB	0.5	9.0	0.08	0.16	200	400	2.4	0.13	280

SPMT 120408 TN – LT 3000

Material Group		Gr. N°	VDI Group	Material Examples	Hardness	D.O.C [mm]		Feed [mm/tooth]		V_c [m/min]		Suggested Starting Parameters		
						min	max	min	max	min	max	D.O.C	Feed	V_c
P	Non Alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.5	9.0	0.13	0.29	190	330	3.0	0.18	250
			2		190 HB						300			220
			3		250 HB						250			200
	Low Alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr06	180 HB	0.5	9.0	0.11	0.23	150	240	3.0	0.16	200
			4,6		230 HB						210			180
			5,7		280 HB				0.20	130	190		0.14	150
			8		350 HB						170			140
	High Alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.5	6.5	0.08	0.20	90	150	2.3	0.14	130
			10		280 HB						130			120
			11		320 HB				0.16	60	110		0.13	100
			11		350 HB						90			80
M	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.5	9.0	0.11	0.23	190	250	3.0	0.16	220
			14		240 HB			0.08	0.20	160	210			190
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.5	6.5	0.08	0.16	70	130	2.3	0.13	100
			14		310 HB						120			90
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4PH, 430	200 HB	0.5	9.0	0.11	0.23	150	210	3.0	0.16	190
			13		42 HRc		6.5		0.18	90	150	2.3	0.13	130
K	Grey	7	15	GG20, GG40, EN-GJL-250	150 HB	0.5	9.0	0.13	0.29	150	240	3.0	0.18	200
			15		200 HB						220			180
			16		250 HB						190			160
	Malleable & Nodular	8	17,19	GG20, GG70, 50005	150 HB	0.5	9.0	0.11	0.25	100	200	3.0	0.16	180
			17,19		200 HB						180			150
			18,20		250 HB						150			130
S	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.5	6.5	0.08	0.16	25	45	2.3	0.13	32
			33	Inconel 700	250 HB									30
			34	Stellite 21	350 HB									30
	Ti based	10	36	TiAl6V4	-	0.5	6.5	0.08	0.18	40	65	2.3	0.14	55
			37	T40	-				0.16	30	55		0.13	40
H	Steel	11	38	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.5	3.2	0.07	0.16	40	80	1.5	0.11	60
			38		50 HRc		1.9		0.14		70	1.1	0.10	55
			38		55 HRc		1.3		0.13		60	0.8		50
	Chilled Cast Iron		40	Ni-Hard 2	400 HB		2.6		0.16		80	1.1	0.11	50
	White Cast Iron		41	G-X300CrMo15	55 HRc		1.3		0.13	30	60	0.8	0.10	40
NF	Aluminium	12	25	AlSi12	130 HB	0.5	9.0	0.13	0.29	200	400	3.0	0.20	280

90° SHOULDER MILLING

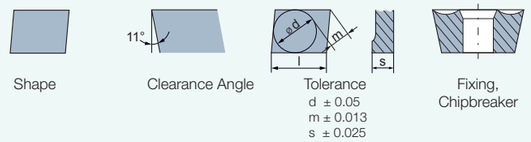
APKT 060204

LT 3000

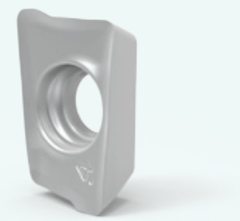
GOOD THINGS COMES IN SMALL PACKAGES.

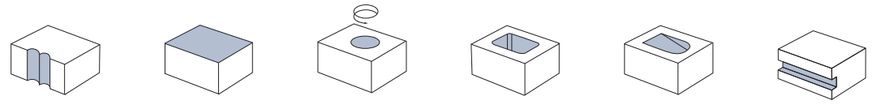
Lamina Technologies introduces the NEW APKT 060204 insert available in our premium milling grade. Small but versatile.

A P K T



Shape | Clearance Angle | Tolerance: d ± 0.05, m ± 0.013, s ± 0.025 | Fixing, Chipbreaker





plunging | face milling | helical interpolation | pocket milling | ramping down | slotting

DESIGNATION	L	S	R	DIRECTION	CATALOG #
APKT 060204 PDTR LT 3000	6.00	2.16	0.40	Right	M0004026

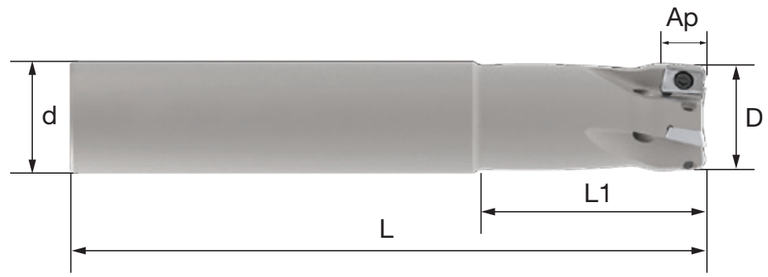
FEATURES

- More teeth per diameter
- Increased effective feed rate
- Smooth cut with less cutting forces
- Replaces HSS solid mills, reducing costs

MULTI-MAT™

magia

CUTTER RANGE



END MILLS

DESIGNATION	D	d1	L	L1	Ap	Z	α	CATALOG #
LT 751 C-W-D010/2	10	10	72	16	5.2	2	7.0	M2003066
LT 751 C-W-D012/3	12	12	80	26	5.2	3	5.0	M2003069
LT 751 CL-W-D016/3	16	16	120	50	5.2	3	2.4	M2003070
LT 751 C-W-D016/4	16	16	90	32	5.2	4	2.4	M2003071
LT 751 C-W-D020/5	20	20	100	40	5.2	5	1.6	M2003072
LT 751 C-W-D025/7*	25	20	120	40	5.2	7	1.2	M2003073
LT 751 C-W-D032/8*	32	25	130	40	5.2	8	0.8	M2003074
LT 751 C-W-D040/10*	40	32	140	40	5.2	10	0.6	M2003075

Replacement screw: M2001640
Replacement bit (Torx Plus 6IP): M2000602
* On request

ADVANTAGES

COMPARED WITH LARGER INSERTS

GREATER PRODUCTIVITY

- Due to the small size of the inserts, it is possible to have more teeth than other indexable cutters of the same diameter, increasing the effective feed rate.

SOFT AND STABLE CUT

- Although the effective feed rate can be higher, the feed per tooth is lower than the feed per tooth with bigger inserts, making the cut smoother with less cutting forces. Excellent advantage for machines with relatively low power.
- Good stability by having minimum of 2 teeth, even in the smallest cutter diameter (10mm).

⌀40 END MILLS CUTTER,
APKT 06 / 10 TEETH

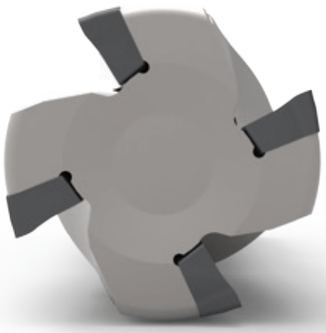
COMPARED WITH SOLID END MILLS

INCREASED PRODUCTIVITY

- Replaces HSS solid mills in roughing to semi-finishing with much higher metal removal rate.

COST SAVINGS, MORE RELIABILITY

- Replaces carbide solid mills in roughing to semi-finishing operations, with substantial cost savings.
- No need to regrind when worn. Simply exchange the insert cutting edge.
- Less carbide is used per insert, which means more economy and less environmental impact.
- Cutter body made of steel improves resistance to shocks/instability while machining.



⌀40 END MILLS CUTTER,
APKT 16 / 4 TEETH

MACHINING CONDITIONS

APKT 060204 PDTR – **LT 3000**

Material	Group	Gr. N°	VDI Group	Material Examples	Hardness	D.O.C [mm] min	D.O.C [mm] max	Feed [mm/tooth] min	Feed [mm/tooth] max	V_c [m/min] min	V_c [m/min] max	Suggested Starting Parameters D.O.C	Suggested Starting Parameters Feed	Suggested Starting Parameters V_c
P	Non Alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.3	5.5	0.04	0.13	190	330	1.3	0.07	250
			2		190 HB									220
			3		250 HB						250			200
	Low Alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr06	180 HB	0.3	5.5	0.03	0.10	150	240	1.3	0.06	200
			4,6		230 HB						210			180
			5,7		280 HB				0.09	130	190		0.05	150
			8		350 HB						170			140
	High Alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.3	3.9	0.03	0.09	90	150	1.0	0.05	130
			10		280 HB						130			120
			11		320 HB				0.07	60	110			100
			11		350 HB						90			80
M	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.3	5.5	0.03	0.10	190	250	1.3	0.06	220
			14		240 HB				0.09	160	210			190
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.3	3.9	0.03	0.07	70	130	1.0	0.05	100
			14		310 HB						120			90
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4PH, 430	200 HB	0.3	5.5	0.03	0.10	150	210	1.3	0.06	190
			13		42 HRc		3.9		0.08	90	150	1.0	0.05	130
K	Grey	7	15	GG20, GG40, EN-GJL-250	150 HB	0.3	5.5	0.04	0.13	150	240	1.3	0.07	200
			15		200 HB						220			180
			16		250 HB						190			160
	Malleable & Nodular	8	17,19	GG20, GG70, 50005	150 HB	0.3	5.5	0.03	0.11	100	200	1.3	0.06	180
			17,19		200 HB						180			150
			18,20		250 HB						150			130
S	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.3	3.9	0.03	0.07	25	45	1.0	0.05	32
			33	Inconel 700	250 HB									30
			34	Stellite 21	350 HB									30
	Ti based	10	36	TiAl6V4	-	0.3	3.9		0.08	40	65	1.0	0.05	55
			37	T40	-				0.07	30	55			40
H	Steel	11	38	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	0.3	2.0	0.02	0.07	40	80	0.7	0.04	60
			38		50 HRc		1.2		0.06		70	0.5		55
			38		55 HRc		0.6		0.06		60	0.3		50
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.3	1.6		0.07		80	0.5		50
	White Cast Iron		41	G-X300CrMo15	55 HRc		0.5		0.06	30	60	0.3		40
NF	Aluminium	12	25	AlSi12	130 HB	0.3	5.5	0.04	0.13	200	400	1.3	0.08	280

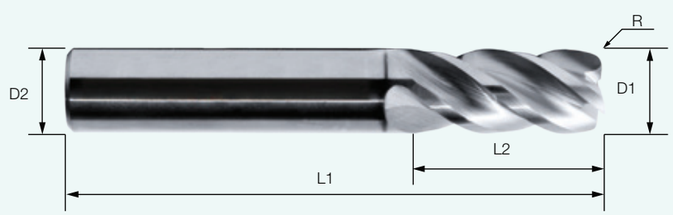
SOLID CARBIDE END MILLS

4 FLUTE WITH CORNER RADIUS

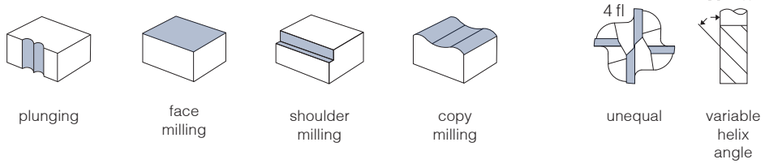
LT 4000

IMPROVED HEAT DISSIPATION.
DECREASED VIBRATION.
LESS CORNER STRESS.

Lamina Technologies is pleased to announce the addition of a new geometry to our line of high performance solid carbide end mills.



38°- 41°



With the addition of a corner radius, our extended solid end mill program provides increased tool life by improved heat dissipation and less corner stress while the unequal pitch prevents vibration improving application.

The corner radius provides the possibility of using our solid end mills in semi-finishing operations, particularly for the mold and die industry.

Corner radius of 0.5, 1.0 and 2.0 available in regular length version and radius 0.5 in long version.

FEATURES

- Unique substrate
- Advanced LT 4000 Multi-Mat™ grade
- Exclusive edge preparation and pre-coating surface treatment
- Breakthrough in materials science
- New, exclusive ultra fine grained coating
- Unequal pitch

MULTI-MAT™

magia

PRODUCT RANGE

90° 4 FLUTE WITH RADIUS

DESIGNATION	R	D1	D2	L1	L2	CATALOG #
E90 Z4 D03.0(06) L08.0(050)R0.5	**0.5**	3.0	6	50	8.0	M5003614
E90 Z4 D04.0(06) L11.0(050)R0.5	**0.5**	4.0	6	50	11.0	M5003615
E90 Z4 D05.0(06) L13.0(050)R0.5	**0.5**	5.0	6	50	13.0	M5003616
E90 Z4 D06.0(06) L16.0(050)R0.5	**0.5**	6.0	6	50	16.0	M5003617
E90 Z4 D08.0(08) L20.0(060)R0.5	**0.5**	8.0	8	60	20.0	M5003618
E90 Z4 D10.0(10) L22.0(072)R0.5	**0.5**	10.0	10	72	22.0	M5003619
E90 Z4 D12.0(12) L26.0(075)R0.5	**0.5**	12.0	12	75	26.0	M5003620
E90 Z4 D03.0(06) L08.0(050)R1.0	**1.0**	3.0	6	50	08.0	M5003623
E90 Z4 D04.0(06) L11.0(050)R1.0	**1.0**	4.0	6	50	11.0	M5003624
E90 Z4 D05.0(06) L13.0(050)R1.0	**1.0**	5.0	6	50	13.0	M5003625
E90 Z4 D06.0(06) L16.0(050)R1.0	**1.0**	6.0	6	50	16.0	M5003626
E90 Z4 D08.0(08) L20.0(060)R1.0	**1.0**	8.0	8	60	20.0	M5003627
E90 Z4 D10.0(10) L22.0(072)R1.0	**1.0**	10.0	10	72	22.0	M5003628
E90 Z4 D12.0(12) L26.0(075)R1.0	**1.0**	12.0	12	75	26.0	M5003629
E90 Z4 D06.0(06) L16.0(050)R2.0	**2.0**	6.0	6	50	16.0	M5003632
E90 Z4 D08.0(08) L20.0(060)R2.0	**2.0**	8.0	8	60	20.0	M5003633
E90 Z4 D10.0(10) L22.0(072)R2.0	**2.0**	10.0	10	72	22.0	M5003634
E90 Z4 D12.0(12) L26.0(075)R2.0	**2.0**	12.0	12	75	26.0	M5003635

90° 4 FLUTE WITH RADIUS, LONG

DESIGNATION	R	D1	D2	L1	L2	CATALOG #
E90 Z4 D08.0(08) L32.0(090)R0.5	**0.5**	8.0	8	90	32.0	M5003638
E90 Z4 D10.0(10) L40.0(100)R0.5	**0.5**	10.0	10	100	40.0	M5003639
E90 Z4 D12.0(12) L48.0(110)R0.5	**0.5**	12.0	12	110	48.0	M5003640

MACHINING CONDITIONS

E90° Z4 with Radius 0.5 | Ø 3 - 5 – LT 4000

Material	Group	Gr. N°	VDI Group	Material Examples	Hardness	Profiling		Slotting	fz[mm/tooth]			vc [m/min]	
						ap	ae	ap	Ø 3	Ø 4	Ø 5	min	max
P	Non Alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	1.5xØ	0.5xØ	1.0xØ	0.017	0.024	0.030	150	200
			2		190 HB							140	
			3		250 HB							120	160
	Low Alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr06	180 HB	1.5xØ	0.5xØ	1.0xØ	0.160	0.025	0.030	120	180
			4,6		230 HB							90	130
			5,7		280 HB			0.7xØ	0.014	0.020	0.024	80	120
			8		350 HB							60	90
	High Alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	1.5xØ	0.5xØ	1.0xØ	0.015	0.021	0.026	70	130
			10		280 HB							65	110
			11		320 HB			0.6xØ	0.011	0.016	0.020	60	90
			11		350 HB							50	80
M	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	1.5xØ	0.5xØ	1.0xØ	0.012	0.017	0.022	80	120
			14		240 HB							70	115
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	1.5xØ	0.5xØ	1.0xØ	0.009	0.013	0.017	60	100
			14		310 HB							60	90
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4PH, 430	200 HB	1.5xØ	0.5xØ	1.0xØ	0.009	0.013	0.017	50	90
			13		42 HRc							30	55
K	Grey	7	15	GG20, GG40, EN-GJL-250	150 HB	1.5xØ	0.5xØ	1.0xØ	0.020	0.029	0.036	140	200
			15		200 HB							150	190
			16		250 HB							120	160
	Malleable & Nodular	8	17,19	GG20, GG70, 50005	150 HB	1.5xØ	0.5xØ	1.0xØ	0.017	0.025	0.031	130	180
			17,19		200 HB							110	150
			18,20		250 HB							90	130
S	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	1.5xØ	0.3xØ	1.0xØ	0.010	0.014	0.018	30	50
			33	Inconel 700	250 HB							25	45
			34	Stellite 21	350 HB							20	50
	Ti based	10	36	TiAl6V4	-	1.5xØ	0.5xØ	1.0xØ	0.010	0.015	0.018	30	60
			37	T40	-							40	70
H	Steel	11	38	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	1.5xØ	0.3xØ	0.2xØ	0.007	0.011	0.013	40	60
			38		50 HRc							35	55
			38		55 HRc		0.2xØ	0.1xØ	0.005	0.008	0.010	30	50
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	1.5xØ	0.2xØ	0.1xØ	0.005	0.008	0.010	35	55
	White Cast Iron		41	G-X300CrMo15	55 HRc							30	50
NF	Aluminium	12	25	AlSi12	130 HB	1.5xØ	0.5xØ	1.0xØ	0.018	0.027	0.033	160	250

E90° Z4 with Radius 1.0 | Ø 3 - 5 – LT 4000

Material	Group	Gr. N°	VDI Group	Material Examples	Hardness	Profiling		Slotting	fz[mm/tooth]			vc [m/min]	
						ap	ae	ap	Ø 3	Ø 4	Ø 5	min	max
P	Non Alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	1.5xØ	0.5xØ	1.0xØ	0.017	0.024	0.030	150	200
			2		190 HB							140	190
			3		250 HB							120	160
	Low Alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr06	180 HB	1.5xØ	0.5xØ	1.0xØ	0.160	0.025	0.030	120	180
			4,6		230 HB							90	130
			5,7		280 HB			0.7xØ	0.014	0.020	0.024	80	120
			8		350 HB							60	90
	High Alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	1.5xØ	0.5xØ	1.0xØ	0.015	0.021	0.026	70	130
			10		280 HB							65	110
			11		320 HB			0.6xØ	0.011	0.016	0.020	60	90
			11		350 HB							50	80
M	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	1.5xØ	0.5xØ	1.0xØ	0.012	0.017	0.022	80	120
			14		240 HB							70	115
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	1.5xØ	0.5xØ	1.0xØ	0.009	0.013	0.017	60	100
			14		310 HB							60	90
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4PH, 430	200 HB	1.5xØ	0.5xØ	1.0xØ	0.009	0.013	0.017	50	90
			13		42 HRc							30	55
K	Grey	7	15	GG20, GG40, EN-GJL-250	150 HB	1.5xØ	0.5xØ	1.0xØ	0.020	0.029	0.036	140	200
			15		200 HB							150	190
			16		250 HB							120	160
	Malleable & Nodular	8	17,19	GG20, GG70, 50005	150 HB	1.5xØ	0.5xØ	1.0xØ	0.017	0.025	0.031	130	180
			17,19		200 HB							110	150
			18,20		250 HB							90	130
S	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	1.5xØ	0.3xØ	1.0xØ	0.010	0.014	0.018	30	50
			33	Inconel 700	250 HB							25	45
			34	Stellite 21	350 HB							20	50
	Ti based	10	36	TiAl6V4	-	1.5xØ	0.5xØ	1.0xØ	0.010	0.015	0.018	30	60
			37	T40	-							40	70
H	Steel	11	38	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	1.5xØ	0.3xØ	0.2xØ	0.007	0.011	0.013	40	60
			38		50 HRc							35	55
			38		55 HRc		0.2xØ	0.1xØ	0.005	0.008	0.010	30	50
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	1.5xØ	0.2xØ	0.1xØ	0.005	0.008	0.010	35	55
	White Cast Iron		41	G-X300CrMo15	55 HRc							30	50
NF	Aluminium	12	25	AlSi12	130 HB	1.5xØ	0.5xØ	1.0xØ	0.018	0.027	0.033	160	250

E90° Z4 with Radius 0.5 | Ø 6, 8, 10, 12 – LT 4000

Material	Group	Gr. N°	VDI Group	Material Examples	Hardness	Profiling		Slot-ting	fz[mm/tooth]				Vc [m/min]	
						ap	ae	ap	Ø 6	Ø 8	Ø 10	Ø 12	min	max
P	Non Alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	1.5xØ	0.5xØ	1.0xØ	0.040	0.055	0.065	0.077	150	200
			2		190 HB								140	190
			3		250 HB								120	160
	Low Alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr06	180 HB	1.5xØ	0.5xØ	1.0xØ	0.039	0.053	0.063	0.074	120	180
			4,6		230 HB								90	130
			5,7		280 HB			0.7xØ	0.032	0.043	0.052	0.062	80	120
			8		350 HB								60	90
	High Alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	1.5xØ	0.5xØ	1.0xØ	0.033	0.046	0.055	0.064	70	130
			10		280 HB								65	110
			11		320 HB			0.6xØ	0.025	0.035	0.041	0.049	60	90
			11		350 HB								50	80
M	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	1.5xØ	0.5xØ	1.0xØ	0.028	0.038	0.045	0.053	80	120
			14		240 HB								70	115
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	1.5xØ	0.5xØ	1.0xØ	0.021	0.029	0.035	0.040	60	100
			14		310 HB								60	90
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4PH, 430	200 HB	1.5xØ	0.5xØ	1.0xØ	0.021	0.029	0.035	0.040	50	90
			13		42 HRc								30	55
K	Grey	7	15	GG20, GG40, EN-GJL-250	150 HB	1.5xØ	0.5xØ	1.0xØ	0.047	0.064	0.076	0.089	140	200
			15		200 HB								150	190
			16		250 HB								120	160
	Malleable & Nodular	8	17,19	GG20, GG70, 50005	150 HB	1.5xØ	0.5xØ	1.0xØ	0.040	0.055	0.066	0.077	130	180
			17,19		200 HB								110	150
			18,20		250 HB								90	130
S	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	1.5xØ	0.3xØ	1.0xØ	0.023	0.031	0.037	0.044	30	50
			33	Inconel 700	250 HB								25	45
			34	Stellite 21	350 HB								20	50
	Ti based	10	36	TiAl6V4	-	1.5xØ	0.5xØ	1.0xØ	0.023	0.032	0.038	0.045	30	60
			37	T40	-								40	70
H	Steel	11	38	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	1.5xØ	0.3xØ	0.2xØ	0.017	0.023	0.028	0.032	40	60
			38		50 HRc								35	55
			38		55 HRc		0.2xØ	0.1xØ	0.013	0.017	0.021	0.024	30	50
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	1.5xØ	0.2xØ	0.1xØ	0.013	0.017	0.021	0.024	35	55
	White Cast Iron		41	G-X300CrMo15	55 HRc								30	50
NF	Aluminium	12	25	AlSi12	130 HB	1.5xØ	0.5xØ	1.0xØ	0.042	0.058	0.069	0.081	160	250

E90° Z4 with Radius 1.0 | Ø 6, 8, 10, 12 – LT 4000

Material	Group	Gr. N°	VDI Group	Material Examples	Hardness	Profiling		Slot-ting	fz[mm/tooth]				Vc [m/min]	
						ap	ae	ap	Ø 6	Ø 8	Ø 10	Ø 12	min	max
P	Non Alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	1.5xØ	0.5xØ	1.0xØ	0.040	0.055	0.065	0.077	150	200
			2		190 HB								140	190
			3		250 HB								120	160
	Low Alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr06	180 HB	1.5xØ	0.5xØ	1.0xØ	0.039	0.053	0.063	0.074	120	180
			4,6		230 HB								90	130
			5,7		280 HB			0.7xØ	0.032	0.043	0.052	0.062	80	120
			8		350 HB								60	90
	High Alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	1.5xØ	0.5xØ	1.0xØ	0.033	0.046	0.055	0.064	70	130
			10		280 HB								65	110
			11		320 HB			0.6xØ	0.025	0.035	0.041	0.049	60	90
			11		350 HB								50	80
M	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	1.5xØ	0.5xØ	1.0xØ	0.028	0.038	0.045	0.053	80	120
			14		240 HB								70	115
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	1.5xØ	0.5xØ	1.0xØ	0.021	0.029	0.035	0.040	60	100
			14		310 HB								60	90
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4PH, 430	200 HB	1.5xØ	0.5xØ	1.0xØ	0.021	0.029	0.035	0.040	50	90
			13		42 HRc								30	55
K	Grey	7	15	GG20, GG40, EN-GJL-250	150 HB	1.5xØ	0.5xØ	1.0xØ	0.047	0.064	0.076	0.089	140	200
			15		200 HB								150	190
			16		250 HB								120	160
	Malleable & Nodular	8	17,19	GG20, GG70, 50005	150 HB	1.5xØ	0.5xØ	1.0xØ	0.040	0.055	0.066	0.077	130	180
			17,19		200 HB								110	150
			18,20		250 HB								90	130
S	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	1.5xØ	0.3xØ	1.0xØ	0.023	0.031	0.037	0.044	30	50
			33	Inconel 700	250 HB								25	45
			34	Stellite 21	350 HB								20	50
	Ti based	10	36	TiAl6V4	-	1.5xØ	0.5xØ	1.0xØ	0.023	0.032	0.038	0.045	30	60
			37	T40	-								40	70
H	Steel	11	38	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	1.5xØ	0.3xØ	0.2xØ	0.017	0.023	0.028	0.032	40	60
			38		50 HRc								35	55
			38		55 HRc		0.2xØ	0.1xØ	0.013	0.017	0.021	0.024	30	50
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	1.5xØ	0.2xØ	0.1xØ	0.013	0.017	0.021	0.024	35	55
	White Cast Iron		41	G-X300CrMo15	55 HRc								30	50
NF	Aluminium	12	25	AlSi12	130 HB	1.5xØ	0.5xØ	1.0xØ	0.042	0.058	0.069	0.081	160	250

E90° Z4 with Radius 2.0 | Ø 6, 8, 10, 12 **– LT 4000**

Material	Group	Gr. N°	VDI Group	Material Examples	Hardness	Profiling ap	Profiling ae	Slot-ting ap	fz[mm/tooth] Ø 6	Ø 8	Ø 10	Ø 12	Vc [m/min] min	max
P	Non Alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	1.5xØ	0.5xØ	1.0xØ	0.040	0.055	0.065	0.077	150	200
			2		190 HB								140	190
			3		250 HB								120	160
	Low Alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr06	180 HB	1.5xØ	0.5xØ	1.0xØ	0.039	0.053	0.063	0.074	120	180
			4,6		230 HB								90	130
			5,7		280 HB			0.7xØ	0.032	0.043	0.052	0.062	80	120
			8		350 HB								60	90
	High Alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	1.5xØ	0.5xØ	1.0xØ	0.033	0.046	0.055	0.064	70	130
			10		280 HB								65	110
			11		320 HB			0.6xØ	0.025	0.035	0.041	0.049	60	90
			11		350 HB								50	80
M	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	1.5xØ	0.5xØ	1.0xØ	0.028	0.038	0.045	0.053	80	120
			14		240 HB								70	115
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	1.5xØ	0.5xØ	1.0xØ	0.021	0.029	0.035	0.040	60	100
			14		310 HB								60	90
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4PH, 430	200 HB	1.5xØ	0.5xØ	1.0xØ	0.021	0.029	0.035	0.040	50	90
			13		42 HRc								30	55
K	Grey	7	15	GG20, GG40, EN-GJL-250	150 HB	1.5xØ	0.5xØ	1.0xØ	0.047	0.064	0.076	0.089	140	200
			15		200 HB								150	190
			16		250 HB								120	160
	Malleable & Nodular	8	17,19	GG20, GG70, 50005	150 HB	1.5xØ	0.5xØ	1.0xØ	0.040	0.055	0.066	0.077	130	180
			17,19		200 HB								110	150
			18,20		250 HB								90	130
S	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	1.5xØ	0.3xØ	1.0xØ	0.023	0.031	0.037	0.044	30	50
			33	Inconel 700	250 HB								25	45
			34	Stellite 21	350 HB								20	50
	Ti based	10	36	TiAl6V4	-	1.5xØ	0.5xØ	1.0xØ	0.023	0.032	0.038	0.045	30	60
			37	T40	-								40	70
H	Steel	11	38	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	1.5xØ	0.3xØ	0.2xØ	0.017	0.023	0.028	0.032	40	60
			38		50 HRc								35	55
			38		55 HRc		0.2xØ	0.1xØ	0.013	0.017	0.021	0.024	30	50
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	1.5xØ	0.2xØ	0.1xØ	0.013	0.017	0.021	0.024	35	55
	White Cast Iron		41	G-X300CrMo15	55 HRc								30	50
NF	Aluminium	12	25	AlSi12	130 HB	1.5xØ	0.5xØ	1.0xØ	0.042	0.058	0.069	0.081	160	250

E90° Z4 with Radius 0.5 Long | Ø 8, 10, 12 **– LT 4000**

Material	Group	Gr. N°	VDI Group	Material Examples	Hardness	Profiling ap	Profiling ae	Slotting ap	fz[mm/tooth] Ø 8	Ø 10	Ø 12	vc [m/min] min	max
P	Non Alloyed	1	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	3.0xØ	0.25xØ	1.0xØ	0.050	0.059	0.070	150	200
			2		190 HB							140	190
			3		250 HB							120	160
	Low Alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr06	180 HB	3.0xØ	0.25xØ	1.0xØ	0.044	0.053	0.062	120	180
			4,6		230 HB							90	130
			5,7		280 HB			0.7xØ	0.035	0.042	0.049	80	120
			8		350 HB							60	90
	High Alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	3.0xØ	0.25xØ	0.7xØ	0.035	0.042	0.049	70	130
			10		280 HB							65	110
			11		320 HB			0.5xØ	0.025	0.030	0.035	60	90
			11		350 HB							50	80
M	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	3.0xØ	0.25xØ	1.0xØ	0.032	0.039	0.045	80	120
			14		240 HB							70	115
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	3.0xØ	0.25xØ	1.0xØ	0.025	0.030	0.035	60	100
			14		310 HB							60	90
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4PH, 430	200 HB	3.0xØ	0.25xØ	1.0xØ	0.024	0.029	0.033	50	90
			13		42 HRc							30	55
K	Grey	7	15	GG20, GG40, EN-GJL-250	150 HB	3.0xØ	0.25xØ	1.0xØ	0.047	0.056	0.066	140	200
			15		200 HB							150	190
			16		250 HB							120	160
	Malleable & Nodular	8	17,19	GG20, GG70, 50005	150 HB	3.0xØ	0.25xØ	1.0xØ	0.045	0.053	0.063	130	180
			17,19		200 HB							110	150
			18,20		250 HB							90	130
S	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	3.0xØ	0.10xØ	1.0xØ	0.020	0.024	0.028	30	50
			33	Inconel 700	250 HB							25	45
			34	Stellite 21	350 HB							20	50
	Ti based	10	36	TiAl6V4	-	3.0xØ	0.25xØ	1.0xØ	0.020	0.024	0.028	30	60
			37	T40	-							40	70
H	Steel	11	38	X100 CrMo13, 440C, G-X260NiCr42	45 HRc	3.0xØ	0.10xØ	0.1xØ	0.017	0.021	0.024	40	60
			38		50 HRc							35	55
			38		55 HRc		0.10xØ	0.1xØ	0.015	0.018	0.021	30	50
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	3.0xØ	0.10xØ	0.1xØ	0.015	0.018	0.021	35	55
	White Cast Iron		41	G-X300CrMo15	55 HRc							30	50
NF	Aluminium	12	25	AlSi12	130 HB	3.0xØ	0.25xØ	1.0xØ	0.050	0.050	0.070	160	250

LAMINA TECHNOLOGIES

Lamina Technologies is a Swiss manufacturer of carbide cutting tools specializing in milling and turning inserts made of state-of-the-art sub-micron grades and coatings by our team of specialists in our factory in Switzerland.

With the Multi-Mat™ concept, Lamina Technologies provides products that machine multiple materials with the same insert, thus allowing you to increase flexibility as well as reduce stock of unused and redundant cutting tools, allowing you to reduce the cost of production and increase production efficiency.

- Simplify your process
- Decrease your tooling costs
- Minimize your machining down time
- Increase your production efficiency

Lamina continues its fast pace worldwide expansion and is currently represented in over 32 countries.

PIONEERS OF MULTI-MAT™

HEADQUARTERS

Lamina Technologies SA
Switzerland
Rue Pythagore, 2
1400 Yverdon-les-Bains
Switzerland
T./F. +41 (0)24 423 55 55
info@lamina-tech.ch
www.lamina-tech.ch

SUBSIDIARIES

Lamina Technologies
Deutschland GmbH
Athenslebener Weg 33
39418 Staßfurt
Germany
T. +49 (3925) 329 277
F. +49 (3925) 329 278
info@lamina-tech.de
www.lamina-tech.ch

Lamina Technologies SA
France
15 Rue Bernard Palissy
Jeantet STJ
25300 Granges Narboz
France
T./F. +33 381 49 67 30
info@lamina-tech.fr
www.lamina-tech.ch

Lamina Technologies
do Brasil Ltda.
Avenida Macuco, 726 Cj. 1603/1604
04523-001 Moema
São Paulo - SP
Brazil
T. +55 11 2344 7890
F. +55 11 2344 7888
info@laminabrasil.com.br
www.laminabrasil.com.br

Lamina Technologii LLC
Russia
Building 21
Zarayskaya str.
109428 Moscow
Russia
T./F. +7 499 653 93 56
info@lamina-russia.ru
www.lamina-russia.ru

Lamina Teknolojileri
Kesici Takımlar Ltd ti.
Kuştepe Mahallesi Mesut
Cemil Sokak 22/B
34381 Şişli, Istanbul
Turkey
T. +90 212 292 09 21
F. +90 212 292 59 51
info@laminateknolojileri.com.tr
www.laminateknolojileri.com.tr

Lamina Technologies
China
Room 202, Building B
668 Hengfeng Road, Jing An Dist.
200070 Shanghai
China
T. +86 21 2287 6501
info@lamina-tech.ch
www.lamina-tech.ch