

- FREZE
END MILL
- RAYBA
REAMER
- MATKAP
DRILL





BİLEME HİZMETİ

Firmamızda, fazla kullanımdan dolayı körelen ürünlerinizi getirip yenisini almadan biletebilirsiniz. Bileme hizmetimizden faydalanmak için lütfen fiyat listesi isteyiniz.

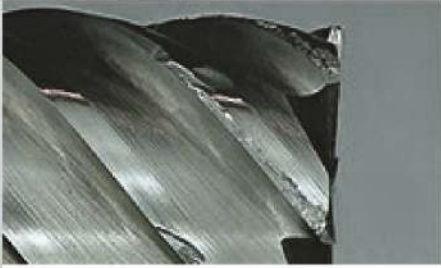
BİLEME AVANTAJLARI

DÜŞÜK ÜRETİM MALİYETİ

YÜKSEK PERFORMANS

GERİ DÖNÜŞÜMDEN YARARLANMA

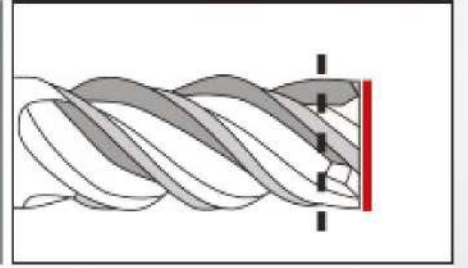
KAPLAMA



ÖNCESİ



SONRASI



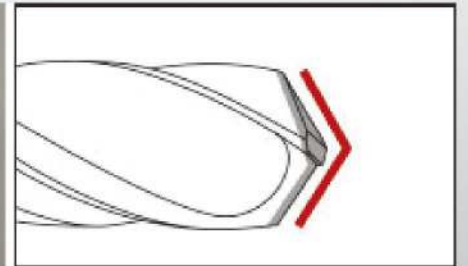
BİLEME BÖLGESİ



ÖNCESİ



SONRASI



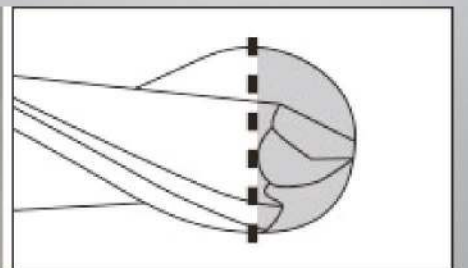
BİLEME BÖLGESİ















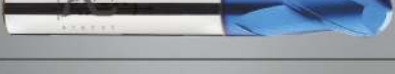


ÖNCESİ



SONRASI



BİLEME BÖLGESİ











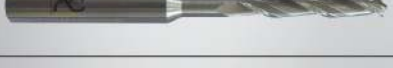

	KARBÜR STANDART DÜZ FREZE	STANDARD END MILL	2
	UZUN KARBÜR DÜZ FREZE	LONG CARBIDE END MILL	3
	STANDART KÖŞE RADÜS FREZE	CORNER RADIUS END MILL	4
	UZUN KÖŞE RADÜS FREZE	LONG CORNER RADIUS END MILL	5
	STANDART KÜRE FREZE	STANDARD BALL NOSE END MILL	6
	KÜRE UZUN BOY FREZE	LONG BALL NOSE END MILL	7
	MİNİ DÜZ FREZE	MINI END MILL	8
	MİNİ KÜRE FREZE	MINI BALL NOSE	9
	ÇOK AĞIZLI FINISH FREZE	FINISHING END MILL	10
	ÇOK AĞIZLI UZUN FREZE	LONG FINISHING END MILL	11
	TEAR SERİSİ	TEAR SERIES	12
	KABATALAŞ FREZE	ROUGHING END MILL	13
	ULTRA 70 SERİSİ DÜZ	ULTRA 70 SERIES END MILL	14
	ULTRA 70 SERİSİ KÜRE	ULTRA 70 SERIES BALL NOSE	15
	ULTRA 70 SERİSİ KÖŞE RADÜS	ULTRA 70 SERIES CORNER RADIUS END MILL	16
	TEK AĞIZ STANDART / UZUN	1 FLUTE ALUMINIUM END MILL	17



A T A C U T

KARBÜR FREZE

CARBIDE END MILL

	ALÜMİNYUM DÜZ FREZE	2 FLUTES ALUMINIUM END MILL	2
	ALÜMİNYUM KÜRE FREZE	2 FLUTES ALUMINIUM BALL NOSE END MILLS	3
	KONİK FREZE	TAPERED END MILL	4
	T FREZE	SLOTING END MILL	5
	KARBÜR KIRLANGIÇ FREZE	DOVETAILL CUTTERS	6
	PAH FREZE	CHAMFER END MILL	7
	İÇ BÜKEY FREZE	ROUNDING END MILL	8
	MERMER FREZE	GRAPHITE AND FIBERGLASS	9
	DÜZ KANALLI FREZE	STRAIGHT FLUTE END MILL	10
	KARBÜR PVC FREZESİ TEK AĞIZLI	1 FLUTE CARBIDE PVC END MILL	11
	KARBÜR PVC FREZESİ İKİ AĞIZLI	2 FLUTE CARBIDE PVC END MILL	12
	HSS-E KONİK AŞŞAP OYMA FREZESİ	HSS-E TAPARED END MILL	13



A T A C U T

KARBÜR RAYBA

CARBIDE REAMER

	KARBÜR RAYBA STANDART BOY	STANDARD CARBIDE REAMER	16
	KARBÜR RAYBA UZUN BOY	LONG CARBIDE REAMER	17

	NC MATKAP 90° - 120°	CARBIDE NC DRILL 90° - 120°	2
	KARBÜR PUNTA MATKAP	CARBIDE CENTER DRILL	3
	3D KARBÜR MATKAP	CARBIDE DRILL 3D	4
	5D KARBÜR MATKAP	CARBIDE DRILL 5D	5





A T A C U T

STANDART DÜZ FREZE

CARBIDE STANDARD END MILL



ÜRÜN KODU	D1	L2	L1	D2
WSZ40608	3	8	50	3
WSZ40608	3	8	50	4
WSZ40814	4	14	50	4
WSZ41016	5	16	50	5
WSZ41216	6	16	50	6
WSZ41420	7	20	63	7
WSZ41620	8	20	63	8
WSZ41821	9	21	72	9
WSZ42021	10	21	72	10
WSZ42226	11	26	75	11
WSZ42426	12	26	75	12
WSZ42628	13	28	83	13
WSZ42828	14	28	83	14
WSZ43032	15	32	92	15
WSZ43232	16	32	92	16
WSZ43436	17	36	92	17
WSZ43636	18	36	92	18
WSZ43838	19	38	100	19
WSZ44038	20	38	100	20
WSZ45045	25	45	105	25
WSZ46445	32	45	105	32

TAVSİYE EDİLEN KESME DEĞERLERİ

MALZEME	Karbon çelikleri, Alaşımli çelikler, S45C, FC, FCD, SCM, S50C, SKS...		Alaşımli çelikler, Takım çelikleri, SCr, SNCM, SKD11, SKD61, NAK80		Sert Çelikler SKD11	
SERTLİK	HRC30		HRC50		HRC60	
ÇAP	Kesme Hızı (VC) (mm·min ⁻¹)	İlerleme (F) (mm·min ⁻¹)	Kesme Hızı (VC) (mm·min ⁻¹)	İlerleme (F) (mm·min ⁻¹)	Kesme Hızı (VC) (mm·min ⁻¹)	İlerleme (F) (mm·min ⁻¹)
3	9000	600	5500	310	3500	220
4	6000	600	5000	400	2200	220
5	4800	750	4000	400	1700	240
6	4500	800	3800	420	1600	300
8	3500	820	2800	420	1000	300
10	3000	820	1800	420	900	300
12	2000	820	1600	350	800	300
16	1500	650	1000	300	500	150
20	1200	650	900	300	400	150





A T A C U T

UZUN DÜZ KARBÜR FREZE

LONG CARBIDE END MILL

4 AĞIZLI



MG

38°

HRC
55

YÜZEY



YANAL

CO
10%TİCİN
ALCN

ÜRÜN KODU	D1	L2	L1	D2
WLZ40620	3	20	75	3
WLZ40825	4	25	75	4
WLZ41030	5	30	75	5
WLZ41230	6	30	75	6
WLZ40620	3	20	100	3
WLZ40825	4	25	100	4
WLZ41040	5	40	100	5
WLZ41240	6	40	100	6
WLZ41440	7	40	100	7
WLZ41640	8	40	100	8
WLZ41840	9	40	100	9
WLZ42040	10	40	100	10
WLZ42245	11	45	100	11
WLZ42445	12	45	100	12
WLZ42275	11	75	150	11
WLZ42475	12	75	150	12
WLZ42675	13	75	150	13
WLZ42875	14	75	150	14
WLZ43075	15	75	150	15
WLZ43275	16	75	150	16
WLZ43475	17	75	150	17
WLZ43675	18	75	150	18
WLZ43875	19	75	150	19
WLZ44075	20	75	150	20
WLZ45075	25	75	150	25
WLZ46475	32	75	150	32

TAVSİYE EDİLEN KESME DEĞERLERİ

MALZEME	Karbon çelikleri, Alaşımli çelikler, S45C, FC, FCD, SCM, S50C, SKS...		Alaşımli çelikler, Takım çelikleri, SCr, SNCM, SKD11, SKD61, NAK80		Sert Çelikler SKD11	
SERTLİK	HRC30		HRC50		HRC60	
ÇAP	Kesme Hızı (VC) (mm ¹)	İlerleme (F) (mm-min)	Kesme Hızı (VC) (mm ¹)	İlerleme (F) (mm-min)	Kesme Hızı (VC) (mm ¹)	İlerleme (F) (mm-min)
3	2500	60	2000	50	800	20
4	2000	80	1700	70	700	30
5	1800	110	1500	85	600	40
6	1500	110	1400	75	550	50
8	1300	110	1100	75	450	50
10	1000	110	800	75	300	50
12	900	110	700	75	250	40
14	700	95	600	70	200	30
16	800	95	500	70	150	20
20	500	80	400	60	120	20





A T A C U T

STANDART KÖŞE RAYDÜS FREZE

CORNER RADIUS END MILL



ÜRÜN KODU	R	D1	L2	L1	D2
WKRSZ4060805	0,5	3	8	50	3
WKRSZ4081005	0,5	4	10	50	4
WKRSZ4081010	1	4	10	50	4
WKRSZ4121605	0,5	6	16	50	6
WKRSZ4121410	1	6	16	50	6
WKRSZ4121615	1,5	6	16	50	6
WKRSZ4162005	0,5	8	20	63	8
WKRSZ4162010	1	8	20	63	8
WKRSZ4162015	1,5	8	20	63	8
WKRSZ4202105	0,5	10	21	72	10
WKRSZ4202110	1	10	21	72	10
WKRSZ4202115	1,5	10	21	72	10
WKRSZ4202120	2	10	21	72	10
WKRSZ4242605	0,5	12	26	75	12
WKRSZ4242610	1	12	26	75	12
WKRSZ4242615	1,5	12	26	75	12
WKRSZ4242620	2	12	26	75	12

TAVSİYE EDİLEN KESME DEĞERLERİ

MALZEME	Karbon çelikleri, Alaşımli çelikler, S45C, FC, FCD, SCM, S50C, SKS...		Alaşımli çelikler, Takım çelikleri, SCr, SNCM, SKD11, SKD61, NAK80		Sert Çelikler SKD11	
	HRC30		HRC50		HRC60	
SERTLİK	HRC30		HRC50		HRC60	
ÇAP	Kesme Hızı (VC) (mm ¹)	İlerleme (F) (mm-min)	Kesme Hızı (VC) (mm ¹)	İlerleme (F) (mm-min)	Kesme Hızı (VC) (mm ¹)	İlerleme (F) (mm-min)
3	9500	450	6000	290	3600	120
4	8000	800	5000	480	3200	160
5	6800	820	4000	500	2500	170
6	6000	900	3600	530	2300	220
8	4600	1000	2800	530	1800	250
10	3500	850	3200	420	1400	220
12	3000	720	1800	350	1200	200
16	2300	520	1400	250	900	150





A T A C U T

UZUN KÖŞE RAYUS FREZE

LONG CORNER RAIUS END MILL



ÜRÜN KODU	R	D1	L2	L1	D2
WKRLZ406080575	0,5	3	8	75	3
WKRLZ4060805100	0,5	3	8	100	3
WKRLZ408140575	0,5	4	14	75	4
WKRLZ408141075	1	4	14	75	4
WKRLZ4081405100	0,5	4	14	100	4
WKRLZ4081410100	1	4	14	100	4
WKRLZ412160575	0,5	6	16	75	6
WKRLZ412161075	1	6	16	75	6
WKRLZ412161575	1,5	6	16	75	6
WKRLZ4121605100	0,5	6	16	100	6
WKRLZ4121610100	1	6	16	100	6
WKRLZ4121615100	1,5	6	16	100	6
WKRLZ4162005100	0,5	8	20	100	8
WKRLZ4162010100	1	8	20	100	8
WKRLZ4162015100	1,5	8	20	100	8
WKRLZ4202105100	0,5	10	21	100	10
WKRLZ4202110100	1	10	21	100	10
WKRLZ4202115100	1,5	10	21	100	10
WKRLZ4202120100	2	10	21	100	10
WKRLZ4242605100	0,5	12	26	100	12
WKRLZ4242610100	1	12	26	100	12
WKRLZ4242615100	1,5	12	26	100	12
WKRLZ4242620100	2	12	26	100	12

TAVSİYE EDİLEN KESME DEĞERLERİ						
MALZEME	Karbon çelikleri, Alaşimli çelikler, S45C, FC, FCD, SCM, S50C, SKS...		Alaşimli çelikler, Takım çelikleri, SCr, SNCM, SKD11, SKD61, NAK80		Sert Çelikler SKD11	
SERTLİK	HRC30		HRC50		HRC60	
ÇAP	Kesme Hızı (VC) (mm ⁻¹)	İlerleme (F) (mm-min)	Kesme Hızı (VC) (mm ⁻¹)	İlerleme (F) (mm-min)	Kesme Hızı (VC) (mm ⁻¹)	İlerleme (F) (mm-min)
6	4800	2560	2900	330	1800	140
8	3700	620	2200	330	1500	160
10	2900	530	1700	260	1100	140
12	2400	450	1400	220	1000	125





A T A C U T

STANDART KÜRE FREZE

STANDARD BALL NOSE END MILL



ÜRÜN KODU	R	L2	L1	D2
WRSZ20203	R0,5	3	50	4
WRSZ20304	R0,75	4	50	4
WRSZ20406	R1	6	50	4
WRSZ20608	R1,5	8	50	3
WRSZ20814	R2	14	50	4
WRSZ21016	R2,5	16	50	5
WRSZ21216	R3	16	50	6
WRSZ21620	R4	20	63	8
WRSZ22020	R5	21	72	10
WRSZ22421	R6	26	75	12
WRSZ22828	R7	28	83	14
WRSZ23232	R8	32	92	16
WRSZ23636	R9	36	92	18
WRSZ24040	R10	40	100	20

TAVSİYE EDİLEN KESME DEĞERLERİ

MALZEME	Karbon çelikleri, Alaşımli çelikler, S45C, FC, FCD, SCM, S50C, SKS...		Alaşımli çelikler, Takım çelikleri, SCr, SNCM, SKD11, SKD61, NAK80		Sert Çelikler SKD11	
	HRC30		HRC50		HRC60	
SERTLİK	HRC30		HRC50		HRC60	
Radius	Kesme Hızı (VC) (mm ³)	İlerleme (F) (mm-min)	Kesme Hızı (VC) (mm ³)	İlerleme (F) (mm-min)	Kesme Hızı (VC) (mm ³)	İlerleme (F) (mm-min)
R0,5	45000	800	35000	600	20000	200
R1,0	23000	800	18000	600	10000	200
R1,5	16000	1000	12000	600	6500	200
R2,0	12000	1000	9500	700	5000	300
R3,0	8000	1100	6000	700	3500	300
R4,0	6000	1200	5000	800	2500	350
R5,0	5000	1100	4000	800	2000	350
R6,0	4000	1000	3000	700	1500	300
R8,0	3000	1000	2000	700	1000	300





A T A C U T

UZUN BOY KÜRE FREZE

LONG BALL NOSE END MILL



ÜRÜN KODU	R	L2	L1	D2
WLRZ2061075	R1,5	10	75	3
WLRZ2081475	R2	14	75	4
WLRZ2101675	R2,5	16	75	5
WLRZ2121675	R3	16	75	6
WLRZ20610100	R1,5	10	100	3
WLRZ20814100	R2	14	100	4
WLRZ21016100	R2,5	16	100	5
WLRZ21216100	R3	16	100	6
WLRZ21620100	R4	20	100	8
WLRZ22021100	R5	21	100	10
WLRZ22426100	R6	26	100	12
WLRZ21216150	R3	16	150	6
WLRZ21620150	R4	20	150	8
WLRZ22021150	R5	21	150	10
WLRZ22426150	R6	26	150	12

TAVSİYE EDİLEN KESME DEĞERLERİ

MALZEME	Karbon çelikleri, Alaşımli çelikler, S45C, FC, FCD, SCM, S50C, SKS...		Alaşımli çelikler, Takım çelikleri, SCr, SNCM, SKD11, SKD61, NAK80		Sert Çelikler SKD11	
SERTLİK	HRC30		HRC50		HRC60	
Radius	Kesme Hızı (VC) (mm·min ⁻¹)	İlerleme (F) (mm·min ⁻¹)	Kesme Hızı (VC) (mm·min ⁻¹)	İlerleme (F) (mm·min ⁻¹)	Kesme Hızı (VC) (mm·min ⁻¹)	İlerleme (F) (mm·min ⁻¹)
R1,5	16000	1000	12000	600	6500	200
R2,0	12000	1000	9500	700	5000	300
R3,0	8000	1100	6000	700	3500	300
R4,0	6000	1200	5000	800	2500	350
R5,0	5000	1100	4000	800	2000	350
R6,0	4000	1000	3000	700	1500	300
R8,0	3000	1000	2000	700	1000	300





A T A C U T

MINİ DÜZ FREZE

MINI END MILL



ÜRÜN KODU	D1	L2	L1	L3	D3	D2
WMINZ20106	1	3	50	6	0,8	4
WMINZ20108	1	3	50	8	0,8	4
WMINZ20110	1	3	50	10	0,8	4
WMINZ20112	1	3	50	12	0,8	4
WMINZ20116	1	3	50	16	0,8	4
WMINZ21506	1,5	4	50	6	1,3	4
WMINZ21508	1,5	4	50	8	1,3	4
WMINZ21510	1,5	4	50	10	1,3	4
WMINZ21512	1,5	4	50	12	1,3	4
WMINZ21516	1,5	4	50	16	1,3	4
WMINZ20208	2	6	50	8	1,8	4
WMINZ20210	2	6	50	10	1,8	4
WMINZ20212	2	6	50	12	1,8	4
WMINZ20216	2	6	50	16	1,8	4
WMINZ20220	2	6	50	20	1,8	4
WMINZ20225	2	6	50	25	1,8	4

TAVSİYE EDİLEN KESME DEĞERLERİ

MALZEME	Alaşımlı Çelikler, Takım Çelikleri, Sert Çelikler S45C, SCM, S50C, SKS, SCR, SNCM, SKD11, SKD61, NAK80...			
Çap	Dalma Boyu	Kesme Hızı (VC) (mm ¹)	İlerleme (F) (mm-min)	Kesme Derinliği H(mm)
1	6	25.000	1500	0,05
1	8	25.000	1500	0,03
1	10	25.000	1500	0,01
1	12	25.000	1500	0,01
1	16	25.000	1500	0,010
1,5	6	15.000	1200	0,01
1,5	8	15.000	1200	0,05
1,5	10	15.000	1200	0,25
1,5	12	15.000	1200	0,18
1,5	16	15.000	1200	0,18
2	8	12.000	900	0,2
2	10	8.800	700	0,12
2	12	7.500	600	0,5
2	16	7.000	500	0,02
2	20	7.000	500	0,02
2	25	7.000	500	0,02



A T A C U T

MİNİ KÜRE FREZE

MINI BALL NOSE



ÜRÜN KODU	R	L2	L1	L3	D3	D2
WMINRZ2020206	R0,5	2	50	6	0,8	4
WMINRZ2020208	R0,5	2	50	8	0,8	4
WMINRZ2020210	R0,5	2	50	10	0,8	4
WMINRZ2020212	R0,5	2	50	12	0,8	4
WMINRZ2020216	R0,5	2	50	16	0,8	4
WMINRZ2030306	R0,75	3	50	6	1,3	4
WMINRZ2030308	R0,75	3	50	8	1,3	4
WMINRZ2030310	R0,75	3	50	10	1,3	4
WMINRZ2030312	R0,75	3	50	12	1,3	4
WMINRZ2030316	R0,75	3	50	16	1,3	4
WMINRZ2040408	R1	4	50	8	1,8	4
WMINRZ2040410	R1	4	50	10	1,8	4
WMINRZ2040412	R1	4	50	12	1,8	4
WMINRZ2040416	R1	4	50	16	1,8	4
WMINRZ2040420	R1	4	50	20	1,8	4

TAVSİYE EDİLEN KESME DEĞERLERİ

MALZEME	Alaşımli Çelikler, Takım Çelikleri, Sert Çelikler S45C, SCM, S50C, SKS, SCR, SNCM, SKD11, SKD61, NAK80...			
Radius	Dalma Boyu	Kesme Hızı (VC) (mm ¹)	İlerleme (F) (mm-min)	Kesme Derinliği H(mm)
R0,5	6	20,000-32,000	300-750	0,04
R0,5	8	20,000-32,000	300-750	0,03
R0,5	10	20,000-32,000	300-750	0,025
R0,5	12	20,000-32,000	300-750	0,015
R0,5	16	20,000-32,000	300-750	0,010
R0,75	6	18,000-20,000	350-550	0,09
R0,75	8	18,000-20,000	350-550	0,07
R0,75	10	18,000-20,000	350-550	0,04
R0,75	12	18,000-20,000	350-550	0,03
R0,75	16	18,000-20,000	350-550	0,02
R1,0	8	12,000-17,000	500-900	0,1
R1,0	10	12,000-17,000	500-900	0,1
R1,0	12	12,000-17,000	500-900	0,1
R1,0	16	12,000-17,000	500-900	0,07
R1,0	20	12,000-17,000	500-900	0,04





A T A C U T

ÇOK AĞIZLI FINISH FREZE

FINISHING END MILL



ÜRÜN KODU	D1	L2	L1	D2
WFZ61216	6	16	50	6
WFZ61420	7	20	63	7
WFZ61620	8	20	63	8
WFZ61821	9	21	72	9
WFZ62021	10	21	72	10
WFZ62226	11	26	75	11
WFZ62426	12	26	75	12
WFZ62628	13	28	83	13
WFZ62828	14	28	83	14
WFZ63032	15	32	92	15
WFZ63232	16	32	92	16
WFZ63436	17	36	92	17
WFZ63636	18	36	92	18
WFZ63838	19	38	100	19
WFZ64038	20	38	100	20
WFZ64240	21	40	100	21
WFZ64440	22	40	100	22
WFZ64645	23	45	100	23
WFZ64845	24	45	100	24
WFZ65045	25	45	105	25
WFZ65245	26	45	105	26
WFZ65445	27	45	105	27
WFZ65645	28	45	105	28
WFZ65845	29	45	105	29
WFZ66045	30	45	105	30
WFZ66245	31	45	105	31
WFZ66445	32	45	105	32

TAVSİYE EDİLEN KESME DEĞERLERİ						
MALZEME	Karbon çelikleri, Alaşımli çelikler, S45C, FC, FCD, SCM, S50C, SKS...		Alaşımli çelikler, Takım çelikleri, SCr, SNCM, SKD11, SKD61, NAK80		Sert Çelikler SKD11	
SERTLİK	HRC30		HRC50		HRC60	
ÇAP	Kesme Hızı (VC) (mm ³)	İlerleme (F) (mm-min)	Kesme Hızı (VC) (mm ³)	İlerleme (F) (mm-min)	Kesme Hızı (VC) (mm ³)	İlerleme (F) (mm-min)
6	5500	1000	4500	850	3800	650
8	4000	1000	3500	850	3000	650
10	3300	1000	3100	850	2400	650
12	3000	900	2500	700	2000	600
16	2500	700	2000	550	1500	450
20	1800	550	1500	420	1200	380





A T A C U T

ÇOK AĞIZLI UZUN FINISH FREZE

LONG FINISHING END MILL

6 AĞIZLI



MG

45°

HRC
55

FINISH

YANAL

CO
10%TICİN
ALCN

ÜRÜN KODU	D1	L2	L1	D2
WFZ61230	6	30	75	6
WFZ61240	6	40	100	6
WFZ61440	7	40	100	7
WFZ61640	8	40	100	8
WFZ61840	9	40	100	9
WFZ62040	10	40	100	10
WFZ62245	11	45	100	11
WFZ62445	12	45	100	12
WFZ62275	11	75	150	11
WFZ62475	12	75	150	12
WFZ62675	13	75	150	13
WFZ62875	14	75	150	14
WFZ63075	15	75	150	15
WFZ63275	16	75	150	16
WFZ63475	17	75	150	17
WFZ63675	18	75	150	18
WFZ63875	19	75	150	19
WFZ64075	20	75	150	20
WFZ62275	21	75	150	21
WFZ64475	22	75	150	22
WFZ64675	23	75	150	23
WFZ64875	24	75	150	24
WFZ65075	25	75	150	25
WFZ65275	26	75	150	26
WFZ65475	27	75	150	27
WFZ65675	28	75	150	28
WFZ65875	29	75	150	29
WFZ66075	30	75	150	30
WFZ66275	31	75	150	31
WFZ66475	32	75	150	32



TAVSİYE EDİLEN KESME DEĞERLERİ

MALZEME	Karbon çelikleri, Alaşımli çelikler, S45C, FC, FCD, SCM, S50C, SKS...		Alaşımli çelikler, Takım çelikleri, SCr, SNCM, SKD11, SKD61, NAK80		Sert Çelikler SKD11	
SERTLİK	HRC30		HRC50		HRC60	
ÇAP	Kesme Hızı (VC) (mm ³)	İlerleme (F) (mm-min)	Kesme Hızı (VC) (mm ³)	İlerleme (F) (mm-min)	Kesme Hızı (VC) (mm ³)	İlerleme (F) (mm-min)
6	1900	400	1500	300	1200	220
8	1500	380	1100	280	900	200
10	1200	360	850	260	750	190
12	1000	340	700	230	650	180
16	750	280	550	200	450	150
20	600	240	450	170	350	120

TEAR SERİSİ

TEAR SERIES



ÜRÜN KODU	D1	L2	L1	D2	CH°
WSZ41216	6	16	50	6	0.1x45°
WSZ41620	8	20	63	8	0.1x45°
WSZ42021	10	21	72	10	0.1x45°
WSZ42426	12	26	75	12	0.1x45°
WSZ42828	14	28	83	14	0.15x45°
WSZ43232	16	32	92	16	0.15x45°
WSZ43636	18	36	92	18	0.15x45°
WSZ44038	20	38	100	20	0.15x45°

TAVSİYE EDİLEN KESME DEĞERLERİ

MALZEME	Karbon çelikleri, Alaşımli çelikler, S45C, FC, FCD, SCM, S50C, SKS...		Alaşımli çelikler, Takım çelikleri, SCr, SNCM, SKD11, SKD61, NAK80		Sert Çelikler SKD11	
SERTLİK	HRC30		HRC50		HRC60	
ÇAP	Kesme Hızı (VC) (mm ³)	İlerleme (F) (mm-min)	Kesme Hızı (VC) (mm ³)	İlerleme (F) (mm-min)	Kesme Hızı (VC) (mm ³)	İlerleme (F) (mm-min)
4	15000	1400	12000	1250	-	-
5	13000	1600	10000	1400	-	-
6	11500	1650	8500	1300	-	-
8	8000	1800	6500	1350	-	-
10	7000	1800	5000	1400	-	-
12	6000	1700	4000	1300	-	-
16	3560	1500	3000	1250	-	-
16	3000	1450	2500	1250	-	-





A T A C U T

KABATALAŞ FREZE

ROUGHING END MILL



ÜRÜN KODU	D1	L2	L1	D2
WKTZ41216	6	16	50	6
WKTZ41420	7	20	63	7
WKTZ41620	8	20	63	8
WKTZ41821	9	21	72	9
WKTZ42021	10	21	72	10
WKTZ42226	11	26	75	11
WKTZ42426	12	26	75	12
WKTZ42628	13	28	83	13
WKTZ42828	14	28	83	14
WKTZ43032	15	32	92	15
WKTZ43232	16	32	92	16
WKTZ43436	17	36	92	17
WKTZ43636	18	36	92	18
WKTZ43838	19	38	100	19
WKTZ44038	20	38	100	20
WKTZ44240	21	40	100	21
WKTZ44440	22	40	100	22
WKTZ44645	23	45	100	23
WKTZ44845	24	45	100	24
WKTZ45045	25	45	105	25
WKTZ45245	26	45	105	26
WKTZ45445	27	45	105	27
WKTZ45645	28	45	105	28
WKTZ45845	29	45	105	29
WKTZ46045	30	45	105	30
WKTZ46245	31	45	105	31
WKTZ46445	32	45	105	32

TAVSİYE EDİLEN KESME DEĞERLERİ

MALZEME	Karbon çelikleri, Alaşımli çelikler, S45C, FC, FCD, SCM, S50C, SKS...		Alaşımli çelikler, Takım çelikleri, SCr, SNCM, SKD11, SKD61, NAK80		Sert Çelikler SKD11		
	SERTLİK	HRC30	HRC50	HRC60	SERTLİK	HRC60	
ÇAP	Kesme Hızı (VC) (mm ³)	İlerleme (F) (mm-min)	Kesme Hızı (VC) (mm ³)	İlerleme (F) (mm-min)	Kesme Hızı (VC) (mm ³)	İlerleme (F) (mm-min)	
Yanal Frezeleme	6	5500	550	3000	310	1150	120
	8	4600	550	2500	310	920	120
	10	3700	550	2000	310	730	120
	12	3000	500	1700	310	600	120
	16	2300	520	1200	310	460	120
Kanal Açma	6	4400	440	2400	250	920	100
	8	3600	440	2000	250	730	100
	10	3000	440	1600	250	580	100
	12	2400	440	1350	250	480	100
	16	1800	440	960	250	370	100





	ÜRÜN KODU	D1	L2	L1	D2
DÜZ STANDART	WSZ20203U70	1	3	50	4
	WSZ20304U70	1,5	4	50	4
	WSZ40406U70	2	6	50	4
	WSZ40608U70	3	8	50	3
	WSZ40814U70	4	14	50	4
	WSZ41016U70	5	16	50	5
	WSZ41216U70	6	16	50	6
	WSZ41420U70	7	20	63	7
	WSZ41620U70	8	20	63	8
	WSZ41821U70	9	21	72	9
	WSZ42021U70	10	21	72	10
	WSZ42226U70	11	26	75	11
	WSZ42426U70	12	26	75	12
UZUN BOY	WLZ41216U70	6	16	100	6
	WLZ41620U70	8	20	100	8
	WLZ42025U70	10	25	100	10
	WLZ42430U70	12	30	100	12

TAVSİYE EDİLEN KESME DEĞERLERİ

MALZEME	Karbon çelikleri, Alaşımli çelikler, S45C, FC, FCD, SCM, S50C, SKS...		Alaşımli çelikler, Takım çelikleri, SCr, SNCM, SKD11, SKD61, NAK80		Sert Çelikler SKD11	
SERTLİK	HRC30		HRC50		HRC60	
ÇAP	Kesme Hızı (VC) (mm ³)	İlerleme (F) (mm-min)	Kesme Hızı (VC) (mm ³)	İlerleme (F) (mm-min)	Kesme Hızı (VC) (mm ³)	İlerleme (F) (mm-min)
3	-	-	-	-	9000	500
4	-	-	-	-	6000	550
5	-	-	-	-	5000	500
6	-	-	-	-	4500	700
8	-	-	-	-	3500	600
10	-	-	-	-	3000	500
12	-	-	-	-	2000	500

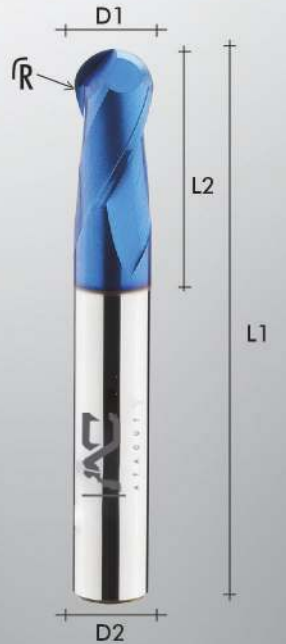




	ÜRÜN KODU	R	L2	L1	D2
KÜRE	WRSZ20203U70	R0,5	3	50	4
	WRSZ20304U70	R0,75	4	50	4
	WRSZ20406U70	R1	6	50	4
	WRSZ20608U70	R1,5	8	50	3
	WRSZ20814U70	R2	14	50	4
	WRSZ21016U70	R2,5	16	50	5
	WRSZ21216U70	R3	16	50	6
	WRSZ21620U70	R4	20	63	8
	WRSZ22020U70	R5	21	72	10
	WRSZ22421U70	R6	26	75	12
UZUN	WLRZ21216U70	R3	16	100	6
	WLRZ21620U70	R4	20	100	8
	WLRZ22021U70	R5	21	100	10
	WLRZ22426U70	R6	26	100	12

TAVSİYE EDİLEN KESME DEĞERLERİ

MALZEME	Karbon çelikleri, Alaşımli çelikler, S45C, FC, FCD, SCM, S50C, SKS...		Alaşımli çelikler, Takım çelikleri, SCr, SNCM, SKD11, SKD61, NAK80		Sert Çelikler SKD11	
SERTLİK	HRC30		HRC50		HRC60	
Radius	Kesme Hızı (VC) (mm ³)	İlerleme (F) (mm-min)	Kesme Hızı (VC) (mm ³)	İlerleme (F) (mm-min)	Kesme Hızı (VC) (mm ³)	İlerleme (F) (mm-min)
R1,0	-	-	-	-	16000	900
R1,5	-	-	-	-	11000	900
R2,0	-	-	-	-	10000	1300
R3,0	-	-	-	-	9000	1500
R4,0	-	-	-	-	6200	1400
R5,0	-	-	-	-	5200	900
R6,0	-	-	-	-	4300	800





ATA CUT

ULTRA 70 SERİSİ KÖŞE RADÜS

ULTRA 70 SERIES CORNER RADIUS END MILL



	ÜRÜN KODU	R	D1	L2	D2	L1
STANDART	WKRSZ4060805U70	0,5	3	8	50	3
	WKRSZ4081005U70	0,5	4	10	50	4
	WKRSZ4081010U70	1	4	10	50	4
	WKRSZ4121605U70	0,5	6	16	50	6
	WKRSZ4121610U70	1	6	16	50	6
	WKRSZ4121615U70	1,5	6	16	50	6
	WKRSZ4162005U70	0,5	8	20	63	8
	WKRSZ4162010U70	1	8	20	63	8
	WKRSZ4162015U70	1,5	8	20	63	8
	WKRSZ4202105U70	0,5	10	21	72	10
	WKRSZ4202110U70	1	10	21	72	10
	WKRSZ4202115U70	1,5	10	21	72	10
	WKRSZ4202120U70	2	10	21	72	10
	WKRSZ4242605U70	0,5	12	26	75	12
	WKRSZ4242610U70	1	12	26	75	12
WKRSZ4242615U70	1,5	12	26	75	12	
WKRSZ4242620U70	2	12	26	75	12	
UZUN	WKRSZ4121605U70	0,5	6	16	100	6
	WKRSZ4162005U70	0,5	8	20	100	8
	WKRSZ4202105U70	0,5	10	21	100	10
	WKRSZ4242605U70	0,5	12	26	100	12

TAVSİYE EDİLEN KESME DEĞERLERİ

MALZEME	Karbon çelikleri, Alaşımli çelikler, S45C, FC, FCD, SCM, S50C, SKS...		Alaşımli çelikler, Takım çelikleri, SCr, SNCM, SKD11, SKD61, NAK80		Sert Çelikler SKD11	
SERTLİK	HRC30		HRC50		HRC60	
Çap	Kesme Hızı (VC) (mm ³)	İlerleme (F) (mm-min)	Kesme Hızı (VC) (mm ³)	İlerleme (F) (mm-min)	Kesme Hızı (VC) (mm ³)	İlerleme (F) (mm-min)
3	-	-	-	-	5400	360
4	-	-	-	-	4800	480
5	-	-	-	-	3800	500
6	-	-	-	-	3500	650
8	-	-	-	-	2700	750
10	-	-	-	-	2100	650
12	-	-	-	-	1800	600



TEK AĞIZ STANDART FREZE

1 FLUTE ALUMINIUM STANDART END MILL



ÜRÜN KODU	D1	L2	L1	D2
WSZ10608	3	8	50	3
WSZ10608	3	8	50	4
WSZ10814	4	14	50	4
WSZ11016	5	16	50	5
WSZ11216	6	16	50	6
WSZ11420	7	20	63	7
WSZ11620	8	20	63	8
WSZ11821	9	21	72	9
WSZ12021	10	21	72	10
WSZ12226	11	26	75	11
WSZ12426	12	26	75	12
WSZ12628	13	28	83	13
WSZ12828	14	28	83	14
WSZ13032	15	32	92	15
WSZ13232	16	32	92	16
WSZ13436	17	36	92	17
WSZ13636	18	36	92	18
WSZ13838	19	38	100	19
WSZ14038	20	38	100	20

TEK AĞIZ UZUN FREZE

1 FLUTE ALUMINIUM LONG END MILL

ÜRÜN KODU	D1	L2	L1	D2
WLZ10620	3	20	75	3
WLZ10825	4	25	75	4
WLZ11030	5	30	75	5
WLZ11230	6	30	75	6
WLZ10620	3	20	100	3
WLZ10825	4	25	100	4
WLZ11040	5	40	100	5
WLZ11240	6	40	100	6
WLZ11440	7	40	100	7
WLZ11640	8	40	100	8
WLZ11840	9	40	100	9
WLZ12040	10	40	100	10
WLZ12245	11	45	100	11
WLZ12445	12	45	100	12





ÜRÜN KODU	D1	L2	L1	D2
WALSZ2020304	1	3	50	4
WALSZ2040604	2	6	50	4
WALSZ2061003	3	10	50	3
WALSZ2081404	4	14	50	4
WALSZ2101605	5	16	50	5
WALSZ2121606	6	16	50	6
WALSZ2162008	8	20	63	8
WALSZ2202110	10	21	72	10
WALSZ2242512	12	25	75	12
WALSZ2282514	14	25	83	14
WALSZ2323216	16	32	92	16
WALSZ2363618	18	36	100	18
WALSZ2404520	20	45	100	20

TAVSİYE EDİLEN KESME DEĞERLERİ

MALZEME	Alüminyum 1070		Alüminyum alloy 2014 / 4032 / 5052 / 6061 / 7075		Alüminyum alloy AC85	
	Kesme Hızı (VC) (mm ³)	İlerleme (F) (mm-min)	Kesme Hızı (VC) (mm ³)	İlerleme (F) (mm-min)	Kesme Hızı (VC) (mm ³)	İlerleme (F) (mm-min)
Çap						
3	35000	2000(900)	14000	850(450)	18000	1100(550)
4	26000	2000(1100)	11000	850(550)	13000	1100(660)
5	21000	2000(1100)	9000	850(550)	10000	1100(660)
6	17000	2000(1100)	7000	850(550)	9000	1100(660)
8	13000	2000(1100)	5500	850(650)	7000	1100(800)
10	11000	2000(1300)	7000	850(650)	5500	1100(800)
12	8800	2000(1300)	3600	850(800)	4500	1100(800)
16	6500	2000(1100)	3000	850(550)	3500	1100(900)
20	5300	2000(1100)	2200	850(550)	2500	1100(650)





A T A C U T

ALÜMİNYUM KÜRE FREZE

2 FLUTES ALUMINIUM BALL NOSE END MILLS



ÜRÜN KODU	R	L2	L1	D2
WALRSZ20203	R0,5	3	50	4
WALRSZ20304	R0,75	4	50	4
WALRSZ20406	R1	6	50	4
WALRSZ20608	R1,5	8	50	3
WALRSZ20814	R2	14	50	4
WALRSZ21016	R2,5	16	50	5
WALRSZ21216	R3	16	50	6
WALRSZ21620	R4	20	63	8
WALRSZ22020	R5	21	72	10
WALRSZ22421	R6	26	75	12
WALRSZ22828	R7	28	83	14
WALRSZ23232	R8	32	92	16
WALRSZ23636	R9	36	92	18
WALRSZ24040	R10	40	100	20

TAVSİYE EDİLEN KESME DEĞERLERİ

MALZEME	Alüminyum 1070		Alüminyum alloy 2014 / 4032 / 5052 / 6061 / 7075		Alüminyum alloy AC85	
	Kesme Hızı (VC) (mm ¹)	İlerleme (F) (mm-min)	Kesme Hızı (VC) (mm ¹)	İlerleme (F) (mm-min)	Kesme Hızı (VC) (mm ¹)	İlerleme (F) (mm-min)
Radius						
R0,5	50000	2300	37000	2000	50000	1400
R0,75	50000	3000	28000	2000	50000	1800
R1	44000	4000	18500	2000	44000	2500
R1,5	28000	4000	11500	2000	28000	2500
R2	22000	4000	8800	2000	22000	2500
R3	16000	4000	6400	2000	16000	2500
R4	12000	4000	4800	2000	12000	2500
R5	10000	4000	4000	2000	10000	2500
R6	8000	4000	3000	2000	8000	2500

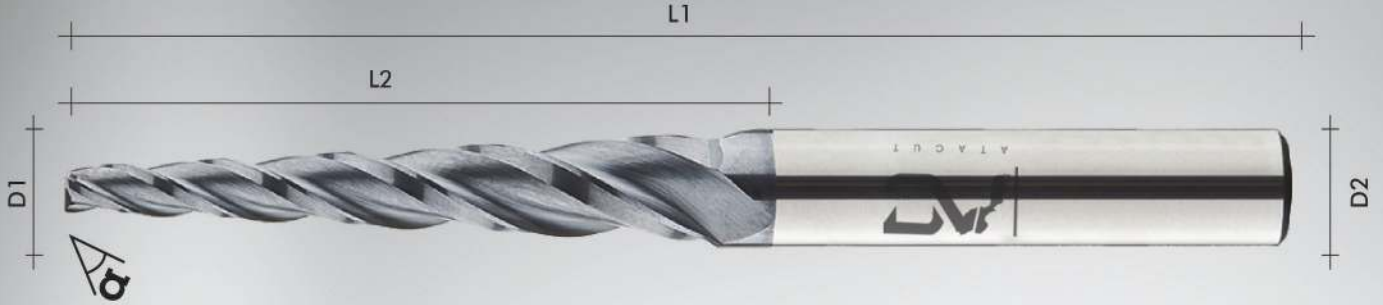




A T A C U T

KONİK FREZE

TAPARED END MILL



ÜRÜN KODU	a	D1	D3	L2	L1	D2	Z
WKSZ30230	30°	2	2,35	20	65	3	3
WKSZ30330	30°	3	3,45	25	65	4	3
WKSZ30430	30°	4	4,52	30	65	5	3
WKSZ30530	30°	5	5,52	30	75	6	3
WKSZ30630	30°	6	6,7	40	100	8	3
WKSZ40830	30°	8	8,79	45	100	10	4
WKSZ41030	30°	10	10,79	45	100	12	4
WKSZ41230	30°	12	12,79	45	100	14	4

ÜRÜN KODU	a	D1	D3	L2	L1	D2	Z
WKSZ30202	2°	2	3,4	20	65	4	3
WKSZ30302	2°	3	4,75	25	65	5	3
WKSZ30402	2°	4	6	30	65	6	3
WKSZ30502	2°	5	8	30	75	8	3
WKSZ30602	2°	6	9,14	40	100	10	3
WKSZ40802	2°	8	11,14	45	100	12	4
WKSZ41002	2°	10	13,84	45	100	14	4
WKSZ41202	2°	12	15,84	45	100	16	4

ÜRÜN KODU	a	D1	D3	L2	L1	D2	Z
WKSZ30201	1°	2	2,7	20	65	3	3
WKSZ30301	1°	3	3,87	25	65	4	3
WKSZ30401	1°	4	5,05	28	65	5	3
WKSZ30501	1°	5	6	28	75	6	3
WKSZ30601	1°	6	7,4	40	100	8	3
WKSZ40801	1°	8	9,57	45	100	10	4
WKSZ41001	1°	10	11,57	45	100	12	4
WKSZ41201	1°	12	13,57	45	100	14	4

ÜRÜN KODU	a	D1	D3	L2	L1	D2	Z
WKSZ30203	3°	2	4,1	20	65	5	3
WKSZ30303	3°	3	5,62	25	65	6	3
WKSZ30403	3°	4	8	30	65	8	3
WKSZ30503	3°	5	10	30	75	10	3
WKSZ30603	3°	6	12	40	100	12	3
WKSZ40803	3°	8	14	45	100	14	4
WKSZ41003	3°	10	16	45	100	16	4
WKSZ41203	3°	12	18	45	100	18	4

ÜRÜN KODU	a	D1	D3	L2	L1	D2	Z
WKSZ302013	1°30'	2	3,05	20	65	3	3
WKSZ303013	1°30'	3	4,31	25	65	4	3
WKSZ304013	1°30'	4	5,57	30	65	5	3
WKSZ305013	1°30'	5	6,83	35	75	6	3
WKSZ306013	1°30'	6	7,83	35	100	8	3
WKSZ408013	1°30'	8	10	43	100	10	4
WKSZ410013	1°30'	10	12	45	100	12	4
WKSZ412013	1°30'	12	14	38	100	14	4

ÜRÜN KODU	a	D1	D3	L2	L1	D2	Z
WKSZ302005	5°	2	5,5	20	65	6	3
WKSZ303005	5°	3	8	25	65	8	3
WKSZ304005	5°	4	10	30	65	10	3
WKSZ305005	5°	5	12	30	75	12	3
WKSZ306005	5°	6	14	40	100	14	3
WKSZ408005	5°	8	16	45	100	16	4
WKSZ410005	5°	10	18	45	100	18	4
WKSZ412005	5°	12	20	45	100	20	4



A T A C U T

T FREZE

SLOTTING END MILL



ÜRÜN KODU	D1	L2	D2	L1	Z
WTSZ64.501	4,5	1	6	50	6
WTSZ67.51.5	7,5	1,5	6	50	6
WTSZ67.502	7,5	2	6	50	6
WTSZ610.502	10,5	2	6	50	6
WTSZ610.52.5	10,5	2,5	6	50	6
WTSZ610.503	10,5	3	6	50	6
WTSZ613.503	13,5	3	10	56	8
WTSZ613.504	13,5	4	10	56	8
WTSZ616.503	16,5	3	10	56	8
WTSZ616.504	16,5	4	10	56	8
WTSZ616.505	16,5	5	10	56	8
WTSZ1019.503	19,5	3	10	63	10
WTSZ1019.504	19,5	4	10	63	10
WTSZ1019.505	19,5	5	10	63	10
WTSZ1022.504	22,5	4	10	63	10
WTSZ1022.505	22,5	5	10	63	10
WTSZ1022.506	22,5	6	10	63	10
WTSZ1025.505	25,5	5	10	63	10
WTSZ1025.506	25,5	6	10	63	10
WTSZ1025.507	25,5	7	10	63	10
WTSZ1025.508	25,5	8	10	63	10
WTSZ1028.505	28,5	5	10	63	10
WTSZ1028.506	28,5	6	10	63	10
WTSZ1028.507	28,5	7	10	63	10
WTSZ1028.508	28,5	8	10	63	10
WTSZ1232.505	32,5	5	12	71	12
WTSZ1232.506	32,5	6	12	71	12
WTSZ1232.508	32,5	8	12	71	12
WTSZ1245.510	45,5	10	12	71	12





A T A C U T

KARBÜR KIRLANGIÇ FREZE

DOVETAILL CUTTERS



ÜRÜN KODU	a	D1	L2	D3	L1	L3	D2	Z
WTKSZ40545	45°	5	1,2	2,5	60	4	6	4
WTKSZ40645	45°	6	1,4	3	60	4	6	4
WTKSZ40845	45°	8	1,9	4	60	5	8	4
WTKSZ41045	45°	10	2,4	5	75	6	10	4
WTKSZ41245	45°	12	2,9	6	75	7	12	4

ÜRÜN KODU	a	D1	L2	D3	L1	L3	D2	Z
WTKSZ40560	60°	5	2,2	2,5	60	4	6	4
WTKSZ40660	60°	6	2,7	3	60	4	6	4
WTKSZ40860	60°	8	3,7	4	60	5	8	4
WTKSZ41060	60°	10	4,6	5	75	6	10	4
WTKSZ41260	60°	12	5,6	6	75	7	12	4



PAH FREZE

CHAMFER END MILL



ÜRÜN KODU	BETA	D1	L2	L1	D2	Z
WPSZ40645	45°	6	2,5	57	6	4
WPSZ40845	45°	8	3	63	8	4
WPSZ41045	45°	10	4,25	72	10	4
WPSZ41245	45°	12	4,5	83	12	4
WPSZ61445	45°	14	5	100	14	6
WPSZ61645	45°	16	6	100	16	6

ÜRÜN KODU	BETA	D1	L2	L1	D2	Z
WPSZ40660	60°	6	4	57	6	4
WPSZ40860	60°	8	4,5	63	8	4
WPSZ41060	60°	10	6	72	10	4
WPSZ41260	60°	12	7,5	75	12	4
WPSZ61460	60°	14	10	83	14	6
WPSZ61660	60°	16	10	92	16	6

İÇ BÜKEY FREZE

ROUNDING END MILL



ÜRÜN KODU	R	D1	L1	D2	Z
WICRSZ4R0508	R0,5	7	63	8	4
WICRSZ4R108	R1	6	63	8	4
WICRSZ4R1.510	R1,5	7	72	10	4
WICRSZ4R210	R2	6	72	10	4
WICRSZ4R2.512	R2,5	7	75	12	4
WICRSZ4R312	R3	6	75	12	4
WICRSZ4R3.516	R3,5	9	92	16	4
WICRSZ4R416	R4	8	92	16	4
WICRSZ4R4.516	R4,5	7	92	16	4
WICRSZ4R520	R5	10	100	20	4
WICRSZ4R620	R6	8	100	20	4

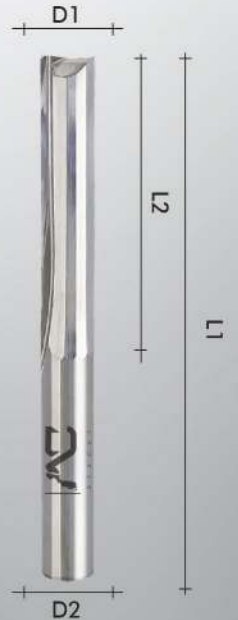


DÜZ KANALLI FREZE

CARBIDE STRAIGHT FLUTE END MILL



ÜRÜN KODU	D1	L2	L1	D2
WDSZ20612	3	12	50	3
WDSZ20613	3	13	50	6
WDSZ20814	4	14	50	4
WDSZ20815	4	15	50	6
WDSZ21016	5	16	50	5
WDSZ21220	6	20	50	6
WDSZ21622	8	22	63	8
WDSZ22032	10	32	72	10
WDSZ22435	12	35	75	12
WDSZ22835	14	35	83	14
WDSZ23235	16	35	92	16
WDSZ24045	20	45	100	20





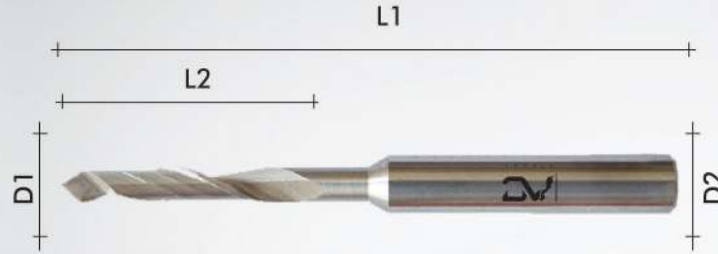
A T A C U T

KARBÜR PVC FREZESİ TEK AĞIZLI

1 FLUTE CARBIDE PVC END MILL



ÜRÜN KODU	D1	L2	D2	L1	D3	L3
WPVCZ2102580	5	25	8	80	4,9	40
WPVCZ2103095	5	30	8	95	4,9	55
WPVCZ2104095	5	40	8	95	4,9	50
WPVCZ2104080	5	40	8	80	-	-
WPVCZ2124080	6	40	8	80	-	-
WPVCZ21645110	8	45	8	110	-	-

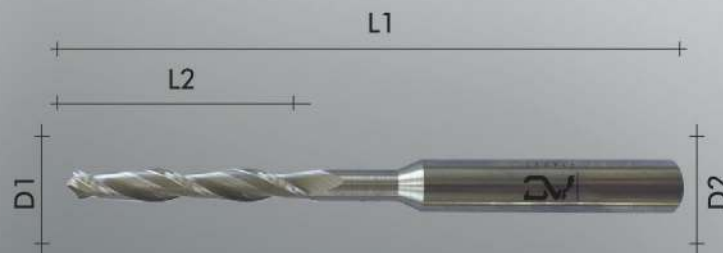


KARBÜR PVC FREZESİ İKİ AĞIZLI

2 FLUTE CARBIDE PVC END MILL



ÜRÜN KODU	D1	L2	D2	L1	D3	L3
WPVCZ2102580	5	25	8	80	4,9	40
WPVCZ2103095	5	30	8	95	4,9	55
WPVCZ2104095	5	40	8	95	4,9	50
WPVCZ2104080	5	40	8	80	-	-
WPVCZ2124080	6	40	8	80	-	-
WPVCZ21645110	8	45	8	110	-	-



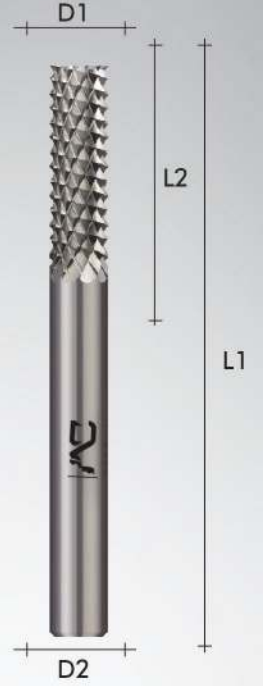


ÜRÜN KODU	α	D1	L2	D2	L1	Z
WKSZ30460HSSE	4°50'	2	60	12	100	3
WKSZ30480HSSE	4°	2	80	12	120	3
WKSZ304100HSSE	2°70'	2	100	12	140	3
WKSZ30660HSSE	4°	3	60	12	100	3
WKSZ30680HSSE	3°	3	80	14	120	3
WKSZ406100HSSE	3°	3	100	14	140	3





ÜRÜN KODU	D1	L2	L1	D2
WMERZ21230	6	30	75	6
WMERZ21640	8	40	100	8
WMERZ22045	10	45	100	10
WMERZ22445	12	45	100	12
WMERZ22845	14	45	100	14
WMERZ23260	16	60	110	16
WMERZ23660	18	60	110	18
WMERZ24060	20	60	110	20



KARBÜR RAYBA STANDART BOY

STANDARD CARBIDE REAMER



ÜRÜN KODU	D1(h7)	L2	L1	D2(h7)	Z
WRYZ40610	3	10	50	3	4
WRYZ40814	4	14	50	4	4
WRYZ41016	5	16	50	5	4
WRYZ61216	6	16	50	6	6
WRYZ61420	7	20	63	7	6
WRYZ61620	8	20	63	8	6
WRYZ61825	9	25	75	9	6
WRYZ62025	10	25	75	10	6
WRYZ62225	11	25	83	11	6
WRYZ62425	12	25	83	12	6
WRYZ62625	13	25	83	13	6
WRYZ62825	14	25	83	14	6
WRYZ83030	15	30	92	15	8
WRYZ83230	16	30	92	16	8
WRYZ83430	17	30	92	17	8
WRYZ83630	18	30	92	18	8
WRYZ83830	19	30	100	19	8
WRYZ84030	20	30	100	20	8

KARBÜR RAYBA UZUN BOY

LONG CARBIDE REAMER



ÜRÜN KODU	D1(h7)	L2	L1	D2(h7)	Z
WRYZ40610	3	15	61	3	4
WRYZ40814	4	20	75	4	4
WRYZ41016	5	25	86	5	4
WRYZ61216	6	26	93	6	6
WRYZ61420	7	31	109	7	6
WRYZ61620	8	33	117	8	6
WRYZ61825	9	36	125	9	6
WRYZ62025	10	38	133	10	6
WRYZ62225	11	41	142	11	6
WRYZ62425	12	44	151	12	6
WRYZ62625	13	44	151	13	6
WRYZ62825	14	47	160	14	6
WRYZ83030	15	50	162	15	8
WRYZ83230	16	52	170	16	8
WRYZ83430	17	56	182	17	8
WRYZ83630	18	56	182	18	8
WRYZ83830	19	60	195	19	8
WRYZ84030	20	60	195	20	8



A T A C U T

NC MATKAP 90° CARBIDE NC DRILL 90°



ÜRÜN KODU	D1	L2	L1	D2
WNCMZ20690	3	10	50	3
WNCMZ20890	4	14	50	4
WNCMZ21290	6	16	50	6
WNCMZ21690	8	20	63	8
WNCMZ22090	10	25	72	10
WNCMZ22490	12	25	75	12
WNCMZ22890	14	30	83	14
WNCMZ23290	16	30	100	16
WNCMZ23690	18	30	100	18
WNCMZ24090	20	30	100	20



A T A C U T

NC MATKAP 120° CARBIDE NC DRILL 120°

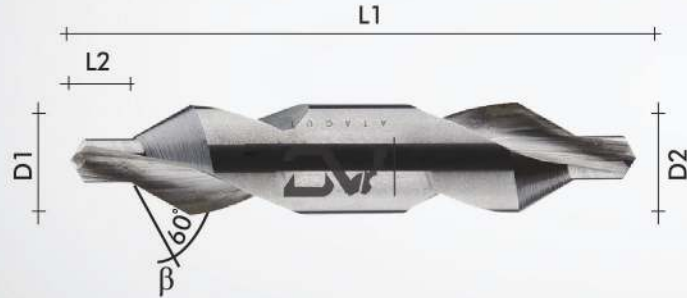


ÜRÜN KODU	D1	L2	L1	D2
WNCMZ206120	3	10	50	3
WNCMZ208120	4	14	50	4
WNCMZ212120	6	16	50	6
WNCMZ216120	8	20	63	8
WNCMZ220120	10	25	72	10
WNCMZ224120	12	25	75	12
WNCMZ228120	14	30	83	14
WNCMZ232120	16	30	100	16
WNCMZ236120	18	30	100	18
WNCMZ240120	20	30	100	20





ÜRÜN KODU	D1	L2	L1	D2
WNCMZ20690	3	10	50	3
WNCMZ20890	4	14	50	4
WNCMZ21290	6	16	50	6
WNCMZ21690	8	20	63	8
WNCMZ22090	10	25	72	10
WNCMZ22490	12	25	75	12
WNCMZ22890	14	30	83	14
WNCMZ23290	16	30	100	16
WNCMZ23690	18	30	100	18
WNCMZ24090	20	30	100	20





A T A C U T

3D KARBÜR MATKAP

CARBIDE DRILL 3D



ÜRÜN KODU	ÜRÜN KODU	D1	L2	L1	D2
İÇTEN SOĞUTMALI	SOĞUTMASIZ				
WSMZ204203D	WMZ204203D	2	20	62	6
WSMZ22.5203D	WMZ22.5203D	2,5	20	62	6
WSMZ206203D	WMZ206203D	3	20	62	6
WSMZ23.3203D	WMZ23.3203D	3,3	20	62	6
WSMZ23.5203D	WMZ23.5203D	3,5	20	62	6
WSMZ223.8243D	WMZ223.8243D	3,8	24	66	6
WSMZ208243D	WMZ208243D	4	24	66	6
WSMZ24.2243D	WMZ24.2243D	4,2	24	66	6
WSMZ24.8283D	WMZ24.8283D	4,8	28	66	6
WSMZ210283D	WMZ210283D	5	28	66	6
WSMZ25.2283D	WMZ25.2283D	5,2	28	66	6
WSMZ25.8283D	WMZ25.8283D	5,8	28	66	6
WSMZ212283D	WMZ212283D	6	28	66	6
WSMZ26.5343D	WMZ26.5343D	6,5	34	80	8
WSMZ26.8343D	WMZ26.8343D	6,8	34	80	8
WSMZ214343D	WMZ214343D	7	34	80	8
WSMZ27.8413D	WMZ27.8413D	7,8	41	80	8
WSMZ216413D	WMZ216413D	8	41	80	8
WSMZ28.5413D	WMZ28.5413D	8,5	41	90	10
WSMZ218473D	WMZ218473D	9	47	90	10
WSMZ29.8473D	WMZ29.8473D	9,8	47	90	10
WSMZ220473D	WMZ220473D	10	47	90	10
WSMZ210.2473D	WMZ210.2473D	10,2	47	102	10
WSMZ210.5553D	WMZ210.5553D	10,5	55	102	10
WSMZ222553D	WMZ222553D	11	55	102	12
WSMZ211.5553D	WMZ211.5553D	11,5	55	102	12
WSMZ211.8553D	WMZ211.8553D	11,8	55	102	12
WSMZ224553D	WMZ224553D	12	55	102	12
WSMZ212.5603D	WMZ212.5603D	12,5	60	107	14
WSMZ226603D	WMZ226603D	13	60	107	14
WSMZ228603D	WMZ228603D	14	60	107	14
WSMZ214.5653D	WMZ214.5653D	14,5	65	107	16
WSMZ232653D	WMZ232653D	16	65	107	16
WSMZ216.5733D	WMZ216.5733D	16,5	73	123	16
WSMZ234733D	WMZ234733D	17	73	123	18
WSMZ217.5733D	WMZ217.5733D	17,5	73	123	18
WSMZ236793D	WMZ236793D	18	79	123	18
WSMZ218.5793D	WMZ218.5793D	18,5	79	131	20
WSMZ238793D	WMZ238793D	19	79	131	20
WSMZ219.5793D	WMZ219.5793D	19,5	79	131	20
WSMZ240793D	WMZ240793D	20	79	131	20





A T A C U T

5D KARBÜR MATKAP

CARBIDE DRILL 5D



ÜRÜN KODU	ÜRÜN KODU	D1	L1	L2	D2
İÇTEN SOĞUTMALI	SOĞUTMASIZ				
WSMZ206285D	WMZ206285D	3	28	66	6
WSMZ23.3285D	WMZ23.3285D	3,3	28	66	6
WSMZ23.5285D	WMZ23.5285D	3,5	28	66	6
WSMZ223.8365D	WMZ223.8365D	3,8	36	74	6
WSMZ208365D	WMZ208365D	4	36	74	6
WSMZ24.2365D	WMZ24.2365D	4,2	36	74	6
WSMZ24.82445D	WMZ24.82445D	4,8	44	82	6
WSMZ210445D	WMZ210445D	5	44	82	6
WSMZ25.2445D	WMZ25.2445D	5,2	44	82	6
WSMZ25.8445D	WMZ25.8445D	5,8	44	82	6
WSMZ212445D	WMZ212445D	6	44	82	6
WSMZ26.5535D	WMZ26.5535D	6,5	53	91	8
WSMZ26.8535D	WMZ26.8535D	6,8	53	91	8
WSMZ214535D	WMZ214535D	7	53	91	8
WSMZ27.8535D	WMZ27.8535D	7,8	53	91	8
WSMZ216535D	WMZ216535D	8	53	91	8
WSMZ28.5535D	WMZ28.5535D	8,5	61	103	10
WSMZ218615D	WMZ218615D	9	61	103	10
WSMZ29.8615D	WMZ29.8615D	9,8	61	103	10
WSMZ220615D	WMZ220615D	10	61	103	10
WSMZ210.2715D	WMZ210.2715D	10,2	71	118	10
WSMZ210.5715D	WMZ210.5715D	10,5	71	118	10
WSMZ222715D	WMZ222715D	11	71	118	12
WSMZ211.5715D	WMZ211.5715D	11,5	71	118	12
WSMZ211.8715D	WMZ211.8715D	11,8	71	118	12
WSMZ224715D	WMZ224715D	12	71	124	12
WSMZ212.5775D	WMZ212.5775D	12,5	77	124	14
WSMZ226775D	WMZ226775D	13	77	124	14
WSMZ228775D	WMZ228775D	14	77	133	14
WSMZ214.5835D	WMZ214.5835D	14,5	83	133	16
WSMZ232835D	WMZ232835D	16	83	143	16
WSMZ216.5935D	WMZ216.5935D	16,5	93	143	16
WSMZ234935D	WMZ234935D	17	93	143	18
WSMZ217.5935D	WMZ217.5935D	17,5	93	143	18
WSMZ236935D	WMZ236935D	18	93	143	18
WSMZ218.51015D	WMZ218.51015D	18,5	101	153	20
WSMZ2381015D	WMZ2381015D	19	101	153	20
WSMZ219.51015D	WMZ219.51015D	19,5	101	153	20
WSMZ2401015D	WMZ2401015D	20	101	153	20

Malzeme Grupları			Kesme Hızları	f _r mm/rev.				
				Matkap Çapı (mm)				
			Vc m/min.	3 - 5 mm	5 - 8 mm	8 - 12 mm	12 - 16 mm	16 - 20 mm
Çelik ve Dökme Çelik	Düşük Alaşımli Çelikler 600 N/mm ²	St37-St42-C22-GS38	65 - 145	0.09 - 0.13	0.16 - 0.23	0.2 - 0.30	0.26 - 0.37	0.28 - 0.40
	Çelikler 600 N/mm ²	St50-St60-C35-GS52	60 - 1450	0.09 - 0.13	0.16 - 0.23	0.2 - 0.30	0.26 - 0.35	0.28 - 0.40
	Çelikler 700-1000 N/mm ²	St70-C45-GS62	50 - 120	0.06 - 0.14	0.11 - 0.25	0.14 - 0.31	0.17 - 0.39	0.19 - 0.44
	Çelikler 1000-1300 N/mm ²	90MnCrV8 - 100Cr6	40 - 70	0.05 - 0.09	0.09 - 0.16	0.12 - 0.20	0.15 - 0.25	0.16 - 0.27
	Çelikler 1300-1600 N/mm ²	X210Cr12 - 34CrAlNi7	30 - 40	0.03 - 0.05	0.06 - 0.08	0.07 - 0.11	0.09 - 0.13	0.1 - 0.15
	Sartleştirilmiş Çelikler	45 - 55HRC	15 - 30	0.25 - 0.36	0.032 - 0.06	0.05 - 0.072	0.067 - 0.096	0.075 - 0.11
	Isıl İşlemli Çelikler	55 - 65HRC	10 - 15	0.008 - 0.012	0.009 - 0.015	0.017 - 0.024	0.025 - 0.036	0.025 - 0.036
	Paslanmaz Çelikler		35 - 85	0.69 - 0.12	0.85 - 0.14	0.15 - 0.26	0.19 - 0.32	0.22 - 0.38
	Paslanmaz Çelikler		40 - 80	0.04 - 0.07	0.07 - 0.13	0.10 - 0.17	0.13 - 0.22	0.15 - 0.25
	Paslanmaz Çelikler		25 - 45	0.04 - 0.07	0.07 - 0.12	0.08 - 0.14	0.11 - 0.18	0.12 - 0.21
Nikel Alaşımli Çelikler	900 N/mm ²		15 - 30	0.03 - 0.05	0.05 - 0.08	0.07 - 0.11	0.09 - 0.13	-
	900-1200 N/mm ²		10 - 20	0.02 - 0.04	0.05 - 0.07	0.06 - 0.09	0.07 - 0.11	-
	1200 N/mm ²		5 - 15	0.02 - 0.03	0.04 - 0.05	0.6 - 0.08	0.07 - 0.09	-
Dökümler	200 HB	GG20,GGG40,GTS45	75 - 90	0.15 - 0.25	0.20 - 0.35	0.25 - 0.45	0.30 - 0.50	0.35 - 0.55
	250 HB	GG30,GGG60,GTW40	65 - 80					
	250 HB	GG40,GGG70,GTS70	55 - 70	0.12 - 0.20	0.15 - 0.25	0.20 - 0.35	0.25 - 0.40	0.30 - 0.45
Dökümler	350-450 HB		35 - 60	0.06 - 0.10	0.08 - 0.12	0.10 - 0.14	0.12 - 0.16	0.14 - 0.18
Alüminyum	Alüminyum <10% Si		80 - 300	0.07 - 0.15	0.10 - 0.25	0.15 - 0.35	0.25 - 0.45	0.30 - 0.50
	Alüminyum >10% Si		70 - 200	0.07 - 0.15	0.10 - 0.25	0.15 - 0.35	0.25 - 0.45	0.30 - 0.50
Titanyum		NiCr20Co14MoTi	10 - 30	0.02 - 0.5	0.02 - 0.07	0.04 - 0.10	0.06 - 0.12	0.08 - 0.15
		NiCr20Co18MoNb						
		NiCr20Co18Ti						
		NiCr20Co11TiAl						



A T A C U T

DÜZ PARMAK FREZELER İÇİN KESME VERİLERİ

MALZEME	Karbonlu Çelikler ve Alaşımli Çelikler (<30 HRC) Ck55, 070m55, GG25				Alaşımli Çelikler (30-45 HRC) W.Nr.1.2344 (H13)				Paslanmaz Çelikler X5CrNiMo17-12-2 Titanyum				Sert Çelikler (45-55 HRC) W.Nr. 1.2344 (H13)				Isıl İşlemli Çelikler					
	Yanal İşleme		Slot		Yanal İşleme		Slot		Yanal İşleme		Slot		Yanal İşleme		Slot		Yanal İşleme		Slot			
Çap (mm)	RPM (rev/min)	Feed (mm/min)	RPM (rev/min)	Feed (mm/min)	RPM (rev/min)	Feed (mm/min)	RPM (rev/min)	Feed (mm/min)	RPM (rev/min)	Feed (mm/min)	RPM (rev/min)	Feed (mm/min)	RPM (rev/min)	Feed (mm/min)	RPM (rev/min)	Feed (mm/min)	RPM (rev/min)	Feed (mm/min)	RPM (rev/min)	Feed (mm/min)	RPM (rev/min)	Feed (mm/min)
2	21000	1100	17000	680	21000	1100	11000	400	14000	560	9600	310	9600	310	4800	130	4800	130	3200	80		
3	15000	1250	12000	720	15000	1250	6900	410	10600	850	7400	380	7400	380	3200	140	4200	200	2700	110		
4	11000	1400	9200	810	11000	1400	5600	490	8000	960	5600	400	5600	400	2400	150	3200	220	2000	120		
5	9600	1920	7600	1060	9600	1920	4500	630	6400	1020	4500	410	4500	430	1900	170	2500	250	1600	130		
6	8000	2240	6400	1280	8000	2240	3700	740	5300	1060	3700	440	3700	440	1600	190	2100	250	1300	160		
7	6800	1900	5500	1210	6800	1900	3200	700	4500	1010	3200	410	3200	450	1400	190	1800	260	1100	140		
8	6000	1680	4800	1150	6000	1680	2800	670	4000	960	2800	390	2800	450	1200	190	1600	260	1000	130		
9	5300	1480	4200	1010	5300	1480	2500	600	3500	840	2500	350	2500	450	1100	180	1400	220	900	130		
10	4800	1440	3800	910	4800	1440	2200	530	3200	770	2200	350	2200	440	1000	160	1300	210	800	130		
11	4400	1350	3500	900	4400	1350	2000	530	2900	760	2000	320	2000	400	900	160	1200	190	720	120		
12	4000	1250	3200	900	4000	1250	1900	530	2700	760	1900	300	1900	380	800	160	1100	180	660	110		
13	3700	1180	2900	810	3700	1180	1700	480	2500	700	1700	290	1700	360	730	150	1000	160	610	100		
14	3400	1160	2700	760	3400	1160	1600	450	2300	640	1600	290	1600	350	680	140	900	140	570	90		
16	3000	1140	2400	670	3000	1140		390	2000	560	1400	280	1400	340	600	120	800	130	500	80		
18	2700	970	2100	670	2700	970	1200	380	1800	550	1200	270	1200	340	530	120	700	110	440	70		
20	2400	860	1900	610	2400	860	1100	350	1600	510	1100	260	1100		480	120	600	100	400	60		
Kesme Derinliği	ae≤0.2D ap≤0.5D		ae≤1D (Max: 12 mm.)		ae≤0.2D ap≤0.5D		ae≤1D (Max: 12 mm.)		ae≤0.1D ap≤1.5D		ap≤0.5D		ae≤0.5D ap≤1.5D		ap≤0.2D		ae≤0.5D ap≤1.5D		ap≤0.2D			

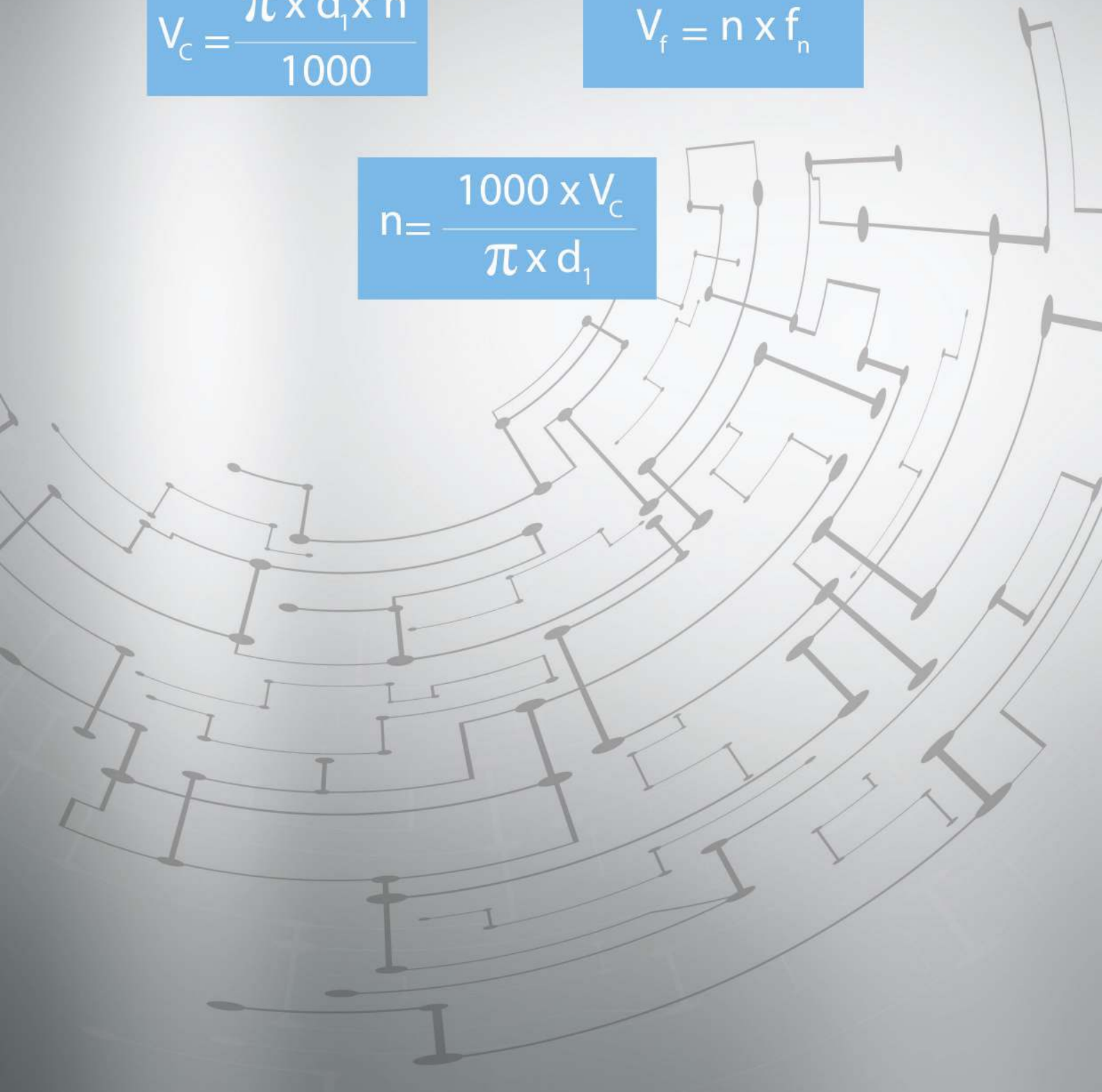
Kesme Hızı

Matkaplar için İlerleme

$$V_c = \frac{\pi \times d_1 \times n}{1000}$$

$$V_f = n \times f_n$$

$$n = \frac{1000 \times V_c}{\pi \times d_1}$$





A T A C U T

