

KSM

Komple Sert Metal
Ürün Katalođu



MAKINA TAKIM ENDÜSTRİSİ A.Ş.

Makina Takım Endüstrisi A.Ş.
Balçık Mahallesi 3257 Sokak
No:15/A 41480 Gebze / KOCAELİ / TÜRKİYE
Tel:+90 262 744 18 80 (Pbx)
Faks:+90 262 744 14 44

www.makinatakim.com.tr

MTE-KSM601201



Sayfa

Ana Ürün Grubu

5	Komple Sert Metal Parmak Freze	2 Ağızlı				TIALN
5	Komple Sert Metal Parmak Freze	2 Ağızlı	Uzun			TIALN
6	Komple Sert Metal Parmak Freze	2 Ağızlı	Çok Uzun			TIALN
7	Komple Sert Metal Parmak Freze	2/4 Ağızlı			ALU	ZrN
7	Komple Sert Metal Parmak Freze	3 Ağızlı			ALU	
8	Komple Sert Metal Kaba Talaş Parmak Freze	3 Ağızlı			ALU	
8	Komple Sert Metal Parmak Freze	2 Ağızlı			ALU	
9	Komple Sert Metal Parmak Freze	6 Ağızlı			ALU	ZrN
9	Komple Sert Metal Parmak Freze	3 Ağızlı	Köşe Pahlı		ALU	ZrN
10	Komple Sert Metal Parmak Freze	3 Ağızlı	Köşe Radyüslü		ALU	ZrN
10	Komple Sert Metal Kaba Talaş Parmak Freze	3 Ağızlı	İçten Soğutmalı		ALU	ZrN
11	Komple Sert Metal Parmak Freze	3 Ağızlı				TIALN
11	Komple Sert Metal Parmak Freze	3 Ağızlı				naco
12	Komple Sert Metal Parmak Freze	3 Ağızlı				TIALN
12	Komple Sert Metal Parmak Freze	3 Ağızlı				TIALN
13	Komple Sert Metal Parmak Freze	3 Ağızlı	Köşe Pahlı			TIALN
13	Komple Sert Metal Parmak Freze	4 Ağızlı				TIALN
14	Komple Sert Metal Parmak Freze	4 Ağızlı	Uzun			TIALN
14	Komple Sert Metal Parmak Freze	4 Ağızlı				TIALN
15	Komple Sert Metal Parmak Freze	4 Ağızlı	Köşe Pahlı			TIALN
15	Komple Sert Metal Parmak Freze	3 Ağızlı	Köşe Pahlı			ALTIN
16	Komple Sert Metal Parmak Freze	4 Ağızlı	Köşe Pahlı		INOX	ALTIN
16	Komple Sert Metal Parmak Freze	4 Ağızlı	Köşe Pahlı		HRC 65	ALTIN
17	Komple Sert Metal Parmak Freze	3/4 Ağızlı	Köşe Radyüslü		HRC 65	ALTIN
18	Komple Sert Metal Parmak Freze	4 Ağızlı	Köşe Pahlı	35°/38°		TIALN
19	Komple Sert Metal Parmak Freze	4 Ağızlı	Köşe Pahlı	35°/38°	INOX	ALTIN
19	Komple Sert Metal Küresel Başlı Parmak Freze	4 Ağızlı		35°/38°		TIALN
20	Komple Sert Metal Parmak Freze	4 Ağızlı	Köşe Radyüslü	35°/38°		TIALN
21	Komple Sert Metal Parmak Freze	6/8 Ağızlı				TIALN
21	Komple Sert Metal Parmak Freze	6/8 Ağızlı	Uzun			TIALN
22	Komple Sert Metal Kaba Talaş Parmak Freze	4 Ağızlı				TIALN
22	Komple Sert Metal Kaba Talaş Parmak Freze	3/6 Ağızlı				ALTIN
23	Komple Sert Metal Kaba Talaş Parmak Freze	4/6 Ağızlı				ALTIN
24	Komple Sert Metal Küresel Başlı Parmak Freze	2 Ağızlı				TIALN
24	Komple Sert Metal Küresel Başlı Parmak Freze	2 Ağızlı	Kısa			TIALN
25	Komple Sert Metal Küresel Başlı Parmak Freze	2 Ağızlı	Uzun			TIALN
25	Komple Sert Metal Küresel Başlı Parmak Freze	4 Ağızlı	Uzun			TIALN
26	Komple Sert Metal Küresel Başlı Parmak Freze	2 Ağızlı	Uzun		HRC 65	TIALN
26	Komple Sert Metal Küresel Başlı Parmak Freze	2 Ağızlı	Kısa		HRC 65	naco
27	Komple Sert Metal DIN 6539 Matkap Ucu					TIALN
28	Komple Sert Metal DIN 338 Matkap Ucu					TIALN
29	Komple Sert Metal Matkap Ucu	3XD				TIALN
31	Komple Sert Metal Matkap Ucu	3XD	İçten Soğutmalı			TIALN
33	Komple Sert Metal Matkap Ucu	5XD				TIALN
35	Komple Sert Metal Matkap Ucu	5XD	İçten Soğutmalı			TIALN
37	Komple Sert Metal Matkap Ucu	5XD	İçten Soğutmalı	4 Fazlı		TIALN
39	Komple Sert Metal Matkap Ucu	8XD	İçten Soğutmalı	4 Fazlı		TIALN
41	Komple Sert Metal Matkap Ucu	12XD	İçten Soğutmalı	4 Fazlı		TIALN
42	Komple Sert Metal Matkap Ucu	15XD	İçten Soğutmalı	4 Fazlı		TIALN
43-47	TABLÖLÖR					



MAKİNA TAKİM ENDÜSTRİSİ A.Ş.

KSM Frezelerin Uygulama Alanları		Kaplama	Z - Ağız Sayısı	Sayfa Numarası	Seri	YH	YP	HRC 45	HRC 60	HRC 65	Çelik	INOX	YP	ALU	Plastik	Inconel Titan	
	TIALN	2	5	K010102				■			■	□	■	□	□		
	TIALN	2	5	K010112				■			■	□	■	□	□		
	TIALN	2	6	K010122				■			■	□	■	□	□		
	ZrN	2/4	7	K010406	■									■	■		
		3	7	K010404	■									■	■		
		3	8	K010405	■									■	■		
		2	8	K010402										■	■		
	ZrN	6	9	K010246	■	■								■	□		
	ZrN	3	9	K010244	■	■	□				□			■	□		
	ZrN	3	10	K010245	■	■	□				□			■	□		
	ZrN	3	10	K010252	■	■								■	□		■
	TIALN	3	11	K010331			■				■	□	■	■		□	
	naco	3	11	K010350			■				■	□	■	■	□	■	
	TIALN	3	12	K010351			■				■	□	■	■	□		
	TIALN	3	12	K010213			■				■	□	■	■	□		
	TIALN	3	13	K010223			■				■	□	■	■	□		
	TIALN	4	13	K010341			■				■	□	■	■			
	TIALN	4	14	K010124			■				■	□	■	■	□		
	TIALN	4	14	K010214			■				■	□	■	■	□		
	TIALN	4	15	K010224			■				■	□	■	■	□		
	ALTIN	3	15	K010243	■		■				■	■	■	■	□	■	
	ALTIN	4	16	K010346	■	■	■				■	■	■	■	■		
	ALTIN	4	16	K010310	■	■	■	■			■	■	■	■		■	
	ALTIN	4	17	K010315	■	■	■	■			■	■	■	■		□	

■ Uygun

□ Yarı uygun

Devamı 3'üncü sayfadadır.



MAKİNA TAKİM ENDÜSTRİSİ A.Ş.























KSM Frezelerin Uygulama Alanları

Kaplama	Z - Ağzı Sayısı	Sayfa Numarası	Seri	YH	YP	HRC 45	HRC 60	HRC 65	Çelik	INOX	YP	ALU	Plastik	Inconel Titan	
ALTIN	4	18	K010732	■	■	■			■	□	■	■		□	
ALTIN	4	19	K010738	■	■	■			■	■	■	■	□	□	
TIALN	4	19	K010739	■	■	■			■		■	■		□	
TIALN	4	20	K010734	■	■	■			■		■	■		□	
TIALN	6/8	21	K010208			■			■	□	■	■		□	
TIALN	6/8	21	K010222			■			■	□	■	■			
TIALN	4	22	K010304			■				■	■				
ALTIN	3/4	22	K010344	■	■	■			■	■	■			■	
ALTIN	4/6	23	K010345	■	■	■			■	■	■			■	
TIALN	2	24	K010512			■			■	■	■	■	□		
TIALN	2	24	K010511			■			■	■	■	■	□		
TIALN	2	25	K010522			■			■	■	■	■	□		
TIALN	2	25	K010524	■		■	■		■						
TIALN	4	26	K010663			■			■	□	■	■			
naco	2	26	K010520	■		■	■		■	□	■	□		□	

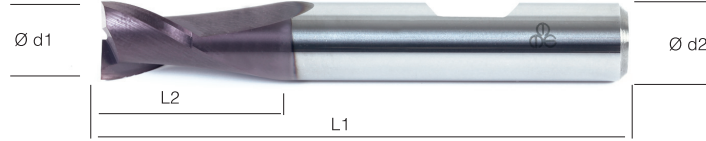
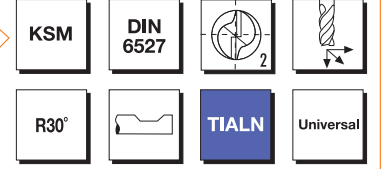
KSM Matkap Uçlarının Uygulama Alanları

Kaplama	Z - Ağzı Sayısı	Sayfa Numarası	Seri	YH	YP	HRC 45	HRC 60	HRC 65	Çelik	INOX	YP	ALU	Plastik	Inconel Titan	
TIALN	2	27	K010303			■			■	□	■	□		□	
	2	28	K010338												
TIALN	2	29	K010503			■			■	□	■	□		□	
TIALN	2	31	K010703			■			■	□	■	□		□	■
TIALN	2	33	K010505			■			■	□	■	□		□	
TIALN	2	35	K010705			■			■	□	■	□		□	■
TIALN	2	37	K010805			■			■	□	■	□		□	
TIALN	2	39	K010708			■			■	□	■	■		□	■
TIALN	2	41	K010710			■			■	□	■	■		□	■
TIALN	2	42	K010915			■			■	□	■	■		□	■

■ Uygun
□ Yan uygun

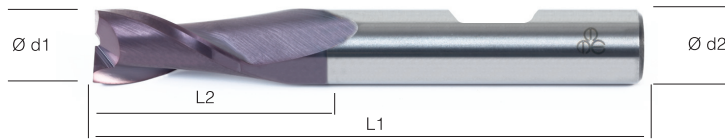
Malzeme	KSM Komple Sert Metal
Norm	DIN 6527 DIN 6539 MTE
Kanal Sayısı	     
Helis Açısı	R20° R25° R30° R35°/38° R45° R48° R52° R55°
Şaft Tipi	 HA  HB
Uç Açısı	 118°  140°
İlerleme Yönü	  
İçten Soğutma	  
Delme Derinliği	 3xD  5xD  8xD  12xD  15xD
Köşe Pahı	 Faz 4 Faz
Kesme Özelliği	YH Yüksek kesme hızı YP Yüksek kesme performansı
Kaplama	TIALN Kaba ve hassas işleme için ZrN Al. ve Titanyum alaşımları için ALTIN Yüksek kesme hızları ve zor işleme için naco Yüksek işleme performansı
Kullanıldığı Malzeme	ALU Kuru İşleme Plastik NE INOX Inconel Titan Çelik <1400N/mm Universal HRC 65

* **UÇB** : Uygun Çalışma Boyu

Komple Sert Metal Parmak Freze - 2 Ağızlı


Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	Z kanal sayısı	Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	Z kanal sayısı
K0101020200101	2	3	3	38	2	K0101021000101	10	10	11	66	2
K0101020300101	3	3	4	38	2	K0101021200101	12	12	12	73	2
K0101020400101	4	6	5	54	2	K0101021400101	14	14	14	75	2
K0101020500101	5	6	6	54	2	K0101021600101	16	16	16	82	2
K0101020600101	6	6	7	54	2	K0101021800101	18	18	18	84	2
K0101020800101	8	8	9	58	2	K0101022000101	20	20	20	92	2

* Kesme değerleri Tablo 1'de yer almaktadır.

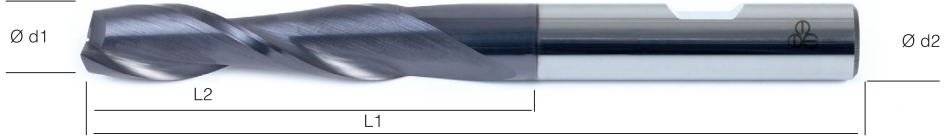
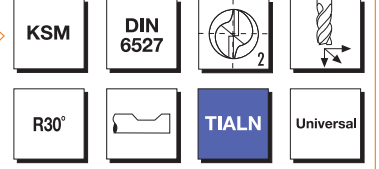
Komple Sert Metal Parmak Freze - 2 Ağızlı Uzun


Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	Z kanal sayısı	Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	Z kanal sayısı
K0101120100101	1.00	3	2	38	2	K0101120750101	7.50	8	16	63	2
K0101120150101	1.50	3	3	38	2	K0101120775101	7.75	8	16	63	2
K0101120200101	2.00	3	6	38	2	K0101120800101	8.00	8	16	63	2
K0101120250101	2.50	3	6	38	2	K0101120870101	8.70	10	16	72	2
K0101120280101	2.80	6	7	38	2	K0101120900101	9.00	10	16	72	2
K0101120300101	3.00	6	7	38	2	K0101120970101	9.70	10	19	72	2
K0101120350101	3.50	6	8	57	2	K0101121000101	10.00	10	19	72	2
K0101120400101	4.00	6	8	57	2	K0101121170101	11.70	12	22	83	2
K0101120450101	4.50	6	10	57	2	K0101121200101	12.00	12	22	83	2
K0101120480101	4.80	6	10	57	2	K0101121370101	13.70	14	22	83	2
K0101120500101	5.00	6	10	57	2	K0101121400101	14.00	14	22	83	2
K0101120550101	5.50	6	10	57	2	K0101121570101	15.70	16	26	92	2
K0101120575101	5.75	6	10	57	2	K0101121600101	16.00	16	26	92	2
K0101120600101	6.00	6	10	57	2	K0101121800101	18.00	18	26	92	2
K0101120675101	6.75	8	13	63	2	K0101122000101	20.00	20	32	104	2
K0101120700101	7.00	8	16	63	2						

* Kesme değerleri Tablo 1'de yer almaktadır.



**Komple Sert Metal Parmak Freze - 2 Ağızlı
Çok Uzun**



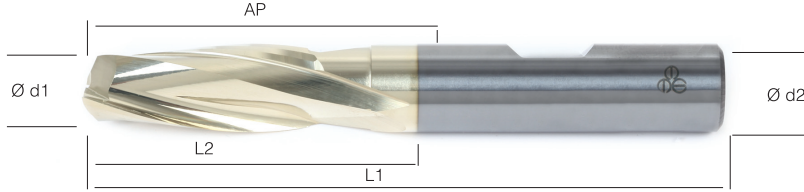
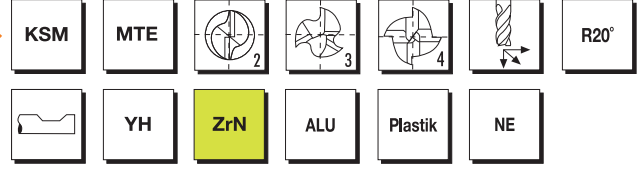
Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	Z kanal sayısı
K0101220300101	3	3	20	75	2
K0101220400101	4	4	25	75	2
K0101220500101	5	5	30	75	2
K0101220600101	6	6	30	75	2
K0101220800101	8	8	40	100	2
K0101221000101	10	10	40	100	2

Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	Z kanal sayısı
K0101221200101	12	12	45	150	2
K0101221400101	14	14	45	150	2
K0101221600101	16	16	65	150	2
K0101221800101	18	18	65	150	2
K0101222000101	20	20	65	150	2

* Kesme değerleri Tablo 1'de yer almaktadır.



Komple Sert Metal Parmak Freze Alu

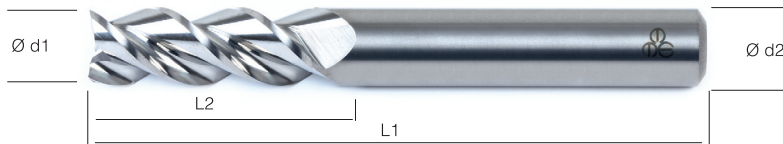
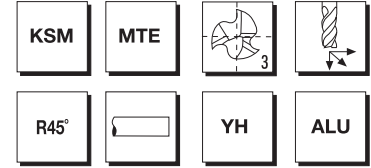


Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	AP mm	Z kanal sayısı
K0104060400108	4	4	13	54	16	2
K0104060500108	5	5	15	54	18	2
K0104060600108	6	6	16	64	21	2
K0104060800108	8	8	22	70	27	2
K0104061000108	10	10	25	72	32	2
K0104061200108	12	12	28	83	38	3

Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	AP mm	Z kanal sayısı
K0104061400108	14	14	30	83	42	3
K0104061600108	16	16	36	92	44	3
K0104061800108	18	18	36	92	50	3
K0104062000108	20	20	41	104	54	4
K0104062500108	25	25	43	110	63	4

* Kesme değerleri Tablo 1'de yer almaktadır.

Komple Sert Metal Parmak Freze 3 Ağızlı - Alu



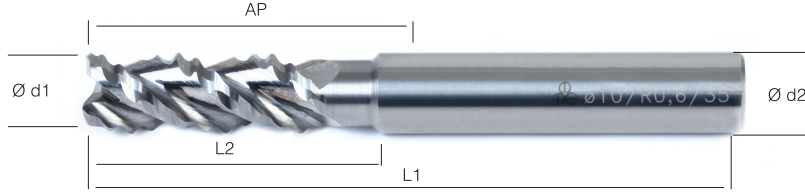
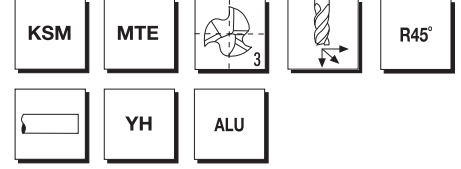
Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	Z kanal sayısı
K0104040600000	6	6	16	60	3
K0104040800000	8	8	25	78	3
K0104041000000	10	10	28	78	3
K0104041200000	12	12	32	89	3

Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	Z kanal sayısı
K0104041400000	14	14	32	89	3
K0104041600000	16	16	36	96	3
K0104042000000	20	20	45	111	3
K0104042500000	25	25	50	126	3

* Kesme değerleri Tablo 1'de yer almaktadır.



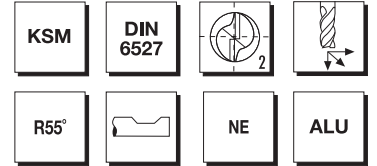
Komple Sert Metal Kaba Talaş Parmak Freze 3 Ağızlı - Alu



Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	AP mm	Z kanal sayısı	r köşe radyus
K0104050600000	6	6	16	60	25	3	0.4
K0104050800000	8	8	25	78	33	3	0.5
K0104051000000	10	10	28	78	35	3	0.6
K0104051200000	12	12	32	89	40	3	0.8
K0104051400000	14	14	32	89	40	3	1.0
K0104051600000	16	16	36	96	45	3	1.0
K0104052000000	20	20	45	111	60	3	1.2
K0104052500000	25	25	50	126	65	3	1.5

* Kesme değerleri Tablo 1'de yer almaktadır.

Komple Sert Metal Parmak Freze 2 Ağızlı - Alu



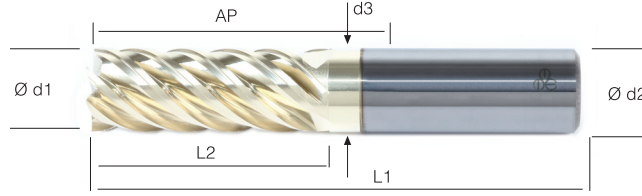
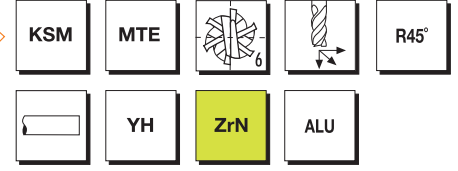
Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	Z kanal sayısı
K0104020300100	3	6	8	57	2
K0104020400100	4	6	11	57	2
K0104020500100	5	6	13	57	2
K0104020600100	6	6	13	57	2
K0104020800100	8	8	19	63	2
K0104021000100	10	10	22	72	2

Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	Z kanal sayısı
K0104021200100	12	12	26	83	2
K0104021400100	14	14	26	83	2
K0104021600100	16	16	32	92	2
K0104021800100	18	18	32	92	2
K0104022000100	20	20	38	104	2

* Kesme değerleri Tablo 1'de yer almaktadır.



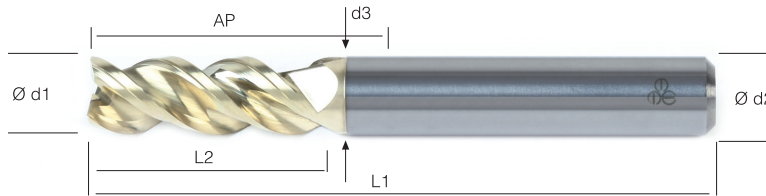
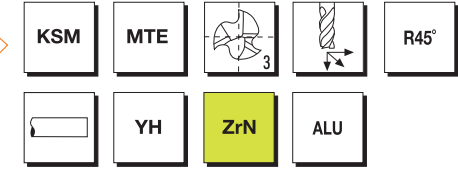
Komple Sert Metal Parmak Freze 6 Ağızlı - Alu



Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	AP mm	d3 mm	Z kanal sayısı
K0102460600108	6	6	15	57	20	5.7	6
K0102460601108	6	6	15	80	43	5.7	6
K0102460800108	8	8	20	63	26	7.4	6
K0102460801108	8	8	20	100	62	7.4	6
K0102461000108	10	10	25	73	32	9.2	6
K0102461001108	10	10	25	100	58	9.2	6
K0102461200108	12	12	30	83	37	11.0	6
K0102461201108	12	12	30	120	73	11.0	6
K0102461600108	16	16	40	93	45	15.0	6
K0102461601108	16	16	40	150	100	15.0	6
K0102462000108	20	20	50	104	53	19.0	6
K0102462001108	20	20	50	150	100	19.0	6
K0102462500108	25	25	56	150	92	24.0	6

* Kesme değerleri
Tablo 1'de yer almaktadır.

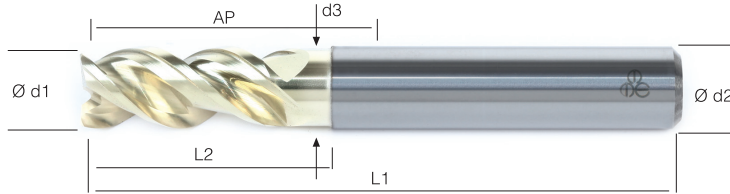
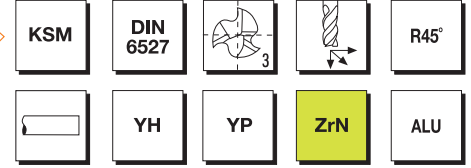
Komple Sert Metal Parmak Freze 3 Ağızlı - Köşe Pahlı - ALU



Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	AP mm	Köşe Pahı	d3 mm	Z kanal sayısı
K0102440300008	3	6	8	57	12	0.1	2.8	3
K0102440400008	4	6	11	57	18	0.1	3.8	3
K0102440500008	5	6	13	57	18	0.1	4.8	3
K0102440600008	6	6	13	57	18	0.2	5.8	3
K0102440601008	6	6	13	80	42	0.2	5.8	3
K0102440800008	8	8	21	63	25	0.2	7.8	3
K0102440801008	8	8	21	100	62	0.2	7.8	3
K0102441000008	10	10	22	72	30	0.2	9.7	3
K0102441001008	10	10	22	100	58	0.2	9.7	3
K0102441200008	12	12	26	83	36	0.2	11.7	3
K0102441201008	12	12	26	120	73	0.2	11.7	3
K0102441600008	16	16	36	92	42	0.2	15.7	3
K0102441601008	16	16	36	150	100	0.2	15.7	3
K0102441800008	18	18	36	92	42	0.2	17.6	3
K0102441801008	18	18	36	150	100	0.2	17.6	3
K0102442000008	20	20	41	104	52	0.2	19.5	3
K0102442001008	20	20	41	150	98	0.2	19.5	3
K0102442500008	25	25	50	125	65	0.3	24.5	3

* Kesme değerleri
Tablo 1'de yer almaktadır.

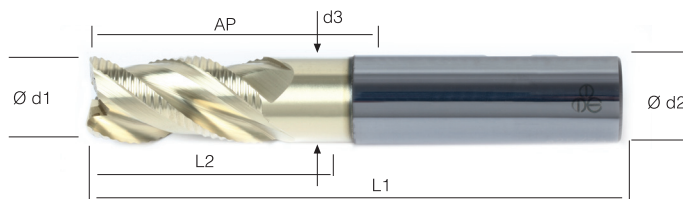
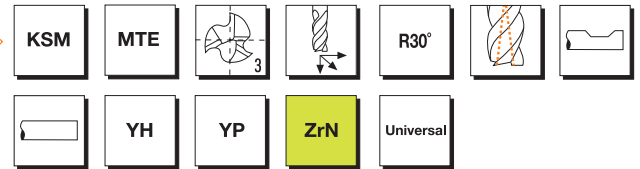
**Komple Sert Metal
Parmak Freze - 3 Ağızlı - Alu
Köşe Radyüslü - ZrN**



Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	AP mm	Z kanal sayısı	r köşe radyüsü
K0102450500008	5	6	13	57	18	3	0.5
K0102450501008	5	6	13	57	18	3	1.0
K0102450600008	6	6	13	57	18	3	0.5
K0102450601008	6	6	13	57	18	3	1.0
K0102450800008	8	8	21	63	25	3	0.5
K0102450801008	8	8	21	63	25	3	1.0
K0102451000008	10	10	22	72	30	3	0.5
K0102451001008	10	10	22	72	30	3	1.0
K0102451200008	12	12	26	83	36	3	0.5
K0102451201008	12	12	26	83	36	3	1.0
K0102451600008	16	16	36	92	42	3	2.0
K0102451601008	16	16	36	92	42	3	4.0
K0102452000008	20	20	41	104	52	3	4.0
K0102452500008	25	25	50	125	65	3	5.0

* Kesme değerleri Tablo 1'de yer almaktadır.

**Komple Sert Metal Kaba Talaş
Parmak Freze - 3 Ağızlı
İçten Soğutmalı - Alu - ZrN**



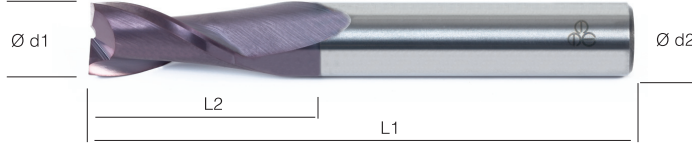
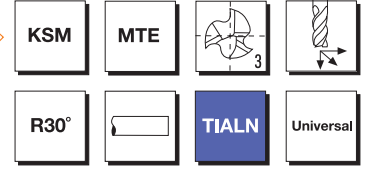
Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	AP mm	Köşe Pahtı	d3 mm	Z kanal sayısı
K0102520600008	6	6	13	70	18	0.4	5.7	3
K0102520800008	8	8	21	80	25	0.4	7.4	3
K0102521000008	10	10	22	80	30	0.4	9.2	3
K0102521200008	12	12	26	90	36	0.4	11.0	3
K0102521600108	16	16	36	100	42	0.4	15.0	3
K0102522000108	20	20	41	120	52	0.4	19.0	3
K0102522500108	25	25	50	150	75	0.5	24.0	3

* Kesme değerleri Tablo 1'de yer almaktadır.

HA : Ø 6 - Ø 12 / HB : Ø 16 - Ø 25



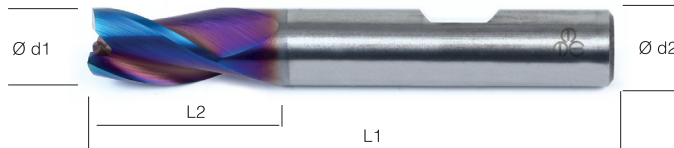
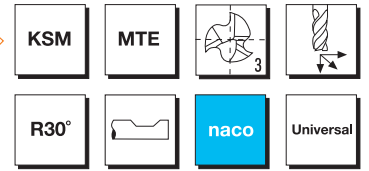
Komple Sert Metal Parmak Freze 3 Ağzılı



Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	Z kanal sayısı	Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	Z kanal sayısı
K0103310100001	1.0	3	3	38	3	K0103310870001	8.7	10	16	72	3
K0103310150001	1.5	3	5	38	3	K0103310900001	9.0	10	16	72	3
K0103310200001	2.0	3	7	38	3	K0103310970001	9.7	10	19	72	3
K0103310250001	2.5	3	7	38	3	K0103311000001	10.0	10	22	72	3
K0103310300001	3.0	3	8	38	3	K0103311100001	11.0	12	22	72	3
K0103310350001	3.5	4	11	50	3	K0103311170001	11.7	12	22	83	3
K0103310400001	4.0	4	11	50	3	K0103311200001	12.0	12	22	83	3
K0103310450001	4.5	5	11	50	3	K0103311370001	13.7	14	22	83	3
K0103310500001	5.0	5	10	50	3	K0103311400001	14.0	14	22	83	3
K0103310550001	5.5	6	10	50	3	K0103311570001	15.7	16	26	83	3
K0103310600001	6.0	6	10	57	3	K0103311600001	16.0	16	26	83	3
K0103310675001	6.7	8	13	63	3	K0103311770001	17.7	18	26	92	3
K0103310700001	7.0	8	13	63	3	K0103311800001	18.0	18	26	92	3
K0103310775001	7.7	8	16	63	3	K0103311970001	19.7	20	32	104	3
K0103310800001	8.0	8	16	63	3	K0103312000001	20.0	20	32	104	3

* Kesme değerleri Tablo 1'de yer almaktadır.

Komple Sert Metal Parmak Freze 3 Ağzılı - Kısa

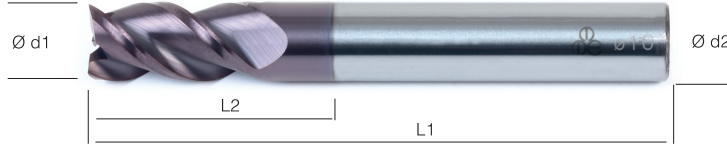
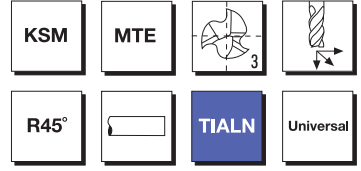


Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	Z kanal sayısı	Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	Z kanal sayısı
K0103500100106	1	6	3	50	3	K0103500700106	7	8	11	57	3
K0103500200106	2	6	4	50	3	K0103500800106	8	8	11	57	3
K0103500300106	3	6	5	50	3	K0103500900106	9	10	15	66	3
K0103500400106	4	6	7	50	3	K0103501000106	10	10	15	66	3
K0103500500106	5	6	8	50	3	K0103501200106	12	12	21	72	3
K0103500600106	6	6	8	50	3						

* Kesme değerleri Tablo 1'de yer almaktadır.



Komple Sert Metal Parmak Freze 3 Ağızlı

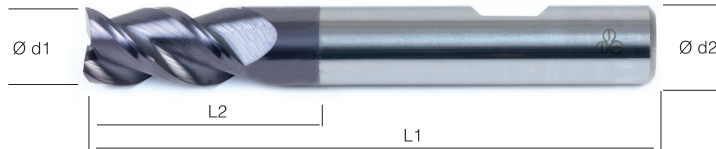
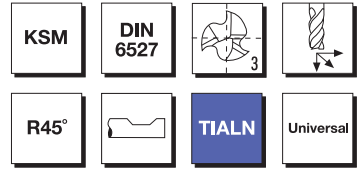


Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	Z kanal sayısı
K0103510100001	1.0	6	4	57	3
K0103510150001	1.5	6	4	57	3
K0103510200001	2.0	6	6	57	3
K0103510250001	2.5	6	6	57	3
K0103510300001	3.0	6	7	57	3
K0103510350001	3.5	6	8	57	3
K0103510400001	4.0	6	8	57	3
K0103510450001	4.5	6	10	57	3
K0103510500001	5.0	6	10	57	3
K0103510550001	5.5	6	10	57	3
K0103510600001	6.0	6	10	57	3

Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	Z kanal sayısı
K0103510650001	6.5	8	16	63	3
K0103510700001	7.0	8	16	63	3
K0103510750001	7.5	8	19	63	3
K0103510800001	8.0	8	19	63	3
K0103510900001	9.0	10	19	72	3
K0103511000001	10.0	10	19	72	3
K0103511200001	12.0	12	22	83	3
K0103511400001	14.0	14	22	83	3
K0103511600001	16.0	16	26	92	3
K0103511800001	18.0	18	26	92	3
K0103512000001	20.0	20	32	104	3

* Kesme değerleri Tablo 1'de yer almaktadır.

Komple Sert Metal Parmak Freze 3 Ağızlı



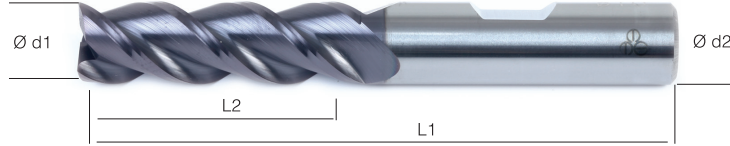
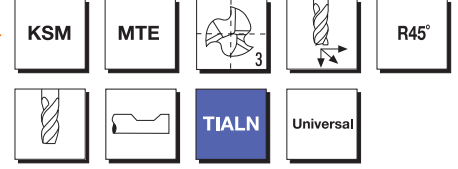
Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	Z kanal sayısı
K0102130100101	1.0	3	2	38	3
K0102130150101	1.5	3	3	38	3
K0102130200101	2.0	6	6	57	3
K0102130250101	2.5	3	7	57	3
K0102130300101	3.0	6	7	57	3
K0102130400101	4.0	6	8	57	3
K0102130450101	4.5	6	8	57	3
K0102130500101	5.0	6	10	57	3
K0102130600101	6.0	6	10	57	3

Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	Z kanal sayısı
K0102130700101	7.0	8	13	63	3
K0102130800101	8.0	8	16	63	3
K0102130900101	9.0	10	16	72	3
K0102131000101	10.0	10	19	72	3
K0102131200101	12.0	12	22	83	3
K0102131400101	14.0	14	22	83	3
K0102131600101	16.0	16	26	92	3
K0102132000101	20.0	20	32	104	3

* Kesme değerleri Tablo 1'de yer almaktadır.



Komple Sert Metal Parmak Freze 3 Ağızlı - Köşe Pahlı

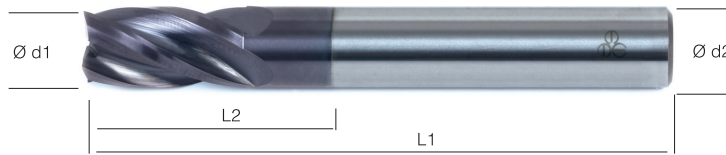
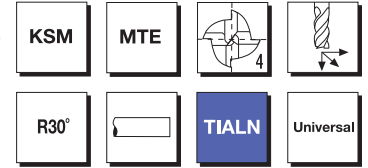


Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	Köşe Pahı	Z kanal sayısı
K0102230200101	2	6	8	57	0.05	3
K0102230300101	3	6	14	57	0.05	3
K0102230400101	4	6	18	57	0.10	3
K0102230500101	5	6	20	57	0.10	3
K0102230600101	6	6	22	57	0.10	3

Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	Köşe Pahı	Z kanal sayısı
K0102230800101	8	8	30	63	0.15	3
K0102231000101	10	10	33	72	0.15	3
K0102231200101	12	12	34	83	0.20	3
K0102231600101	16	16	38	92	0.20	3
K0102232000101	20	20	47	104	0.30	3

* Kesme değerleri Tablo 1'de yer almaktadır.

Komple Sert Metal Parmak Freze 4 Ağızlı

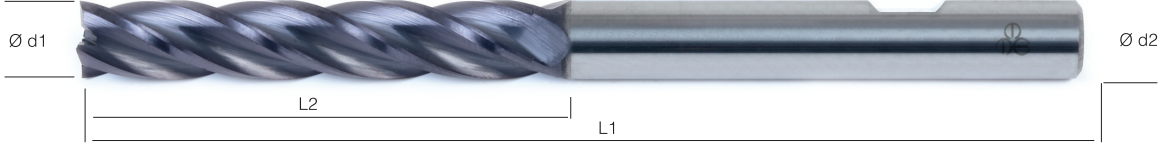
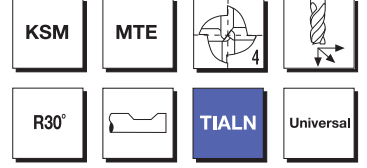


Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	Z kanal sayısı
K0103410100001	1.0	3	3	38	4
K0103410150001	1.5	3	5	38	4
K0103410200001	2.0	3	7	38	4
K0103410250001	2.5	3	7	38	4
K0103410300001	3.0	3	8	38	4
K0103410350001	3.5	4	11	50	4
K0103410400001	4.0	4	11	50	4
K0103410450001	4.5	5	11	50	4
K0103410500001	5.0	5	10	50	4
K0103410550001	5.5	6	10	57	4
K0103410600001	6.0	6	10	57	4

Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	Z kanal sayısı
K0103410700001	7.0	8	13	63	4
K0103410800001	8.0	8	16	63	4
K0103410900001	9.0	10	16	72	4
K0103411000001	10.0	10	19	72	4
K0103411100001	11.0	12	19	72	4
K0103411200001	12.0	12	22	83	4
K0103411400001	14.0	14	22	83	4
K0103411600001	16.0	16	26	83	4
K0103411800001	18.0	18	26	92	4
K0103412000001	20.0	20	32	104	4



Komple Sert Metal Parmak Freze 4 Ağızlı - Uzun

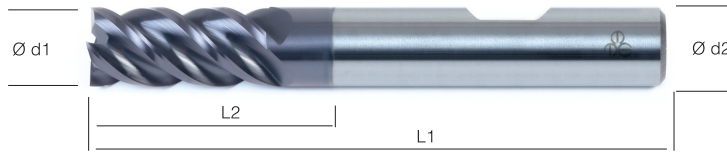
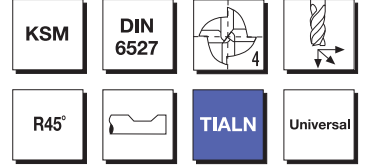


Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	Z kanal sayısı
K0101240300101	3	3	20	60	4
K0101240400101	4	4	25	60	4
K0101240500101	5	5	25	75	4
K0101240600101	6	6	30	75	4
K0101240800101	8	8	45	100	4

Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	Z kanal sayısı
K0101241000101	10	10	45	100	4
K0101241200101	12	12	65	150	4
K0101241600101	16	16	65	150	4
K0101242000101	20	20	65	150	4

* Kesme değerleri Tablo 1'de yer almaktadır.

Komple Sert Metal Parmak Freze 4 Ağızlı



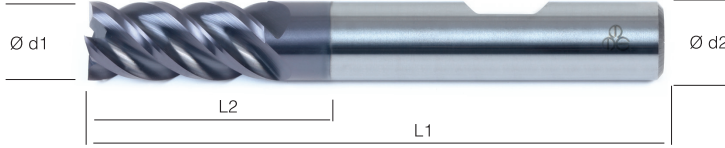
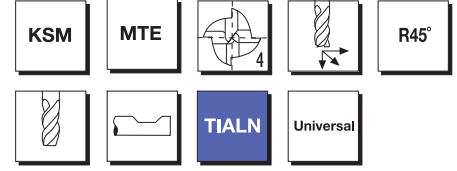
Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	Z kanal sayısı
K0102140300101	3	6	8	57	4
K0102140400101	4	6	11	57	4
K0102140500101	5	6	13	57	4
K0102140600101	6	6	13	57	4
K0102140800101	8	8	19	63	4
K0102141000101	10	10	22	72	4

Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	Z kanal sayısı
K0102141200101	12	12	26	83	4
K0102141400101	14	14	26	83	4
K0102141600101	16	16	32	92	4
K0102141800101	18	18	32	92	4
K0102142000101	20	20	38	104	4

* Kesme değerleri Tablo 1'de yer almaktadır.



Komple Sert Metal Parmak Freze 4 Ağzılı - Köşe Pahlı

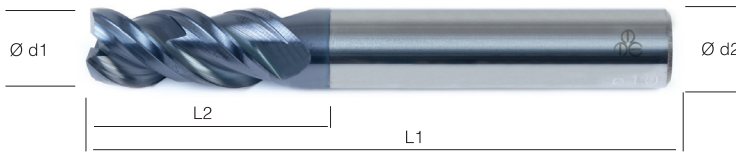
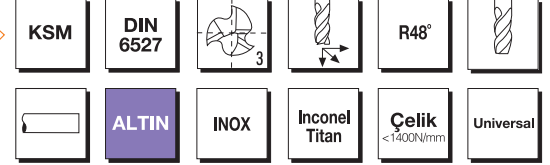


Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	Köşe Pahı	Z kanal sayısı
K0102240200101	2	6	8	57	0.05	4
K0102240300101	3	6	14	57	0.05	4
K0102240400101	4	6	18	57	0.10	4
K0102240500101	5	6	20	57	0.10	4
K0102240600101	6	6	22	57	0.10	4

Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	Köşe Pahı	Z kanal sayısı
K0102240800101	8	8	30	63	0.15	4
K0102241000101	10	10	33	72	0.15	4
K0102241200101	12	12	34	83	0.20	4
K0102241600101	16	16	38	92	0.20	4
K0102242000101	20	20	47	104	0.30	4

* Kesme değerleri Tablo 1'de yer almaktadır.

Komple Sert Metal Parmak Freze 3 Ağzılı - INOX - Köşe Pahlı



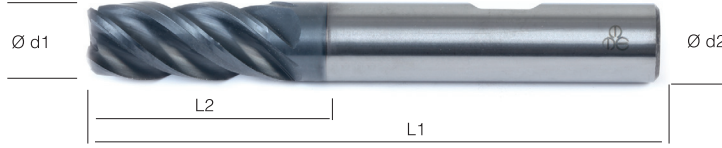
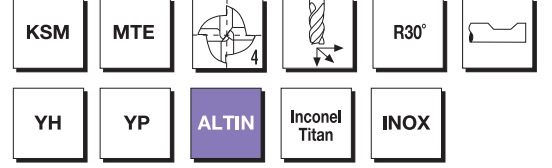
Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	Köşe Pahı	Z kanal sayısı
K0102430300002	3	6	8	57	0.05	3
K0102430400002	4	6	11	57	0.05	3
K0102430500002	5	6	13	57	0.08	3
K0102430600002	6	6	13	57	0.08	3
K0102430700002	7	8	16	63	0.08	3
K0102430800002	8	8	19	63	0.10	3

Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	Köşe Pahı	Z kanal sayısı
K0102430900002	9	10	19	72	0.10	3
K0102431000002	10	10	22	72	0.10	3
K0102431200002	12	12	26	83	0.15	3
K0102431600002	16	16	32	92	0.20	3
K0102432000002	20	20	38	104	0.20	3

* Kesme değerleri Tablo 1'de yer almaktadır.



Komple Sert Metal Parmak Freze 4 Ağızlı - INOX - Köşe Pahlı

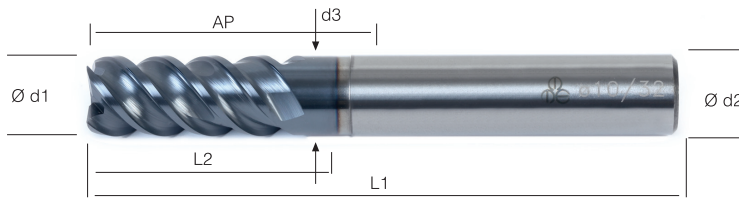
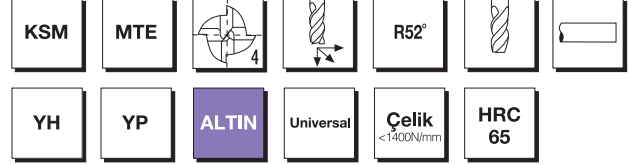


Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	Köşe Pahı	Z kanal sayısı
K0103460400102	4	6	12	55	0.4	4
K0103460500102	5	6	13	57	0.4	4
K0103460600102	6	6	13	57	0.4	4
K0103460800102	8	8	16	63	0.5	4
K0103461000102	10	10	22	72	0.5	4
K0103461200102	12	12	26	83	0.5	4

Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	Köşe Pahı	Z kanal sayısı
K0103461400102	14	14	26	83	0.5	4
K0103461600102	16	16	32	92	0.5	4
K0103461800102	18	18	32	92	0.5	4
K0103462000102	20	20	38	104	0.5	4
K0103462500102	25	25	45	121	0.5	4

* Kesme değerleri Tablo 1'de yer almaktadır.

Komple Sert Metal Parmak Freze 4 Ağızlı - HRC 65 - Köşe Pahlı

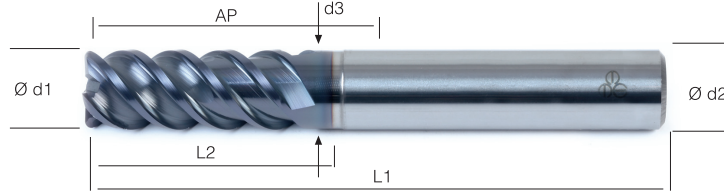


Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	AP mm	Köşe Pahı	d3 mm	Z kanal sayısı
K0103100400002	4	6	11	57	21	0.10	3.8	4
K0103100500002	5	6	13	57	21	0.10	4.8	4
K0103100600002	6	6	13	57	21	0.10	5.8	4
K0103100800002	8	8	19	63	27	0.15	7.8	4
K0103101000002	10	10	22	72	32	0.15	9.8	4
K0103101200002	12	12	26	83	38	0.20	11.8	4
K0103101400002	14	14	26	83	42	0.20	13.8	4
K0103101600002	16	16	32	92	44	0.20	15.8	4
K0103101800002	18	18	32	92	44	0.30	17.8	4
K0103102000002	20	20	38	104	54	0.30	19.8	4

* Kesme değerleri Tablo 2'de yer almaktadır.



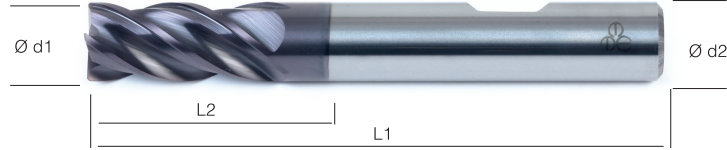
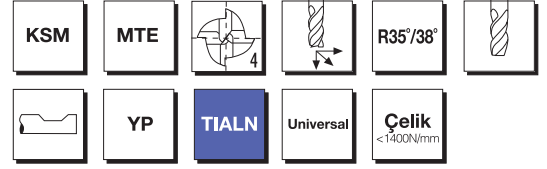
Komple Sert Metal Parmak Freze 3/4 Ağızlı - Köşe Radyüslü



Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	AP mm	d3 mm	Z kanal sayısı	r köşe radyüs
K0103150300002	3	6	8	57	18	2.9	3	0.2
K0103150301002	3	6	8	57	18	2.9	3	0.5
K0103150400002	4	6	11	57	21	3.8	4	0.3
K0103150401002	4	6	11	57	21	3.8	4	0.5
K0103150402002	4	6	11	57	21	3.8	4	1.0
K0103150500002	5	6	13	57	21	4.8	4	0.3
K0103150501002	5	6	13	57	21	4.8	4	0.5
K0103150502002	5	6	13	57	21	4.8	4	1.0
K0103150600002	6	6	13	57	21	5.8	4	0.3
K0103150601002	6	6	13	57	21	5.8	4	0.5
K0103150602002	6	6	13	57	21	5.8	4	1.0
K0103150603002	6	6	13	57	21	5.8	4	1.5
K0103150604002	6	6	13	57	21	5.8	4	2.0
K0103150800002	8	8	19	63	27	7.8	4	0.5
K0103150801002	8	8	19	63	27	7.8	4	1.0
K0103150802002	8	8	19	63	27	7.8	4	1.5
K0103150803002	8	8	19	63	27	7.8	4	2.0
K0103151000002	10	10	22	72	32	9.8	4	0.5
K0103151001002	10	10	22	72	32	9.8	4	1.0
K0103151002002	10	10	22	72	32	9.8	4	1.5
K0103151003002	10	10	22	72	32	9.8	4	2.0
K0103151200002	12	12	26	83	38	11.8	4	0.5
K0103151201002	12	12	26	83	38	11.8	4	1.0
K0103151202002	12	12	26	83	38	11.8	4	1.5
K0103151203002	12	12	26	83	38	11.8	4	2.0
K0103151600002	16	16	32	92	44	15.8	4	0.5
K0103151601002	16	16	32	92	44	15.8	4	1.0
K0103151602002	16	16	32	92	44	15.8	4	1.5
K0103151603002	16	16	32	92	44	15.8	4	2.0
K0103151604002	16	16	32	150	44	15.8	4	1.0
K0103152000002	20	20	38	92	54	19.8	4	0.5
K0103152001002	20	20	38	92	54	19.8	4	1.0
K0103152002002	20	20	38	92	54	19.8	4	1.5
K0103152003002	20	20	38	92	54	19.8	4	2.0
K0103152004002	20	20	38	150	54	19.8	4	1.0
K0103152500002	25	20	38	160	54	19.8	4	2.0

* Kesme değerleri Tablo 2'de yer almaktadır.

Komple Sert Metal Parmak Freze
4 Ağızlı - 35°/38° - Köşe Pahlı

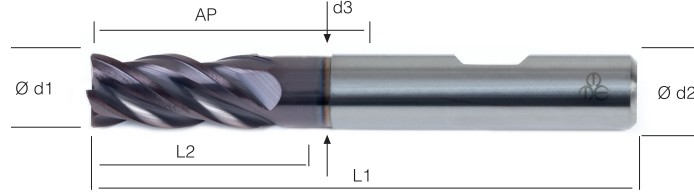
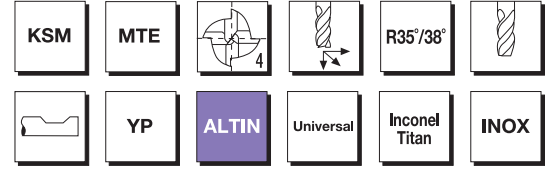


Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	Köşe Pahı	Z kanal sayısı
K0107320300101	3	6	8	57	0.10	4
K0107320400101	4	6	11	57	0.13	4
K0107320500101	5	6	13	57	0.18	4
K0107320600101	6	6	13	57	0.20	4
K0107320700101	7	8	19	63	0.20	4
K0107320800101	8	8	19	63	0.20	4
K0107320900101	9	10	22	72	0.30	4
K0107321000101	10	10	22	72	0.30	4
K0107321100101	11	12	26	83	0.30	4
K0107321200101	12	12	26	83	0.30	4
K0107321300101	13	14	26	83	0.30	4
K0107321400101	14	14	26	83	0.30	4
K0107321600101	16	16	32	92	0.40	4
K0107321800101	18	18	32	92	0.40	4
K0107322000101	20	20	38	104	0.50	4
K0107322500101	25	25	38	104	0.50	4

* Kesme değerleri Tablo 3'te yer almaktadır.



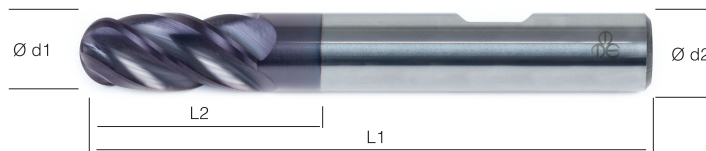
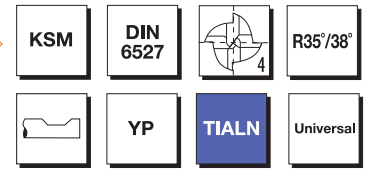
Komple Sert Metal Parmak Freze 4 Ağızlı - 35°/38° - INOX - Köşe Pahlı



Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	AP mm	Köşe Pahı	d3 mm	Z kanal sayısı
K0107380300102	3	6	8	57	18	0.13	2.8	4
K0107380400102	4	6	11	57	21	0.18	3.6	4
K0107380500102	5	6	13	57	21	0.20	4.6	4
K0107380600102	6	6	13	57	21	0.20	5.5	4
K0107380700102	7	8	19	63	27	0.20	6.5	4
K0107380800102	8	8	19	63	27	0.20	7.5	4
K0107380900102	9	10	22	72	32	0.30	8.5	4
K0107381000102	10	10	22	72	32	0.30	9.5	4
K0107381100102	11	12	26	83	38	0.30	10.5	4
K0107381200102	12	12	26	83	38	0.30	11.5	4
K0107381300102	13	14	26	83	42	0.30	12.5	4
K0107381400102	14	14	26	83	42	0.30	13.5	4
K0107381600102	16	16	32	92	44	0.40	15.5	4
K0107381800102	18	18	32	100	50	0.40	17.5	4
K0107382000102	20	20	38	104	54	0.50	19.5	4
K0107382500102	25	25	42	121	65	0.50	24.0	4

* Kesme değerleri Tablo 3'te yer almaktadır.

Komple Sert Metal Küresel Başlı Parmak Freze - 4 Ağızlı - 35°/38°

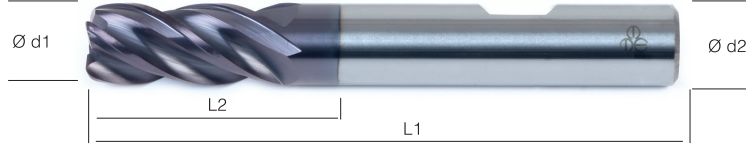
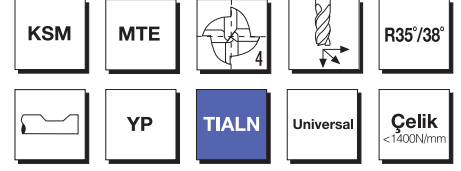


Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	R radyüs	Z kanal sayısı
K0107390300101	3	6	8	57	1.5	4
K0107390400101	4	6	10	57	2.0	4
K0107390500101	5	6	13	57	2.5	4
K0107390600101	6	6	13	57	3.0	4
K0107390800101	8	8	16	63	4.0	4
K0107391000101	10	10	22	72	5.0	4
K0107391200101	12	12	26	83	6.0	4
K0107391400101	14	14	26	83	7.0	4
K0107391600101	16	16	32	92	8.0	4
K0107392000101	20	20	38	104	10.0	4

* Kesme değerleri Tablo 3'te yer almaktadır.



Komple Sert Metal Parmak Freze
4 Ağızlı - 35°/38° - Köşe Radyüslü

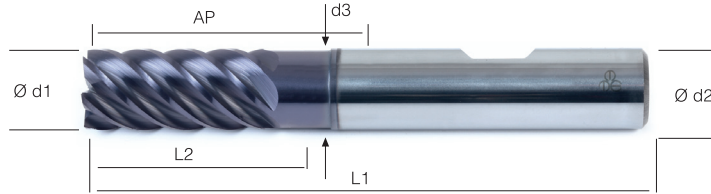
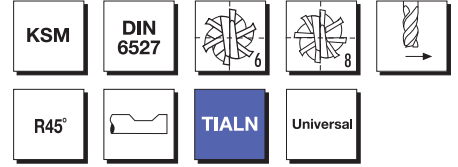


Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	r köşe radyüs	Z kanal sayısı
K0107340400101	4	6	11	57	0.25	4
K0107340401101	4	6	11	57	0.50	4
K0107340402101	4	6	11	57	1.00	4
K0107340500101	5	6	13	57	0.50	4
K0107340501101	5	6	13	57	1.00	4
K0107340502101	5	6	13	57	1.50	4
K0107340600101	6	6	13	57	0.50	4
K0107340601101	6	6	13	57	1.00	4
K0107340602101	6	6	13	57	1.50	4
K0107340603101	6	6	13	57	2.00	4
K0107340800101	8	8	19	63	0.50	4
K0107340801101	8	8	19	63	1.00	4
K0107340802101	8	8	19	63	1.50	4
K0107340803101	8	8	19	63	2.00	4
K0107341000101	10	10	22	72	0.50	4
K0107341001101	10	10	22	72	1.00	4
K0107341002101	10	10	22	72	1.50	4
K0107341003101	10	10	22	72	2.00	4
K0107341200101	12	12	26	83	0.50	4
K0107341201101	12	12	26	83	1.00	4
K0107341202101	12	12	26	83	1.50	4
K0107341203101	12	12	26	83	2.00	4
K0107341400101	14	14	26	83	1.00	4
K0107341401101	14	14	26	83	2.00	4
K0107341600101	16	16	32	92	1.00	4
K0107341601101	16	16	32	92	1.50	4
K0107341602101	16	16	32	92	2.00	4
K0107341603101	16	16	32	92	2.50	4
K0107341800101	18	18	32	92	1.50	4
K0107341801101	18	18	32	92	2.50	4
K0107342000101	20	20	38	104	1.00	4
K0107342001101	20	20	38	104	1.50	4
K0107342002101	20	20	38	104	2.00	4
K0107342003101	20	20	38	104	2.50	4
K0107342004101	20	20	38	104	3.00	4
K0107342005101	20	20	38	104	4.00	4
K0107342006101	20	20	38	104	5.00	4

* Kesme değerleri Tablo 3'te yer almaktadır.



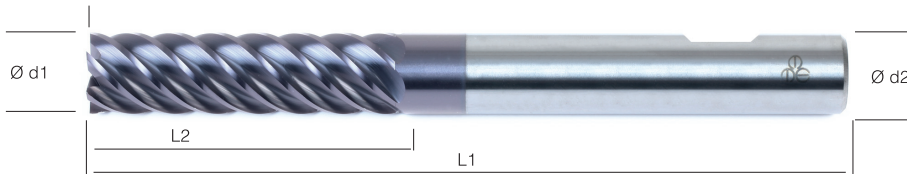
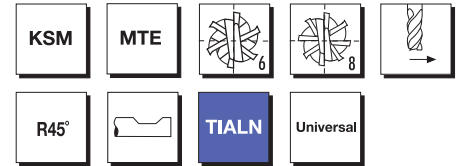
Komple Sert Metal Parmak Freze 6/8 Ağızlı



Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	AP mm	d3 mm	Z kanal sayısı
K0102080300101	3	6	8	57	11	2.7	6
K0102080400101	4	6	11	57	16	3.7	6
K0102080500101	5	6	13	57	18	4.6	6
K0102080600101	6	6	13	57	18	5.5	6
K0102080800101	8	8	19	63	24	7.5	6
K0102081000101	10	10	22	72	32	9.5	6
K0102081200101	12	12	26	83	36	11.5	6
K0102081400101	14	14	26	83	36	13.5	6
K0102081600101	16	16	32	92	42	15.5	6
K0102081800101	18	18	32	92	42	17.5	8
K0102082000101	20	20	38	104	48	19.5	8
K0102082500101	25	25	45	121	65	24.5	8

* Kesme değerleri Tablo 4'te yer almaktadır.

Komple Sert Metal Parmak Freze 6/8 Ağızlı - Uzun

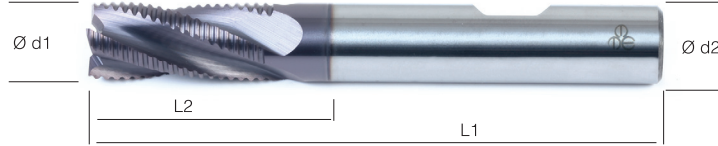
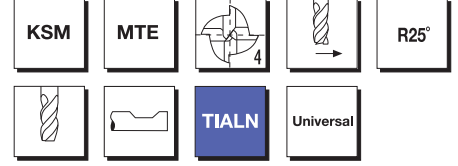


Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	Z kanal sayısı
K0102221200101	12	12	40	100	6
K0102221600101	16	16	60	150	6
K0102222000101	20	20	80	150	8
K0102222500101	25	25	90	150	8

* Kesme değerleri Tablo 4'te yer almaktadır.



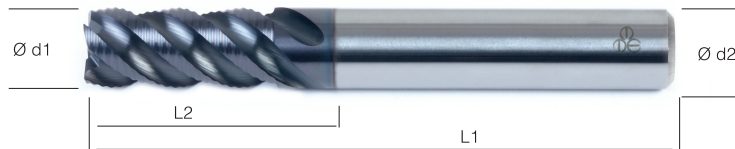
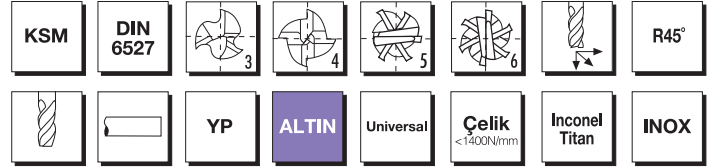
Komple Sert Metal Kaba Talaş Parmak Freze 4 Ağızlı



Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	Z kanal sayısı	Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	Z kanal sayısı
K0103040300101	3	6	6	57	4	K0103041200101	12	12	26	83	4
K0103040400101	4	6	8	57	4	K0103041400101	14	14	26	83	4
K0103040500101	5	6	10	57	4	K0103041600101	16	16	32	92	4
K0103040600101	6	6	13	57	4	K0103042000101	20	20	38	104	4
K0103040800101	8	8	16	63	4	K0103042500101	25	25	45	121	4
K0103041000101	10	10	22	72	4						

* Kesme değerleri Tablo 5'te yer almaktadır.

Komple Sert Metal Kaba Talaş Parmak Freze 3/6 Ağızlı - INOX

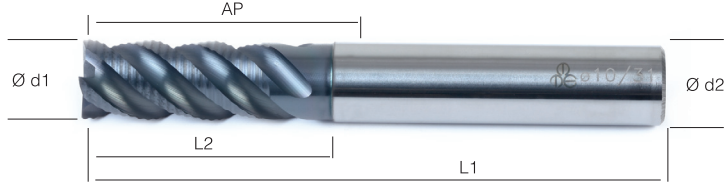
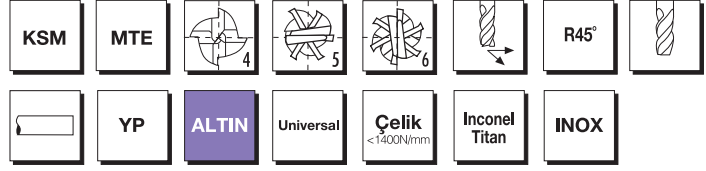


Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	Z kanal sayısı	Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	Z kanal sayısı
K0103440400002	4	6	11	57	3	K0103441000002	10	10	22	72	4
K0103440500002	5	6	13	57	4	K0103441200002	12	12	26	83	4
K0103440600002	6	6	16	57	4	K0103441400002	14	14	26	83	5
K0103440700002	7	8	16	63	4	K0103441600002	16	16	32	92	5
K0103440800002	8	8	16	63	4	K0103442000002	20	20	38	104	6
K0103440900002	9	10	19	72	4	K0103442500002	25	25	45	121	6

* Kesme değerleri Tablo 5'te yer almaktadır.



**Komple Sert Metal
Kaba Talaş Parmak Freze
4/6 Ağızlı - INOX**

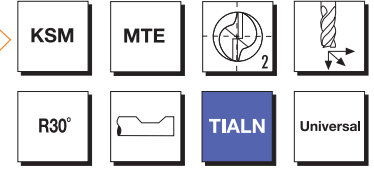


Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	AP mm	d3 mm	Z kanal sayısı
K0103450600002	6	6	16	57	20	5.5	4
K0103450800002	8	8	16	63	26	7.5	4
K0103451000002	10	10	22	72	31	9.5	4
K0103451200002	12	12	26	83	37	11.5	4
K0103451600002	16	16	32	100	51	15.5	5
K0103452000002	20	20	38	110	59	19.2	6

* Kesme değerleri Tablo 5'te yer almaktadır.



Komple Sert Metal Küresel Başlı Parmak Freze 2 Ağızlı

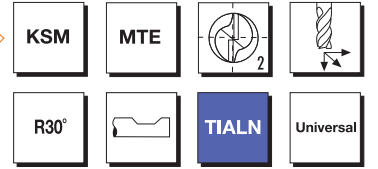


Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	Z kanal sayısı
K0105120300101	3	3	7	38	2
K0105120400101	4	4	14	50	2
K0105120500101	5	6	16	50	2
K0105120600101	6	6	19	57	2
K0105120800101	8	8	20	63	2

Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	Z kanal sayısı
K0105121000101	10	10	21	72	2
K0105121200101	12	12	25	83	2
K0105121600101	16	16	32	92	2
K0105122000101	20	20	38	104	2

* Kesme değerleri Tablo 6'de yer almaktadır.

Komple Sert Metal Küresel Başlı Parmak Freze 2 Ağızlı - Kısa



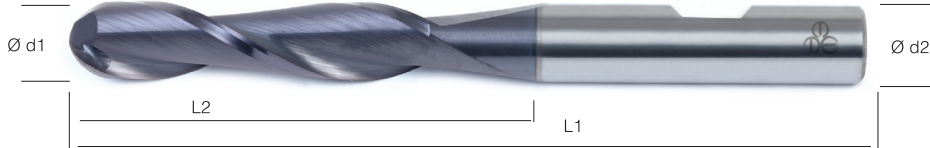
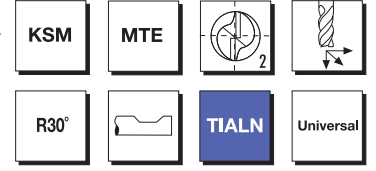
Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	Z kanal sayısı
K0105110100101	1.0	6	3	50	2
K0105110200101	2.0	6	4	50	2
K0105110250101	2.5	6	4	50	2
K0105110300101	3.0	6	5	50	2
K0105110350101	3.5	6	5	50	2
K0105110400101	4.0	6	6	54	2
K0105110450101	4.5	6	6	54	2
K0105110500101	5.0	6	7	54	2

Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	Z kanal sayısı
K0105110600101	6.0	6	9	54	2
K0105110800101	8.0	8	12	58	2
K0105111000101	10.0	10	14	66	2
K0105111200101	12.0	12	14	73	2
K0105111400101	14.0	14	16	75	2
K0105111600101	16.0	16	18	82	2
K0105111800101	18.0	18	20	88	2
K0105112000101	20.0	20	22	92	2

* Kesme değerleri Tablo 6'de yer almaktadır.



Komple Sert Metal Küresel Başlı Parmak Freze 2 Ağızlı - Uzun

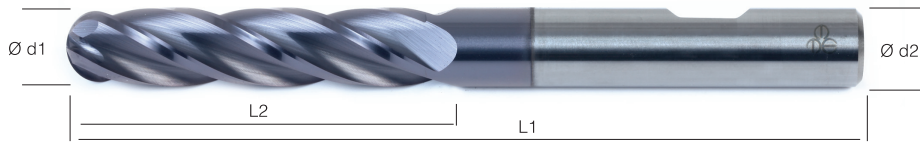
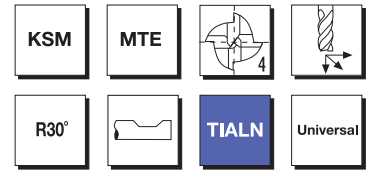


Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	Z kanal sayısı
K0105220300101	3	3	20	60	2
K0105220400101	4	4	25	60	2
K0105220500101	5	5	25	75	2
K0105220600101	6	6	30	75	2
K0105220800101	8	8	45	100	2
K0105221000101	10	10	45	100	2

Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	Z kanal sayısı
K0105221200101	12	12	45	100	2
K0105221201101	12	12	65	150	2
K0105221600101	16	16	45	100	2
K0105221601101	16	16	65	150	2
K0105222000101	20	20	45	100	2
K0105222001101	20	20	65	150	2

* Kesme değerleri Tablo 6'de yer almaktadır.

Komple Sert Metal Küresel Başlı Parmak Freze 4 Ağızlı - Uzun



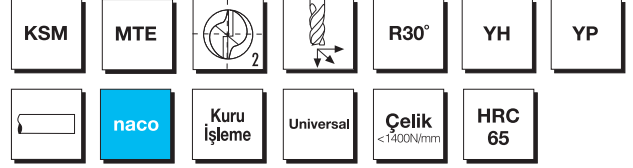
Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	Z kanal sayısı
K0105240300101	3	3	20	75	4
K0105240400101	4	4	25	75	4
K0105240500101	5	5	25	75	4
K0105240600101	6	6	30	75	4
K0105240800101	8	8	45	100	4
K0105241000101	10	10	45	100	4

Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	Z kanal sayısı
K0105241200101	12	12	45	100	4
K0105241201101	12	12	65	150	4
K0105241600101	16	16	45	100	4
K0105241601101	16	16	65	150	4
K0105242000101	20	20	45	100	4
K0105242001101	20	20	65	150	4

* Kesme değerleri Tablo 6'de yer almaktadır.



**Komple Sert Metal
Küresel Başlı Parmak Freze
2 Ağızlı - Kısa**

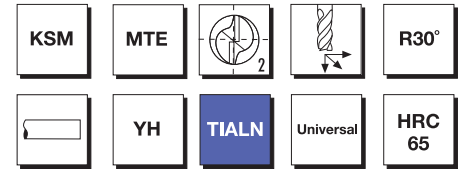


Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	Z kanal sayısı
K0105200050006	0.5	3	1.5	38	2
K0105200060006	0.6	3	1.5	38	2
K0105200070006	0.7	3	2.0	38	2
K0105200080006	0.8	3	2.0	38	2
K0105200090006	0.9	3	2.5	38	2
K0105200100006	1.0	3	2.0	50	2
K0105200101006	1.0	6	2.0	54	2
K0105200110006	1.1	3	3.0	50	2
K0105200120006	1.2	3	3.0	50	2
K0105200140006	1.4	3	3.0	50	2
K0105200150006	1.5	3	3.0	50	2
K0105200151006	1.5	6	3.0	54	2
K0105200160006	1.6	3	4.0	50	2
K0105200180006	1.8	3	4.0	50	2
K0105200200006	2.0	3	4.0	50	2
K0105200201006	2.0	6	4.0	54	2

Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	Z kanal sayısı
K0105200250006	2.5	3	5.0	50	2
K0105200251006	2.5	6	5.0	54	2
K0105200300006	3.0	3	5.0	50	2
K0105200301006	3.0	6	5.0	54	2
K0105200400006	4.0	4	8.0	54	2
K0105200401006	4.0	6	8.0	54	2
K0105200500006	5.0	5	9.0	54	2
K0105200501006	5.0	6	9.0	54	2
K0105200600006	6.0	6	10.0	54	2
K0105200800006	8.0	8	12.0	58	2
K0105201000006	10.0	10	14.0	66	2
K0105201200006	12.0	12	16.0	73	2
K0105201400006	14.0	14	18.0	75	2
K0105201600006	16.0	16	22.0	82	2
K0105202000006	20.0	20	26.0	92	2

* Kesme değerleri Tablo 8'da yer almaktadır.

**Komple Sert Metal
Küresel Başlı Parmak Freze
2 Ağızlı - Uzun**



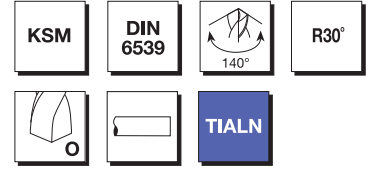
Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	Z kanal sayısı
K0106630100001	1.0	3	1.5	50	2
K0106630150001	1.5	3	2.5	50	2
K0106630200001	2.0	3	3.0	50	2
K0106630250001	2.5	3	4.0	50	2
K0106630300001	3.0	3	6.0	75	2
K0106630400001	4.0	4	8.0	75	2
K0106630500001	5.0	5	10.0	75	2
K0106630600001	6.0	6	12.0	100	2

Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	Z kanal sayısı
K0106630800001	8.0	8	14.0	100	2
K0106631000001	10.0	10	18.0	100	2
K0106631200001	12.0	12	22.0	150	2
K0106631400001	14.0	14	26.0	150	2
K0106631600001	16.0	16	30.0	150	2
K0106631800001	18.0	18	34.0	150	2
K0106632000001	20.0	20	38.0	150	2

* Kesme değerleri Tablo 7'de yer almaktadır.



Komple Sert Metal Matkap Ucu DIN 6539



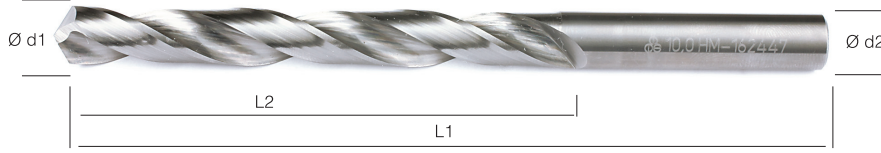
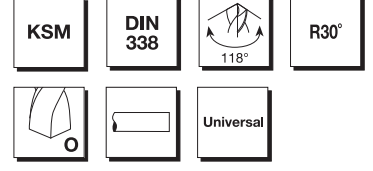
d1=d2

Ürün kodu	d1 mm	L2 mm	L1 mm	Ürün kodu	d1 mm	L2 mm	L1 mm
K0103030300001	3.0	16	46	K0103030770001	7.7	37	79
K0103030310001	3.1	18	49	K0103030780001	7.8	37	79
K0103030320001	3.2	18	49	K0103030790001	7.9	37	79
K0103030330001	3.3	18	49	K0103030800001	8.0	37	79
K0103030340001	3.4	20	52	K0103030810001	8.1	37	79
K0103030350001	3.5	20	52	K0103030820001	8.2	37	79
K0103030360001	3.6	20	52	K0103030830001	8.3	37	79
K0103030370001	3.7	20	52	K0103030840001	8.4	37	79
K0103030380001	3.8	22	55	K0103030850001	8.5	37	79
K0103030390001	3.9	22	55	K0103030860001	8.6	40	84
K0103030400001	4.0	22	55	K0103030870001	8.7	40	84
K0103030410001	4.1	22	55	K0103030880001	8.8	40	84
K0103030420001	4.2	22	55	K0103030890001	8.9	40	84
K0103030430001	4.3	24	58	K0103030900001	9.0	40	84
K0103030440001	4.4	24	58	K0103030910001	9.1	40	84
K0103030450001	4.5	24	58	K0103030920001	9.2	40	84
K0103030460001	4.6	24	58	K0103030930001	9.3	40	84
K0103030470001	4.7	24	58	K0103030940001	9.4	40	84
K0103030480001	4.8	26	62	K0103030950001	9.5	40	84
K0103030490001	4.9	26	62	K0103030960001	9.6	43	89
K0103030500001	5.0	26	62	K0103030970001	9.7	43	89
K0103030510001	5.1	26	62	K0103030980001	9.8	43	89
K0103030520001	5.2	26	62	K0103030990001	9.9	43	89
K0103030530001	5.3	26	62	K0103031000001	10.0	43	89
K0103030540001	5.4	28	66	K0103031020001	10.2	43	89
K0103030550001	5.5	28	66	K0103031030001	10.3	43	89
K0103030560001	5.6	28	66	K0103031050001	10.5	43	89
K0103030570001	5.7	28	66	K0103031100001	11.0	47	95
K0103030580001	5.8	28	66	K0103031150001	11.5	47	95
K0103030590001	5.9	28	66	K0103031180001	11.8	47	95
K0103030600001	6.0	28	66	K0103031200001	12.0	51	102
K0103030610001	6.1	31	70	K0103031300001	13.0	51	102
K0103030620001	6.2	31	70	K0103031350001	13.5	54	107
K0103030630001	6.3	31	70	K0103031400001	14.0	54	107
K0103030640001	6.4	31	70	K0103031450001	14.5	56	111
K0103030650001	6.5	31	70	K0103031500001	15.0	56	111
K0103030660001	6.6	31	70	K0103031550001	15.5	58	115
K0103030670001	6.7	31	70	K0103031600001	16.0	58	115
K0103030680001	6.8	34	74	K0103031650001	16.5	60	119
K0103030690001	6.9	34	74	K0103031700001	17.0	60	119
K0103030700001	7.0	34	74	K0103031750001	17.5	62	123
K0103030710001	7.1	34	74	K0103031800001	18.0	62	123
K0103030720001	7.2	34	74	K0103031850001	18.5	64	127
K0103030730001	7.3	34	74	K0103031900001	19.0	64	127
K0103030740001	7.4	34	74	K0103031950001	19.5	66	131
K0103030750001	7.5	34	74	K0103032000001	20.0	66	131
K0103030760001	7.6	37	79				

* Kesme değerleri Tablo 9'da yer almaktadır.



Komple Sert Metal Matkap Ucu DIN 338



d1=d2

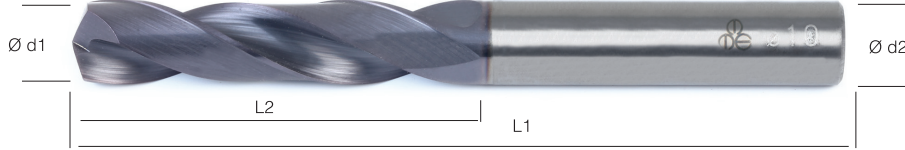
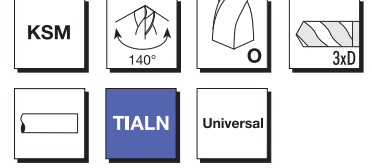
Ürün kodu	d1 mm	L2 mm	L1 mm
K0103380200000	2.0	24	49
K0103380250000	2.5	30	57
K0103380300000	3.0	33	61
K0103380330000	3.3	36	65
K0103380350000	3.5	39	70
K0103380380000	3.8	43	75
K0103380400000	4.0	43	75
K0103380420000	4.2	43	75
K0103380450000	4.5	47	80
K0103380500000	5.0	52	86
K0103380550000	5.5	57	93
K0103380600000	6.0	57	93
K0103380650000	6.5	63	101
K0103380680000	6.8	69	109
K0103380700000	7.0	69	109
K0103380750000	7.5	69	109
K0103380800000	8.0	75	117
K0103380850000	8.5	75	117

Ürün kodu	d1 mm	L2 mm	L1 mm
K0103380900000	9.0	81	125
K0103380950000	9.5	81	125
K0103381000000	10.0	87	133
K0103381030000	10.3	87	133
K0103381050000	10.5	87	133
K0103381100000	11.0	94	142
K0103381150000	11.5	94	142
K0103381200000	12.0	101	151
K0103381250000	12.5	101	151
K0103381300000	13.0	101	151
K0103381400000	14.0	108	160
K0103381500000	15.0	114	169
K0103381550000	15.5	120	178
K0103381600000	16.0	120	178
K0103381700000	17.0	125	184
K0103381800000	18.0	130	191
K0103382000000	20.0	140	205

* Kesme değerleri Tablo 9'da yer almaktadır.



Komple Sert Metal Matkap Ucu 3XD



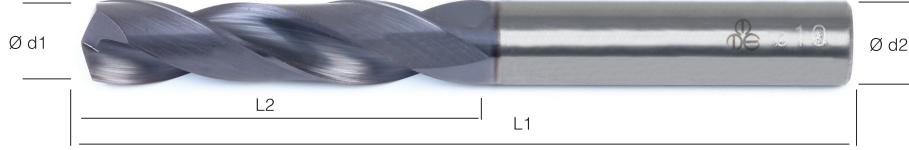
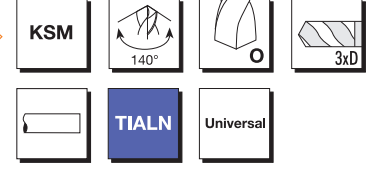
Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	UÇB mm	Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	UÇB mm
K0105030300001	3.0	6	20	62	14	K0105030710001	7.1	8	41	79	29
K0105030310001	3.1	6	20	62	14	K0105030720001	7.2	8	41	79	29
K0105030320001	3.2	6	20	62	14	K0105030730001	7.3	8	41	79	29
K0105030330001	3.3	6	20	62	14	K0105030740001	7.4	8	41	79	29
K0105030340001	3.4	6	20	62	14	K0105030750001	7.5	8	41	79	29
K0105030350001	3.5	6	20	62	14	K0105030760001	7.6	8	41	79	29
K0105030360001	3.6	6	20	62	14	K0105030770001	7.7	8	41	79	29
K0105030370001	3.7	6	20	62	14	K0105030780001	7.8	8	41	79	29
K0105030380001	3.8	6	24	66	17	K0105030790001	7.9	8	41	79	29
K0105030390001	3.9	6	24	66	17	K0105030800001	8.0	8	41	79	29
K0105030400001	4.0	6	24	66	17	K0105030810001	8.1	10	47	89	35
K0105030410001	4.1	6	24	66	17	K0105030820001	8.2	10	47	89	35
K0105030420001	4.2	6	24	66	17	K0105030830001	8.3	10	47	89	35
K0105030430001	4.3	6	24	66	17	K0105030840001	8.4	10	47	89	35
K0105030440001	4.4	6	24	66	17	K0105030850001	8.5	10	47	89	35
K0105030450001	4.5	6	24	66	17	K0105030860001	8.6	10	47	89	35
K0105030460001	4.6	6	24	66	17	K0105030870001	8.7	10	47	89	35
K0105030470001	4.7	6	24	66	17	K0105030880001	8.8	10	47	89	35
K0105030480001	4.8	6	28	66	20	K0105030890001	8.9	10	47	89	35
K0105030490001	4.9	6	28	66	20	K0105030900001	9.0	10	47	89	35
K0105030500001	5.0	6	28	66	20	K0105030910001	9.1	10	47	89	35
K0105030510001	5.1	6	28	66	20	K0105030920001	9.2	10	47	89	35
K0105030520001	5.2	6	28	66	20	K0105030930001	9.3	10	47	89	35
K0105030530001	5.3	6	28	66	20	K0105030940001	9.4	10	47	89	35
K0105030540001	5.4	6	28	66	20	K0105030950001	9.5	10	47	89	35
K0105030550001	5.5	6	28	66	20	K0105030960001	9.6	10	47	89	35
K0105030560001	5.6	6	28	66	20	K0105030970001	9.7	10	47	89	35
K0105030570001	5.7	6	28	66	20	K0105030980001	9.8	10	47	89	35
K0105030580001	5.8	6	28	66	20	K0105030990001	9.9	10	47	89	35
K0105030590001	5.9	6	28	66	20	K0105031000001	10.0	10	47	89	35
K0105030600001	6.0	6	28	66	20	K0105031010001	10.0	12	55	102	40
K0105030610001	6.1	8	34	79	24	K0105031020001	10.2	12	55	102	40
K0105030620001	6.2	8	34	79	24	K0105031030001	10.30	12	55	102	40
K0105030630001	6.3	8	34	79	24	K0105031040001	10.40	12	55	102	40
K0105030640001	6.4	8	34	79	24	K0105031050001	10.50	12	55	102	40
K0105030650001	6.5	8	34	79	24	K0105031060001	10.60	12	55	102	40
K0105030660001	6.6	8	34	79	24	K0105031070001	10.70	12	55	102	40
K0105030670001	6.7	8	34	79	24	K0105031080001	10.80	12	55	102	40
K0105030680001	6.8	8	34	79	24	K0105031090001	10.90	12	55	102	40
K0105030690001	6.9	8	34	79	24	K0105031100001	11.00	12	55	102	40
K0105030700001	7.0	8	34	79	24	K0105031110001	11.10	12	55	102	40

* Kesme değerleri Tablo 9'da yer almaktadır.

Devamı 30'uncu sayfadadır



Komple Sert Metal Matkap Ucu 3XD

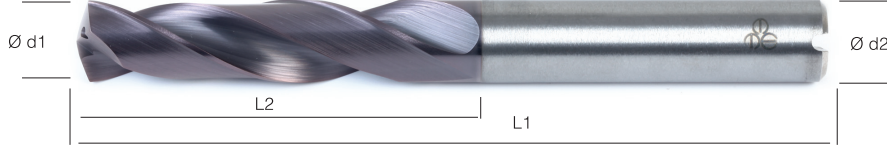
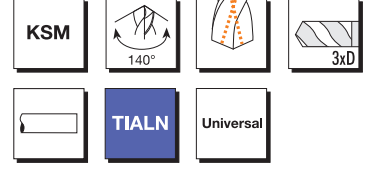


Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	UÇB mm	Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	UÇB mm
K0105031120001	11.2	12	55	102	40	K0105031480001	14.8	16	65	115	45
K0105031130001	11.3	12	55	102	40	K0105031500001	15.0	16	65	115	45
K0105031140001	11.4	12	55	102	40	K0105031550001	15.5	16	65	115	45
K0105031150001	11.5	12	55	102	40	K0105031580001	15.8	16	65	115	45
K0105031160001	11.6	12	55	102	40	K0105031600001	16.0	16	65	115	45
K0105031170001	11.7	12	55	102	40	K0105031650001	16.5	18	73	123	51
K0105031180001	11.8	12	55	102	40	K0105031680001	16.8	18	73	123	51
K0105031190001	11.9	12	55	102	40	K0105031700001	17.0	18	73	123	51
K0105031200001	12.0	12	55	102	40	K0105031750001	17.5	18	73	123	51
K0105031230001	12.3	14	60	107	43	K0105031780001	17.8	18	73	123	51
K0105031250001	12.5	14	60	107	43	K0105031800001	18.0	18	73	123	51
K0105031280001	12.8	14	60	107	43	K0105031850001	18.5	20	79	131	55
K0105031300001	13.0	14	60	107	43	K0105031900001	19.0	20	79	131	55
K0105031350001	13.5	14	60	107	43	K0105031950001	19.5	20	79	131	55
K0105031380001	13.8	14	60	107	43	K0105031980001	19.8	20	79	131	55
K0105031400001	14.0	14	60	107	43	K0105032000001	20.0	20	79	131	55
K0105031450001	14.5	16	65	115	45						

* Kesme değerleri Tablo 9'da yer almaktadır.



Komple Sert Metal Matkap Ucu 3XD - İçten Soğutmalı



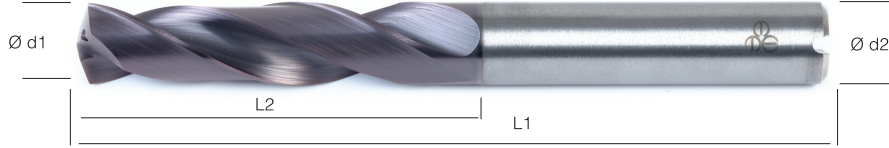
Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	UÇB mm	Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	UÇB mm
K0107030300001	3.0	6	20	62	14	K0107030710001	7.1	8	41	79	29
K0107030310001	3.1	6	20	62	14	K0107030720001	7.2	8	41	79	29
K0107030320001	3.2	6	20	62	14	K0107030730001	7.3	8	41	79	29
K0107030330001	3.3	6	20	62	14	K0107030740001	7.4	8	41	79	29
K0107030340001	3.4	6	20	62	14	K0107030750001	7.5	8	41	79	29
K0107030350001	3.5	6	20	62	14	K0107030760001	7.6	8	41	79	29
K0107030360001	3.6	6	20	62	14	K0107030770001	7.7	8	41	79	29
K0107030370001	3.7	6	20	62	14	K0107030780001	7.8	8	41	79	29
K0107030380001	3.8	6	24	66	17	K0107030790001	7.9	8	41	79	29
K0107030390001	3.9	6	24	66	17	K0107030800001	8.0	8	41	79	29
K0107030400001	4.0	6	24	66	17	K0107030810001	8.1	10	47	89	35
K0107030410001	4.1	6	24	66	17	K0107030820001	8.2	10	47	89	35
K0107030420001	4.2	6	24	66	17	K0107030830001	8.3	10	47	89	35
K0107030430001	4.3	6	24	66	17	K0107030840001	8.4	10	47	89	35
K0107030440001	4.4	6	24	66	17	K0107030850001	8.5	10	47	89	35
K0107030450001	4.5	6	24	66	17	K0107030860001	8.6	10	47	89	35
K0107030460001	4.6	6	24	66	17	K0107030870001	8.7	10	47	89	35
K0107030470001	4.7	6	24	66	17	K0107030880001	8.8	10	47	89	35
K0107030480001	4.8	6	28	66	20	K0107030890001	8.9	10	47	89	35
K0107030490001	4.9	6	28	66	20	K0107030900001	9.0	10	47	89	35
K0107030500001	5.0	6	28	66	20	K0107030910001	9.1	10	47	89	35
K0107030510001	5.1	6	28	66	20	K0107030920001	9.2	10	47	89	35
K0107030520001	5.2	6	28	66	20	K0107030930001	9.3	10	47	89	35
K0107030530001	5.3	6	28	66	20	K0107030940001	9.4	10	47	89	35
K0107030540001	5.4	6	28	66	20	K0107030950001	9.5	10	47	89	35
K0107030550001	5.5	6	28	66	20	K0107030960001	9.6	10	47	89	35
K0107030560001	5.6	6	28	66	20	K0107030970001	9.7	10	47	89	35
K0107030570001	5.7	6	28	66	20	K0107030980001	9.8	10	47	89	35
K0107030580001	5.8	6	28	66	20	K0107030990001	9.9	10	47	89	35
K0107030590001	5.9	6	28	66	20	K0107031000001	10.0	10	47	89	35
K0107030600001	6.0	6	28	66	20	K0107031010001	10.1	12	55	102	40
K0107030610001	6.1	8	34	79	24	K0107031020001	10.2	12	55	102	40
K0107030620001	6.2	8	34	79	24	K0107031030001	10.3	12	55	102	40
K0107030630001	6.3	8	34	79	24	K0107031040001	10.4	12	55	102	40
K0107030640001	6.4	8	34	79	24	K0107031050001	10.5	12	55	102	40
K0107030650001	6.5	8	34	79	24	K0107031060001	10.6	12	55	102	40
K0107030660001	6.6	8	34	79	24	K0107031070001	10.7	12	55	102	40
K0107030670001	6.7	8	34	79	24	K0107031080001	10.8	12	55	102	40
K0107030680001	6.8	8	34	79	24	K0107031090001	10.9	12	55	102	40
K0107030690001	6.9	8	34	79	24	K0107031100001	11.0	12	55	102	40
K0107030700001	7.0	8	34	79	24	K0107031110001	11.1	12	55	102	40

* Kesme değerleri Tablo 9'da yer almaktadır.

Devamı 32'inci sayfadır



Komple Sert Metal Matkap Ucu 3XD - İçten Soğutmalı

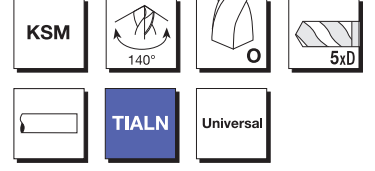


Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	UÇB mm	Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	UÇB mm
K0107031120001	11.2	12	55	102	40	K0107031480001	14.8	16	65	115	45
K0107031130001	11.3	12	55	102	40	K0107031500001	15.0	16	65	115	45
K0107031140001	11.4	12	55	102	40	K0107031550001	15.5	16	65	115	45
K0107031150001	11.5	12	55	102	40	K0107031580001	15.8	16	65	115	45
K0107031160001	11.6	12	55	102	40	K0107031600001	16.0	16	65	115	45
K0107031170001	11.7	12	55	102	40	K0107031650001	16.5	18	73	123	51
K0107031180001	11.8	12	55	102	40	K0107031680001	16.8	18	73	123	51
K0107031190001	11.9	12	55	102	40	K0107031700001	17.0	18	73	123	51
K0107031200001	12.0	12	55	102	40	K0107031750001	17.5	18	73	123	51
K0107031230001	12.3	14	60	107	43	K0107031780001	17.8	18	73	123	51
K0107031250001	12.5	14	60	107	43	K0107031800001	18.0	18	73	123	51
K0107031280001	12.8	14	60	107	43	K0107031850001	18.5	20	79	131	55
K0107031300001	13.0	14	60	107	43	K0107031900001	19.0	20	79	131	55
K0107031350001	13.5	14	60	107	43	K0107031950001	19.5	20	79	131	55
K0107031380001	13.8	14	60	107	43	K0107031980001	19.8	20	79	131	55
K0107031400001	14.0	14	60	107	43	K0107032000001	20.0	20	79	131	55
K0107031450001	14.5	16	65	115	45						

* Kesme değerleri Tablo 9'da yer almaktadır.



Komple Sert Metal Matkap Ucu 5XD



Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	UÇB mm
K0105050050001	0.5	3	10	50	
K0105050060001	0.6	3	10	50	
K0105050070001	0.7	3	10	50	
K0105050080001	0.8	3	10	50	
K0105050090001	0.9	3	10	50	
K0105050100001	1.0	3	10	55	6.5
K0105050110001	1.1	3	12	55	9.5
K0105050120001	1.2	3	12	55	9.5
K0105050130001	1.3	3	12	55	9.5
K0105050140001	1.4	3	12	55	9.5
K0105050150001	1.5	3	12	55	9.5
K0105050160001	1.6	3	16	55	13.0
K0105050170001	1.7	3	16	55	13.0
K0105050180001	1.8	3	16	55	13.0
K0105050190001	1.9	3	16	55	13.0
K0105050200001	2.0	3	16	57	13.0
K0105050210001	2.1	3	21	57	16.0
K0105050220001	2.2	3	21	57	16.0
K0105050230001	2.3	3	21	57	16.0
K0105050240001	2.4	3	21	57	16.0
K0105050250001	2.5	3	21	57	16.0
K0105050260001	2.6	3	21	57	18.5
K0105050270001	2.7	3	21	57	18.5
K0105050280001	2.8	3	21	57	18.5
K0105050290001	2.9	3	21	57	18.5
K0105050300001	3.0	6	28	66	23.0
K0105050310001	3.1	6	28	66	23.0
K0105050320001	3.2	6	28	66	23.0
K0105050330001	3.3	6	28	66	23.0
K0105050340001	3.4	6	28	66	23.0
K0105050350001	3.5	6	28	66	23.0
K0105050360001	3.6	6	28	66	23.0
K0105050370001	3.7	6	28	66	23.0
K0105050380001	3.8	6	36	74	29.0
K0105050390001	3.9	6	36	74	29.0
K0105050400001	4.0	6	36	74	29.0
K0105050410001	4.1	6	36	74	29.0
K0105050420001	4.2	6	36	74	29.0
K0105050430001	4.3	6	36	74	29.0
K0105050440001	4.4	6	36	74	29.0
K0105050450001	4.5	6	36	74	29.0

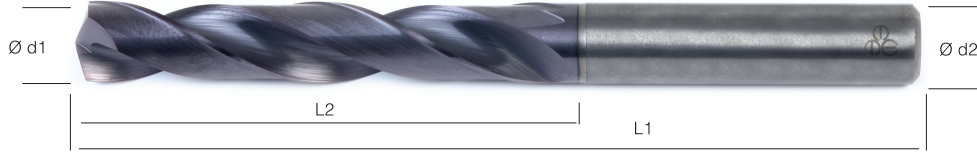
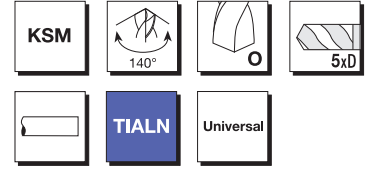
Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	UÇB mm
K0105050460001	4.6	6	36	74	29.0
K0105050470001	4.7	6	36	74	29.0
K0105050480001	4.8	6	44	82	35.0
K0105050490001	4.9	6	44	82	35.0
K0105050500001	5.0	6	44	82	35.0
K0105050510001	5.1	6	44	82	35.0
K0105050520001	5.2	6	44	82	35.0
K0105050530001	5.3	6	44	82	35.0
K0105050540001	5.4	6	44	82	35.0
K0105050550001	5.5	6	44	82	35.0
K0105050555001	5.5	6	44	82	35.0
K0105050560001	5.6	6	44	82	35.0
K0105050570001	5.7	6	44	82	35.0
K0105050580001	5.8	6	44	82	35.0
K0105050590001	5.9	6	44	82	35.0
K0105050600001	6.0	6	44	82	35.0
K0105050610001	6.1	8	53	91	43.0
K0105050620001	6.2	8	53	91	43.0
K0105050630001	6.3	8	53	91	43.0
K0105050640001	6.4	8	53	91	43.0
K0105050650001	6.5	8	53	91	43.0
K0105050660001	6.6	8	53	91	43.0
K0105050670001	6.7	8	53	91	43.0
K0105050680001	6.8	8	53	91	43.0
K0105050690001	6.9	8	53	91	43.0
K0105050700001	7.0	8	53	91	43.0
K0105050710001	7.1	8	53	91	43.0
K0105050720001	7.2	8	53	91	43.0
K0105050730001	7.3	8	53	91	43.0
K0105050740001	7.4	8	53	91	43.0
K0105050750001	7.5	8	53	91	43.0
K0105050760001	7.6	8	53	91	43.0
K0105050770001	7.7	8	53	91	43.0
K0105050780001	7.8	8	53	91	43.0
K0105050790001	7.9	8	53	91	43.0
K0105050800001	8.0	10	53	91	43.0
K0105050810001	8.1	10	61	103	49.0
K0105050820001	8.2	10	61	103	49.0
K0105050830001	8.3	10	61	103	49.0
K0105050840001	8.4	10	61	103	49.0
K0105050850001	8.5	10	61	103	49.0

* Kesme değerleri Tablo 9'da yer almaktadır.

Devamı 34'üncü sayfadadır



Komple Sert Metal Matkap Ucu 5XD

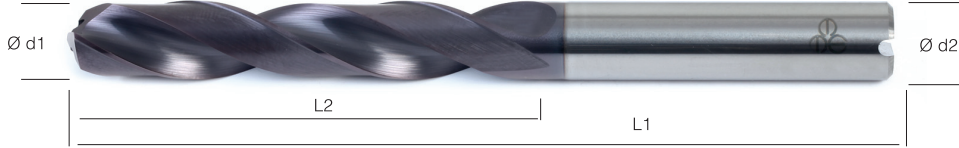


Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	UÇB mm
K0105050860001	8.6	10	61	103	49.0
K0105050870001	8.7	10	61	103	49.0
K0105050880001	8.8	10	61	103	49.0
K0105050890001	8.9	10	61	103	49.0
K0105050900001	9.0	10	61	103	49.0
K0105050910001	9.1	10	61	103	49.0
K0105050920001	9.2	10	61	103	49.0
K0105050930001	9.3	10	61	103	49.0
K0105050940001	9.4	10	61	103	49.0
K0105050950001	9.5	10	61	103	49.0
K0105050960001	9.6	10	61	103	49.0
K0105050970001	9.7	10	61	103	49.0
K0105050980001	9.8	10	61	103	49.0
K0105050990001	9.9	10	61	103	49.0
K0105051000001	10.0	10	61	103	49.0
K0105051010001	10.1	12	71	118	56.0
K0105051020001	10.2	12	71	118	56.0
K0105051030001	10.3	12	71	118	56.0
K0105051040001	10.4	12	71	118	56.0
K0105051050001	10.5	12	71	118	56.0
K0105051060001	10.6	12	71	118	56.0
K0105051070001	10.7	12	71	118	56.0
K0105051080001	10.8	12	71	118	56.0
K0105051090001	10.9	12	71	118	56.0
K0105051100001	11.0	12	71	118	56.0
K0105051110001	11.1	12	71	118	56.0
K0105051120001	11.2	12	71	118	56.0
K0105051130001	11.3	12	71	118	56.0
K0105051140001	11.4	12	71	118	56.0
K0105051150001	11.5	12	71	118	56.0
K0105051160001	11.6	12	71	118	56.0
K0105051170001	11.7	12	71	118	56.0
K0105051180001	11.8	12	71	118	56.0
K0105051190001	11.9	12	71	118	56.0
K0105051200001	12.0	12	71	118	56.0
K0105051220001	12.2	14	77	124	60.0
K0105051230001	12.3	14	77	124	60.0
K0105051250001	12.5	14	77	124	60.0
K0105051280001	12.8	14	77	124	60.0
K0105051300001	13.0	14	77	124	60.0
K0105051350001	13.5	14	77	124	60.0
K0105051380001	13.8	14	77	124	60.0
K0105051400001	14.0	14	77	124	60.0
K0105051450001	14.5	16	83	133	63.0
K0105051480001	14.8	16	83	133	63.0
K0105051500001	15.0	16	83	133	63.0
K0105051550001	15.5	16	83	133	63.0
K0105051580001	15.8	16	83	133	63.0
K0105051600001	16.0	16	83	133	63.0
K0105051650001	16.5	18	93	143	71.0
K0105051680001	16.8	18	93	143	71.0
K0105051700001	17.0	18	93	143	71.0
K0105051750001	17.5	18	93	143	71.0
K0105051780001	17.8	18	93	143	71.0
K0105051800001	18.0	18	93	143	71.0
K0105051850001	18.5	20	101	153	77.0
K0105051900001	19.0	20	101	153	77.0
K0105051950001	19.5	20	101	153	77.0
K0105052000001	20.0	20	101	153	77.0

* Kesme değerleri Tablo 9'da yer almaktadır.



Komple Sert Metal Matkap Ucu 5XD - İçten Soğutmalı



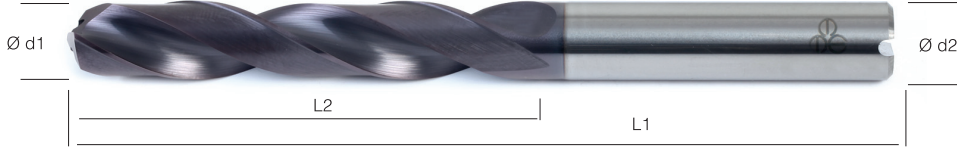
Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	UÇB mm	Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	UÇB mm
K0107050100001	1.00	3	10	55	6.5	K0107050490001	4.90	6	44	82	35.0
K0107050110001	1.10	3	12	55	9.5	K0107050500001	5.00	6	44	82	35.0
K0107050120001	1.20	3	12	55	9.5	K0107050510001	5.10	6	44	82	35.0
K0107050130001	1.30	3	12	55	9.5	K0107050520001	5.20	6	44	82	35.0
K0107050140001	1.40	3	12	55	9.5	K0107050530001	5.30	6	44	82	35.0
K0107050150001	1.50	3	12	55	9.5	K0107050540001	5.40	6	44	82	35.0
K0107050160001	1.60	3	16	55	13.0	K0107050550001	5.50	6	44	82	35.0
K0107050170001	1.70	3	16	55	13.0	K0107050555001	5.55	6	44	82	35.0
K0107050180001	1.80	3	16	55	13.0	K0107050560001	5.60	6	44	82	35.0
K0107050190001	1.90	3	16	55	13.0	K0107050565001	5.65	6	44	82	35.0
K0107050200001	2.00	3	16	57	16.0	K0107050570001	5.70	6	44	82	35.0
K0107050210001	2.10	3	21	57	16.0	K0107050580001	5.80	6	44	82	35.0
K0107050220001	2.20	3	21	57	16.0	K0107050590001	5.90	6	44	82	35.0
K0107050230001	2.30	3	21	57	16.0	K0107050600001	6.00	6	44	82	35.0
K0107050240001	2.40	3	21	57	16.0	K0107050610001	6.10	8	53	91	43.0
K0107050250001	2.50	3	21	57	16.0	K0107050620001	6.20	8	53	91	43.0
K0107050260001	2.60	3	21	57	18.5	K0107050630001	6.30	8	53	91	43.0
K0107050270001	2.70	3	21	57	18.5	K0107050640001	6.40	8	53	91	43.0
K0107050275001	2.70	3	21	57	18.5	K0107050650001	6.50	8	53	91	43.0
K0107050280001	2.80	3	21	57	18.5	K0107050660001	6.60	8	53	91	43.0
K0107050290001	2.90	3	21	57	18.5	K0107050670001	6.70	8	53	91	43.0
K0107050300001	3.00	6	28	66	23.0	K0107050680001	6.80	8	53	91	43.0
K0107050310001	3.10	6	28	66	23.0	K0107050690001	6.90	8	53	91	43.0
K0107050320001	3.20	6	28	66	23.0	K0107050700001	7.00	8	53	91	43.0
K0107050330001	3.30	6	28	66	23.0	K0107050710001	7.10	8	53	91	43.0
K0107050340001	3.40	6	28	66	23.0	K0107050720001	7.20	8	53	91	43.0
K0107050350001	3.50	6	28	66	23.0	K0107050730001	7.30	8	53	91	43.0
K0107050360001	3.60	6	28	66	23.0	K0107050740001	7.40	8	53	91	43.0
K0107050365001	3.60	6	28	66	23.0	K0107050750001	7.50	8	53	91	43.0
K0107050370001	3.70	6	28	66	23.0	K0107050760001	7.60	8	53	91	43.0
K0107050380001	3.80	6	36	74	23.0	K0107050765001	7.65	8	53	91	43.0
K0107050390001	3.90	6	36	74	23.0	K0107050770001	7.70	8	53	91	43.0
K0107050400001	4.00	6	36	74	29.0	K0107050780001	7.80	8	53	91	43.0
K0107050410001	4.10	6	36	74	29.0	K0107050790001	7.90	8	53	91	43.0
K0107050420001	4.20	6	36	74	29.0	K0107050800001	8.00	10	53	91	43.0
K0107050430001	4.30	6	36	74	29.0	K0107050810001	8.10	10	61	103	49.0
K0107050440001	4.40	6	36	74	29.0	K0107050820001	8.20	10	61	103	49.0
K0107050450001	4.50	6	36	74	29.0	K0107050830001	8.30	10	61	103	49.0
K0107050460001	4.60	6	36	74	29.0	K0107050840001	8.40	10	61	103	49.0
K0107050470001	4.70	6	36	74	29.0	K0107050850001	8.50	10	61	103	49.0
K0107050480001	4.80	6	44	82	35.0	K0107050860001	8.60	10	61	103	49.0

* Kesme değerleri Tablo 9'da yer almaktadır.

Devamı 36'nci sayfadadır



Komple Sert Metal Matkap Ucu 5XD - İçten Soğutmalı

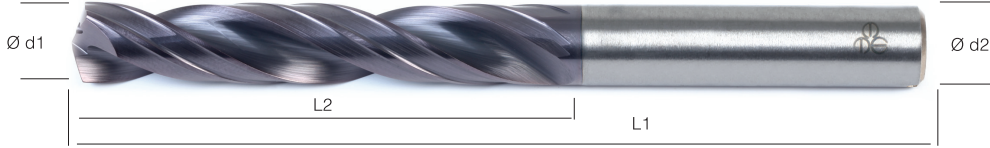


Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	UÇB mm	Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	UÇB mm
K0107050870001	8.7	10	61	103	49	K0107051160001	11.6	12	71	118	56
K0107050880001	8.8	10	61	103	49	K0107051170001	11.7	12	71	118	56
K0107050890001	8.9	10	61	103	49	K0107051180001	11.8	12	71	118	56
K0107050900001	9.0	10	61	103	49	K0107051190001	11.9	12	71	118	56
K0107050910001	9.1	10	61	103	49	K0107051200001	12.0	12	71	118	56
K0107050920001	9.2	10	61	103	49	K0107051220001	12.2	14	77	124	60
K0107050930001	9.3	10	61	103	49	K0107051230001	12.3	14	77	124	60
K0107050940001	9.4	10	61	103	49	K0107051250001	12.5	14	77	124	60
K0107050950001	9.5	10	61	103	49	K0107051280001	12.8	14	77	124	60
K0107050955001	9.5	10	61	103	49	K0107051300001	13.0	14	77	124	60
K0107050960001	9.6	10	61	103	49	K0107051350001	13.5	14	77	124	60
K0107050970001	9.7	10	61	103	49	K0107051380001	13.8	14	77	124	60
K0107050980001	9.8	10	61	103	49	K0107051400001	14.0	14	77	124	60
K0107050990001	9.9	10	61	103	49	K0107051450001	14.5	16	83	133	63
K0107051000001	10.0	10	61	103	49	K0107051480001	14.8	16	83	133	63
K0107051010001	10.1	12	71	118	56	K0107051500001	15.0	16	83	133	63
K0107051020001	10.2	12	71	118	56	K0107051510001	15.1	16	83	133	63
K0107051030001	10.3	12	71	118	56	K0107051550001	15.5	16	83	133	63
K0107051040001	10.4	12	71	118	56	K0107051580001	15.8	16	83	133	63
K0107051050001	10.5	12	71	118	56	K0107051600001	16.0	16	83	133	63
K0107051060001	10.6	12	71	118	56	K0107051650001	16.5	18	93	143	71
K0107051070001	10.7	12	71	118	56	K0107051680001	16.8	18	93	143	71
K0107051080001	10.8	12	71	118	56	K0107051700001	17.0	18	93	143	71
K0107051090001	10.9	12	71	118	56	K0107051750001	17.5	18	93	143	71
K0107051100001	11.0	12	71	118	56	K0107051780001	17.8	18	93	143	71
K0107051110001	11.1	12	71	118	56	K0107051800001	18.0	18	93	143	71
K0107051120001	11.2	12	71	118	56	K0107051850001	18.5	20	101	153	71
K0107051130001	11.3	12	71	118	56	K0107051900001	19.0	20	101	153	71
K0107051140001	11.4	12	71	118	56	K0107051950001	19.5	20	101	153	71
K0107051150001	11.5	12	71	118	56	K0107052000001	20.0	20	101	153	71

* Kesme değerleri Tablo 9'da yer almaktadır.



Komple Sert Metal Matkap Ucu 5XD - İçten Soğutmalı - 4 Fazlı



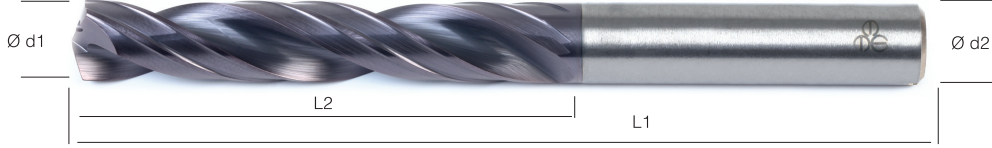
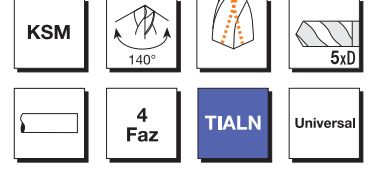
Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	UÇB mm	Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	UÇB mm
K0108050300001	3.0	6	28	66	23	K0108050710001	7.1	8	53	91	43
K0108050310001	3.1	6	28	66	23	K0108050720001	7.2	8	53	91	43
K0108050320001	3.2	6	28	66	23	K0108050730001	7.3	8	53	91	43
K0108050330001	3.3	6	28	66	23	K0108050740001	7.4	8	53	91	43
K0108050340001	3.4	6	28	66	23	K0108050750001	7.5	8	53	91	43
K0108050350001	3.5	6	28	66	23	K0108050760001	7.6	8	53	91	43
K0108050360001	3.6	6	28	66	23	K0108050770001	7.7	8	53	91	43
K0108050370001	3.7	6	28	66	23	K0108050780001	7.8	8	53	91	43
K0108050380001	3.8	6	36	74	29	K0108050790001	7.9	8	53	91	43
K0108050390001	3.9	6	36	74	29	K0108050800001	8.0	8	53	91	43
K0108050400001	4.0	6	36	74	29	K0108050810001	8.1	10	61	103	49
K0108050410001	4.1	6	36	74	29	K0108050820001	8.2	10	61	103	49
K0108050420001	4.2	6	36	74	29	K0108050830001	8.3	10	61	103	49
K0108050430001	4.3	6	36	74	29	K0108050840001	8.4	10	61	103	49
K0108050440001	4.4	6	36	74	29	K0108050850001	8.5	10	61	103	49
K0108050450001	4.5	6	36	74	29	K0108050860001	8.6	10	61	103	49
K0108050460001	4.6	6	36	74	29	K0108050870001	8.7	10	61	103	49
K0108050470001	4.7	6	36	74	29	K0108050880001	8.8	10	61	103	49
K0108050480001	4.8	6	44	82	35	K0108050890001	8.9	10	61	103	49
K0108050490001	4.9	6	44	82	35	K0108050900001	9.0	10	61	103	49
K0108050500001	5.0	6	44	82	35	K0108050910001	9.1	10	61	103	49
K0108050510001	5.1	6	44	82	35	K0108050920001	9.2	10	61	103	49
K0108050520001	5.2	6	44	82	35	K0108050930001	9.3	10	61	103	49
K0108050530001	5.3	6	44	82	35	K0108050940001	9.4	10	61	103	49
K0108050540001	5.4	6	44	82	35	K0108050950001	9.5	10	61	103	49
K0108050550001	5.5	6	44	82	35	K0108050960001	9.6	10	61	103	49
K0108050560001	5.6	6	44	82	35	K0108050970001	9.7	10	61	103	49
K0108050570001	5.7	6	44	82	35	K0108050980001	9.8	10	61	103	49
K0108050580001	5.8	6	44	82	35	K0108050990001	9.9	10	61	103	49
K0108050590001	5.9	6	44	82	35	K0108051000001	10.0	10	61	103	49
K0108050600001	6.0	8	44	82	35	K0108051010001	10.1	12	71	118	56
K0108050610001	6.1	8	53	91	43	K0108051020001	10.2	12	71	118	56
K0108050620001	6.2	8	53	91	43	K0108051030001	10.3	12	71	118	56
K0108050630001	6.3	8	53	91	43	K0108051040001	10.4	12	71	118	56
K0108050640001	6.4	8	53	91	43	K0108051050001	10.5	12	71	118	56
K0108050650001	6.5	8	53	91	43	K0108051060001	10.6	12	71	118	56
K0108050660001	6.6	8	53	91	43	K0108051070001	10.7	12	71	118	56
K0108050670001	6.7	8	53	91	43	K0108051080001	10.8	12	71	118	56
K0108050680001	6.8	8	53	91	43	K0108051090001	10.9	12	71	118	56
K0108050690001	6.9	8	53	91	43	K0108051100001	11.0	12	71	118	56
K0108050700001	7.0	8	53	91	43	K0108051110001	11.1	12	71	118	56

* Kesme değerleri Tablo 9'da yer almaktadır.

Devamı 38'inci sayfadadır



Komple Sert Metal Matkap Ucu 5XD - İçten Soğutmalı - 4 Fazlı



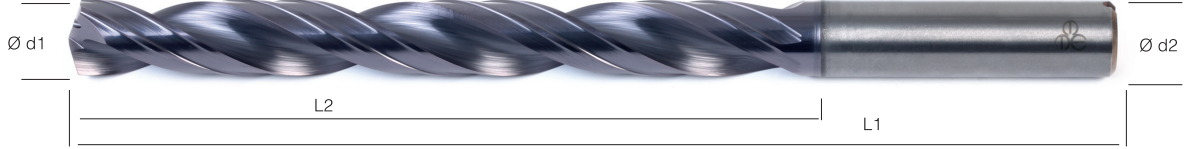
Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	UÇB mm
K0108051120001	11.2	12	71	118	56
K0108051130001	11.3	12	71	118	56
K0108051140001	11.4	12	71	118	56
K0108051150001	11.5	12	71	118	56
K0108051160001	11.6	12	71	118	56
K0108051170001	11.7	12	71	118	56
K0108051180001	11.8	12	71	118	56
K0108051190001	11.9	12	71	118	56
K0108051200001	12.0	12	71	118	56
K0108051220001	12.2	14	77	124	60
K0108051230001	12.3	14	77	124	60
K0108051250001	12.5	14	77	124	60
K0108051280001	12.8	14	77	124	60
K0108051300001	13.0	14	77	124	60
K0108051350001	13.5	14	77	124	60
K0108051380001	13.8	14	77	124	60
K0108051400001	14.0	14	77	124	60

Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	UÇB mm
K0108051450001	14.5	16	83	133	63
K0108051480001	14.8	16	83	133	63
K0108051500001	15.0	16	83	133	63
K0108051550001	15.5	16	83	133	63
K0108051580001	15.8	16	83	133	63
K0108051600001	16.0	16	83	133	63
K0108051650001	16.5	18	93	143	71
K0108051680001	16.8	18	93	143	71
K0108051700001	17.0	18	93	143	71
K0108051750001	17.5	18	93	143	71
K0108051780001	17.8	18	93	143	71
K0108051800001	18.0	18	93	143	71
K0108051850001	18.5	20	101	153	77
K0108051900001	19.0	20	101	153	77
K0108051950001	19.5	20	101	153	77
K0108052000001	20.0	20	101	153	77

* Kesme değerleri Tablo 9'da yer almaktadır.



Komple Sert Metal Matkap Ucu 8XD - İçten Soğutmalı - 4 Fazlı



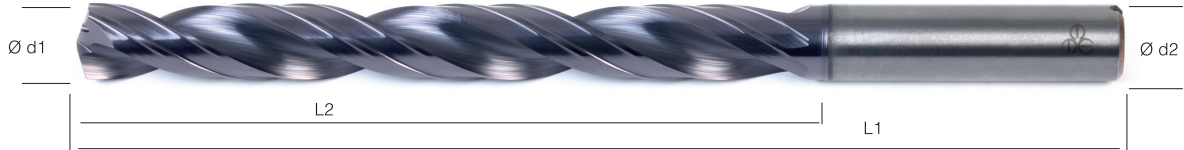
Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	UÇB mm
K0107080100001	1.0	3	11	55	9.0
K0107080110001	1.1	3	17	55	13.5
K0107080120001	1.2	3	17	55	13.5
K0107080130001	1.3	3	17	55	13.5
K0107080140001	1.4	3	17	55	13.5
K0107080150001	1.5	3	22	65	17.5
K0107080160001	1.6	3	22	65	17.5
K0107080170001	1.7	3	22	65	17.5
K0107080180001	1.8	3	22	65	17.5
K0107080190001	1.9	3	22	65	17.5
K0107080200001	2.0	3	28	74	22.5
K0107080210001	2.1	3	28	74	22.5
K0107080220001	2.2	3	28	74	22.5
K0107080230001	2.3	3	28	74	22.5
K0107080240001	2.4	3	28	74	22.5
K0107080250001	2.5	3	32	81	22.5
K0107080260001	2.6	3	32	81	22.5
K0107080270001	2.7	3	32	81	22.5
K0107080280001	2.8	3	32	81	22.5
K0107080290001	2.9	3	32	81	22.5
K0107080300001	3.0	6	34	72	27.0
K0107080310001	3.1	6	34	72	27.0
K0107080320001	3.2	6	34	72	27.0
K0107080330001	3.3	6	34	72	27.0
K0107080340001	3.4	6	34	72	27.0
K0107080350001	3.5	6	34	72	27.0
K0107080360001	3.6	6	34	72	27.0
K0107080370001	3.7	6	34	72	27.0
K0107080380001	3.8	6	43	81	35.0
K0107080390001	3.9	6	43	81	35.0
K0107080400001	4.0	6	43	81	35.0
K0107080410001	4.1	6	43	81	35.0
K0107080420001	4.2	6	43	81	35.0
K0107080430001	4.3	6	43	81	35.0
K0107080440001	4.4	6	43	81	35.0
K0107080450001	4.5	6	43	81	35.0
K0107080460001	4.6	6	43	81	35.0
K0107080470001	4.7	6	57	95	35.0
K0107080480001	4.8	6	57	95	45.0
K0107080490001	4.9	6	57	95	45.0
K0107080500001	5.0	6	57	95	45.0

Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	UÇB mm
K0107080510001	5.1	6	57	95	45.0
K0107080520001	5.2	6	57	95	45.0
K0107080530001	5.3	6	57	95	45.0
K0107080540001	5.4	6	57	95	45.0
K0107080550001	5.5	6	57	95	45.0
K0107080560001	5.6	6	57	95	45.0
K0107080570001	5.7	6	57	95	45.0
K0107080580001	5.8	6	57	95	45.0
K0107080590001	5.9	6	57	95	45.0
K0107080600001	6.0	6	57	95	45.0
K0107080610001	6.1	8	76	114	52.0
K0107080620001	6.2	8	76	114	52.0
K0107080630001	6.3	8	76	114	52.0
K0107080640001	6.4	8	76	114	52.0
K0107080650001	6.5	8	76	114	52.0
K0107080660001	6.6	8	76	114	52.0
K0107080670001	6.7	8	76	114	52.0
K0107080680001	6.8	8	76	114	52.0
K0107080690001	6.9	8	76	114	52.0
K0107080700001	7.0	8	76	114	60.0
K0107080710001	7.1	8	76	114	60.0
K0107080720001	7.2	8	76	114	60.0
K0107080730001	7.3	8	76	114	60.0
K0107080740001	7.4	8	76	114	60.0
K0107080750001	7.5	8	76	114	60.0
K0107080760001	7.6	8	76	114	60.0
K0107080770001	7.7	8	76	114	60.0
K0107080780001	7.8	8	76	114	60.0
K0107080790001	7.9	8	76	114	60.0
K0107080800001	8.0	8	76	114	60.0
K0107080810001	8.1	10	95	142	68.0
K0107080820001	8.2	10	95	142	68.0
K0107080830001	8.3	10	95	142	68.0
K0107080840001	8.4	10	95	142	68.0
K0107080850001	8.5	10	95	142	68.0
K0107080860001	8.6	10	95	142	68.0
K0107080870001	8.7	10	95	142	68.0
K0107080880001	8.8	10	95	142	68.0
K0107080890001	8.9	10	95	142	68.0
K0107080900001	9.0	10	95	142	68.0
K0107080910001	9.1	10	95	142	76.0

* Kesme değerleri Tablo 9'da yer almaktadır.

Devamı 40' inci sayfadadır

Komple Sert Metal Matkap Ucu 8XD - İçten Soğutmalı - 4 Fazlı

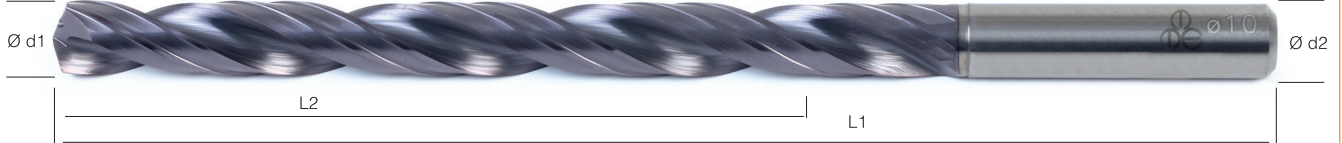


Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	UÇB mm	Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	UÇB mm
K0107080920001	9.2	10	95	142	76.0	K0107081110001	11.1	12	114	162	90.0
K0107080930001	9.3	10	95	142	76.0	K0107081120001	11.2	12	114	162	90.0
K0107080940001	9.4	10	95	142	76.0	K0107081130001	11.3	12	114	162	90.0
K0107080950001	9.5	10	95	142	76.0	K0107081140001	11.4	12	114	162	90.0
K0107080960001	9.6	10	95	142	76.0	K0107081150001	11.5	12	114	162	90.0
K0107080970001	9.7	10	95	142	76.0	K0107081160001	11.6	12	114	162	90.0
K0107080980001	9.8	10	95	142	76.0	K0107081170001	11.7	12	114	162	90.0
K0107080990001	9.9	10	95	142	76.0	K0107081180001	11.8	12	114	162	90.0
K0107081000001	10.0	10	95	142	76.0	K0107081190001	11.9	12	114	162	90.0
K0107081010001	10.1	12	114	162	90.0	K0107081200001	12.0	12	114	162	90.0
K0107081020001	10.2	12	114	162	90.0	K0107081250001	12.5	14	133	178	106.0
K0107081030001	10.3	12	114	162	90.0	K0107081280001	12.8	14	133	178	106.0
K0107081040001	10.4	12	114	162	90.0	K0107081300001	13.0	14	133	178	106.0
K0107081050001	10.5	12	114	162	90.0	K0107081350001	13.5	14	133	178	106.0
K0107081060001	10.6	12	114	162	90.0	K0107081400001	14.0	14	133	178	106.0
K0107081070001	10.7	12	114	162	90.0	K0107081450001	14.5	16	152	203	122.0
K0107081080001	10.8	12	114	162	90.0	K0107081500001	15.0	16	152	203	122.0
K0107081090001	10.9	12	114	162	90.0	K0107081550001	15.5	16	152	203	122.0
K0107081100001	11.0	12	114	162	90.0	K0107081600001	16.0	16	152	203	122.0

* Kesme değerleri Tablo 9'da yer almaktadır.



Komple Sert Metal Matkap Ucu 12XD - İçten Soğutmalı - 4 Fazlı



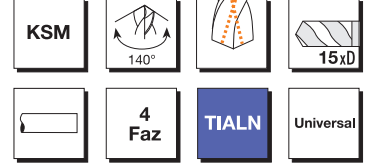
Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	UÇB mm
K0107100100001	1.0	3	15	55	12.0
K0107100110001	1.1	3	23	55	18.5
K0107100120001	1.2	3	23	55	18.5
K0107100130001	1.3	3	23	55	18.5
K0107100140001	1.4	3	23	55	18.5
K0107100150001	1.5	3	23	65	18.5
K0107100160001	1.6	3	30	65	24.0
K0107100170001	1.7	3	30	65	24.0
K0107100180001	1.8	3	30	65	24.0
K0107100190001	1.9	3	30	65	24.0
K0107100200001	2.0	3	30	74	24.0
K0107100210001	2.1	3	38	74	30.5
K0107100220001	2.2	3	38	74	30.5
K0107100230001	2.3	3	38	74	30.5
K0107100240001	2.4	3	38	74	30.5
K0107100250001	2.5	3	38	81	30.5
K0107100260001	2.6	3	44	81	35.0
K0107100270001	2.7	3	44	81	35.0
K0107100280001	2.8	3	44	81	35.0
K0107100290001	2.9	3	44	81	35.0
K0107100300001	3.0	6	54	92	48.0
K0107100330001	3.3	6	54	92	48.0
K0107100350001	3.5	6	54	92	48.0
K0107100380001	3.8	6	64	102	58.0
K0107100400001	4.0	6	64	102	58.0
K0107100420001	4.2	6	64	102	58.0
K0107100450001	4.5	6	64	102	58.0
K0107100480001	4.8	6	78	116	70.0
K0107100500001	5.0	6	78	116	70.0
K0107100550001	5.5	6	78	116	70.0

Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	UÇB mm
K0107100580001	5.8	6	78	116	70.0
K0107100600001	6.0	6	78	116	70.0
K0107100650001	6.5	8	108	146	94.0
K0107100680001	6.8	8	108	146	94.0
K0107100700001	7.0	8	108	146	94.0
K0107100750001	7.5	8	108	146	94.0
K0107100780001	7.8	8	108	146	94.0
K0107100800001	8.0	8	108	146	94.0
K0107100850001	8.5	10	120	162	110.0
K0107100880001	8.8	10	120	162	110.0
K0107100900001	9.0	10	120	162	110.0
K0107100950001	9.5	10	120	162	110.0
K0107100980001	9.8	10	120	162	110.0
K0107101000001	10.0	10	120	162	110.0
K0107101020001	10.2	12	156	204	142.0
K0107101050001	10.5	12	156	204	142.0
K0107101080001	10.8	12	156	204	142.0
K0107101100001	11.0	12	156	204	142.0
K0107101150001	11.5	12	156	204	142.0
K0107101180001	11.8	12	156	204	142.0
K0107101200001	12.0	12	156	204	142.0
K0107101250001	12.5	14	182	230	166.0
K0107101280001	12.8	14	182	230	166.0
K0107101300001	13.0	14	182	230	166.0
K0107101350001	13.5	14	182	230	166.0
K0107101400001	14.0	14	182	230	166.0
K0107101450001	14.5	16	208	260	192.0
K0107101500001	15.0	16	208	260	192.0
K0107101550001	15.5	16	208	260	192.0
K0107101600001	16.0	16	208	260	192.0

* Kesme değerleri Tablo 9'da yer almaktadır.



Komple Sert Metal Matkap Ucu 15XD - İçten Soğutmalı - 4 Fazlı



Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	UÇB mm	Ürün kodu	d1 mm	d2 mm	L2 mm	L1 mm	UÇB mm
K0109150100001	1.0	3	20	60	15	K0109150530001	5.3	6	92	130	80
K0109150110001	1.1	3	22	60	17	K0109150540001	5.4	6	92	130	81
K0109150120001	1.2	3	24	60	18	K0109150550001	5.5	6	92	130	83
K0109150130001	1.3	3	25	60	21	K0109150560001	5.6	6	100	140	84
K0109150140001	1.4	3	27	60	21	K0109150570001	5.7	6	100	140	86
K0109150150001	1.5	3	27	60	23	K0109150580001	5.8	6	100	140	87
K0109150160001	1.6	3	32	65	24	K0109150590001	5.9	6	100	140	90
K0109150170001	1.7	3	32	65	26	K0109150600001	6.0	6	100	140	90
K0109150180001	1.8	3	35	65	27	K0109150610001	6.1	8	108	145	92
K0109150190001	1.9	3	35	65	29	K0109150620001	6.2	8	108	145	93
K0109150200001	2.0	3	35	65	30	K0109150630001	6.3	8	108	145	96
K0109150210001	2.1	3	40	75	32	K0109150640001	6.4	8	108	145	96
K0109150220001	2.2	3	40	75	33	K0109150650001	6.5	8	108	145	97
K0109150230001	2.3	3	40	75	35	K0109150660001	6.6	8	130	170	99
K0109150240001	2.4	3	45	75	36	K0109150670001	6.7	8	130	170	101
K0109150250001	2.5	3	45	75	38	K0109150680001	6.8	8	130	170	102
K0109150260001	2.6	3	48	80	39	K0109150690001	6.9	8	130	170	104
K0109150270001	2.7	3	48	80	41	K0109150700001	7.0	8	130	170	105
K0109150280001	2.8	3	50	80	42	K0109150750001	7.5	8	130	170	115
K0109150290001	2.9	3	50	80	44	K0109150780001	7.8	8	130	170	117
K0109150300001	3.0	6	60	100	45	K0109150800001	8.0	8	130	170	120
K0109150310001	3.1	6	60	100	47	K0109150850001	8.5	10	163	208	128
K0109150320001	3.2	6	60	100	48	K0109150880001	8.8	10	163	208	132
K0109150330001	3.3	6	60	100	50	K0109150900001	9.0	10	163	208	135
K0109150340001	3.4	6	60	100	51	K0109150950001	9.5	10	163	208	143
K0109150350001	3.5	6	60	100	53	K0109150980001	9.8	10	163	208	147
K0109150360001	3.6	6	68	108	54	K0109151000001	10.0	10	163	208	150
K0109150370001	3.7	6	68	108	56	K0109151020001	10.2	12	195	245	153
K0109150380001	3.8	6	68	108	57	K0109151050001	10.5	12	195	245	158
K0109150390001	3.9	6	68	108	59	K0109151080001	10.8	12	195	245	162
K0109150400001	4.0	6	68	108	60	K0109151100001	11.0	12	195	245	165
K0109150410001	4.1	6	78	115	62	K0109151120001	11.2	12	195	245	168
K0109150420001	4.2	6	78	115	63	K0109151150001	11.5	12	195	245	173
K0109150430001	4.3	6	78	115	65	K0109151180001	11.8	12	195	245	177
K0109150440001	4.4	6	78	115	66	K0109151200001	12.0	12	195	245	180
K0109150450001	4.5	6	78	115	68	K0109151250001	12.5	14	230	280	188
K0109150460001	4.6	6	84	125	69	K0109151300001	13.0	14	230	280	195
K0109150470001	4.7	6	84	125	71	K0109151380001	13.8	14	230	280	207
K0109150480001	4.8	6	84	125	72	K0109151400001	14.0	14	230	280	210
K0109150490001	4.9	6	84	125	74	K0109151480001	14.8	16	260	310	222
K0109150500001	5.0	6	84	125	75	K0109151500001	15.0	16	260	310	225
K0109150510001	5.1	6	92	130	77	K0109151580001	15.8	16	260	310	237
K0109150520001	5.2	6	92	130	78	K0109151600001	16.0	16	260	310	240

* Kesme değerleri Tablo 9'da yer almaktadır.



Standart Karbür Takımlar için Önerilen Kesme Değerleri

TABLO 1

Malzeme Tanımı	ÇAPLARA GÖRE İLERLEME (Diş Başına İlerleme) mm/ diş												
	Mukavemet (N/mm ²)	Vc (m/dk.) Kesme Hızı	Ø2 fz	Ø3 fz	Ø4 fz	Ø5 fz	Ø6 fz	Ø8 fz	Ø10 fz	Ø12 fz	Ø14 fz	Ø16 fz	
Genel Yapı Çelikleri	< 500 N/mm ²	120	0.012	0.012	0.025	0.030	0.037	0.051	0.068	0.090	0.100	0.113	0.135
Genel Yapı Çelikleri	> 700 N/mm ²	105	0.012	0.012	0.025	0.030	0.037	0.051	0.068	0.090	0.100	0.113	0.135
Otomat Çelikleri	< 850 N/mm ²	95	0.012	0.012	0.025	0.030	0.037	0.051	0.068	0.090	0.100	0.113	0.135
Otomat Çelikleri	850 - 1000 N/mm ²	90	0.012	0.012	0.025	0.030	0.037	0.051	0.068	0.090	0.100	0.113	0.135
Otomat Çelikleri	1400 N/mm ²	80	0.008	0.012	0.018	0.018	0.028	0.040	0.055	0.070	0.080	0.090	0.110
Alaşımli ve Sertleştirilmiş Çelikler	1000 N/mm ²	80	0.008	0.008	0.015	0.015	0.018	0.030	0.035	0.040	0.040	0.060	0.080
Nitrasyon Çelikleri	1000 N/mm ²	80	0.008	0.008	0.015	0.015	0.018	0.030	0.035	0.040	0.040	0.060	0.080
Alaşımli Isıl İşlem Görmüş Çelikler	850 N/mm ²	100	0.010	0.010	0.020	0.020	0.030	0.040	0.050	0.060	0.060	0.080	0.100
Takım Çelikleri		70	0.008	0.012	0.018	0.018	0.028	0.040	0.055	0.070	0.080	0.090	0.110
Dökme Demir	< 180 HB	120	0.008	0.008	0.015	0.020	0.020	0.030	0.040	0.045	0.045	0.060	0.080
Küresel Grafitli Dövme Demir		60	0.011	0.023	0.027	0.030	0.033	0.045	0.056	0.068	0.075	0.090	0.115
Küresel Grafitli Dökme Demir		90	0.011	0.023	0.027	0.030	0.033	0.045	0.056	0.068	0.075	0.090	0.115
Al ve Al Alaşımli (< %12-Si)		200	0.008	0.008	0.015	0.015	0.025	0.030	0.040	0.050	0.050	0.065	0.085
Al ve Al Alaşımli (> %12-Si)		200	0.012	0.012	0.025	0.030	0.037	0.051	0.068	0.090	0.100	0.113	0.135
Pirinç - Bakır - Bronz		80	0.012	0.012	0.025	0.030	0.037	0.051	0.068	0.090	0.100	0.113	0.135
Duroplastik ve Termoplastik		40											
Titanyum ve Titanyum Alaşımli		60	0.008	0.012	0.013	0.016	0.019	0.028	0.036	0.051	0.060	0.068	0.084

fz : Diş Başına İlerleme (mm/diş)

K010310 / K010315 Serileri için Önerilen Kesme Değerleri

TABLO 2

Malzeme Tanımı	ÇAPLARA GÖRE İLERLEME (Diş Başına İlerleme) mm/ diş									
	Mukavemet (N/mm ²)	Vc (m/dk.) Kesme Hızı	Ø4 fz	Ø5 fz	Ø6 fz	Ø8 fz	Ø10 fz	Ø12 fz	Ø16 fz	Ø20 fz
Genel Yapı Çelikleri	<500	250	0.045	0.045	0.055	0.070	0.080	0.100	0.120	0.120
Otomat Çelikleri	<850	240	0.040	0.040	0.055	0.060	0.070	0.080	0.100	0.100
Alaşımli Isıl İşlem Görmüş Çelikler	700-850	200	0.040	0.040	0.050	0.060	0.070	0.080	0.100	0.100
Alaşımli Isıl İşlem Görmüş Çelikler	850-1000	190	0.040	0.040	0.050	0.060	0.070	0.080	0.100	0.100
Alaşımli Isıl İşlem Görmüş Çelikler	850-1000	180	0.040	0.040	0.050	0.060	0.070	0.080	0.100	0.100
Paslanmaz Çelikler - Östenitik	<700	120	0.025	0.025	0.035	0.040	0.040	0.050	0.070	0.070
Dökme Demir	<180 HB	200	0.045	0.045	0.055	0.070	0.080	0.100	0.120	0.120
Titanyum ve Titanyum Alaşımli	<850	160	0.040	0.040	0.040	0.060	0.070	0.080	0.100	0.100
Düşük Alaşımli Bakır	<400	280	0.045	0.045	0.055	0.070	0.080	0.100	0.120	0.120

fz : Diş Başına İlerleme (mm/diş)



Son İşleme için Önerilen Kesme Değerleri

Kenar Frezeleme $a_e = 0,5xD$ ve $a_p = 2xD$

TABLO 3

Malzeme Tanımı	ÇAPLARA GÖRE İLERLEME (Diş Başına İlerleme) mm/diş							
	Mukavemet (N/mm ²)	Vc (m/dk.) Kesme Hızı	Ø6 fz	Ø8 fz	Ø10 fz	Ø12 fz	Ø16 fz	Ø20 fz
Genel Yapı Çelikleri	< 500	300	0.030	0.038	0.049	0.060	0.071	0.086
Genel Yapı Çelikleri	500-850	280	0.030	0.038	0.045	0.056	0.068	0.079
Otomat Çelikleri	< 850	230	0.030	0.038	0.045	0.056	0.068	0.079
Otomat Çelikleri	850 - 1000	150	0.026	0.038	0.041	0.049	0.060	0.075
Alaşsız Isıl İşlem Görmüş Çelikler	< 700	230	0.019	0.026	0.034	0.041	0.049	0.060
Alaşsız Isıl İşlem Görmüş Çelikler	700-850	230	0.030	0.040	0.045	0.060	0.075	0.090
Alaşsız Isıl İşlem Görmüş Çelikler	850-1000	230	0.025	0.035	0.045	0.050	0.065	0.086
Alaşlı Isıl İşlem Görmüş Çelikler	850-1000	230	0.025	0.035	0.045	0.050	0.065	0.086
Alaşlı Isıl İşlem Görmüş Çelikler	1000-1200	190	0.020	0.030	0.040	0.050	0.060	0.075
Alaşsız ve Sertleştirilmiş Çelikler	850-1000	250	0.030	0.040	0.050	0.065	0.080	0.100
Alaşlı ve Sertleştirilmiş Çelikler	<1000	230	0.025	0.035	0.045	0.050	0.065	0.080
Alaşlı ve Sertleştirilmiş Çelikler	>1000	190	0.020	0.030	0.040	0.050	0.060	0.075
Takım Çelikleri	<850	240	0.025	0.035	0.045	0.050	0.065	0.080
Takım Çelikleri	850-1100	230	0.025	0.035	0.045	0.050	0.065	0.080
Takım Çelikleri	1100-1400	220	0.020	0.030	0.040	0.045	0.060	0.075
Paslanmaz Çelikler - Sülfürlü	<700	150	0.025	0.035	0.045	0.055	0.065	0.080
Paslanmaz Çelikler - Östenitik	<700	120	0.020	0.030	0.040	0.050	0.060	0.075
Paslanmaz Çelikler - Östenitik	<850	110	0.025	0.035	0.045	0.080	0.065	0.080
Paslanmaz Çelikler - Martenzitik	<1100	110	0.020	0.030	0.040	0.075	0.060	0.075
Dökme Demir	<180 HB	200	0.040	0.050	0.065	0.080	0.095	0.115
Dökme Demir	>180 HB	150	0.035	0.045	0.060	0.075	0.090	0.110
Dökme Demir - (GGG, GT)	>180 HB	150	0.040	0.050	0.065	0.080	0.095	0.115
Dökme Demir - (GGG, GT)	>260 HB	120	0.035	0.045	0.060	0.075	0.090	0.110
Titanyum ve Titanyum Alaşımları	<850	70	0.020	0.030	0.040	0.050	0.060	0.075
Titanyum ve Titanyum Alaşımları	850-1200	60	0.025	0.030	0.040	0.045	0.055	0.065

fz : Diş Başına İlerleme (mm/diş)

Kaba İşleme için Önerilen Kesme Değerleri

Alın Frezeleme $a_e = 1xD$ ve $a_p = 1,5xD$

TABLO 3

Malzeme Tanımı	ÇAPLARA GÖRE İLERLEME (Diş Başına İlerleme) mm/diş							
	Mukavemet (N/mm ²)	Vc (m/dk.) Kesme Hızı	Ø6 fz	Ø8 fz	Ø10 fz	Ø12 fz	Ø16 fz	Ø20 fz
Genel Yapı Çelikleri	< 500	235	0.040	0.050	0.065	0.080	0.095	0.115
Genel Yapı Çelikleri	500-850	185	0.040	0.050	0.060	0.075	0.090	0.105
Otomat Çelikleri	< 850	185	0.040	0.050	0.060	0.075	0.090	0.105
Otomat Çelikleri	850 - 1000	180	0.035	0.050	0.055	0.065	0.080	0.100
Alaşsız Isıl İşlem Görmüş Çelikler	< 700	185	0.050	0.065	0.080	0.080	0.095	0.115
Alaşsız Isıl İşlem Görmüş Çelikler	700-850	185	0.050	0.060	0.075	0.075	0.090	0.105
Alaşsız Isıl İşlem Görmüş Çelikler	850-1000	185	0.040	0.055	0.065	0.065	0.080	0.100
Alaşlı Isıl İşlem Görmüş Çelikler	850-1000	185	0.030	0.040	0.055	0.065	0.080	0.100
Alaşlı Isıl İşlem Görmüş Çelikler	1000-1200	160	0.030	0.040	0.050	0.060	0.070	0.090
Alaşsız ve Sertleştirilmiş Çelikler	850-1000	235	0.040	0.050	0.065	0.080	0.095	0.115
Alaşlı ve Sertleştirilmiş Çelikler	<1000	180	0.030	0.040	0.055	0.065	0.080	0.100
Alaşlı ve Sertleştirilmiş Çelikler	>1000	160	0.030	0.040	0.050	0.060	0.070	0.090
Takım Çelikleri	<850	185	0.030	0.040	0.055	0.065	0.080	0.100
Takım Çelikleri	850-1100	180	0.030	0.040	0.050	0.060	0.070	0.090
Takım Çelikleri	1100-1400	110	0.025	0.035	0.045	0.055	0.065	0.080
Paslanmaz Çelikler - Sülfürlü	<700	130	0.030	0.040	0.055	0.065	0.080	0.090
Paslanmaz Çelikler - Östenitik	<700	105	0.030	0.040	0.050	0.060	0.070	0.100
Paslanmaz Çelikler - Östenitik	<850	105	0.030	0.040	0.055	0.065	0.080	0.090
Paslanmaz Çelikler - Martenzitik	<1100	100	0.025	0.035	0.045	0.055	0.065	0.080
Dökme Demir	<180 HB	160	0.040	0.050	0.075	0.090	0.110	0.130
Dökme Demir	>180 HB	145	0.040	0.050	0.065	0.080	0.100	0.120
Dökme Demir - (GGG, GT)	>180 HB	120	0.035	0.050	0.075	0.080	0.100	0.120
Dökme Demir - (GGG, GT)	>260 HB	100	0.040	0.050	0.065	0.080	0.095	0.115
Titanyum ve Titanyum Alaşımları	<850	65	0.030	0.040	0.050	0.060	0.070	0.090
Titanyum ve Titanyum Alaşımları	850-1200	55	0.025	0.035	0.045	0.055	0.065	0.085

fz : Diş Başına İlerleme (mm/diş)



Sert İşleme için Önerilen Kesme Değerleri

$ap = 1,5xD$ ve $ae = 0,01xD$

TABLO 4

Malzeme Tanımı	Mukavemet (N/mm ²)	Vc (m/dk.) Kesme Hızı	ÇAPLARA GÖRE İLERLEME (Diş Başına İlerleme) mm/ diş								
			Ø2 fz	Ø4 fz	Ø6 fz	Ø8 fz	Ø10 fz	Ø12 fz	Ø16 fz	Ø20 fz	
Alaşımli Çelik	< 1200 N/mm ² 35 HRC	130	0.018	0.040	0.060	0.080	0.100	0.110	0.140	0.180	
Düşük Temperlenmiş Çelik	< 1450 N/mm ² 45 HRC	120	0.010	0.025	0.040	0.055	0.065	0.070	0.080	0.100	
Temperlenmiş Çelik	45-55 HRC	100	0.010	0.025	0.035	0.045	0.055	0.060	0.070	0.090	
Temperlenmiş Çelik	55-65 HRC	80	0.010	0.020	0.030	0.040	0.050	0.060	0.070	0.080	
Temperlenmiş Çelik	65-70 HRC	60	0.008	0.020	0.030	0.040	0.045	0.050	0.060	0.070	

fz : Diş Başına İlerleme (mm/diş)

Kaba İşlemeli Takımlar için Önerilen Kesme Değerleri

Kenar Frezeleme $ap = 1xD$ ve $ae = 0,5xD$

TABLO 5

Malzeme Tanımı	Mukavemet (N/mm ²)	Vc (m/dk.) Kesme Hızı	ÇAPLARA GÖRE İLERLEME (Diş Başına İlerleme) mm/ diş						
			Ø6 fz	Ø8 fz	Ø10 fz	Ø12 fz	Ø14 fz	Ø16 fz	Ø20 fz
Alaşımli Çelik	400-800	170	0.030	0.040	0.060	0.080	0.100	0.120	0.140
Paslanmaz Çelik - Östenitik	> 1200	150	0.030	0.040	0.070	0.090	0.110	0.130	0.150
Paslanmaz Çelik - Martenzitik	> 1200	160	0.040	0.050	0.070	0.090	0.100	0.130	0.150
Titanyum	> 1100	100	0.050	0.060	0.080	0.100	0.120	0.150	0.200
Titanyum	> 1500	80	0.060	0.070	0.080	0.100	0.120	0.150	0.200
Nikel	> 1600	70	0.040	0.050	0.070	0.090	0.100	0.130	0.150
Hardox, Inconel, Waspaloy	> 1300	50	0.060	0.060	0.080	0.100	0.120	0.150	0.200

fz : Diş Başına İlerleme (mm/diş)

Kaba İşlemeli Takımlar için Önerilen Kesme Değerleri

Alın Frezeleme $ap = 1xD$ ve $ae = 1xD$

TABLO 5

Malzeme Tanımı	Mukavemet (N/mm ²)	Vc (m/dk.) Kesme Hızı	ÇAPLARA GÖRE İLERLEME (Diş Başına İlerleme) mm/ diş						
			Ø6 fz	Ø8 fz	Ø10 fz	Ø12 fz	Ø14 fz	Ø16 fz	Ø20 fz
Alaşımli Çelik	400-800	170	0.010	0.020	0.025	0.030	0.040	0.050	0.065
Paslanmaz Çelik - Östenitik	> 1200	150	0.020	0.030	0.040	0.050	0.080	0.100	0.120
Paslanmaz Çelik - Martenzitik	> 1200	160	0.030	0.040	0.050	0.060	0.100	0.120	0.150
Titanyum	> 1100	100	0.050	0.080	0.100	0.120	0.140	0.160	0.200
Titanyum	> 1500	80	0.050	0.080	0.100	0.120	0.140	0.160	0.200
Nikel	> 1600	70	0.040	0.060	0.070	0.100	0.120	0.150	0.200
Hardox, Inconel, Waspaloy	> 1300	50	0.040	0.060	0.070	0.100	0.120	0.150	0.200

fz : Diş Başına İlerleme (mm/diş)



Son İşleme için Önerilen Kesme Değerleri

Kenar Frezeleme $a_e = 1,5xD$ ve $a_p = 0,1xD$

TABLO 6

ÇAPLARA GÖRE İLERLEME (Diş Başına İlerleme) mm/ diş

Malzeme Tanımı	Mukavemet (N/mm ²)	Vc (m/dk.) Kesme Hızı	Ø1 fz Ø2,5 fz	Ø3 fz Ø3,5 fz	Ø4 fz Ø4,5 fz	Ø5 fz	Ø6 fz	Ø8 fz	Ø10 fz	Ø12 fz	Ø14 fz	Ø16 fz	Ø18 fz Ø20 fz	
Genel Yapı Çelikleri	< 500	N/mm ²	190	0.015	0.015	0.031	0.038	0.046	0.064	0.085	0.113	0.125	0.141	0.169
Genel Yapı Çelikleri	> 700	N/mm ²	170	0.015	0.015	0.031	0.038	0.046	0.064	0.085	0.113	0.125	0.141	0.169
Otomat Çelikleri	< 850	N/mm ²	170	0.015	0.015	0.031	0.038	0.046	0.064	0.085	0.113	0.125	0.141	0.169
Otomat Çelikleri	850- 1000	N/mm ²	140	0.015	0.015	0.031	0.038	0.046	0.064	0.085	0.113	0.125	0.141	0.169
Otomat Çelikleri	1400	N/mm ²	85	0.010	0.015	0.023	0.023	0.035	0.050	0.069	0.088	0.100	0.113	0.138
Alaşımli ve Sertleştirilmiş Çelikler	1000	N/mm ²	120	0.010	0.010	0.019	0.019	0.023	0.038	0.044	0.050	0.050	0.075	0.100
Nitasyon Çelikleri	1000	N/mm ²	120	0.010	0.010	0.019	0.019	0.023	0.038	0.044	0.050	0.050	0.075	0.100
Alaşımli Isil İşlem Görmüş Çelikler	850	N/mm ²	160	0.013	0.013	0.025	0.025	0.038	0.050	0.063	0.075	0.075	0.100	0.125
Takım Çelikleri (Alaşımli ve Alaşımli)			95	0.010	0.015	0.023	0.023	0.035	0.050	0.069	0.088	0.100	0.113	0.138
Dökme Demir	< 180	HB	150	0.010	0.010	0.019	0.025	0.025	0.038	0.050	0.056	0.056	0.075	0.100
Küresel Grafitli Dövme Demir			70	0.014	0.029	0.034	0.038	0.041	0.056	0.070	0.085	0.094	0.113	0.144
Küresel Grafitli Dökme Demir			100	0.014	0.029	0.034	0.038	0.041	0.056	0.070	0.085	0.094	0.113	0.144
Al ve Al Alaşımli (< %6-Si)				0.010	0.010	0.019	0.019	0.031	0.038	0.050	0.063	0.063	0.081	0.106
Al ve Al Alaşımli (< %12-Si)			700	0.015	0.015	0.031	0.038	0.046	0.064	0.085	0.113	0.125	0.141	0.169
Al ve Al Alaşımli (> %12-Si)			400	0.015	0.015	0.031	0.038	0.046	0.064	0.085	0.113	0.125	0.141	0.169
Pirinç - Bakır - Bronz			300	0.015	0.015	0.031	0.038	0.046	0.064	0.085	0.113	0.125	0.141	0.169
Titanyum ve Titanyum Alaşımli			60	0.010	0.015	0.016	0.020	0.024	0.035	0.045	0.064	0.075	0.085	0.105
Paslanmaz Çelikler	< 700	N/mm ²	110	0.008	0.008	0.016	0.016	0.025	0.031	0.038	0.044	0.044	0.063	0.075
Paslanmaz Çelikler	> 700	N/mm ²	75	0.006	0.006	0.013	0.013	0.019	0.025	0.031	0.038	0.038	0.056	0.075

fz : Diş Başına İlerleme (mm/diş)

Kaba İşleme için Önerilen Kesme Değerleri

Alın Frezeleme $a_e = 1xD$ ve $a_p = 1xD$

TABLO 6

ÇAPLARA GÖRE İLERLEME (Diş Başına İlerleme) mm/ diş

Malzeme Tanımı	Mukavemet (N/mm ²)	Vc (m/dk.) Kesme Hızı	Ø1 fz Ø2,5 fz	Ø3 fz Ø3,5 fz	Ø4 fz Ø4,5 fz	Ø5 fz	Ø6 fz	Ø8 fz	Ø10 fz	Ø12 fz	Ø14 fz	Ø16 fz	Ø18 fz Ø20 fz	
Genel Yapı Çelikleri	< 500	N/mm ²	120	0.012	0.012	0.025	0.030	0.037	0.051	0.068	0.090	0.100	0.113	0.135
Genel Yapı Çelikleri	> 700	N/mm ²	105	0.012	0.012	0.025	0.030	0.037	0.051	0.068	0.090	0.100	0.113	0.135
Otomat Çelikleri	< 850	N/mm ²	95	0.012	0.012	0.025	0.030	0.037	0.051	0.068	0.090	0.100	0.113	0.135
Otomat Çelikleri	850- 1000	N/mm ²	90	0.012	0.012	0.025	0.030	0.037	0.051	0.068	0.090	0.100	0.113	0.135
Otomat Çelikleri	1400	N/mm ²	80	0.008	0.012	0.018	0.018	0.028	0.040	0.055	0.070	0.080	0.090	0.110
Alaşımli ve Sertleştirilmiş Çelikler	1000	N/mm ²	80	0.008	0.008	0.015	0.015	0.018	0.030	0.035	0.040	0.040	0.060	0.080
Nitasyon Çelikleri	1000	N/mm ²	80	0.008	0.008	0.015	0.015	0.018	0.030	0.035	0.040	0.040	0.060	0.080
Alaşımli Isil İşlem Görmüş Çelikler	850	N/mm ²	100	0.010	0.010	0.020	0.020	0.030	0.040	0.050	0.060	0.060	0.080	0.100
Takım Çelikleri (Alaşımli ve Alaşımli)			70	0.008	0.012	0.018	0.018	0.028	0.040	0.055	0.070	0.080	0.090	0.110
Dökme Demir	< 180	HB	120	0.008	0.008	0.015	0.020	0.020	0.030	0.040	0.045	0.045	0.060	0.080
Küresel Grafitli Dövme Demir			60	0.011	0.023	0.027	0.030	0.033	0.045	0.056	0.068	0.075	0.090	0.115
Küresel Grafitli Dökme Demir			90	0.011	0.023	0.027	0.030	0.033	0.045	0.056	0.068	0.075	0.090	0.115
Al ve Al Alaşımli (< %6-Si)			300	0.008	0.008	0.015	0.015	0.025	0.030	0.040	0.050	0.050	0.065	0.085
Al ve Al Alaşımli (< %12-Si)			280	0.012	0.012	0.025	0.030	0.037	0.051	0.068	0.090	0.100	0.113	0.135
Al ve Al Alaşımli (> %12-Si)			200	0.012	0.012	0.025	0.030	0.037	0.051	0.068	0.090	0.100	0.113	0.135
Pirinç - Bakır - Bronz			200	0.012	0.012	0.025	0.030	0.037	0.051	0.068	0.090	0.100	0.113	0.135
Titanyum ve Titanyum Alaşımli			40	0.008	0.012	0.013	0.016	0.019	0.028	0.036	0.051	0.060	0.068	0.084
Paslanmaz Çelikler	< 700	N/mm ²	80	0.006	0.006	0.013	0.013	0.020	0.025	0.030	0.035	0.035	0.050	0.060
Paslanmaz Çelikler	> 700	N/mm ²	60	0.005	0.005	0.010	0.010	0.015	0.020	0.025	0.030	0.030	0.045	0.060

fz : Diş Başına İlerleme (mm/diş)



Son İşleme için Önerilen Kesme Değerleri

Kenar Frezeleme $a_e = 0,03xD$ ve $a_p = 0,03xD$

TABLO 7

ÇAPLARA GÖRE İLERLEME (Diş Başına İlerleme) mm/ diş

Malzeme Tanımı	Mukavemet (N/mm ²)	Vc (m/dk.) Kesme Hızı	Ø1 fz Ø2,5 fz	Ø3 fz Ø3,5 fz	Ø4 fz Ø4,5 fz	Ø5 fz	Ø6 fz	Ø8 fz	Ø10 fz	Ø12 fz	Ø14 fz	Ø16 fz	Ø18 fz Ø20 fz	
Sertleştirilmiş Çelikler	45-55	HRC	65	0.006	0.011	0.023	0.023	0.034	0.045	0.056	0.068	0.068	0.079	0.090
Sertleştirilmiş Çelikler	55-60	HRC	50	0.005	0.009	0.018	0.018	0.026	0.034	0.043	0.051	0.051	0.056	0.062
Sertleştirilmiş Çelikler	60-65	HRC	30	0.003	0.007	0.014	0.014	0.020	0.028	0.034	0.043	0.043	0.051	0.056

fz : Diş Başına İlerleme (mm/diş)

Sert İşleme için Önerilen Kesme Değerleri

TABLO 8

ÇAPLARA GÖRE İLERLEME (Diş Başına İlerleme) mm/ diş

Malzeme Tanımı	Mukavemet (N/mm ²)	Vc (m/dk.) Kesme Hızı	Ø1 fz	Ø2 fz	Ø4 fz	Ø6 fz	Ø8 fz	Ø10 fz	Ø12 fz	Ø16 fz	Ø20 fz	
Alaşımli Çelik	<1200		180	0.020	0.030	0.070	0.120	0.150	0.180	0.230	0.250	
Düşük Temperlenmiş Çelik	<1450		170	0.020	0.030	0.060	0.090	0.120	0.160	0.200	0.220	
Temperlenmiş Çelik	45-55	HRC	150	0.010	0.020	0.050	0.080	0.110	0.120	0.140	0.180	
Temperlenmiş Çelik	55-65	HRC	120	0.010	0.020	0.050	0.070	0.090	0.120	0.130	0.150	0.170
Temperlenmiş Çelik	65-70	HRC	80	0.010	0.020	0.050	0.070	0.090	0.120	0.130	0.150	0.170

fz : Diş Başına İlerleme (mm/diş)

KSM Matkaplar için Önerilen Kesme Değerleri

TABLO 9

ÇAPLARA GÖRE İLERLEME (Devir Başına İlerleme) mm/ devir

Malzeme Tanımı	Vc (m/dk.) Kesme Hızı	Ø1 fn Ø2 fn	Ø2 fn Ø3 fn	Ø3 fn Ø5 fn	Ø5 fn Ø8 fn	Ø8 fn Ø12 fn	Ø12 fn Ø16 fn	Ø16 fn Ø20 fn
Alaşımzsız Çelikler, Çelik Dökümler	60-100	0.03-0.05	0.05-0.08	0.10-0.18	0.16-0.24	0.20-0.30	0.20-0.33	0.25-0.40
Alaşımli Çelikler	50-80	0.02-0.04	0.05-0.08	0.08-0.15	0.10-0.18	0.12-0.22	0.15-0.28	0.20-0.35
	40-80	0.02-0.04	0.05-0.08	0.08-0.15	0.10-0.18	0.12-0.22	0.15-0.28	0.20-0.35
Inox	30-50	0.01-0.03	0.03-0.06	0.06-0.10	0.08-0.15	0.12-0.20	0.10-0.20	0.16-0.28
Korozyon ve Aside Dayanımlı Çelikler (CrNi - Alaşımli)	25-35	0.01-0.03	0.03-0.06	0.05-0.10	0.08-0.15	0.12-0.20	0.10-0.20	0.16-0.28
Gri Dökme Demir, Alaşımli Gri Dökme Demir	50-130			0.15-0.30	0.12-0.30	0.20-0.40	0.25-0.40	0.40-0.50
	70-90			0.15-0.30	0.12-0.30	0.20-0.40	0.25-0.40	0.40-0.50
Küresel Grafit	70-90		0.05-0.10	0.10-0.20	0.10-0.20	0.20-0.40	0.35-0.45	0.40-0.60
	60-80			0.08-0.12	0.10-0.18	0.16-0.28	0.22-0.33	0.30-0.50
Alüminyum -Dövme	50-350	0.04-0.07	0.01-0.15	0.15-0.25	0.20-0.30	0.25-0.40	0.35-0.50	0.40-0.60
Alüminyum Alaşımli Döküm (< %10 - Si)	100-250		0.05-0.12	0.15-0.25	0.20-0.30	0.25-0.40	0.35-0.50	0.40-0.60
Alüminyum Alaşımli Döküm (> %10 - Si)	100-200	0.60-0.80	0.60-0.10	0.12-0.20	0.18-0.22	0.20-0.28	0.26-0.30	0.25-0.32
Bakır- Piriç - Bronz - Kısa Talaşlı	60-200	0.05-0.08	0.08-0.15	0.07-0.15	0.10-0.20	0.20-0.30	0.25-0.40	0.35-0.50
Titanyum Alaşımları	20-40	0.01-0.03	0.03-0.06	0.02-0.06	0.05-0.08	0.08-0.14	0.10-0.16	0.10-0.20
Sertleştirilmiş Malzemeler	25-35	0.01-0.02	0.02-0.03	0.06-0.08	0.07-0.09	0.10-0.13	0.12-0.15	
	20-25	0.01-0.02	0.02-0.03	0.03-0.05	0.04-0.06	0.08-0.10	0.12-0.15	
	15-20	0.01-0.02	0.02-0.03	0.03-0.05	0.04-0.06	0.08-0.10	0.10-0.12	
	10-15	0.01-0.02	0.02-0.03	0.03-0.05	0.04-0.06	0.08-0.10	0.10-0.12	

Delme Derinliği

Düzeltilme Katsayısı

fn : Devir Başına İlerleme (mm/devir)

1xd	1.3
3xd	1.0
5xd	0.8
8xd	0.7
12xd	0.6
15xd	0.5