



**Sinter Sud**

metallo**duro**  
**hard**metal



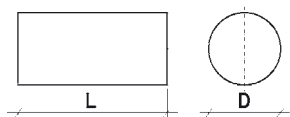
# Sinter Sud



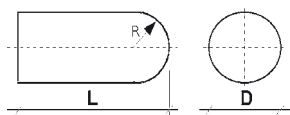
# Testine

per lime rotative

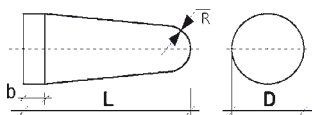
Burr blanks  
Frässtifte-Rohlinge  
Fraises rotatives



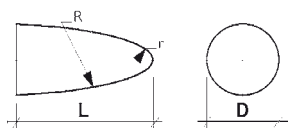
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<b>Din 8033</b>	Codice Articolo Item Code Artikel-Code Code Article	Codice Articolo Item Code Artikel-Code Code Article
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TLA / ZYA 0512	K10FTLA0512	K30TLA0512
TLA / ZYA 0613	K10FTLA0613	K30TLA0613
TLA / ZYA 0820	K10FTLA0820	K30TLA0820
TLA / ZYA 1020	K10FTLA1020	K30TLA1020
TLA / ZYA 1225	K10FTLA1225	K30TLA1225
TLA / ZYA 1625	K10FTLA1625	K30TLA1625
TLA / ZYA 2025	K10FTLA2025	K30TLA2025



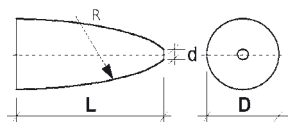
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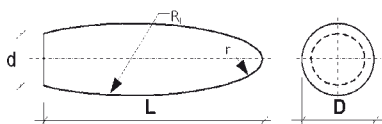
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TLC / KEL 1638	K10FTLC1638	K30TLC1638
TLC / KEL 2032	K10FTLC2032	K30TLC2032



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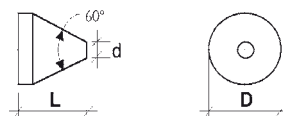


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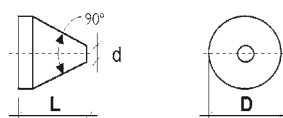


NO DIN STANDARD						Codice Articolo Item Code Artikel-Code Code Article	Codice Articolo Item Code Artikel-Code Code Article
	D	L	R	r	d		
TLS 08	8	20	26	1,3	6,0	K10FTLS0820	K30TLS0820
TLS 10	10	25	33	1,5	6,0	K10FTLS1025	K30TLS1025
TLS 12	12	30	40	2,0	8,0	K10FTLS1230	K30TLS1230
TLS 16	16	35	47	4,0	12,5	K10FTLS1635	K30TLS1635

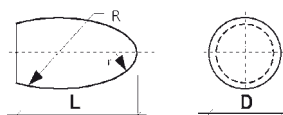
GRADO - GRADE SORTE - NUANCE	<b>K10F</b>	<b>K30</b>
<b>Din 8033</b>	Codice Articolo Item Code Artikel-Code Code Article	Codice Articolo Item Code Artikel-Code Code Article
TLF / KSJ 60° 0606	K10FTLF0606	K30TLF0606
TLF / KSJ 60° 0808	K10FTLF0808	K30TLF0808
TLF / KSJ 60° 1010	K10FTLF1010	K30TLF1010
TLF / KSJ 60° 1212	K10FTLF1212	K30TLF1212
TLF / KSJ 60° 1616	K10FTLF1616	K30TLF1616
TLF / KSJ 60° 2020	K10FTLF2020	K30TLF2020



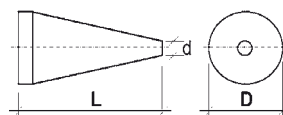
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TLG / KSK 90° 1613	K10FTLG1613	K30TLG1613
TLG / KSK 90° 2020	K10FTLG2020	K30TLG2020



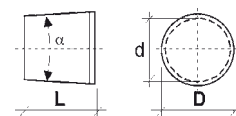
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TLH / TRE 1016	K10FTLH1016	K30TLH1016
TLH / TRE 1220	K10FTLH1220	K30TLH1220
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TLH / TRE 2025	K10FTLH2025	K30TLH2025



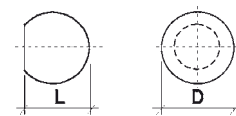
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TLI / SKM 1225	K10FTLI1225	K30TLI1225
TLI / SKM 1625	K10FTLI1625	K30TLI1625
TLI / SKM 2025	K10FTLI2025	K30TLI2025



TLL / WKN 0606	K10FTLL0606	K30TLL0606
TLL / WKN 0808	K10FTLL0808	K30TLL0808
TLL / WKN 1010	K10FTLL1010	K30TLL1010
TLL / WKN 1212	K10FTLL1212	K30TLL1212
TLL / WKN 1616	K10FTLL1616	K30TLL1616
TLL / WKN 2020	K10FTLL2020	K30TLL2020



TLM / KUD 0403,5	K10FTLM0403,5	K30TLM0403,5
TLM / KUD 0504	K10FTLM0504	K30TLM0504
TLM / KUD 0605	K10FTLM0605	K30TLM0605
TLM / KUD 0807	K10FTLM0807	K30TLM0807
TLM / KUD 1009	K10FTLM1009	K30TLM1009
TLM / KUD 1210,5	K10FTLM1210,5	K30TLM1210,5
TLM / KUD 1614	K10FTLM1614	K30TLM1614
TLM / KUD 2018	K10FTLM2018	K30TLM2018



# Gradi metallo duro - Composizione

Hard Metal grades - Specifications

Hartmetall Sorten - Zusammensetzung

Carbure Nuances - Spécifications

Grado Grade HM - Sorte Nuance	WC Incl. Doping %	Co %	Grana Grain size Korngröße Grosseur de grain micron	Densità Density Dichte Densité g/cm <sup>3</sup>	Durezza Hardness Härte Dureté HRA	Durezza Hardness Härte Dureté HV30	Resistenza alla flessione Transverse rupture strenght Biegefestigkeit Resistance a la flexion N/mm <sup>2</sup>
<b>MK12</b>	88	12	Ultra-fine	14,20	92,5	1730	4500

Adatto alla lavorazione, sia in sgrossatura che in finitura, di acciai con durezza comprese tra i 40 ed i 55 HRC, acciai per trattamenti superficiali, nichel e leghe di nichel. Adatto alla lavorazione di finitura con microfrese su acciai

Suitable for finishing processing and roughing of steels with hardness between 40 and 55 HRC, steels for surface treatments, nickel and nickel alloys. Suitable for manufacturing with micro end mills on steels applications

Convient pour le traitement, soit pour l'ébauche que pour finition des aciers de dureté comprise entre 40 et 55 HRC, aciers pour traitements de surface, nickel, alliages de nickel. Aussi pour le travail de finition les aciers Micro.

(Geeignet für) Veredelung von Stählen mit Härte zwischen 40 und 55 HRC, Nickel und Nickellegierungen; geeignet für die Veredelung durch Mikrofräsen auf Stählen.

<b>GF70</b>	91,5	8,5	Ultra-fine	14,50	93,8	1950	4700
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Adatto alle lavorazioni di finitura ad alta velocità per acciai di durezza comprese tra i 55 ed i 65 HRC tra cui acciaio rapido e acciaio temperato. Lavorazioni di fresatura e foratura ad alta velocità di ghisa, non ferrosi, leghe leggere, compositi, laminati di carta, plastica, grafite.

Suitable for finishing manufacturing high speed steels with hardness between 55 and 65 HRC as HS and tempered steels. Suitable for high speed milling and drilling of cast iron, non ferrous metals, light alloys, composites, laminates of paper, plastic, graphite.

Convient pour la finition des aciers rapides de la dureté comprise entre 55 et 65 HRC (acier trempé, acier rapide). D'usinage et de fraisage à haute vitesse de forage de la fonte, les métaux non ferreux, alliages légers, composites, produits laminé de papier et de plastique, graphite.

(Geeignet für) Hochgeschwindigkeitsveredelung von Stählen mit Härte zwischen 55 und 65 HRC (Schnellarbeits- und getemperten Stählen). Hochgeschwindigkeits-Fräsen und Bohren von Gusseisen, eisenlosen Metallen, Leichtmetallen, Verbundwerkstoffen von Papier, Holz und Plastik.

<b>K10F</b>	90	10,0	Sub-Micron	14,42	92,1	1620	3700
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Grado adatto alla lavorazione di acciai anche non temprati, specie quando la durezza è minore di 40 HRC. Idoneo alla lavorazione di leghe di alluminio, alluminio magnesio, ghisa, materiali non ferrosi.

Suitable for steels manufacturing including non tempered steels with hardness up to 40 HRC. For aluminium alloys, aluminium magnesium, cast iron, non-ferrous material.

Convient pour l'usinage des aciers, y compris les non trempés, en particulier lorsque la dureté est inférieure à 40 HRC. Approprié pour l'aluminium, aluminium magnesium, fonte, métaux non ferreux.

(Geeignet für) die Bearbeitung von Stählen mit Härten bis 40 HRC. Verarbeitung von Aluminium-Legierungen, Aluminium, Magnesium, Guseisen und eisenlosen Materialien.

<b>K12F</b>	88	12	Sub-Micron	14,22	91,1	1480	3740
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Adatto alla lavorazione di acciai inossidabili, leghe a base nichel, titanio, leghe di titanio, leghe speciali (nimonic, inconel, Monel, Hastelloy), ottone, bronzo. Adatto alla foratura e sgrossatura di superfici irregolari o ondulate di acciai teneri o tenaci. Non indicato nella lavorazione di acciai induriti.

Suitable for stainless steels manufacturing, nickel alloys, titanium, titanium alloys, special alloys (nimonic, inconel, monel, hastelloy), brass, bronze. Suitable also for roughing and drilling tender steels with irregular surfaces.

Convient pour l'usinage de l'acier inoxydable, des alliages à base de nickel, titanium, alliages de titanium, alliages specials (nimonic, inconel, Monel, Hastelloy), laiton, bronze. Convient aussi pour le forage et l'ébauche des aciers légers avec des surfaces irrégulieres.

(Geeignet für) die Bearbeitung vom Edelstahl, Nickellegierungen, Titan, Titanlegierungen, Sonderlegierungen (Nimonic, Inconel, Monel, Hastelloy), Messing und Bronze. Bohren von Edelstählen mit unregelmäßigen Oberflächen.

<b>K30</b>	91	9,0	Medium	14,58	91,0	1520	2900
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Adatto ad applicazioni ove è richiesta una modesta resistenza all'usura, ma molta tenacità. Ideale, quindi, per la lavorazione del legno e per lavorazioni con taglio interrotto.

Suitable for applications where a modest wear resistance is required, but high toughness. Suitable also for woodworking and cutting cut manufacturing.

Convient pour des applications ou on demande une baisse resistance à l'usure, mais avec haute ténacité. Ideal donc pour le travaux du bois et coupe interrompue.

(Geeignet für) Anwendungen, wo eine bescheidene Beständigkeit benötigt wird. Ideal für Holzbearbeitung und für Bearbeitungen mit unterbrochenem Schnitt.

<b>K06</b>	94	6,0	Sub-Micron	14,80	93,4	1890	2600
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Idoneo alla foratura e fresatura di compositi plastici, PCB, ceramiche, legni in particolare legni duri e truciolati (MDF). Adatto anche a foratura su acciai.

Suitable for drilling and milling of plastic composites, PCB, ceramics, woods in particular hard woods and composite woods (MDF). Suitable also for drilling steels.

Convient pour la forage et la fraisage de matériaux composites, de plastique, PCB, ceramiques, bois en particulier bois durs et bois composites (MDF). Convient aussi pour le forage des aciers.

(Geeignet für) Bohren und Fräsen von Keramik, Plastikverbundwerkstoffen, PCB, Holz, Holzverbundmaterial (MDF). Bohren von Stählen.

Classificazione della grana del metallo duro Hard metal grain size classification Hartmetallkorngröße Klassifizierung Classification de grosseur de grain	Dimensione della grana Grain size Korngröße Grosseur de grain	Classificazione Classification Klassifizierung Classification
	> 0,2	nano
	> 0,2 - 0,5	ultrafine
	> 0,5 - 0,8	sub-micron
	> 0,8 - 1,3	fine
	> 1,3 - 2,5	medium
	> 2,5 - 6,0	coarse
	> 6,0	extra-coarse



# Dati Tecnici

## Tolleranze

Technical data: Tolerances  
Technische daten: Toleranzen  
Données techniques: Tolérances

<b>CILINDRI grezzi</b> solid rods as sintered VHM- Rundstäbe roh Barreaux ronds brut	
Diametro Diameter Durchmesser Diametre mm	Tolleranze Tolerances Toleranzen Tolerances mm
0,5 - 3,5	+0,25 / +0,35
4,0 - 6,0	+0,25 / +0,40
6,5 - 12,0	+0,30 / +0,45
12,5 - 16,0	+0,35 / +0,50
16,5 - 22,0	+0,40 / +0,55
22,5 - 45,0	+0,45 / +0,60
Lunghezza Lenght Länge Longueur mm	Tolleranze Tolerances Toleranzen Tolerances mm
fino a 100,0	+0,50 / +1,00
100,0 - 165,0	+1,00 / +2,50
165,0 - 335,0	+1,00 / +6,00
Rettilinearità Straightness Geradeheit Rectitude Ø mm	Tolleranze Tolerances Toleranzen Tolerances mm
0,6 - 4	0,10
4,5 - 8	0,12
8,5 - 12,0	0,15
12,5 - 20	0,20
≥20,5	0,24

<b>CILINDRI Rettificati h6</b> Solid rods ground h6 VHM- Rundstäbe geschliffen h6 Barreaux ronds rectifiés h6	
Diametro Diameter Durchmesser Diametre mm	Tolleranze Tolerances Toleranzen Tolerances mm
fino a 100,0	+0,50 / +1,00
100,0 - 165,0	+1,00 / +2,50
165,0 - 335,0	+1,00 / +6,00

Tutti i diametri.  
All diameters.  
Alle Durchmesser.  
Toutes les diamètres.

**h6**

Lunghezza Lenght Länge Longueur mm	Tolleranze Tolerances Toleranzen Tolerances mm
fino a 100,0	+0,50 / +1,00
100,0 - 165,0	+1,00 / +2,50
165,0 - 335,0	+1,00 / +6,00
Rettilinearità Straightness Geradeheit Rectitude Ø mm	Tolleranze Tolerances Toleranzen Tolerances mm
<4,0	0,07
4,5 - 5	0,06
5,5 - 12	0,05
>12,50	0,04

Rotondità Circularity Rundheit Circularité Ø mm	Tolleranze Tolerances Toleranzen Tolerances mm
< 3,0	2,0 micron
3,0 - 6,0	2,5 micron
6,1 - 10,0	3,0 micron
10,1 - 18,0	3,5 micron
18,1 - 30,0	4,0 micron
30,1 - 50,0	5,0 micron

<b>Tolleranza decentramento foro dei cilindri con 1 foro centrale</b> solid rods as sintered VHM- Rundstäbe roh Barreaux ronds brut	
Diametro Diameter Durchmesser Diametre mm	Max decentramento Max hole distance from center Max Bohrung Abstand von der Mitte Distance maximale du centre du trou mm
4,0 - 8,0	0,15
9,0 - 12,0	0,20
13,0 - 16,0	0,30
17,0 - 18,0	0,40
> 20,0	0,50

<b>Tolleranza interasse foro dei cilindri con due fori paralleli ad interasse minore</b> 2 holes axial approx. 2 Bohrungen Dezentralisation Rapprochement 2 trous axial					
Diametro Diameter Durchmesser Diametre mm	Interasse fori Bolt circle Teilkreis Distance entre 2 trous mm	Interasse fori Bolt circle Teilkreis Distance entre 2 trous mm		a	
6,0	2,00	-0,20/0	0,80	±0,10	0,15
7,0	2,00	-0,20/0	0,80	±0,10	0,15
8,0	2,60	-0,30/0	1,00	±0,10	0,15
9,0	2,60	-0,30/0	1,00	±0,10	0,20
10,0	2,60	-0,30/0	1,00	±0,10	0,20
11,0	3,50	-0,30/0	1,20	±0,15	0,28
12,0	3,50	-0,30/0	1,20	±0,15	0,30
13,0	3,50	-0,30/0	1,20	±0,15	0,34
14,0	5,00	-0,30/0	1,50	±0,15	0,37
15,0	5,00	-0,30/0	1,50	±0,15	0,40
16,0	5,00	-0,30/0	1,50	±0,15	0,40
18,0	6,20	-0,30/0	2,00	±0,20	0,50
20,0	6,20	-0,40/0	2,00	±0,20	0,50
22,0	6,20	-0,40/0	2,00	±0,20	0,50
24,0	7,50	-0,40/0	2,00	±0,20	0,50
25,0	7,50	-0,40/0	2,00	±0,20	0,50
26,0	8,50	-0,50/0	2,00	±0,20	0,50
28,0	8,50	-0,50/0	2,00	±0,20	0,50
≥30,0	8,50	-0,50/0	3,00	±0,25	0,50

<b>Tolleranza interasse cilindri con due fori paralleli ad interasse maggiore</b> 2 holes axial approx. 2 Bohrungen Dezentralisation Rapprochement 2 trous axial					
Diametro Diameter Durchmesser Diametre mm	Interasse fori Bolt circle Teilkreis Distance entre 2 trous mm	Diametro foro Bolt circle Teilkreis Distance barreau rond mm		a	
4,0	1,80	-0,15	0,80	±0,10	0,10
5,0	2,00	-0,15	0,80	±0,10	0,13
6,0	3,00	-0,20	1,00	±0,10	0,15
7,0	3,50	-0,20	1,00	±0,15	0,15
8,0	4,00	-0,30	1,00	±0,15	0,15
9,0	4,00	-0,30	1,40	±0,15	0,20
10,0	5,00	-0,30	1,40	±0,15	0,20
11,0	5,00	-0,30	1,40	±0,15	0,28
12,0	6,00	-0,30	1,75	±0,15	0,30
13,0	6,00	-0,30	1,75	±0,15	0,34
14,0	7,00	-0,30	1,75	±0,15	0,37
15,0	7,00	-0,30	2,00	±0,20	0,40
16,0	8,00	-0,30	2,00	±0,20	0,40
17,0	8,00	-0,30	2,00	±0,20	0,40
18,0	9,00	-0,30	2,00	±0,20	0,50
20,0	10,00	-0,40	2,60	±0,25	0,50
22,0	11,00	-0,40	2,60	±0,25	0,50
24,0	12,00	-0,50	3,00	±0,25	0,50
25,0	12,00	-0,50	3,00	±0,25	0,50
26,0	13,00	-0,50	3,00	±0,25	0,50
≥28,0	14,00	-0,50	3,00	±0,25	0,50



### BARRE quadre e rettangolari

Square and rectangular bars  
Quadrat- und Rechteckstäbe  
Barreaux carres et rectang

Lunghezza Lenght Länge Longueur mm	Tolleranze Tolerances Toleranzen Tolerances mm
fino a 100,0	+0,50 / +1,50
100,0 - 165,0	+1,00 / +2,50
165,0 - 335,0	+1,00 / +6,00

Spessore/Altezza Thickness/Height Stärke/Höhe Epaisseur/Hauteur mm	Tolleranze Tolerances Toleranzen Tolerances mm
1,5	0,25 ÷ 0,50
2,0	0,25 ÷ 0,50
2,5	0,25 ÷ 0,52
3,0	0,25 ÷ 0,55
4,0	0,25 ÷ 0,55
5,0	0,25 ÷ 0,60
6,0	0,25 ÷ 0,60
7,0	0,25 ÷ 0,60
8,0	0,25 ÷ 0,60
9,0	0,25 ÷ 0,60
10,0	0,25 ÷ 0,60
12,0	0,25 ÷ 0,60
14,0	0,25 ÷ 0,60
16,0	0,25 ÷ 0,60
18,0	0,25 ÷ 0,60
20,0	0,30 ÷ 0,65
22,0	0,30 ÷ 0,65
24,0	0,30 ÷ 0,65
25,0	0,30 ÷ 0,80
26,0	0,30 ÷ 0,80
28,0	0,30 ÷ 0,80
30,0	0,30 ÷ 0,80
32,0	0,30 ÷ 0,80
35,0	0,30 ÷ 0,80
> 35,0	0,35 ÷ 0,80



## **Sinter Sud srl**

### **Uffici e Stabilimento/Factory:**

Zona Ind.le loc. Capitone  
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