IZAR®
CUTTING TOOLS

FRACTIONAL 2019

izartool.com

Pulgadas
Inches
Pouces

I am IZAR

ENFOCADOS HACIA EL CLIENTE

Customer focus Orientés vers le client

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Estimados clientes, colaboradores y amigos,

Este año 2019, se cumplen 50 años de nuestra primera acción exportadora, allá por 1969, coincidiendo con la llegada del hombre a la luna, y nada hubiera hecho pensar entonces, que las ventas internacionales fueran a suponer 50 años más tarde, la mayor parte de las ventas de la empresa. Sin duda, una parte importante de ello se debe a las ventas de brocas, fresas y machos de roscar en pulgadas.

Nuestro catálogo principal continúa siendo el métrico, donde disponemos de una amplísima oferta para hacer frente a las más complejas necesidades de nuestros clientes en el mecanizado de materiales diversos, con especial énfasis en las aplicaciones más difíciles, como los aceros inoxidables o los materiales duros, como el titanio.

Sin embargo tocaba ya actualizar nuestra oferta en pulgadas, que no hace sino complementar el anterior y va dirigido hacia mercados, como el continente americano, donde las pulgadas son también importantes y hacia donde también queremos extender nuestro enfoque a la calidad, la innovación y la internacionalización.

Continuamos invirtiendo con fuerza en medios productivos más modernos, al objeto de mejorar nuestros procesos y también nuestro servicio. Continuamos también innovando y ampliando nuestra oferta de herramientas de corte de calidad. Confiamos por todo ello, en continuar mereciendo su confianza con este nuevo catálogo en pulgadas 2019.

Estamos muy orgullosos de contar con una base de clientes muy fiel, que aprecian, no solo nuestro producto, sino también la calidad humana de nuestras personas, siendo prueba de ello, que aquel primer cliente internacional de IZAR, Beltracy, continúa siendo cliente y amigo a día de hoy.

Dear clients, associates and friends,

This time 50 years ago, back in 1969 when the first man stepped on the moon, we exported our first product. Who would have thought then that international sales would account for most of the company's sales today. Without a doubt, for a large part this is due to the sales of drill bits, mills and taps in inches.

Our main catalogue continues to be the metric one, with a very wide range of products to meet the most complex needs of our customers in the machining of various materials, with special emphasis on the most difficult applications, such as stainless steels or hard materials, such as titanium.

However, since, among others, the American continent takes up an important share of the market, we adapted our offer to inches, as we wish to extend our focus on quality, innovation and internationalization to those regions as well.

We continue to invest heavily in more modern means of production in order to improve our processes and service. We also continue to innovate and expand our range of quality cutting tools. With this new fractional catalogue 2019, we are confident we can count on your business in the future.

We are very proud to have a very loyal customer base, who appreciate not only our product, but also the human quality of our people. Proof of this is that the first international customer of IZAR, Beltracy, continues to be customer and friend today.

Chers clients, collaborateurs et amis,

En cette année 2019 nous célébrons le 50ème anniversaire de notre première action exportatrice, en 1969, coïncidant avec l'arrivée de l'homme sur la lune, et rien n'aurait alors laissé croire, que les ventes internationales allaient supposer 50 ans plus tard, la majeure partie des ventes de l'entreprise. Sans nul doute, une importante part de cela est due aux ventes de forets, fraises et tarauds en pouces,

Notre principal catalogue reste le métrique, où nous disposons d'une très vaste offre pour faire face aux besoins les plus complexes de nos clients dans l'usinage de divers matériaux, en mettant en accent particulier sur les applications les plus difficiles, telles que les aciers inoxydables ou les matériaux durs tels que le titane.

Toutefois, il convenait d'actualiser notre offre en pouces, qui ne fait que compléter la précédente et s'adresse à des marchés tels que le continent américain, où les pouces sont également important et sur lequel nous voulons également étendre notre approche de la qualité, de l'innovation et de l'internationalisation.

Nous continuons à investir fortement dans les moyens de production les plus modernes, afin d'améliorer nos processus et également notre service. Nous continuons d'innover et d'élargir notre offre d'outils de coupe de qualité. Nous espérons ainsi continuer à mériter votre confiance avec ce nouveau catalogue en pouces 2019.

Nous sommes très fiers de disposer d'une base de clients très fidèles, qui apprécient, non seulement notre produit, mais également la qualité humaine de nos personnes, la preuve de cela étant que le premier client international d'IZAR, Beltracy, est toujours notre client et ami à ce jour.

UNA EMPRESA CON VALORES
A Company With Values
Une entreprise avec des valeurs

Valores IZAR

- La honestidad.
- El enfoque al cliente
- La adaptación al cambio
- El compromiso con la calidad y con el trabajo bien hecho
- El trabajo en equipo
- El interés por la tecnología y por la innovación

IZAR Values

- Honesty
- Customer focus
- Adaptation to change
- Commitment to quality and to the job well done
- Team-work
- Interest for technology and innovation

Valeurs IZAR

- L'honnêteté
- L'orientation client
- L'adaptation au changement
- L'engagement pour la qualité et pour le travail bien fait
- Le travail en équipe
- L'intérêt pour la technologie et l'innovation

UNA EMPRESA SOCIALMENTE RESPONSABLE
A socially responsible company
Une enterprise socialement responsable

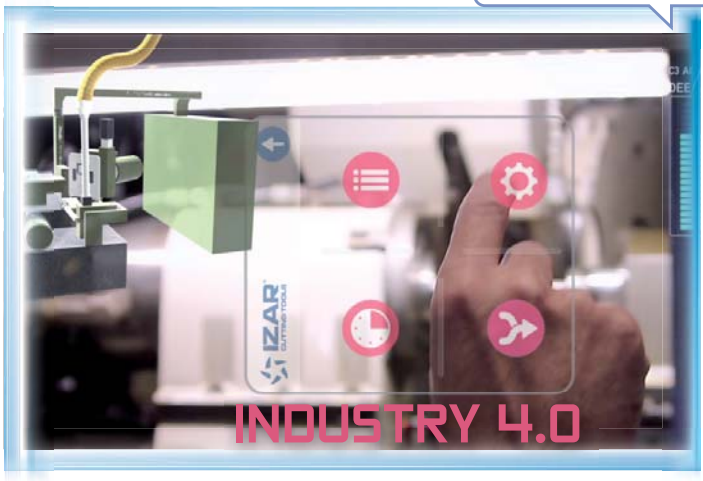
PREMIO INTERNACIONAL EISEN 2014 CSR
a la Responsabilidad Social de Empresa

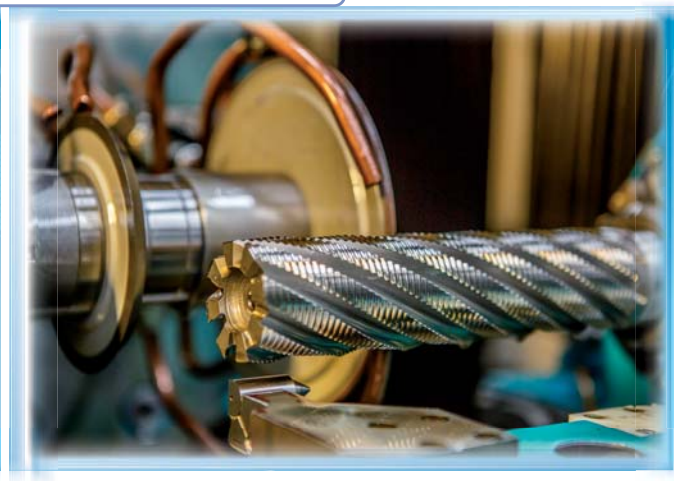
EISEN 2014 CSR International Award
to Corporate Social Responsibility

Prix International EISEN 2014 CSR
À la Responsabilité Sociale de l´entreprise

ISA

COMPROMETIDOS CON LA FABRICACIÓN Y EL EMPLEO
Commited to manufacturing and jobs
Engagés dans la fabrication et l'emploi





LA CALIDAD TOTAL NOS DISTINGUE
Total quality makes a difference
La qualité totale nous différencie

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A Major Figure in the global market
Présent sur tous les marchés mondiaux

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Leader sur le marché national

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CERTIFIED ISO 9001 CERTIFIED ISO 14001

TABLA MATERIALES
Material Table
Tableau de Materiaux

GRUPO GROUP GROUPE	SUBGRUPO SUBGROUP S. GROUPE	MATERIALES MATERIALS MATERIAUX	DUREZA (HRC) Hardness (HRC) Dureté (HRC)	DUREZA (HB) Hardness (HB) Dureté (HB)	TRACCIÓN (N/mm²) Tensile (N/mm²) Traction (N/mm²)
1. **ACERO** **STEEL** ACIER	**1.1**	**Aceros Construcción - Aceros Cementación** **Structural Steels - Case Hardening Steels** Aciers de Construction - Aciers Superieurs	<24,5	<250	<850
		Aceros al Carbono No Aleados - Aceros Bonificados Unalloyed Carbon Steels - Heat-Treatable Steels Aciers au Carbone Sans Alliage - Aciers Superieurs			
	1.2	**Aceros Aleados** **Alloyed Steels** Aciers Allies	<31,6	<300	<1000
	1.3	**Aceros Aleados Tratados - Aceros Bonificados** **Heat-Treatable Alloyed Steels** Aciers Allies Superieurs	31,6-42,8	300-400	850-1300
	1.4	**Materiales resistentes al desgaste** **Wear-Resistant Materials** - Matériaux résistant a l'usure	42,8-50,8	400-500	1330-1600
2. **INOX** **STAINLESS STEEL** INOX	**2.1**	**INOX Austeníticos** **Austenitic Stainless** INOX Austenitiques	<24,5	<250	<850
	2.2	**INOX Ferríticos-Martensíticos** **Ferritic-Martensitic Stainless** INOX Ferritiques-Martensitiques	<34	<320	<1100
3. **FUNDICIÓN** **CAST IRON** FONTE	**3.1**	**Fundición Gris Grafito Esferoidal - Fundición Maleable** **Spheroidal Graphite Cast Iron - Malleable Cast Iron** Fonte Grise Graphite Spherique		<200	<700
	3.2	**Fundición Gris Grafito Esferoidal - Fundición Maleable** **Spheroidal Graphite Cast Iron - Malleable Cast Iron** Fonte Grise Graphite Spherique	<31,6	>200<300	>700<1000
4. **TITANIO** **TITANIUM** TITANE		**Aleaciones Titanio / Alloyed Titanium /** Alliages Titane			
5. **COBRE** **BRONCE - LATÓN** **COPPER** **BRONZE -** BRASS CUIVRE BRONZE - LAITON	**5.1**	**Cobre - Bronce - Latón Viruta Corta** **Copper - Bronze - Brass (Short Chip)** Cuivre - Bronze - Laiton (Coupeaux Courts)		<200	<700
	5.2	**Cobre - Bronce - Latón Viruta Larga** **Copper - Bronze - Brass (Long Chip)** Cuivre - Bronze - Laiton (Coupeaux Longs)		<200	<700
6. **ALUMINIO** **MAGNESIO** **ALUMINIUM** **MAGNESIUM**	**6.1**	**Al - Mg No Aleado** **Unalloyed Al - Mg** Al - Mg Sans Alliage		<100	<350
	6.2	**Aleaciones Al Si < 10%** **Al Alloys Si < 10%** Alliages Al Si < 10%		<180	<600
	6.3	**Aleaciones Al Si > 10%** **Al Alloys Si > 10%** Alliages Al Si > 10%		<180	<600
7. **MATERIALES** **SINTÉTICOS** **SYNTHETIC** **MATERIALS** MATERIAUX SYNTHETIQUES	**7.1**	**Termoplásticos** **Thermo-Plastics** Thermoplastiques			
	7.2	**Duroplásticos** **Hard-Plastics** Plastiques Durs			

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	España Spain - Espagne	Alemania Germany - Allemagne		Francia France	Reino Unido UK - Royaume-Uni	Italia Italy - Italie	EE.UU. USA - États-Unis
	UNE	N° MATERIAL	DIN	AFNOR	B.S.	UNI	AISI
	GRUPO GROUP GROUPE 1 ACEROS - STEELS - ACIERS						
1.1	**ACEROS DE CONSTRUCCIÓN / STRUCTURAL STEELS / ACIERS DE CONSTRUCTION (<850 N/mm² / <250 HB)**						
	AE235B,FE360 B	1,0036	FE360 (ST 37-2)	E -42-2	FE 360 B	FE 360 B FU	A 570 GR.33,36
	AE235B,FE360B	1,0037	FE 360 B(RST 37-2)	E 24-2	FE 360 B	FE 360 B,C,D	A 283 CR.C
	AE275B,FE430BFN	1,0044	FE 430 B (ST 44-2)	E 28-2	FE 430 B FN	FE 430 B	A 570 GR.40
	A490-2,FE490-2FN	1,0050	FE 490-2 (ST 50-2)	A 50-2	FE 490-2 FN	FE 490	A 570 GR.50
	A590-2,FE590-2FN	1,0060	FE 590-2 (ST 60-2)	A 60-2	FE 590-2 FN	FE 60-2	A 572 GR.65
	A690-2,FE690-2FN	1,0070	FE 690-2 (ST 70-2)	A 70-2	FE 690-2 FN	FE 70-2,FE 690	
	AE 235 D,FE360D1FF	1,0116	FE 360D1 (ST 37-3)	A 24-3	FE 360 D1 FF	FE 360 C,D	A 284 GR.D
	ACEROS DE CEMENTACIÓN / CASE HARDENING STEELS / ACIERS DE CIMENTERIE						
	F.111	1,0401	C 15	AF 37 C 12	080 A 15	C 15	M 1015
	F.1510-C10K	1,1121	CK 10	XC 10	040 A 10	C 10	1010
	F.1110-C15K	1,1141	C15	C18RR	080M15	C15	GR.1016
		1,7015	15 CR 3	12C8	523M15		5015
	F.1516-16MNCR5	1,7131	16MNCR5	16MC5	527M17	16MNCR5	NO.5115
	F.150 D	1,7147	20MNCR5	20MC5		20MNCR5	5120
	ACEROS DE FÁCIL MECANIZACIÓN / FREE-CUTTING STEELS / ACIERS D'USINAGE MECANIQUE FACILE						
	F.2111-11SMN28	1,0712	9SMN28	S 250	230M07	CF 9 SMN 28	1213
	F.2112-11SMN PB28	1,0718	9 SMN PB 28	S 250 PB		CF 9SMN PB28	12 L 13
	F.2121-10S20	1,0721	10S20	10F1	210M15	CF10S20	GR.1108
	F.210-G	1,0726	35S20	35 MF 6	212M36	CF 35 SMN 10	1140
		1,0727	45 S 20	45 MF 4			1146
	F.2113-12SMN35	1,0736	9 SMN 36	S 300		CF 9 SMN 36	1215
	F.210-F	1,0723	15 S 20		210 A 15		
	ACEROS DE CONSTRUCCIÓN FUNDIDOS / CAST STEELS / ACIERS DE CONSTRUCTION FONTE						
		1,0416	GS-83,3	A 42C-M	AM 1	FEG38VR	GR. N1
		1,0551	GS-52	E26-52-M	161GR400A	GC20	GR.N 2
		1,0553	GS-60	30M6M	A 3		GR.80-40
		1,0554	GS-62	E26-52-M	AW3		GR.105-85
	ACEROS AL CARBONO NO ALEADOS / UNALLOYED CARBON STEELS / ACIERS AU CARBONE SANS ALLIAGE						
	ACEROS BONIFICADOS / HEAT-TREATABLE STEELS / ACIERS SUPERIEURS						
	F . 112	1,0402	C 22	1 C 22	070 M 20	C 25	M 1023
	F. 113	1,5010	C 35	C 35	40 HS	C 35	GR.1035
	F.114	1,0503	C 45	C 45	50 HS	C 45	GR.1043
	F.115	1,0535	C 55	C 54	50	C 55	GR.1055
		1,0601	CK 60	C 60	60 HS,CS	C 60	1060
	F.1120-C25K	1,1151	CK 22	2 C 22	055 M 15	C 20, C 25	1020
		1,1157	40 MN 4	35 M 5	150 M 36		1035
	F.1130-C35K	1,1181	CK 35	2 C 35	080 A 35	C 35	1038
	F.1140-C45K	1,1191	CK 45	2 C 45	080 M 46	C45	1045
	F.1150-C55K	1,1203	CK 55	2 C 55	060 A 57	C 55	1055
		1,1221	CK 60	2 C 60	060 A 62	C 60	1060
	ACEROS ALEADOS - ALLOYED STEELS - ACIERS ALLIES (<1000 N/mm² / <300 HB)						
1.2	**ACEROS ALEADOS PARA HERRAMIENTAS / ALLOYED TOOL STEELS / ACIERS ALLIES POUR OUTILS**						
	F.5230-100 CR6	1,2067	100 CR 6	Y 100 C 6	BL 3		L 1 , L 3
	F.5212-X210CR12	1,2080	X210 CR 12	Z 200 C 12	B D 3	X 205CR12 KU	D 3
	F.5227-X100CRMO V5	1,2363	X 100 CRMO V5	Z 100	CDV 5	X100CRMOV51KU	A 2
		1,2379	X 155CRVMO 12	Z 160CDV12	BD2	X155CRVMO121KU	D 2
	F.5220-95MNCRW5	1,2510	100 MNCRW 4	90 MWCV 5	BO 1	95MNWCR5KU	O 1
		1,2550	60 WCRV 7	55 W C20	BS 1	55 WCR V8 KU	S 1
		1,2842	90MN CRV8	90 MNV8	B 02	90MNVCR8KU	O 2
	ACEROS RÁPIDOS / HIGH SPEED STEELS / ACIERS RAPIDES						
	F.5563.12-1-5-5	1,3202	HS 12-1-4-5	HS 12-1-5-5	BT 15	HS12-1-5-5	T 15
	F.5553.10-4-3-10	1,3207	HS 10-4-3-10	Z130WKCDV	BT 42	HS 10-4-3-10	T 42
	F.5613-6-5-2-5	1,3243	HS 6-5-2-5	Z85WDKCV06	BM 35	HS 6-5-2-5	M 35
	F.5617.-2-10-1-8	1,3247	S 2 10 1 8	Z110DKCWV	BM 42	HS 5-5-2	M 42
	F.5603.-6-5-2	1,3343	HS 6-5-2	Z85WDCV06	BM 2	HS 6-5-2	M 2
	FUNDICIÓN ALEADA / ALLOYED CAST IRON / FONTE ALLIEE						
	F.8372-AM26CRMO4	1,7218	GS-25 CRMO 4	25 CD 4	70 8A 25	25 CRM04	4130
	F.8331-AM34CRMO 4	1,7220	34 CRM 04	25 CD 4	708 A25	30 CRM04	4130
	ACEROS BONIFICADOS / ALLOYED HEAT-TREATABLE STEELS / ACIERS SUPERIEURS						
	F. 114	1,0503	C 45	C 45	50 HS	C 45	GR.1043
	F.8331-AM34CRMO 4	1,7220	34 CRMO 4	25 CD4	708 A25	30 CRMO 4	4130
	F.8332-AM42CRMO 4	1,7225	41 CRMO 4	42 CD4	708M 40	38CRMO 4KB	GR.414O
		1,7228	50 CRMO 4	50 CR MO 4	708 A 47		4150
	ACEROS NITRURACIÓN / NITRIDING STEELS / ACIERS AVEC NITRATE						
		1,7779	20 CRMOV 1 3 5				
		1,8504	34 CR AL 6				
	F,1741-34CRAIMO 5	1,8507	34 CRAIMO 5	30 CAD 6,12		34 CR AI MO 7	A 355 CI.D
	F.1740-41 CRAIMO 7	1,8509	41 CRAIMO 7	40 CAD 6,12	905 M 39	41 CR AI MO 7	A 355 CI.A
	F.1712-31 CRMO 12	1,8515	31 CRMO 12	30 CD 12	722 M 24	30 CR MO 12	
	ACEROS ALEADOS BONIFICADOS - HEAT-TREATABLE ALLOYED STEEL - ACIERS ALLIES SUPERIEURS (850-1300 N/mm² / 300-400 HB)						
1.3	**ACEROS ALEADOS HERRAMIENTAS / ALLOYED TOOL STEELS / ACIERS ALLIES OUTILS**						
		1,2311	40 CRMNMO 7				
		1,2312	40 CRMNMOS 8 6				
	F.5213-X210CRW 12	1,2436	X 210 CRW 12	Z 200 CW 12		X 215 CRW 12 1 KU	
		1,2713	55 NICRMOV 6	55 NCDV	BH 224/5		L 6
		1,2714	56 NICRMOV 7	55 NCDV 7	BH 224/5	56 NICRMOV7KU	L 6
	ACEROS ALEADOS HTAS. TRABAJO CALIENTE / TOOL STEELS WARM WORKING / ACIERS ALLIES OUTILS TRAVAIL EN CHAUD						
	F.5317-X37CRMOV 5	1,2343	X38CRMOV5.1	Z 38CDV 5	BH 11	X37CRMOV51KU	H 11
	F.5318-X40CRMOV 5	1,2344	X 40CRMOV 51	X 40CRMOV 5	BH 13	X 40CRMOV511KU	H 13
	F.5318-X40CRMOV 5						
	F.5313-30CRMOV 12	1,2365	X 32CRMOV 3 3	32CDV12-28	BH 10	30CRMOV1227KU	H 10
	F.5323-X30WCRV 9 3	1,2581	X30WCRV 9,3	Z30WCV 9	BH 21	X 30WCRV 93KU	H 21
		1,2550	60 WCRV 7	55 WC 20	BS 1	55 WCRV 8 KU	S 1
		1,2567	X 30 WCRV 5 3	Z 32 WCV 5		X 30 WCRV 53 KU	
	ACEROS BONIFICADOS / HEAT-TREATABLE STEELS / ACIERS SUPERIEURS						
		1,5864	35 NICR 18				
		1,6580	30 NICRMO 8				
	F-124 A	1,7361	32 CRMO 12	30 CD 12	722 M 24	32 CRMO 12	
		1,7707	30 CRMOV 9			31 CRMOV 10	
	ACEROS NITRURACIÓN / NITRIDING STEELS / ACIERS AVEC NITRATE						
	F.1712-31 CRMO 12	1,8515	31 CRMO 12	30 CD 12	722 M 24	30 CRMO 12	
		1,8523	39 CRMOV 13 9		897 M 39		
1.4	**Materiales resistentes al desgaste - Wear-Resistant Materials - Matériaux résistant a l'usure** **HARDOX 450 - XAR 450 - RAEX - FORA - CREUSABRO**						

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	España Spain - Espagne	Alemania Germany - Allemagne		Francia France	Reino Unido UK - Royaume-Uni	Italia Italy - Italie	EE.UU. USA - États-Unis
	UNE	Nº MATERIAL	DIN	AFNOR	B.S.	UNI	AISI
GRUPO GROUP GROUPE 2	**ACEROS INOXIDABLES - STAINLESS STEELS - ACIERS INOX**						
2.1	**ACEROS INOX AUSTENÍTICOS / AUSTENITIC STAINLESS STEELS / ACIERS INOX AUSTENITIQUES (< 850 N/mm² / <250 HB)**						
	F.3507-X 10CRNI 18-8	1,4300	X 12 CRNI 18 8				302
	F.3504-X5CRNI 18-10	1,4301	X5 CRNI 18-10	X5 CRNI 18-10	304 S31	X5 CRNI 18-10	304
	F.3541-X2CRNIN 18-10	1,4311	X 2 CRNIN 18-10	Z 3CN 18.07AZ	304 S 61	X 2 CRNIN 18 11	304 LN
	F.3542-X2CRNIMON17-12-2	1,4406	X 2 CRNIMON 17-12-2	Z 3 CND17.11.02	316 S 61	X 2 CRNIMON 17 12	316 LN
	F.3533-X2CRNIMO17-13-2	1,4435	X2CRNIMO 18-14-3	Z3CND 17-12-03	316 S14	X2CRNIMO 1713	316 L
	F.3523-X6CRNITI 18-10	1,4541	X 6CRNITI 18-10	Z 6CNT 18-10	321 S31	X 6CRNITI 18 11	321
	F.3535-X6CRNITI 17-12-2	1,4571	X 6 CRNIMOTI 17 12 2	Z 6CNDT 17,12	320 S18	X 6 CRNIMOTI 17 12	316 TI
	F.3535-X6CRNIMOTI17-12	1,4573	X 10 CRNIMOTI 18 12		320 S33	X 6 CRNIMOTI 17 13	316 TI
	F.3312-X15CRNISI20-12	1,4828	X 15CRNISI 20 12	Z 17CNS 20 12	309 S24	X 16CRNI 23 14	309
2.2	**ACEROS INOX MARTENSÍTICOS / MARTENSITIC STAINLESS STEEL / ACIERS INOX MARTENSITIQUES (<1100 N/mm² / <320 HB)**						
	F.3402-X20CR13	1,4021	X 20 CR 13	X 20 CR 13	420 S 37	X 20 CR 13	420
	F.3427-X19CRNI 17-2	1,4057	X 20 CRNI 17 2	Z 15 CN16,02	431 S29	X 16 CRNI16	431
	F.3220-X45CRSI09-03	1,4718	X 45 CRSI 9,3	Z 45 CS9	401 S45	X 45CR SI 8	HNV 3
	ACEROS INOX FERRÍTICOS / FERRITIC STAINLESS STEELS / ACIERS INOX FERRITIQUES (<1100 N/mm² / <320 HB)						
	F.3111-X6CRAI 13	1,4002	X 6 CRAI 13	Z 8CA 12	405 S17	X 6 CRAI 13	405
	F.3401-X 10 CR 13	1,4006	X 10 CR13	Z 12 C 13	410 S2	X 12 CR 13	410
	F.3113-X6 CR17	1,4016	X 6 CR 17	Z 8 C 17	430 S18	X 8 CR 17	430
	F.3115-X5CRTI 17	1,4510	X 6 CRTI 17	Z 8CT 17		X 6 CRTI 17	430 TI
		1,4512	X 6 CRTI 12	Z 6CT 12	409 S19	X 6 CRTI 12	409
GRUPO GROUP GROUPE 3	**FUNDICIÓN - CAST IRON - FONTE**						
3.1	**F. GRIS GRAFITO ESFEROIDAL / CAST IRON SPHEROIDAL GRAPHITE / F. GRISE GRAPHITE SPHERIQUE (<700N/mm²/<200 HB)**						
		0.7033	GGG 35-3	FGS 370-71	GR.350/22	GS 370-17	
		0.7040	GGG 40	FGS 400-12	GR.420-12	GS 400-12	GR.60-40-18
		0.7050	GGG 50	FGS 500-7	500/7	GS 500-7	65-45-12
		0.7060	GGG 60	FGS 600-3	GR.600/3	GS 600-3	GR.80-55-06
		0.8135	GTS 35-10	MN 35-10	B 35-12	B 35-10	GR.32510
		0.8145	GTS 45-06	MN 450-6	P 45-06	P 45-06	GR.45006
		0.8155	GTS 55-04	MN 550-4	P 55-04	P 55-04	6004
3.2	**F. GRIS GRAFITO ESFEROIDAL / CAST IRON SPHEROIDAL GRAPHITE / F. GRISE GRAPHITE SPHERIQUE (700-1000N/mm² /200-300 HB)**						
		0.7070	GGG 70	FGS 700-2	GR.700/2	GS 700-2	100-70-03
		0.8080	GGG 80	FGS 800-2	GR.800/2	GS 800-2	GR.120-90-02
GRUPO GROUP GROUPE 4	**TITANIO - TITANIUM - TITANE**						
	TITANIO PURO / UNALLOYED TITANIUM / TITANE PUR (<700 N/mm² / <200 HB)						
		3,7024	TI 99,5 GRADO 1	T 35			
		3,7034	TI 99,7 GRADO 2	T 40			
		3,7055	TI 99,4 GRADO 3	T 50			
		3,7065	TI 4	T 60			
	TITANIO ALEADO / ALLOYED TITANIUM / ALLIAGES TITANE (< 900 N/mm² / <270 HB)						
		3,7114	TIAL 5 SN 2				
		3,7124	TICU 2,5	TU 2			
		3,7164	TIAL 6 V 4	T-AGV	2 TA 10		
GRUPO GROUP GROUPE 5	**COBRE - LATÓN - BRONCE - COPPER - BRASS - BRONZE - CUIVRE - LAITON - BRONZE (< 700 N/mm² / <200-300 HB)**						
5.1	**BRONCES / BRONZE / BRONZES**						
		2,1020	CU SN 6				
	C 715O	2,1030	CU SN 8				
	ALEACIONES COBRE VIRUTA CORTA / SHORT CHIPPING COPPER / ALLIAGE CUIVRE COPEAUX COURTS						
		2,0360	CU ZN 40	CU ZN 40	CZ 109	P-CU ZN 40	C 28000
		2,0402	CU ZN 40 PB2	CU ZN 39 PB2	CZ 122		C 38000
	LATONES / BRASS / LAITONS (< 700 N/mm² / < 200-300 HB)						
		2,0250	CU ZN 20	CU ZN 20	CZ 103		C 24000
		2,0265	CU ZN 30	CU ZN 30	CZ 106	P-CU ZN 30	C 26000
		2,0321	CU ZN 37	CU ZN 37	CZ 108		C 27400
5.2	**ALEACIÓN Cu VIRUTA LARGA / LONG CHIPS ALLOYED Cu / ALLIAGE Cu COPEAUX LONGS (< 700 N/mm² / <200-300 HB)**						
		2,1245	CUBE 1,7	CU BE 1,7	CB101		C 17000
		2,1247	CUBE 2	CU BE 1,9			C 17200
GRUPO GROUP GROUPE 6	**ALUMINIO - MAGNESIO - ALUMINIUM - MAGNESIUM**						
6.1	**Al - Mg SIN ALEAR / UNALLOYED ALUMINIUM - MAGNESIUM / ALUMINIUM - MAGNESIUM SANS ALLIAGE (<350 N/mm² / <100 HB)**						
		3,0250	Al 99,5 H				
		3,0280	Al 99,8 H				
6.2	**ALEACIONES ALUMINIO / ALUMINIUM ALLOYS / ALLIAGES ALUMINIUM Si<10% (< 600 N/mm² / <180 HB)**						
	L-3811	3,0515	AlMN 1	3103	3103	P-ALMN 1,2 CU	A 93003
	L-3120-38-312	3,1325	AlCUMG 1	2017 A		P-AlCU4MGMNSI	A 92017
	L-3140-38-314	3,1355	AlCUMG 2	2024	2024	P-AlCU4-4MGMN	2024
	L-3710-38.371	3,4365	AlZNMGCU-1,5	7075	7075	P-AlZNMGCU-1,5	A 9775
	FUNDICIÓN ALUMINIO / CAST ALUMINIUM / FONTE ALUMINIUM						
		3,3292	GD-AlMG 9	A-G10SY 4	LM 10		A 05200
6.3	**ALEACIONES ALUMINIO / ALUMINIUM ALLOYS / ALLIAGES ALUMINIUM Si>10% (<600 N/mm² / <180 HB)**						
	L-256O-61	3,2381	G-AlSI 10 MG	A-S10G		G-AlSI9MG	A-0359.0
	L-253O	3,2583	G-AlSI 11	A-S12U	LM 20	G-AlSI13CUMN	A-04130
GRUPO GROUP GROUPE 7	**MATERIALES SINTÉTICOS - SYNTHETIC MATERIALS - MATERIELS SYNTHETIQUES**						
7.1	**TERMOPLÁSTICOS / THERMOPLASTICS / THERMOPLASTIQUES**						
		POLIPROPILENO			PP		
		POLISTIROL		PS			
		POLIVILNICLORITO			PVC		
		POLICARBONATO		MACRALON	PC		
	ULTRAMID	POLIAMIDA		PA			
		POLIMETILMETACRILATO		PLEXIGLAS	PMMA		
7.2	**DUROPLÁSTICOS / HARD-PLASTICS / PLASTIQUES DURS**						
	BAQUELITA						
	PERTINAX						
	MOLTOPREN						
	RESOPAL	GRAFITO					

TABLA USO TALADRADO
Drilling Use Table
Tableau Usage Perçage

BROCAS
Twist Drills / Forets

	Norma / Norm / Norme	IZAR Std.	IZAR Std.	IZAR Std.	NAS	ANSI Std.	ANSI Std.	ANSI Std.	ASME Std.	ANSI Std.	ANSI Std.	ANSI Std.	ANSI Std.	ANSI Std.	ANSI Std.	ASME Std.
	Elab. / Manuf.				907 J			N		N	N	N	N	N	N	
	Ref.	1781	1780	9370	1700	1721	1720	1752	1370	1070	1715	1702	1717	1751	1710	1380
	Material	MD/HM/ Carbure	MD/HM/ Carbure	MD/HM/ Carbure	Cobalt 5%	Cobalt 5%	Cobalt 5%	Cobalt 5%	Cobalt 5%	HSS	HSS	HSS	HSS	HSS	HSS	HSS
	Recubrimiento Coating Revêtement	TiSiN	TiSiN							TIN	Zirkonio					
	Pag.	18	19	20	22	23	24	29	33	25	26	27	28	30	32	33
	Foto Picture Photo															

Material

● **Uso Recomendado** / **Recommended Use** / Utilisation Conseillée
○ **Uso Alternativo** / **Alternative Use** / Option d´emploi

1.	1.1 57000 - 130000 psi (< 24,5 HRC)	●	●	●		●			●	●	●	●	●	●	●	○
	1.2 130000 - 175000 psi (< 31,6 HRC)	●	●	●	○				○						○	
	1.3 <210000 psi (31,6 - 42,8 HRC)	●	●	●	●			●								
2. INOX Stainless Steel	2.1 Serie 3 (< 24,5 HRC)	●	●	●		●	●									
	2.2 Serie 4 (< 34 HRC)	●	●	●	●	●		●	●							
3. FUNDICIÓN Cast Iron Fonte	3.1 < 100000 psi	●	●	●					●	●	●	●	●	●	●	●
	3.2 100000 - 145000 psi (< 31,6 HRC)	●	●	●						●	●	●	●	●	●	●
4. Ti		●	●	●	●			●								
5. Cu - BRONCE - LATÓN Copper - Bronze - Brass Cuivre - Bronze - Laiton	5.1 VIRUTA CORTA Short Chip Coupeaux Courts		●	●		●			●						○	○
	5.2 VIRUTA LARGA Long Chip Coupeaux Longs		●	●		●			●						○	○
6. ALUMINIO - MAGNESIO Aluminium - Magnesium	6.1 NO ALEADO Unalloyed Sans Alliage		○	●		●	●		○	○	○	○	○	○		○
	6.2 < 10% Si		○	●		●	●		●	○	○	○	○	○		●
	6.3 > 10% Si		○	●		●	●		●	○	○	○	○	○		●
7.	7.1 TERMOPLÁSTICOS Thermo-Plastics Thermoplastiques			●		○	○									
	7.2 DUROPLÁSTICOS Hard-Plastics Plastiques Durs															

TABLA USO ROSCADO
Threading Use Table
Tableau Usage Taraudage

MACHOS
Taps
Tarauds

Rosca / **Thread** / Filet	Whitworth	Whitworth	Whitworth	Whitworth	UNC	UNC	UNC	UNC	UNC
Uso **Use** Usage	**Máquina** / **Machine**	**Máquina** / **Machine**	**Máquina** / **Machine**	**Mano** / **Hand** / Main	**Máquina** **Machine**	**Máquina** **Machine**	**Máquina** / **Machine**	**Máquina** / **Machine**	**Máquina** / **Machine**
Ref.	**3112**	**3102**	**3152**	**3032**	**3144**	**3104**	**3114**	**3134**	**3154**
DIN	371	371	371	352	371	371	371	371	371
Ref.	**3212**	**3202**	**3252**	**3012**			**3214**	**3234**	**3254**
DIN	376	376	376	352			376	376	376
Material	Cobalt 5%	Cobalt 5%	Cobalt 5%	HSS	PMX	PMX	Cobalt 5%	Cobalt 5%	Cobalt 5%
Recubrimiento / **Coating** / Revêtement					HARD	HARD			
Pag.	**36**	**37**	**38**	**39-40**	**41**	**41**	**42**	**43**	**44**
Foto **Picture** Photo									
Entrada / **Point** / Entrée	C 2-3h	B 3,5-5h	C 2-3h	C 2-3h	B 3,5-5h	B 3,5-5h	C 2-3h	B 3,5-5h	C 2-3h
Tol.				6H	2B	2B	6H	2B	2B

Material

● **Uso Recomendado** / **Recommended Use** / Utilisation Conseillée
○ **Uso Alternativo** / **Alternative Use** / Option d´emploi

1.	**1.1** 57000 - 130000 psi (< 24,5 HRC)					●	●		
	1.2 130000 - 175000 psi (< 31,6 HRC)	●	●	●	●			●	●	●
	1.3 <210000 psi (31,6 - 42,8 HRC)									
2. INOX Stainless Steel	**2.1** Serie 3 (< 24,5 HRC)									
	2.2 Serie 4 (< 34 HRC)									
3. FUNDICIÓN Cast Iron Fonte	**3.1** < 100000 psi	●	●	●	●	●	●	●	●	●
	3.2 100000 - 145000 psi (< 31,6 HRC)	●	●	●	●	●	●	●	●	●
4. Ti										
5. Cu - BRONCE - LATÓN Copper - Bronze - Brass Cuivre - Bronze - Laiton	**5.1** VIRUTA CORTA Short Chip Coupeaux Courts	●	●	●	●	●	●	●	●	●
	5.2 VIRUTA LARGA Long Chip Coupeaux Longs	●	●	●	●	●	●	●	●	●
6. ALUMINIO - MAGNESIO Aluminium - Magnesium	**6.1** NO ALEADO Unalloyed Sans Alliage	●	●	●	●	●	●	●	●	●
	6.2 < 10% Si	●	●	●	●	●	●	●	●	●
	6.3 > 10% Si	○	○	○	○	○	○	○	○	○
7.	**7.1** TERMOPLÁSTICOS Thermo-Plastics Thermoplastiques									
	7.2 DUROPLÁSTICOS Hard-Plastics Plastiques Durs									

TABLA USO ROSCADO
Threading Use Table
Tableau Usage Taraudage

UNC	UNF-SAE	UNF-SAE	UNF-SAE	UNF-SAE	UNF-SAE	UNF-SAE	UN	UNEF	NPT	NPT
Mano / **Hand** / Main	**Máquina Machine**	**Máquina Machine**	**Máquina** / **Machine**	**Máquina** / **Machine**	**Máquina** / **Machine**	**Mano** / **Hand** / Main	**Máquina** / **Machine**	**Mano / Hand / Main**	**Máquina** / **Machine**	**Mano** / **Hand** / Main
3034	**3127**	**3124**	**3224**	**3204**	**3244**	**3024**	**3209**	**3025**	**3107**	**3017**
352	371	371	374	374	374	2181	374	2181	374	2181
HSS	PMX	PMX	Cobalt 5%	Cobalt 5%	Cobalt 5%	HSS	Cobalt 5%	HSS	Cobalt 5%	HSS
	HARD	HARD								
45	**46**	**46**	**47**	**47**	**48**	**49**	**50**	**51**	**52**	**53**
										
C 2-3h	B 3,5-5h	C 2-3h	C 2-3h	B 3,5-5h	C 2-3h	C 2-3h	C 2-3h	C 2-3h	C 2-3h	
2B	2B	2B	2B	2B	2B	2B	2B	2B		
	●	●								
●			●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●	●	●
○	○	○	○	○	○	○	○	○	○	○

● **Uso Recomendado** / **Recommended Use** / Utilisation Conseillée
○ **Uso Alternativo** / **Alternative Use** / Option d´emploi

TABLA USO FRESADO
Milling Use Table
Tableau Usage Fraisage

FRESAS DESBASTE
Roughing End Mills
Fraises Ebauche

	Norma Norm / Norme	IZAR Std.	ASME Std.	ASME Std.	ASME Std.	ASME Std.	ASME Std.	ASME Std.	ASME Std.
	Elab. / Manuf.	NR	NR-F	NR-F	NR	NR	NR-F	NR-F	NR-F
	Material	MD/HM/ Carbure	PMX	PMX	PMX	PMX	Cobalt 8%	Cobalt 8%	Cobalt 8%
	Recubrimiento / Coating / Revêtement	TIALN-PRO	TIALN-TOP	TIALN-TOP	TIALN-TOP	TIALN-TOP	TIALSIN	TIALSIN	TIALSIN
	Z	NZ	3-8	3-8	3-8	3-8	3-5	6-8	3-5
	Ref.	**7744**	**7644**	**7696**	**7640**	**7690**	**7304**	**7330**	**7306**
	Pag.	**58**	**62**	**63**	**67**	**68**	**64**	**64**	**65**
	Foto Picture Photo								

Material		
		● **Uso Recomendado** / Recommended Use / Utilisation Conseillée ○ **Uso Alternativo** / Alternative Use / Option d´emploi
1.	**1.1** 57000 - 130000 psi (< 24,5 HRC)	● ● ●
	1.2 130000 - 175000 psi (< 31,6 HRC)	● ● ● ● ● ●
	1.3 <210000 psi (31,6 - 42,8 HRC)	● ○ ○
	1.4 ANTIDESGASTE Wear-Resistant - Anti-Usure	○
2. INOX Stainless Steel	**2.1** Serie 3 (< 24,5 HRC)	○
	2.2 Serie 4 (< 34 HRC)	● ●
3. FUNDICIÓN Cast Iron Fonte	**3.1** < 100000 psi	● ● ●
	3.2 100000 - 145000 psi (< 31,6 HRC)	● ● ● ●
4. Ti		● ● ● ● ●
5. Cu - BRONCE - LATÓN Copper - Bronze - Brass Cuivre - Bronze - Laiton	**5.1** VIRUTA CORTA Short Chip Coupeaux Courts	● ○ ○ ● ● ●
	5.2 VIRUTA LARGA Long Chip Coupeaux Longs	○ ○ ● ● ●
6. ALUMINIO - MAGNESIO Aluminium - Magnesium	**6.1** NO ALEADO Unalloyed Sans Alliage	● ●
	6.2 < 10% Si	● ●
	6.3 > 10% Si	● ●
7.	**7.1** TERMOPLÁSTICOS Thermo-Plastics Thermoplastiques	
	7.2 DUROPLÁSTICOS Hard-Plastics Plastiques Durs	

TABLA USO FRESADO
Milling Use Table
Tableau Usage Fraisage

ASME Std.	ASME Std.	ASME Std.	ASME Std.	ASME Std.	ASME Std.	ASME Std.	ASME Std.	ASME Std.	ASME Std.	ASME Std.	ASME Std.
NR-F	NR-F	NR	NR	NR	NR	NR	NR-F	NR-F	NR	WR	WR
Cobalt 8%	Cobalt 8%	Cobalt 8%	Cobalt 8%	Cobalt 8%	Cobalt 8%	Cobalt 8%	Cobalt 8%	Cobalt 8%	Cobalt 8%	Cobalt 8%	Cobalt 8%
TIALSIN	TIALSIN	TIALSIN	TIALSIN	TIALSIN	TIALSIN	TIALSIN	TIALSIN	TIALSIN	TIALSIN	TIALSIN	TIALSIN
6	4-6	3-5	6-8	3-6	6-8	3-8	3	3	3	3	3
7332	**7391**	**7300**	**7340**	**7302**	**7342**	**7390**	**7521**	**7320**	**7324**	**7370**	**7372**
65	**66**	**69**	**69**	**70**	**71**	**72**	**84**	**85**	**85**	**86**	**87**
											

● **Uso Recomendado** / **Recommended Use** / Utilisation Conseillée
○ **Uso Alternativo** / **Alternative Use** / Option d´emploi

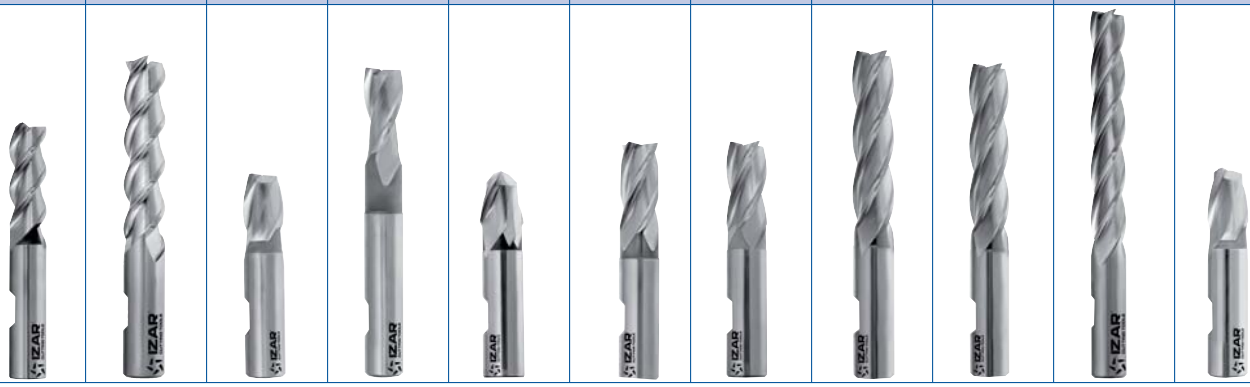
		●	●	●	●	●	●	●	●	●	●
●	●										
							●				
							●				
●	●	○	○	○	○	○		●	●	●	●
●	●	○	○	○	○	○		●	●	●	●
●	●							●	●	●	●
●	●	○	○	○	○	○		●	●	●	●
●	●	○	○	○	○	○		●	●	●	●
							●	●	●	●	●
							●	●	●		
							●	●	●		

TABLA USO FRESADO
Milling Use Table
Tableau Usage Fraisage

FRESAS ACABADO
Finishing End Mills
Fraises Finition

	Norma Norm / Norme	IZAR Std.	ASME Std.	ASME Std.	ASME Std.	ASME Std.	ASME Std.	ASME Std.	ASME Std.	ASME Std.
	Elab. / Manuf.	N	N	N	W	N	N	N	N	N
	Material	MD/HM/ Carbure	PMX	PMX	PMX	PMX	Cobalt 8%	Cobalt 8%	Cobalt 8%	Cobalt 8%
	Recubrimiento / Coating / Revêtement	TIALN-PRO	TIALN-TOP	TIALN-TOP	TIALN-TOP	TIALN-TOP	TIALSIN	TIALSIN	TIALSIN	TIALSIN
	Z	4	4-6	4	3	2	4-6	4-8	4-6	4-6
	Ref.	**7401**	**7666**	**7600**	**7630**	**7620**	**7411**	**7413**	**7415**	**7420**
	Pag.	**59**	**73**	**74**	**75**	**76**	**77**	**78**	**78**	**79**
	Foto Picture Photo									
Material		● **Uso Recomendado** / Recommended Use / Utilisation Conseillée ○ **Uso Alternativo** / Alternative Use / Option d´emploi								
1.	**1.1** 57000 - 130000 psi (< 24,5 HRC)	●				●	●	●	●	●
	1.2 130000 - 175000 psi (< 31,6 HRC)	●	●	●		●				
	1.3 <210000 psi (31,6 - 42,8 HRC)	○	○	○		○				
2. INOX Stainless Steel	**2.1** Serie 3 (< 24,5 HRC)	○	●	●	●					
	2.2 Serie 4 (< 34 HRC)	○	●	●						
3. FUNDICIÓN Cast Iron Fonte	**3.1** < 100000 psi	●	●	●		●	○	○	○	○
	3.2 100000 - 145000 psi (< 31,6 HRC)	●	●	●		●	○	○	○	○
4. Ti		○	●	●	●	●				
5. Cu - BRONCE - LATÓN Copper - Bronze - Brass Cuivre - Bronze - Laiton	**5.1** VIRUTA CORTA Short Chip Coupeaux Courts	●	●	●	●	●	○	○	○	○
	5.2 VIRUTA LARGA Long Chip Coupeaux Longs	●			●	●	○	○	○	○
6. ALUMINIO - MAGNESIO Aluminium - Magnesium	**6.1** NO ALEADO Unalloyed Sans Alliage	○				●				
	6.2 < 10% Si	○	●	●		●				
	6.3 > 10% Si	○	●	●		●				
7.	**7.1** TERMOPLÁSTICOS Thermo-Plastics Thermoplastiques	○								
	7.2 DUROPLÁSTICOS Hard-Plastics Plastiques Durs	●								

TABLA USO FRESADO
Milling Use Table
Tableau Usage Fraisage

ASME Std.	ASME Std.	ASME Std.	ASME Std.	ASME Std.	ASME Std.	ASME Std.	ASME Std.	ASME Std.	ASME Std.	ASME Std.
N	N	N	N	N	N	N	N	N	N	N
Cobalt 8%	Cobalt 8%	Cobalt 8%	Cobalt 8%	Cobalt 8%	HSS	HSS	HSS	HSS	HSS	HSS
		TIALSIN	TIALSIN	TIALSIN						
3	3	2	2	2	4-6	4-8	4	6-8	4-6	2
7530	**7532**	**7205**	**7203**	**7220**	**7410**	**7400**	**7412**	**7402**	**7414**	**7200**
88	**89**	**90**	**91**	**92**	**80**	**81**	**82**	**82**	**83**	**93**
										
● **Uso Recomendado** / **Recommended Use** / Utilisation Conseillée ○ **Uso Alternativo** / **Alternative Use** / Option d´emploi										
●	●	●	●	●	●	●	●	●	●	●
●	●									
●	●									
		●	●	●						
		●	●	●						
		●	●	●						
		●	●	●						
●	●	●	●	●						
●	●	●	●	●						
●	●	●	●	●						

ÍNDICE GENERAL
General Index
Index Général

Otros Catalogos IZAR disponibles **Other IZAR Catalogues available** Autres Catalogues IZAR disponibles

PRO 18
Construcción mm
Metric Construction
Construction mm

IND-18
Industrial mm
Metric Industrial
Industriel mm

IZAR®
CUTTING TOOLS

Fraccional 2019

TALADRADO METAL DURO
Carbide Drilling
Perçage Carbure

Ref. **1781**

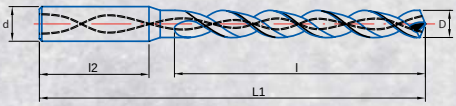
BROCA INTEGRAL METAL DURO REFRIGERACIÓN INTERIOR

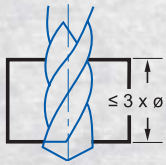
Internal Cooling Solid Carbide Drill Bit

Foret Carbure Trous d'huile

NEW!

MD/HM Carbure K30F	TiSiN	IZAR std.	140°		
2Z		HRC 45-55	Tol. m7	3XD	





Material		Vc*	Avances** mm/rev. Feed** / Pas**					
Grupo	Sub.	TiSiN	Ø 1/8	Ø 1/4	Ø 5/16	Ø 1/2	Ø 9/16	Ø 5/8
1	1.1	100-120	0,007	0,008	0,011	0,014	0,016	0,018
1	1.2	90-110	0,006	0,007	0,008	0,011	0,012	0,014
1	1.3	75-95	0,003	0,004	0,004	0,006	0,007	0,009
1	1.4	35-40	0,002	0,003	0,004	0,004	0,006	0,006
2	2.1	30-40	0,002	0,002	0,002	0,004	0,005	0,006
	2.2	50-65	0,003	0,005	0,006	0,008	0,009	0,010
3	3.1	125-150	0,007	0,009	0,012	0,016	0,018	0,022
	3.2	90-110	0,007	0,008	0,010	0,012	0,014	0,018
4		35-50	0,002	0,004	0,004	0,006	0,006	0,007

Vf (Avance mm/min Feed/Pas) = r.p.m. x f x K

K = Coeficiente corrección segun profundidad taladrado / Correction coefficient depending on drilling depth / Coéficient Correction suivant la profondeur du perçage

***K para/for/pour Vc:**
< 3 x ø => K = 1
< 4 x ø => K = 0,9
< 5 x ø => K = 0,8

****K para/for/pour Vf:**
< 3 x ø => K = 1
> 3 x ø => K = 0,9

$$r.p.m. = \frac{Vc \times 1.000 \times K}{\pi \times ø}$$

Vc= m/min.

D	d	Corte Flute / Coupe	OAL	N° Art. TiSiN	€
1/8	5/32	25/32	2 23/64	76740	
9/64	5/32	25/32	2 23/64	76741	
5/32	5/32	25/32	2 23/64	76742	
11/64	15/64	15/16	2 19/32	76743	
3/16	15/64	1 7/64	2 19/32	76744	
13/64	15/64	1 7/64	2 19/32	76745	
7/32	15/64	1 7/64	2 19/32	76746	
15/64	15/64	1 7/64	2 19/32	76747	
1/4	5/16	1 11/32	3 7/64	76748	
17/64	5/16	1 11/32	3 7/64	76749	
9/32	5/16	1 39/64	3 7/64	76750	
19/64	5/16	1 39/64	3 7/64	76751	
5/16	5/16	1 39/64	3 7/64	76752	
21/64	25/64	1 27/32	3 1/2	76753	
11/32	25/64	1 27/32	3 1/2	76754	
23/64	25/64	1 27/32	3 1/2	76755	

D	d	Corte Flute / Coupe	OAL	N° Art. TiSiN	€
3/8	25/64	1 27/32	3 1/2	76756	
25/64	25/64	1 27/32	3 1/2	76757	
13/32	15/32	2 11/64	4 1/64	76758	
27/64	15/32	2 11/64	4 1/64	76759	
7/16	15/32	2 11/64	4 1/64	76760	
29/64	15/32	2 11/64	4 1/64	76761	
15/32	15/32	2 11/64	4 1/64	76762	
31/64	35/64	2 23/64	4 7/32	76763	
1/2	35/64	2 23/64	4 7/32	76764	
33/64	35/64	2 23/64	4 7/32	76765	
17/32	35/64	2 23/64	4 7/32	76766	
9/16	5/8	2 9/16	4 17/32	76767	
37/64	5/8	2 9/16	4 17/32	76768	
5/8	5/8	2 9/16	4 17/32	76770	

Ref. **1780**

BROCA INTEGRAL METAL DURO GRAN RENDIMIENTO CNC

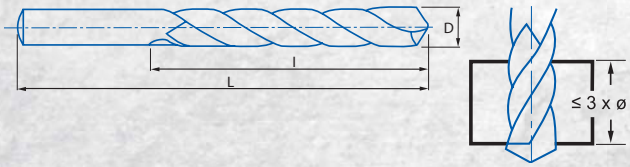
CNC High Performance Solid Carbide Drill Bit

Foret Carbure Haut Rendement CNC

GAMA Range Gamme

NEW!

MD/HM Carbure K20	TiSiN	IZAR std.	140°		
2Z		HRC 45-55	Tol. m7	3XD	



Material		Vc	Avances mm/rev. Feed / Pas					
Grupo	Sub.	TiSiN	Ø 1/8	Ø 7/32	Ø 5/16	Ø 1/2	Ø 9/16	Ø 5/8
1	1.1	290-360	0,003	0,006	0,008	0,011	0,012	0,013
1	1.2	130-260	0,002	0,004	0,005	0,006	0,008	0,009
1	1.3	100-130	0,001	0,002	0,003	0,004	0,006	0,006
1	1.4	50-100	0,001	0,002	0,002	0,003	0,003	0,003
2	2.1	115-150	0,001	0,002	0,002	0,003	0,003	0,003
	2.2	130-230	0,002	0,002	0,003	0,005	0,006	0,007
3	3.1	130-330	0,003	0,006	0,008	0,011	0,012	0,012
	3.2	130-195	0,003	0,005	0,006	0,009	0,010	0,011
4		100-130	0,001	0,002	0,003	0,005	0,006	0,007
5	5.1	160-490	0,003	0,006	0,008	0,011	0,012	0,013
	5.2	160-490	0,003	0,006	0,008	0,011	0,012	0,013
6	6.1	260-980	0,003	0,006	0,008	0,011	0,012	0,013
	6.2	260-980	0,003	0,006	0,008	0,011	0,012	0,013
	6.3	195-490	0,003	0,006	0,008	0,011	0,012	0,013

Vc= m/min.

$$r.p.m. = \frac{Vc \times 1.000 \times K}{\pi \times ø}$$

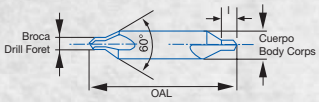
D	d	Corte Flute / Coupe	OAL	N° Art. TiSiN	€
1/8	15/64	25/32	2 7/16	76706	
9/64	15/64	25/32	2 7/16	76707	
5/32	15/64	15/16	2 19/32	76708	
11/64	15/64	15/16	2 19/32	76709	
3/16	15/64	15/16	2 19/32	76710	
13/64	15/64	1 7/64	2 19/32	76711	
7/32	15/64	1 7/64	2 19/32	76712	
15/64	15/64	1 7/64	2 19/32	76713	
1/4	15/64	1 7/64	2 19/32	76714	
17/64	5/16	1 11/32	3 7/64	76715	
9/32	5/16	1 39/64	3 7/64	76716	
19/64	5/16	1 39/64	3 7/64	76717	
5/16	5/16	1 39/64	3 7/64	76718	
21/64	25/64	1 27/32	3 1/2	76719	
11/32	25/64	1 27/32	3 1/2	76720	
23/64	25/64	1 27/32	3 1/2	76721	

D	d	Corte Flute / Coupe	OAL	N° Art. TiSiN	€
3/8	25/64	1 27/32	3 1/2	76722	
25/64	25/64	1 27/32	3 1/2	76723	
13/32	15/32	2 11/64	4 1/64	76726	
27/64	15/32	2 11/64	4 1/64	76727	
7/16	15/32	2 11/64	4 1/64	76729	
29/64	15/32	2 11/64	4 1/64	76730	
15/32	15/32	2 11/64	4 1/64	76731	
31/64	35/64	2 23/64	4 7/32	76732	
1/2	35/64	2 23/64	4 7/32	76734	
33/64	35/64	2 23/64	4 7/32	76735	
17/32	35/64	2 23/64	4 7/32	76736	
9/16	5/8	2 9/16	4 17/32	76737	
37/64	5/8	2 9/16	4 17/32	76738	
5/8	5/8	2 9/16	4 17/32	76739	

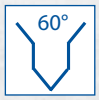
Ref. **9370**

BROCA CENTRAR DOBLE METAL DURO
Solid Carbide Double Center Drill
Foret a Centrer Double Carbure

NEW!



MD
HM
Carbure



Blanca
Bright Finish
Finition Blanc

Rectificado
Ground
Taillé Meulé

Material		Vc (ft/min.)
Grupo	Sub.	MD/HM
1	1.1	200-250
1	1.2	160-200
1	1.3	80-130
2	2.1	65-100
	2.2	65-100
3	3.1	160-200
	3.2	110-170
4		60-100
5	5.1	230-330
	5.2	230-330
6	6.1	330-500
	6.2	330-500
	6.3	230-300
7	7.1	490-650

Ø	f - Avances Brocas MD-HM - Drill Feed - Pas Foret (inch/rev.)				
	5/64	1/8	7/32	7/16	5/8
	0,0027	0,0035	0,0059	0,0078	0,0098
	0,0027	0,0035	0,0059	0,0078	0,0098
	0,0023	0,0031	0,0055	0,0066	0,0078
	0,0023	0,0031	0,0055	0,0078	0,0086
	0,0023	0,0031	0,0055	0,0078	0,0086
	0,0039	0,0047	0,0066	0,0086	0,0098
	0,0039	0,0047	0,0066	0,0086	0,0098
	0,0019	0,0023	0,0031	0,0047	0,0059
	0,0039	0,0047	0,0059	0,0086	0,0098
	0,0039	0,0047	0,0059	0,0086	0,0098
	0,0047	0,0055	0,0062	0,0086	0,0098
	0,0047	0,0055	0,0062	0,0086	0,0098
	0,0047	0,0055	0,0062	0,0086	0,0098
	0,0059	0,0062	0,0086	0,0110	0,0118

$$\text{r.p.m.} = \frac{Vc \times 1.000}{\pi \times ø}$$

D	Broca diam. Drill / Foret	Cuerpo diam. Body / Corps	OAL	l		N° Art. MD/HM	€
0	1/32	3/32	1 7/8	1,5	1	75934	
1	3/64	1/8	1 7/8	1,8	1	75937	
2	5/64	3/16	1 7/8	2,8	1	75938	
3	7/64	1/4	2	3,5	1	75939	
4	1/8	5/16	2 1/8	4,1	1	75941	
5	3/16	7/16	2 3/4	6	1	75942	
6	7/32	1/2	3	6,5	1	75947	
7	1/4	5/8	3 3/4	8,2	1	75945	
8	5/16	3/4	3/4	10,5	1	75946	

TIALN-PRO bajo demanda / **upon request** / sur demande

IZAR®
CUTTING TOOLS

Fraccional 2019

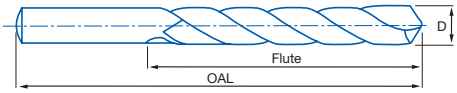
TALADRADO
Drilling
Perçage

Ref. **1700**

BROCA MANGO CILÍNDRICO MATERIALES DUROS. SERIE CORTA

Hard Materials Straight Shank Twist Drill. Jobber Series

Foret Queue Cylindrique Matériaux Durs. Série Courte



Cobalt 5%	NAS 907 J	135°			Ambar Gold Finish Finition Or	Rectificado Ground Taillé Meulé	A.R.I.* * Alto Rendimiento Intensivo I.H.P.* * Intensive High Performance H.P.I.* * Haute Performance Intensif	

Material		Vc (ft/min.)
Group	Sub.	5% Co
1	1.3	26 - 49
2	2.2	26 - 39
4	4	33-49

Ø	f - Avances Brocas HSS-Cobalt - Drill Feed - Pas Foret (inch/rev.)												
	5/64	1/8	5/32	13/64	1/4	21/64	25/64	15/32	5/8	51/64	1"	1"3/16	1"37/64
	0,0008	0,0014	0,0018	0,0020	0,0024	0,0028	0,0035	0,0039	0,0047	0,0063	0,0071	0,0075	0,0098
	0,0012	0,0016	0,0020	0,0024	0,0028	0,0035	0,0039	0,0047	0,0059	0,0067	0,0083	0,0098	0,0118
	0,0008	0,0012	0,0016	0,0020	0,0024	0,0028	0,0031	0,0039	0,0047	0,0055	0,0063	0,0079	0,0094

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \varnothing}$$

D	Corte Flute / Coupe	OAL		Nº Art. Cobalt	€
3/64	3/4	1 3/4	10	10785	
1/16	7/8	1 7/8	10	29771	
5/64	1	2	10	29780	
3/32	1 1/4	2 1/4	10	29790	
7/64	1 1/2	2 5/8	10	29800	
1/8	1 5/8	2 3/4	10	29808	
9/64	1 3/4	2 7/8	10	29815	
5/32	2	3 1/8	10	29821	
11/64	2 1/8	3 1/4	10	29830	
3/16	2 5/16	3 1/2	10	27637	
13/64	2 7/16	3 5/8	10	29843	
7/32	2 1/2	3 3/4	10	29850	
15/64	2 5/8	3 7/8	10	29855	
1/4	2 3/4	4	10	27638	
17/64	2 7/8	4 1/8	10	29864	
9/32	2 15/16	4 1/4	10	29871	
19/64	3 1/16	4 3/8	10	29876	
5/16	3 3/16	4 1/2	10	29878	
21/64	3 5/16	4 5/8	10	29882	
11/32	3 7/16	4 3/4	10	29888	
23/64	3 1/2	4 7/8	10	29893	
3/8	3 5/8	5	10	29896	

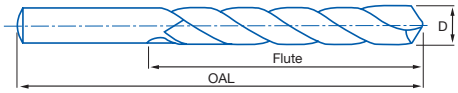
D	Corte Flute / Coupe	OAL		Nº Art. Cobalt	€
25/64	3 3/4	5 1/8	10	29900	
13/32	3 7/8	5 1/4	5	29904	
27/64	3 15/16	5 3/8	5	29907	
7/16	4 1/16	5 1/2	5	29909	
29/64	4 3/16	5 5/8	5	29912	
15/32	4 5/16	5 3/4	5	29913	
31/64	4 3/8	5 7/8	5	29916	
1/2	4 1/2	6	5	29918	
33/64	4 13/16	6 5/8	1	29920	
17/32	4 13/16	6 5/8	1	29921	
35/64	4 13/16	6 5/8	1	29922	
9/16	4 13/16	6 5/8	1	29923	
37/64	4 13/16	6 5/8	1	29924	
19/32	5 3/16	7 1/8	1	29925	
39/64	5 3/16	7 1/8	1	29926	
5/8	5 3/16	7 1/8	1	29927	
41/64	5 3/16	7 1/8	1	29928	
21/32	5 3/16	7 1/8	1	29929	
43/64	5 5/8	7 5/8	1	29931	
11/16	5 5/8	7 5/8	1	29932	
3/4	6 7/64	9 31/32	1	18844	

Ref. **1721**

BROCA MANGO CILÍNDRICO MULTI INOX. SERIE CORTA

Multi-STAINLESS Steel Straight Shank Twist Drill. Jobber Series

Foret Queue Cylindrique Multi INOX. Serie Courte



Cobalt 5% | ANSI Std. | 135° | Blue+ Gold Finish | Rectificado Ground Taillé Meulé | > 5/32

Material		Vc (ft/min.)
Group	Sub.	5% Co
1	1.1	82 - 98
2	2.1	17 - 39
	2.2	26 - 39
5	5.1	164-197
	5.2	82-98
6	6.1	197-262
	6.2	197-262
	6.3	131-164

f - Avances Brocas HSS-Cobalt - Drill Feed - Pas Foret **(inch/rev.)**

Ø 5/64	1/8	5/32	13/64	1/4	21/64	25/64	15/32	5/8	51/64	1"	1"3/16	1"37/64
0,0018	0,0022	0,0028	0,0031	0,0039	0,0047	0,0059	0,0063	0,0071	0,0098	0,0118	0,0122	0,0157
0,0012	0,0016	0,0020	0,0024	0,0028	0,0035	0,0039	0,0047	0,0059	0,0067	0,0083	0,0098	0,0118
0,0012	0,0016	0,0020	0,0024	0,0028	0,0035	0,0039	0,0047	0,0059	0,0067	0,0083	0,0098	0,0118
0,0016	0,0020	0,0024	0,0031	0,0035	0,0043	0,0051	0,0059	0,0075	0,0087	0,0102	0,0126	0,0150
0,0024	0,0035	0,0039	0,0047	0,0059	0,0071	0,0083	0,0098	0,0118	0,0142	0,0169	0,0201	0,0244
0,0031	0,0043	0,0051	0,0059	0,0075	0,0087	0,0102	0,0126	0,0150	0,0177	0,0213	0,0252	0,0303
0,0031	0,0043	0,0051	0,0059	0,0075	0,0087	0,0102	0,0126	0,0150	0,0177	0,0213	0,0252	0,0303
0,0024	0,0035	0,0039	0,0047	0,0059	0,0071	0,0083	0,0098	0,0118	0,0142	0,0169	0,0201	0,0244

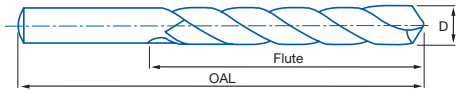
$$r.p.m. = \frac{Vc \times 1.000}{\pi \times ø}$$

D	Corte Flute / Coupe	OAL		Nº Art. Cobalt	€
1/16	7/8	1 7/8	10	35066	
5/64	1	2	10	35067	
3/32	1 1/4	2 1/4	10	35068	
7/64	1 1/2	2 5/8	10	35069	
1/8	1 5/8	2 3/4	10	35070	
9/64	1 3/4	2 7/8	10	35071	
5/32	2	3 1/8	10	35072	
11/64	2 1/8	3 1/4	10	35073	
3/16	2 5/16	3 1/2	10	35074	
13/64	2 7/16	3 5/8	10	35075	
7/32	2 1/2	3 3/4	10	35076	
15/64	2 5/8	3 7/8	10	35077	
1/4	2 3/4	4	10	35078	
17/64	2 7/8	4 1/8	10	35079	
9/32	2 15/16	4 1/4	10	35080	
19/64	3 1/16	4 3/8	10	35081	

D	Corte Flute / Coupe	OAL		Nº Art. Cobalt	€
5/16	3 3/16	4 1/2	10	35082	
21/64	3 5/16	4 5/8	10	35083	
11/32	3 7/16	4 3/4	10	35084	
23/64	3 1/2	4 7/8	10	35085	
3/8	3 5/8	5	10	35086	
25/64	3 3/4	5 1/8	10	35087	
13/32	3 7/8	5 1/4	5	35088	
27/64	3 15/16	5 3/8	5	35089	
7/16	4 1/16	5 1/2	5	35090	
29/64	4 3/16	5 5/8	5	35091	
15/32	4 5/16	5 3/4	5	35092	
31/64	4 3/8	5 7/8	5	35093	
1/2	4 1/2	6	5	35094	

Ref. 1720

BROCA MANGO CILÍNDRICO INOX. SERIE CORTA
Stainless Steel Straight Shank Twist Drill. Jobber Series
Foret Queue Cylindrique Inoxydable. Série Courte



Cobalt 5%

ANSI Std.

Blanca
Bright Finish
Finition Blanc

Rectificado
Ground
Taillé Meulé

Material		Vc (ft/min.)
Group	Sub.	5% Co
2	2.1	17 - 39
6	6.1	197-262
	6.2	197-262
	6.3	131-164

Ø	f - Avances Brocas HSS-Cobalt - Drill Feed - Pas Foret (inch/rev.)												
	5/64	1/8	5/32	13/64	1/4	21/64	25/64	15/32	5/8	51/64	1"	1"3/16	1"37/64
	0,0012	0,0016	0,0020	0,0024	0,0028	0,0035	0,0039	0,0047	0,0059	0,0067	0,0083	0,0098	0,0118
	0,0031	0,0043	0,0051	0,0059	0,0075	0,0087	0,0102	0,0126	0,0150	0,0177	0,0213	0,0252	0,0303
	0,0031	0,0043	0,0051	0,0059	0,0075	0,0087	0,0102	0,0126	0,0150	0,0177	0,0213	0,0252	0,0303
	0,0024	0,0035	0,0039	0,0047	0,0059	0,0071	0,0083	0,0098	0,0118	0,0142	0,0169	0,0201	0,0244

r.p.m. = $\frac{Vc \times 1.000}{\pi \times ø}$

D	Corte Flute / Coupe	OAL		Nº Art. Cobalt	€
3/64	3/4	1 3/4	10	32051	
1/16	7/8	1 7/8	10	37549	
5/64	1	2	10	37550	
3/32	1 1/4	2 1/4	10	37551	
7/64	1 1/2	2 5/8	10	37552	
1/8	1 5/8	2 3/4	10	37553	
9/64	1 3/4	2 7/8	10	37554	
5/32	2	3 1/8	10	37555	
11/64	2 1/8	3 1/4	10	37556	
3/16	2 5/16	3 1/2	10	37557	
13/64	2 7/16	3 5/8	10	37558	
7/32	2 1/2	3 3/4	10	37559	
15/64	2 5/8	3 7/8	10	37560	
1/4	2 3/4	4	10	37561	
17/64	2 7/8	4 1/8	10	37562	
9/32	2 15/16	4 1/4	10	37563	

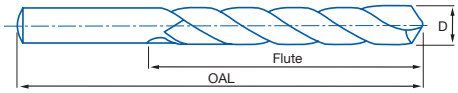
D	Corte Flute / Coupe	OAL		Nº Art. Cobalt	€
19/64	3 1/16	4 3/8	10	37564	
5/16	3 3/16	4 1/2	10	37565	
21/64	3 5/16	4 5/8	10	37566	
11/32	3 7/16	4 3/4	10	37567	
23/64	3 1/2	4 7/8	10	37568	
3/8	3 5/8	5	10	37569	
25/64	3 3/4	5 1/8	10	37570	
13/32	3 7/8	5 1/4	5	37571	
27/64	3 15/16	5 3/8	5	37572	
7/16	4 1/16	5 1/2	5	37573	
29/64	4 3/16	5 5/8	5	37574	
15/32	4 5/16	5 3/4	5	37575	
31/64	4 3/8	5 7/8	5	37576	
1/2	4 1/2	6	5	37577	

Ref. **1070**

BROCA MANGO CILÍNDRICO USO GENERAL. SERIE CORTA

General Purpose Straight Shank Twist Drill. Jobber Series

Foret Queue Cylindrique Utilisation Générale. Série Courte



HSS | TIN | ANSI Std. N | 118° | Bright Finish | Rectificado Ground Taillé Meulé

Material		Vc (ft/min.)	
Group	Sub.	HSS	TIN
1	1.1	82 - 98	98-115
3	3.1	98-115	118-138
	3.2	82-98	98-118
6	6.1	196-262	236-315
	6.2	196-262	236-315
	6.3	131-164	157-197

f - Avances Brocas HSS-Cobalt - Drill Feed - Pas Foret **(inch/rev.)**

Ø 5/64	1/8	5/32	13/64	1/4	21/64	25/64	15/32	5/8	51/64	1"	1"3/16	1"37/64
0,0018	0,0022	0,0028	0,0031	0,0039	0,0047	0,0059	0,0063	0,0071	0,0098	0,0118	0,0122	0,0157
0,0024	0,0035	0,0039	0,0047	0,0059	0,0071	0,0083	0,0098	0,0118	0,0142	0,0169	0,0201	0,0244
0,0020	0,0028	0,0031	0,0039	0,0047	0,0055	0,0067	0,0079	0,0094	0,0110	0,0134	0,0161	0,0193
0,0031	0,0043	0,0051	0,0059	0,0075	0,0087	0,0102	0,0126	0,0150	0,0177	0,0213	0,0252	0,0303
0,0031	0,0043	0,0051	0,0059	0,0075	0,0087	0,0102	0,0126	0,0150	0,0177	0,0213	0,0252	0,0303
0,0024	0,0035	0,0039	0,0047	0,0059	0,0071	0,0083	0,0098	0,0118	0,0142	0,0169	0,0201	0,0244

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times ø}$$

D	Corte Flute / Coupe	OAL		Nº Art. HSS	€	Nº Art. TIN	€
1/64	3/16	3/4	10	19871		13913	
1/32	1/2	1 3/8	10	17700		13914	
3/64	3/4	1 3/4	10	17721		13919	
1/16	7/8	1 7/8	10	17733		13922	
5/64	1	2	10	17751		13925	
3/32	1 1/4	2 1/4	10	17772		13931	
7/64	1 1/2	2 5/8	10	17793		13934	
1/8	1 5/8	2 3/4	10	17811		13940	
9/64	1 3/4	2 7/8	10	17820		13942	
5/32	2	3 1/8	10	17841		13948	
11/64	2 1/8	3 1/4	10	17862		13952	
3/16	2 5/16	3 1/2	10	17880		13957	
13/64	2 7/16	3 5/8	10	17904		13960	
7/32	2 1/2	3 3/4	10	17919		13964	
15/64	2 5/8	3 7/8	10	17931		13967	
1/4	2 3/4	4	10	17943		13970	
17/64	2 7/8	4 1/8	10	17955		13973	
9/32	2 15/16	4 1/4	10	18593		13977	
19/64	3 1/16	4 3/8	10	20597		13978	
5/16	3 3/16	4 1/2	10	20603		13980	
21/64	3 5/16	4 5/8	10	21500		13982	
11/32	3 7/16	4 3/4	10	21539		13985	
23/64	3 1/2	4 7/8	10	22679		13988	
3/8	3 5/8	5	10	24017		13990	
25/64	3 3/4	5 1/8	10	24026		13992	
13/32	3 7/8	5 1/4	5	24038		13995	
27/64	3 15/16	5 3/8	5	24044		13996	
7/16	4 1/16	5 1/2	5	24050		13997	
29/64	4 3/16	5 5/8	5	24053		13998	
15/32	4 5/16	5 3/4	5	25701		13999	
31/64	4 3/8	5 7/8	5	25704		14000	
1/2	4 1/2	6	5	25707		14001	

D	Corte Flute / Coupe	OAL		Nº Art. HSS	€
33/64	4 13/16	6 5/8	1	17928	
17/32	4 13/16	6 5/8	1	25713	
35/64	4 13/16	6 5/8	1	25722	
9/16	4 13/16	6 5/8	1	25725	
37/64	4 13/16	6 5/8	1	25731	
19/32	5 3/16	7 1/8	1	25734	
39/64	5 3/16	7 1/8	1	17930	
5/8	5 3/16	7 1/8	1	25740	
41/64	5 3/16	7 1/8	1	25743	
21/32	5 3/16	7 1/8	1	25746	
43/64	5 5/8	7 5/8	1	24143	
11/16	5 5/8	7 5/8	1	25752	
45/64	5 5/8	9 1/2	1	13683	
23/32	5 5/8	9 1/2	1	13686	
47/64	5 5/8	9 3/4	1	24149	
3/4	5 7/8	9 3/4	1	25767	
25/32	6	9 7/8	1	25776	
13/16	6 1/8	10	1	25779	
27/32	6 1/8	10	1	25782	
7/8	6 1/8	10	1	25785	
29/32	6 1/8	10	1	29845	
59/64	6 1/8	10 3/4	1	29841	
15/16	6 1/8	10 3/4	1	29842	
31/32	6 3/8	11	1	29844	
1	6 3/8	11	1	25800	

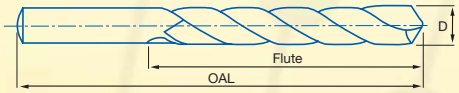
Ref. **1715**

BROCA MANGO CILÍNDRICO ZIRKONIO

Zirkonio Straight Shank Drill Bit

Foret Queue Cylindrique Zirkonio

NEW!



Especial Multi METAL

HSS | Zirkonio | ANSI Std. N | 130° | Bright Finish | Rectificado Ground Taillé Meulé

Material		Vc (ft/min.)
Group	Sub.	Zirkonio
1	1.1	82 - 98
3	3.1	98-115
	3.2	82-98
6	6.1	196-262
	6.2	196-262
	6.3	131-164

f - Avances Brocas HSS-Cobalt - Drill Feed - Pas Foret **(inch/rev.)**

Ø 5/64	1/8	5/32	13/64	1/4	21/64	25/64	15/32	5/8	51/64	1"	1"3/16	1"37/64
0,0018	0,0022	0,0028	0,0031	0,0039	0,0047	0,0059	0,0063	0,0071	0,0098	0,0118	0,0122	0,0157
0,0024	0,0035	0,0039	0,0047	0,0059	0,0071	0,0083	0,0098	0,0118	0,0142	0,0169	0,0201	0,0244
0,0020	0,0028	0,0031	0,0039	0,0047	0,0055	0,0067	0,0079	0,0094	0,0110	0,0134	0,0161	0,0193
0,0031	0,0043	0,0051	0,0059	0,0075	0,0087	0,0102	0,0126	0,0150	0,0177	0,0213	0,0252	0,0303
0,0031	0,0043	0,0051	0,0059	0,0075	0,0087	0,0102	0,0126	0,0150	0,0177	0,0213	0,0252	0,0303
0,0024	0,0035	0,0039	0,0047	0,0059	0,0071	0,0083	0,0098	0,0118	0,0142	0,0169	0,0201	0,0244

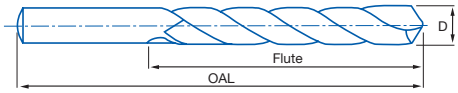
$$r.p.m. = \frac{Vc \times 1.000}{\pi \times ø}$$

D	Corte Flute Coupe	OAL		Nº Art. Zirkonio	€
3/64	3/4	1 3/4	10	77388	
1/16	7/8	1 7/8	10	77389	
5/64	1	2	10	77390	
3/32	1 1/4	2 1/4	10	77391	
7/64	1 1/2	2 5/8	10	77393	
1/8	1 5/8	2 3/4	10	77394	
9/64	1 3/4	2 7/8	10	77395	
5/32	2	3 1/8	10	77396	
11/64	2 1/8	3 1/4	10	77400	
3/16	2 5/16	3 1/2	10	77401	
13/64	2 7/16	3 5/8	10	77408	
7/32	2 1/2	3 3/4	10	77409	
15/64	2 5/8	3 7/8	10	77410	
1/4	2 3/4	4	10	77411	
17/64	2 7/8	4 1/8	10	77412	
9/32	2 15/16	4 1/4	10	77415	

D	Corte Flute Coupe	OAL		Nº Art. Zirkonio	€
19/64	3 1/16	4 3/8	10	77416	
5/16	3 3/16	4 1/2	10	77417	
21/64	3 5/16	4 5/8	10	77418	
11/32	3 7/16	4 3/4	10	77419	
23/64	3 1/2	4 7/8	10	77420	
3/8	3 5/8	5	10	77421	
25/64	3 3/4	5 1/8	10	77423	
13/32	3 7/8	5 1/4	5	77424	
27/64	3 15/16	5 3/8	5	77425	
7/16	4 1/16	5 1/2	5	77426	
29/64	4 3/16	5 5/8	5	77427	
15/32	4 5/16	5 3/4	5	77428	
31/64	4 3/8	5 7/8	5	77429	
1/2	4 1/2	6	5	77430	

Ref. 1702

BROCA MANGO CILÍNDRICO AGUZADA. SERIE CORTA
Split Point Straight Shank Twist Drill. Jobber Series
Foret Queue Cylindrique Affutage en Croix. Série Courte



HSS | ANSI Std. N | 118° | Bright Finish | Rectificado Ground Taillé Meulé

Material		Vc (ft/min.)
Group	Sub.	HSS
1	1.1	82 - 98
3	3.1	98-115
	3.2	82-98
6	6.1	196-262
	6.2	196-262
	6.3	131-164

f - Avances Brocas HSS-Cobalt - Drill Feed - Pas Foret (inch/rev.)

Ø 5/64	1/8	5/32	13/64	1/4	21/64	25/64	15/32	5/8	51/64	1"	1"3/16	1"37/64
0,0018	0,0022	0,0028	0,0031	0,0039	0,0047	0,0059	0,0063	0,0071	0,0098	0,0118	0,0122	0,0157
0,0024	0,0035	0,0039	0,0047	0,0059	0,0071	0,0083	0,0098	0,0118	0,0142	0,0169	0,0201	0,0244
0,0020	0,0028	0,0031	0,0039	0,0047	0,0055	0,0067	0,0079	0,0094	0,0110	0,0134	0,0161	0,0193
0,0031	0,0043	0,0051	0,0059	0,0075	0,0087	0,0102	0,0126	0,0150	0,0177	0,0213	0,0252	0,0303
0,0031	0,0043	0,0051	0,0059	0,0075	0,0087	0,0102	0,0126	0,0150	0,0177	0,0213	0,0252	0,0303
0,0024	0,0035	0,0039	0,0047	0,0059	0,0071	0,0083	0,0098	0,0118	0,0142	0,0169	0,0201	0,0244

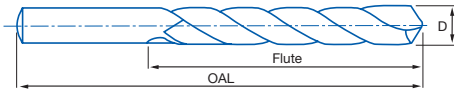
$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \varnothing}$$

D	Corte Flute / Coupe	OAL		Nº Art. HSS	€
3/64	3/4	1 3/4	10	23232	
1/16	7/8	1 7/8	10	23233	
5/64	1	2	10	23234	
3/32	1 1/4	2 1/4	10	22822	
7/64	1 1/2	2 5/8	10	23235	
1/8	1 5/8	2 3/4	10	22824	
9/64	1 3/4	2 7/8	10	23236	
5/32	2	3 1/8	10	23237	
11/64	2 1/8	3 1/4	10	23238	
3/16	2 5/16	3 1/2	10	23239	
13/64	2 7/16	3 5/8	10	23240	
7/32	2 1/2	3 3/4	10	23241	
15/64	2 5/8	3 7/8	10	23242	
1/4	2 3/4	4	10	22825	
17/64	2 7/8	4 1/8	10	23243	
9/32	2 15/16	4 1/4	10	23244	
19/64	3 1/16	4 3/8	10	23245	
5/16	3 3/16	4 1/2	10	22826	
21/64	3 5/16	4 5/8	10	23246	
11/32	3 7/16	4 3/4	10	23247	
23/64	3 1/2	4 7/8	10	23248	
3/8	3 5/8	5	10	22827	

D	Corte Flute / Coupe	OAL		Nº Art. HSS	€
25/64	3 3/4	5 1/8	10	23249	
13/32	3 7/8	5 1/4	5	23250	
27/64	3 15/16	5 3/8	5	23251	
7/16	4 1/16	5 1/2	5	23252	
29/64	4 3/16	5 5/8	5	23253	
15/32	4 5/16	5 3/4	5	23254	
31/64	4 3/8	5 7/8	5	23255	
1/2	4 1/2	6	5	23256	
33/64	4 13/16	6 5/8	1	23257	
17/32	4 13/16	6 5/8	1	23258	
35/64	4 13/16	6 5/8	1	23259	
9/16	4 13/16	6 5/8	1	23260	
37/64	4 13/16	6 5/8	1	23261	
19/32	5 3/16	7 1/8	1	23262	
39/64	5 3/16	7 1/8	1	23263	
5/8	5 3/16	7 1/8	1	23264	
41/64	5 3/16	7 1/8	1	23265	
21/32	5 3/16	7 1/8	1	23266	
43/64	5 5/58	7 5/8	1	23267	
11/16	5 5/8	7 5/8	1	23268	
3/4	6 7/64	9 31/32	1	23269	

Ref. 1717

BROCA MANGO REBAJADO. SERIE CORTA
Reduced Shank Twist Drill. Jobber Series
Foret Queue Reduit. Série Courte



HSS | Ø=1/2 | ANSI Std. N | 118° | Blue Finish | Rectificado Ground Taillé Meulé

Material		Vc (ft/min.)
Group	Sub.	HSS
1	1.1	82 - 98
3	3.1	98-115
	3.2	82-98
6	6.1	196-262
	6.2	196-262
	6.3	131-164

f - Avances Brocas HSS-Cobalt - Drill Feed - Pas Foret (inch/rev.)

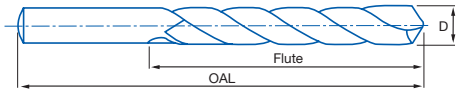
Ø	5/64	1/8	5/32	13/64	1/4	21/64	25/64	15/32	5/8	51/64	1"	1"3/16	1"37/64
	0,0018	0,0022	0,0028	0,0031	0,0039	0,0047	0,0059	0,0063	0,0071	0,0098	0,0118	0,0122	0,0157
	0,0024	0,0035	0,0039	0,0047	0,0059	0,0071	0,0083	0,0098	0,0118	0,0142	0,0169	0,0201	0,0244
	0,0020	0,0028	0,0031	0,0039	0,0047	0,0055	0,0067	0,0079	0,0094	0,0110	0,0134	0,0161	0,0193
	0,0031	0,0043	0,0051	0,0059	0,0075	0,0087	0,0102	0,0126	0,0150	0,0177	0,0213	0,0252	0,0303
	0,0031	0,0043	0,0051	0,0059	0,0075	0,0087	0,0102	0,0126	0,0150	0,0177	0,0213	0,0252	0,0303
	0,0024	0,0035	0,0039	0,0047	0,0059	0,0071	0,0083	0,0098	0,0118	0,0142	0,0169	0,0201	0,0244

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times ø}$$

D	Corte Flute / Coupe	OAL		Nº Art. HSS	€
17/32	3	6	1	22864	
9/16	3	6	1	22866	
19/32	3	6	1	22869	
5/8	3	6	1	22872	
21/32	3	6	1	22874	
11/16	3	6	1	22875	
23/32	3	6	1	22876	
3/4	3	6	1	22877	
25/32	3	6	1	22878	
13/16	3	6	1	22879	
27/32	3	6	1	24616	
7/8	3	6	1	22881	
29/32	3	6	1	24617	
15/16	3	6	1	22883	
31/32	3	6	1	24618	
1	3	6	1	22884	
1 1/16	3	6	1	22885	
1 1/8	3	6	1	22886	
1 5/32	3	6	1	24619	
1 3/16	3	6	1	22887	
1 1/4	3	6	1	22888	
1 5/16	3	6	1	22890	
1 3/8	3	6	1	22892	
1 7/16	3	6	1	24620	
1 1/2	3	6	1	22893	

Ref. 1752

BROCA MANGO CILÍNDRICO MATERIALES DUROS. SERIE EXTRA CORTA
Hard Materials Straight Shank Twist Drill. Stub Series
Foret Queue Cylindrique Matériaux Durs. Série Extra-Courte



Cobalt 5%

ANSI Std. N

Ambar Gold Finish Finition Or

Rectificado Ground Taillé Meulé

Material		Vc (ft/min.)
Group	Sub.	5% Co
1	1.3	26 - 49
2	2.2	26 - 39
4	4	33-49

f - Avances Brocas HSS-Cobalt - Drill Feed - Pas Foret **(inch/rev.)**

Ø 5/64	1/8	5/32	13/64	1/4	21/64	25/64	15/32	5/8	51/64	1"	1"3/16	1"37/64
0,0008	0,0014	0,0018	0,0020	0,0024	0,0028	0,0035	0,0039	0,0047	0,0063	0,0071	0,0075	0,0098
0,0012	0,0016	0,0020	0,0024	0,0028	0,0035	0,0039	0,0047	0,0059	0,0067	0,0083	0,0098	0,0118
0,0008	0,0012	0,0016	0,0020	0,0024	0,0028	0,0031	0,0039	0,0047	0,0055	0,0063	0,0079	0,0094

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \varnothing}$$

D	Corte Flute / Coupe	OAL		NEW! Nº Art. Cobalt	€
3/64	1/2	1 3/8	10	13333	
1/16	5/8	1 5/8	10	29649	
5/64	11/16	1 11/16	10	29655	
3/32	3/4	1 3/4	10	29662	
7/64	13/16	1 13/16	10	29670	
1/8	7/8	1 7/8	10	29676	
9/64	15/16	1 15/16	10	29679	
5/32	1	2 1/16	10	29685	
11/64	1 1/16	2 1/8	10	29691	
3/16	1 1/8	2 3/16	10	29697	
13/64	1 3/16	2 1/4	10	29704	
7/32	1 1/4	2 3/8	10	29709	
15/64	1 5/16	2 7/16	10	29713	
1/4	1 3/8	2 1/2	10	29717	
17/64	1 7/16	2 5/8	10	29720	
9/32	1 1/2	2 11/16	10	29724	
19/64	1 9/12	2 3/4	10	29727	
5/16	1 5/8	2 13/16	10	29729	
21/64	1 11/16	2 15/16	10	29732	
11/32	1 11/16	3	10	29735	
23/64	1 3/4	3 1/16	10	29738	
3/8	1 13/16	3 1/8	10	29740	
25/64	1 7/8	3 1/4	10	29743	
13/32	1 15/16	3 5/16	5	29746	

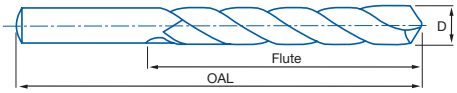
D	Corte Flute / Coupe	OAL		NEW! Nº Art. Cobalt	€
27/64	2	3 3/8	5	29748	
7/16	2 1/16	3 7/16	5	29749	
29/64	2 1/8	3 9/16	5	29750	
15/32	2 1/8	3 5/8	5	29751	
31/64	2 3/16	3 11/16	5	29752	
1/2	2 1/4	3 3/4	5	29753	
33/64	2 3/8	3 7/8	1	13334	
17/32	2 3/8	3 7/8	1	29754	
35/64	2 1/2	4	1	13335	
9/16	2 43/64	4 11/64	1	29756	
19/32	2 5/8	4 1/8	1	13336	
39/64	2 3/4	4 1/4	1	13337	
5/8	2 15/16	4 7/16	1	29759	
41/64	2 7/8	4 1/2	1	13338	
21/32	2 7/8	4 1/2	1	13339	
11/16	3 5/64	4 53/64	1	29760	
3/4	3 11/32	5 7/32	1	29761	
25/32	3 1/4	5 1/8	1	68674	
13/16	3 3/8	5 1/4	1	68617	
27/32	3 1/2	5 3/8	1	68675	
7/8	3 1/2	5 1/2	1	68618	
1	4	6	1	68619	

Ref. **1751**

BROCA MANGO CILÍNDRICO USO GENERAL. SERIE EXTRA CORTA

General Purpose Straight Shank Twist Drill. Stub Series

Foret Queue Cylindrique Utilisation Générale. Série Extra-Courte



HSS | ANSI Std. N | 135° | Sin destalonar / No Clear / Pas détalonnée | Blue Finish | Rectificado / Ground / Taillé Meulé | Láminas / Metal Sheets/ Tôle

Material		Vc (ft/min.)
Group	Sub.	HSS
1	1.1	82 - 98

f - Avances Brocas HSS-Cobalt - Drill Feed - Pas Foret **(inch/rev.)**

Ø	5/64	1/8	5/32	13/64	1/4	21/64	25/64	15/32	5/8	51/64	1"	1"3/16	1"37/64
	0,0018	0,0022	0,0028	0,0031	0,0039	0,0047	0,0059	0,0063	0,0071	0,0098	0,0118	0,0122	0,0157

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \varnothing}$$

D	Corte Flute / Coupe	OAL		Nº Art. HSS	€
Nº 30	15/16	1 15/16	10	15177	
Nº 20	1 1/16	2 1/8	10	15180	
Nº 11	1 3/16	2 1/4	10	15183	

Bajo demanda / **upon request** / sur demande

Ref. 1493

JUEGO BROCAS. 13 PCS. (1/16 - 1/4 X 1/64)

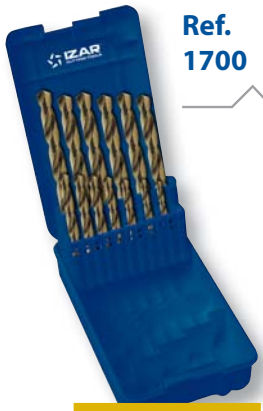
Twist Drill Set. 13 pcs. (1/16 - 1/4 x 1/64)

Jeu de Forets. 13 pcs. (1/16 - 1/4 x 1/64)

Ref. 1070

N° Art. HSS €

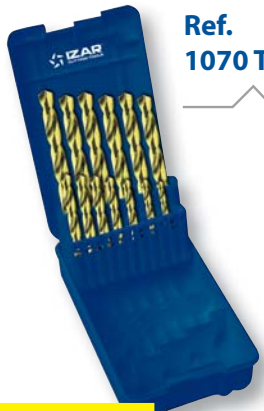
13065



Ref. 1700

N° Art. Cobalt €

14280



Ref. 1070 TIN

N° Art. TIN €

14279

* **Art. bajo demanda**
upon request
sur demande

Ref. 1720

N° Art. Cobalt €

75841

Ref. 1495

JUEGO BROCAS. 15 PCS. (1/16 - 1/2 X 1/32)

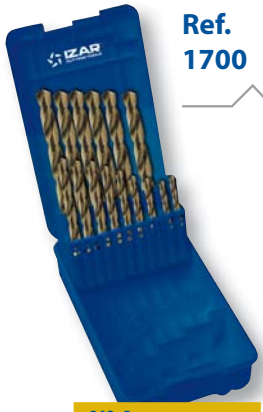
Twist Drill Set. 15 pcs. (1/16 - 1/2 x 1/32)

Jeu de Forets. 15 pcs. (1/16 - 1/2 x 1/32)

Ref. 1070

N° Art. HSS €

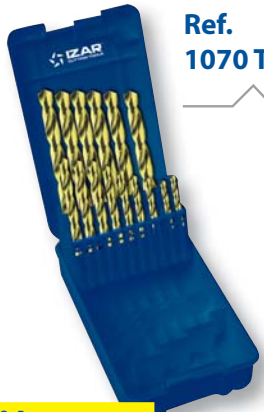
13067



Ref. 1700

N° Art. Cobalt €

14272



Ref. 1070 TIN

N° Art. TIN €

19230

* **Art. bajo demanda**
upon request
sur demande

Ref. 1720

N° Art. Cobalt €

75842

Ref. 1496

JUEGO BROCAS. 29 PCS. (1/16 - 1/2 X 1/64)

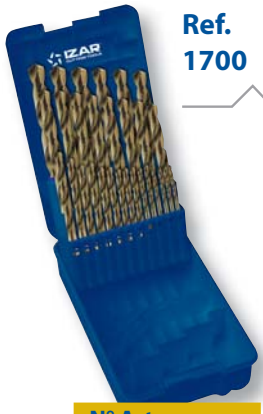
Twist Drill Set. 29 pcs. (1/16 - 1/2 x 1/64)

Jeu de Forets. 29 pcs. (1/16 - 1/2 x 1/64)

Ref. 1070

N° Art. HSS €

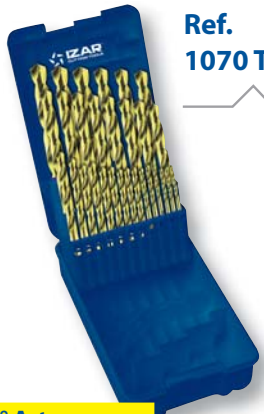
20423



Ref. 1700

N° Art. Cobalt €

14271



Ref. 1070 TIN

N° Art. TIN €

19231

* **Art. bajo demanda**
upon request
sur demande

Ref. 1720

N° Art. Cobalt €

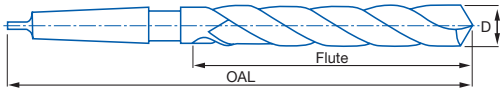
75844

Ref. **1710**

BROCA MANGO CÓNICO. SERIE CORTA

Morse Taper Shank Twist Drill. Jobber Series

Foret Queue Cóne Morse. Série Courte



HSS | ANSI Std. N | 118° | Blue Finish | Rectificado Ground Taillé Meulé

Material		Vc (ft/min.)
Group	Sub.	HSS
1	1.1	82 - 98
	1.2	49 - 66
3	3.1	98-115
	3.2	82-98
5	5.1	180-215
	5.2	82-98

f - Avances Brocas HSS-Cobalt - Drill Feed - Pas Foret **(inch/rev.)**

Ø	5/64	1/8	5/32	13/64	1/4	21/64	25/64	15/32	5/8	51/64	1"	1"3/16	1"37/64
	0,0018	0,0022	0,0028	0,0031	0,0039	0,0047	0,0059	0,0063	0,0071	0,0098	0,0118	0,0122	0,0157
	0,0014	0,0018	0,0020	0,0024	0,0031	0,0039	0,0047	0,0051	0,0063	0,0079	0,0098	0,0102	0,0118
	0,0024	0,0035	0,0039	0,0047	0,0059	0,0071	0,0083	0,0098	0,0118	0,0142	0,0169	0,0201	0,0244
	0,0020	0,0028	0,0031	0,0039	0,0047	0,0055	0,0067	0,0079	0,0094	0,0110	0,0134	0,0161	0,0193
	0,0016	0,0020	0,0024	0,0031	0,0035	0,0043	0,0051	0,0059	0,0075	0,0087	0,0102	0,0126	0,0150
	0,0024	0,0035	0,0039	0,0047	0,0059	0,0071	0,0083	0,0098	0,0118	0,0142	0,0169	0,0201	0,0244

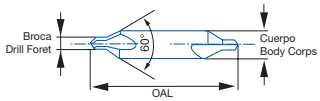
$$r.p.m. = \frac{Vc \times 1.000}{\pi \times ø}$$

D	Corte Flute / Coupe	OAL	CM Taper		Nº Art. HSS	€
1/2	3 63/64	7 11/64	1	1	22894	
33/64	3 63/64	7 11/64	1	1	22896	
17/32	4 1/4	7 7/16	1	1	22899	
35/64	4 1/4	7 7/16	1	1	22901	
9/16	4 31/64	8 11/32	2	1	22902	
37/64	4 31/64	8 11/32	2	1	22903	
19/32	4 23/32	8 37/64	2	1	22905	
39/64	4 23/32	8 37/64	2	1	22906	
5/8	4 23/32	8 37/64	2	1	22908	
41/64	4 59/64	8 25/32	2	1	22911	
21/32	4 59/64	8 25/32	2	1	22913	
43/64	5 1/8	8 31/32	2	1	22914	
11/16	5 1/8	8 31/32	2	1	22915	
45/64	5 1/8	8 31/32	2	1	22916	
23/32	5 5/16	9 11/64	2	1	22917	
47/64	5 5/16	9 11/64	2	1	22918	
3/4	5 33/64	9 3/8	2	1	22919	
49/64	5 33/64	9 3/8	2	1	22920	
25/32	5 33/64	9 3/8	2	1	22921	
51/64	5 45/64	9 9/16	2	1	22922	
13/16	5 45/64	9 9/16	2	1	22923	
53/64	5 45/64	9 9/16	2	1	22924	
27/32	5 29/32	9 49/64	2	1	22926	
55/64	5 29/32	9 49/64	2	1	22927	
7/8	5 29/32	9 61/64	2	1	22928	
57/64	6 7/64	9 61/64	2	1	22929	
29/32	6 7/64	9 61/64	2	1	22930	
59/64	6 7/64	10 55/64	3	1	22931	

D	Corte Flute / Coupe	OAL	CM Taper		Nº Art. HSS	€
15/16	6 19/64	11 1/16	3	1	22932	
61/64	6 19/64	11 1/16	3	1	22933	
31/32	6 19/64	11 1/16	3	1	22934	
63/64	6 1/2	11 17/64	3	1	22935	
1	6 1/2	11 17/64	3	1	22936	
1 1/32	6 1/2	11 17/64	3	1	22937	
1 1/16	6 11/16	11 29/64	3	1	22938	
1 3/32	6 11/16	11 29/64	3	1	22939	
1 1/8	6 57/64	11 21/32	3	1	22940	
1 5/32	6 57/64	11 21/32	3	1	22941	
1 3/16	7 3/32	11 27/32	3	1	22942	
1 7/32	7 3/32	11 27/32	3	1	22943	
1 1/4	7 9/32	12 3/64	3	1	22944	
1 9/32	7 9/32	13 5/32	4	1	22946	
1 5/16	7 9/32	13 5/32	4	1	22947	
1 11/32	7 31/64	13 11/32	4	1	22948	
1 3/8	7 31/64	13 11/32	4	1	22949	
1 13/32	7 43/64	13 35/64	4	1	22950	
1 7/16	7 43/64	13 35/64	4	1	22951	
1 1/2	7 7/8	13 47/64	4	1	22952	
1 9/16	7 7/8	13 47/64	4	1	22953	
1 5/8	8 5/64	13 15/16	4	1	22954	
1 11/16	8 17/64	14 9/64	4	1	22955	
1 3/4	8 17/64	14 9/64	4	1	22956	
1 13/16	8 15/32	14 21/64	4	1	22957	
1 7/8	8 21/32	14 17/32	4	1	22958	
1 15/16	8 21/32	14 17/32	4	1	22959	
2	8 55/64	14 23/32	4	1	22960	

Ref. 1370

BROCA CENTRAR DOBLE COBALTO
Cobalt Double Center Drill
Foret à Centrer Double Cobalt



Cobalt 5% | ASME Std. | 60° | 118° | Blanca Bright Finish Finition Blanc | Rectificado Ground Taillé Meulé

Material		Vc (ft/min.)
Group	Sub.	5% Co
1	1.1	71-90
	1.2	29-43
3	3.1	72-87
	3.2	54-72
5	5.1	90-108
6	6.3	54-90

f - Avances Brocas HSS-Cobalt - Drill Feed - Pas Foret (inch/rev.)

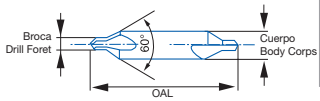
Ø 5/64	1/8	5/32	13/64	1/4	21/64	25/64	15/32	5/8	51/64	1"	1"3/16	1"37/64
0,0018	0,0022	0,0028	0,0031	0,0039	0,0047	0,0059	0,0063	0,0071	0,0098	0,0118	0,0122	0,0157
0,0014	0,0018	0,0020	0,0024	0,0031	0,0039	0,0047	0,0051	0,0063	0,0079	0,0098	0,0102	0,0118
0,0024	0,0035	0,0039	0,0047	0,0059	0,0071	0,0083	0,0098	0,0118	0,0142	0,0169	0,0201	0,0244
0,0020	0,0028	0,0031	0,0039	0,0047	0,0055	0,0067	0,0079	0,0094	0,0110	0,0134	0,0161	0,0193
0,0016	0,0020	0,0024	0,0031	0,0035	0,0043	0,0051	0,0059	0,0075	0,0087	0,0102	0,0126	0,0150
0,0024	0,0035	0,0039	0,0047	0,0059	0,0071	0,0083	0,0098	0,0118	0,0142	0,0169	0,0201	0,0244

D	Broca diam. Drill / Foret	Cuerpo diam. Body / Corps	OAL		Nº Art. Cobalt	€
0	1/32	3/32	1 1/8	1	42859	
1	3/64	1/8	1 1/4	1	42860	
2	5/64	3/16	1 7/8	1	42861	
3	7/64	1/4	2	1	42862	
4	1/8	5/16	2 1/8	1	42864	
5	3/16	7/16	2 3/4	1	42867	
6	7/32	1/2	3	1	42870	
7	1/4	5/8	3 1/4	1	42871	
8	5/16	3/4	3 1/2	1	42873	

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \varnothing}$$

Ref. 1380

BROCA CENTRAR DOBLE HSS
HSS Double Center Drill
Foret à Centrer Double HSS



HSS | ASME Std. | 60° | 118° | Blanca Bright Finish Finition Blanc | Rectificado Ground Taillé Meulé

Material		Vc (ft/min.)
Group	Sub.	HSS
1	1.1	65-82
	1.2	26-39
2	2.2	20-26
3	3.1	65-79
	3.2	49-65
5	5.1	82-98
	5.2	82-98
6	6.3	49-82

f - Avances Brocas HSS-Cobalt - Drill Feed - Pas Foret (inch/rev.)

Ø 5/64	1/8	5/32	13/64	1/4	21/64	25/64	15/32	5/8	51/64	1"	1"3/16	1"37/64
0,0018	0,0022	0,0028	0,0031	0,0039	0,0047	0,0059	0,0063	0,0071	0,0098	0,0118	0,0122	0,0157
0,0014	0,0018	0,0020	0,0024	0,0031	0,0039	0,0047	0,0051	0,0063	0,0079	0,0098	0,0102	0,0118
0,0012	0,0016	0,0020	0,0024	0,0028	0,0035	0,0039	0,0047	0,0059	0,0067	0,0083	0,0098	0,0118
0,0024	0,0035	0,0039	0,0047	0,0059	0,0071	0,0083	0,0098	0,0118	0,0142	0,0169	0,0201	0,0244
0,0020	0,0028	0,0031	0,0039	0,0047	0,0055	0,0067	0,0079	0,0094	0,0110	0,0134	0,0161	0,0193
0,0016	0,0020	0,0024	0,0031	0,0035	0,0043	0,0051	0,0059	0,0075	0,0087	0,0102	0,0126	0,0150
0,0024	0,0035	0,0039	0,0047	0,0059	0,0071	0,0083	0,0098	0,0118	0,0142	0,0169	0,0201	0,0244
0,0024	0,0035	0,0039	0,0047	0,0059	0,0071	0,0083	0,0098	0,0118	0,0142	0,0169	0,0201	0,0244

D	Broca diam. Drill / Foret	Cuerpo diam. Body / Corps	OAL		Nº Art. HSS	€
0	1/32	3/32	1 1/8	1	43940	
1	3/64	1/8	1 1/4	1	40054	
2	5/64	3/16	1 7/8	1	40056	
3	7/64	1/4	2	1	40059	
4	1/8	5/16	2 1/8	1	40060	
5	3/16	7/16	2 3/4	1	40250	
6	7/32	1/2	3	1	40253	
7	1/4	5/8	3 1/4	1	40062	
8	5/16	3/4	3 1/2	1	40064	

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \varnothing}$$

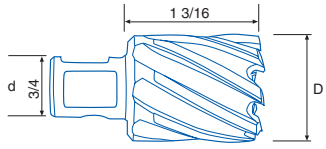
Ref. **7070**

FRESA HUECA MÁQUINAS ELECTROMAGNÉTICAS HSS CORTA

Short HSS Electromagnetic Machine Hole-Cutter

Fraise à Carotter pour Unité de Perçage Electro-Magnetique HSS Courte

NEW!



HSS | Serie Corta / Short Length / Série Courte | Rectificado / Ground / Taillé Meulé | Aceros Construcción / Structural Steels / Aciers de Construction | Apto con Poca Lubricación / Suitable with Minimal Cooling / Apte avec Lubrification minimale | UNIVERSAL: NITTO + WELDON

Aceros <850 N/mm² Steels/Aciers | Aceros <1000 N/mm² Steels/Aciers | Fundición / Cast Iron / Fonté

D	Corte / Flute / Coupe	d	Nº Art. HSS	€
1/2	1 3/16	3/4	65762	
9/16	1 3/16	3/4	65763	
5/8	1 3/16	3/4	43598	
11/16	1 3/16	3/4	43599	
3/4	1 3/16	3/4	43600	
13/16	1 3/16	3/4	43601	
7/8	1 3/16	3/4	65764	
15/16	1 3/16	3/4	43602	
1"	1 3/16	3/4	65765	
1 1/16	1 3/16	3/4	43603	
1 1/8	1 3/16	3/4	43604	
1 3/16	1 3/16	3/4	65766	
1 1/4	1 3/16	3/4	43605	
1 5/16	1 3/16	3/4	65767	
1 3/8	1 3/16	3/4	65769	
1 7/16	1 3/16	3/4	65770	
1 1/2	1 3/16	3/4	43606	
1 9/16	1 3/16	3/4	65772	
1 5/8	1 3/16	3/4	65773	
1 11/16	1 3/16	3/4	65774	
1 3/4	1 3/16	3/4	65775	
1 13/16	1 3/16	3/4	65776	
1 7/8	1 3/16	3/4	65777	
1 15/16	1 3/16	3/4	65778	
2"	1 3/16	3/4	65779	
2 1/16	1 3/16	3/4	65780	

Serie Larga bajo demanda / Long Series upon request / Serie Longue sur demande

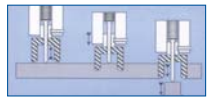
Ref. **4075**

EXPULSOR

Pilot Pin

Ejecteur

HSS

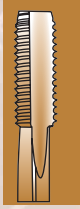


D	Corte / Flute / Coupe	Nº Art. HSS	€
1/4	1 3/16	21411	

IZAR®
CUTTING TOOLS

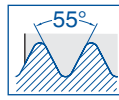
Fractional 2019

ROSCADO
Threading
Taraudage



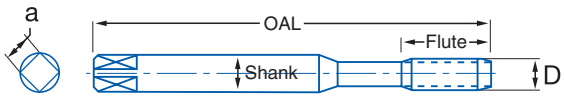
Ref. 3112

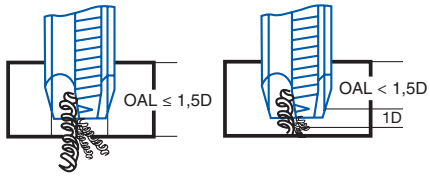
MACHO RECTO MÁQUINA WHITWORTH MANGO REFORZADO
Reinforced Shank Whitworth Machine Straight Tap
Taraud Droit Machine Whitworth Queue Renforcée



Rosca Whitworth cilíndrica
Straight Whitworth Thread
Filetage Whitworth Cylindrique

Cobalt 5% | DIN 371 | C 2-3h | α 10° ± 2





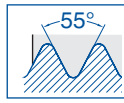
Material		Vc
Grupo	Sub.	5%Co
1	1.1	20-32
3	3.1	22-32
	3.2	13-22
5	5.1	16-26
	5.2	26-39
6	6.1	49-115
	6.2	45-66
	6.3	39-49

Vc= ft/min.

W	Hilos Threads Filets	OAL	Corte Flute Coupe	Mango Shank Queue	a mm	Z	N° Art. Cobalt	€
W 3/32	48,00	1 31/32	23/64	7/64	5/64	3	75415	
W 1/8	40,00	2 13/64	7/16	9/64	7/64	3	75413	
W 5/32	32,00	2 31/64	33/64	11/64	9/64	3	75129	
W 3/16	24,00	2 3/4	19/32	15/64	3/16	3	75414	
W 7/32	24,00	3 5/32	5/8	15/64	3/16	3	75418	
W 1/4	20,00	3 5/32	43/64	9/32	7/32	3	75412	
W 5/16	18,00	3 35/64	25/32	5/16	1/4	3	75458	
W 3/8	16,00	3 15/16	55/64	23/64	9/32	3	75456	

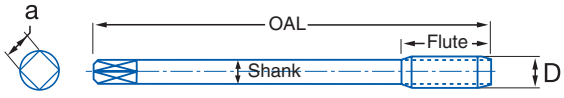
Ref. 3212

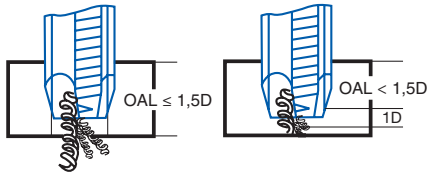
MACHO RECTO MÁQUINA WHITWORTH
Whitworth Machine Straight Tap
Taraud Droit Machine Whitworth



Rosca Whitworth cilíndrica
Straight Whitworth Thread
Filetage Whitworth Cylindrique

Cobalt 5% | DIN 376 | C 2-3h | α 10° ± 2





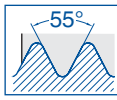
Material		Vc
Grupo	Sub.	5%Co
1	1.1	20-32
3	3.1	22-32
	3.2	13-22
5	5.1	16-26
	5.2	26-39
6	6.1	49-115
	6.2	45-66
	6.3	39-49

Vc= ft/min.

W	Hilos Threads Filets	OAL	Corte Flute Coupe	Mango Shank Queue	a mm	Z	N° Art. Cobalt	€
W 3/8	16,00	3 15/16	55/64	9/32	7/32	3	70395	
W 7/16	14,00	3 15/16	55/64	5/16	1/4	3	70396	
W 1/2	12,00	4 21/64	15/16	23/64	9/32	3	70398	
W 9/16	12,00	4 21/64	1 1/32	7/16	23/64	3	70399	
W 5/8	11,00	4 21/64	1 1/16	15/32	23/64	3	70401	
W 3/4	10,00	4 59/64	1 3/16	35/64	7/16	4	70402	
W 7/8	9,00	5 33/64	1 17/64	45/64	37/64	4	70416	
W 1"	8,00	6 19/64	1 27/64	45/64	37/64	4	70404	
W 1"1/8	7,00	7 3/32	1 37/64	55/64	45/64	4	70450	
W 1"1/4	7,00	7 3/32	1 37/64	55/64	45/64	4	70452	
W 1"3/8	6,00	7 7/8	1 31/32	1 7/64	55/64	4	70453	
W 1"1/2	6,00	7 7/8	1 31/32	1 17/64	15/16	4	70455	
W 1"5/8	5,00	8 21/32	2 9/32	1 27/64	1 9/64	4	70456	
W 1"7/8	4,50	8 21/32	2 9/32	1 27/64	1 9/64	4	70458	

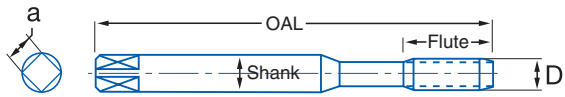
Ref. 3102

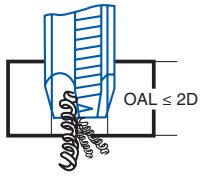
MACHO RECTO MÁQUINA WHITWORTH MANGO REFORZADO
Reinforced Shank Whitworth Machine Straight Tap
Taraud Droit Machine Whitworth Queue Renforcée

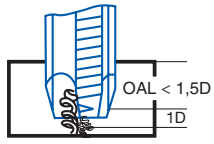


Rosca Whitworth cilíndrica
Straight Whitworth Thread
Filetage Whitworth Cylindrique

Cobalt 5%	DIN 371	B 3,5-5h	GUN	α 10 -12°







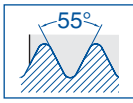
Material		Vc
Grupo	Sub.	5%Co
1	1.1	20-32
3	3.1	22-32
	3.2	13-22
5	5.1	16-26
	5.2	26-39
6	6.1	49-115
	6.2	45-66
	6.3	39-49

Vc= ft/min.

W	Hilos Threads Filets	OAL	Corte Flute Coupe	Mango Shank Queue	a mm	Z	N° Art. Cobalt	€
W 1/8	40,00	2 13/64	7/16	9/64	7/64	3	62897	
W 5/32	32,00	2 31/64	33/64	11/64	9/64	3	62915	
W 3/16	24,00	2 3/4	19/32	15/64	3/16	3	62903	
W 1/4	20,00	3 5/32	43/64	9/32	7/32	3	62894	
W 5/16	18,00	3 35/64	25/32	5/16	1/4	3	62912	
W 3/8	16,00	3 15/16	55/64	23/64	9/32	3	73766	

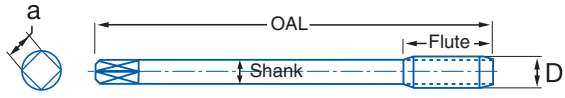
Ref. 3202

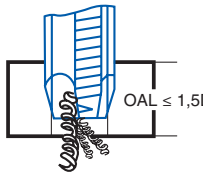
MACHO RECTO MÁQUINA WHITWORTH
Whitworth Machine Straight Tap
Taraud Droit Machine Whitworth

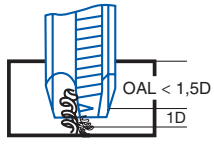


Rosca Whitworth cilíndrica
Straight Whitworth Thread
Filetage Whitworth Cylindrique

Cobalt 5%	DIN 376	B 3,5-5h	GUN	α 10 -12°







Material		Vc
Grupo	Sub.	5%Co
1	1.1	20-32
3	3.1	22-32
	3.2	13-22
5	5.1	16-26
	5.2	26-39
6	6.1	49-115
	6.2	45-66
	6.3	39-49

Vc= ft/min.

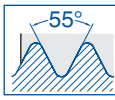
W	Hilos Threads Filets	OAL	Corte Flute Coupe	Mango Shank Queue	a mm	Z	N° Art. Cobalt	€
W 1/4	20,00	3 5/32	43/64	11/64	9/64	3	59861	
W 5/16	18,00	3 35/64	25/32	15/64	3/16	3	14979	
W 3/8	16,00	3 15/16	55/64	9/32	7/32	3	70420	
W 7/16	14,00	3 15/16	55/64	5/16	1/4	3	70446	
W 1/2	12,00	4 21/64	15/16	23/64	9/32	3	70417	
W 9/16	12,00	4 21/64	1 1/32	7/16	23/64	3	70447	
W 5/8	11,00	4 21/64	1 1/16	15/32	23/64	3	70443	
W 3/4	10,00	4 59/64	1 3/16	35/64	7/16	4	70419	
W 7/8	9,00	5 33/64	1 17/64	45/64	37/64	4	70444	
W 1"	8,00	6 19/64	1 27/64	45/64	37/64	4	70449	

Ref. 3152

MACHO HELICOIDAL MÁQUINA WHITWORTH MANGO REFORZADO

Reinforced Shank Whitworth Machine Spiral Tap

Taraud Hélicoïdal Machine Whitworth Queue Renforcée



Rosca Whitworth cilíndrica
Straight Whitworth Thread
Filetage Whitworth Cylindrique

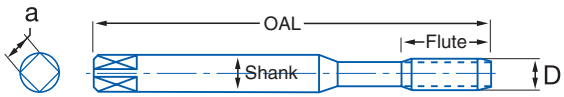
Cobalt 5%

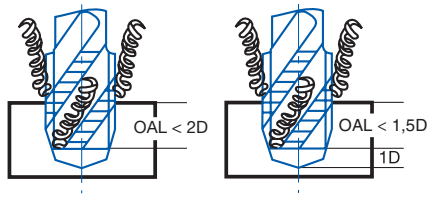
DIN 371

C 2-3h

35°

α 10° ± 2





Material		Vc
Grupo	Sub.	5%Co
1	1.1	20-32
3	3.1	22-32
	3.2	13-22
5	5.1	16-26
	5.2	26-39
6	6.1	49-115
	6.2	45-66
	6.3	39-49

Vc= ft/min.

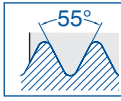
W	Hilos Threads Filets	OAL	Corte Flute Coupe	Mango Shank Queue	a mm	Z	N° Art. Cobalt	€
W 1/8	40,00	2 13/64	13/64	9/64	7/64	3	63152	
W 5/32	32,00	2 31/64	9/32	11/64	9/64	3	63170	
W 3/16	24,00	2 3/4	5/16	15/64	3/16	3	63161	
W 1/4	20,00	3 5/32	25/64	9/32	7/32	3	63149	
W 5/16	18,00	3 35/64	15/32	5/16	1/4	3	63167	
W 3/8	16,00	3 15/16	35/64	23/64	9/32	3	63158	

Ref. 3252

MACHO HELICOIDAL MÁQUINA WHITWORTH

Whitworth Machine Spiral Tap

Taraud Hélicoïdal Machine Whitworth



Rosca Whitworth cilíndrica
Straight Whitworth Thread
Filetage Whitworth Cylindrique

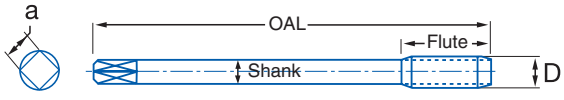
Cobalt 5%

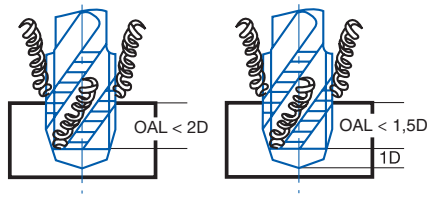
DIN 376

C 2-3h

35°

α 10° ± 2





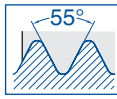
Material		Vc
Grupo	Sub.	5%Co
1	1.1	20-32
3	3.1	22-32
	3.2	13-22
5	5.1	16-26
	5.2	26-39
6	6.1	49-115
	6.2	45-66
	6.3	39-49

Vc= ft/min.

W	Hilos Threads Filets	OAL	Corte Flute Coupe	Mango Shank Queue	a mm	Z	N° Art. Cobalt	€
W 3/16	24,00	2 3/4	5/16	9/64	7/64	3	59857	
W 1/4	20,00	3 5/32	33/64	11/64	9/64	3	59858	
W 5/16	18,00	3 35/64	35/64	15/64	3/16	3	59859	
W 3/8	16,00	3 15/16	5/8	9/32	7/32	3	70408	
W 7/16	14,00	3 15/16	5/8	5/16	1/4	3	70411	
W 1/2	12,00	4 21/64	45/64	23/64	9/32	3	70405	
W 9/16	12,00	4 21/64	25/32	7/16	23/64	3	70413	
W 5/8	11,00	4 21/64	25/32	15/32	23/64	4	70410	
W 3/4	10,00	4 59/64	63/64	35/64	7/16	4	70407	
W 7/8	9,00	5 33/64	1 1/16	45/64	37/64	4	10909	
W 1"	8,00	6 19/64	1 3/16	45/64	37/64	4	70414	

Ref. 3032

JUEGO MACHOS MANO WHITWORTH
Whitworth Hand Tap Set
Jeu de Tarauds à Main Whitworth

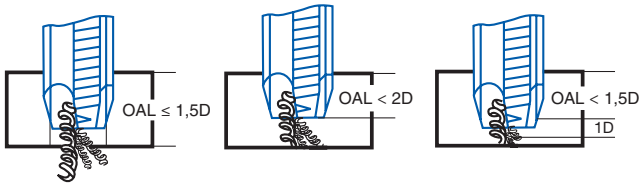


Rosca Whitworth cilíndrica
Straight Whitworth Thread
Filetage Whitworth Cylindrique

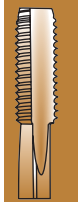
HSS | DIN 352 | C 2-3h | α 10° ± 2

N°1 Desbaste Roughing Ebauche | **N°2** Semidesbaste Semiroughing Semi-Ebauche | **N°3** Acabado Finishing - Finition **(Ref. 3012)**

Grupo 1 Subgr. 1.1 | **Grupo 5** Subgr. 5.1 | **Grupo 3** Subgr. 3.1/3.2 | **Grupo 6** Subgr. 6.1/6.2/6.3

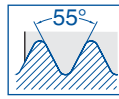


W	Hilos Threads Filets	OAL	Corte Flute Coupe	Mango Shank Queue	a mm	Z	Nº Art. HSS	€
W 3/32	48,00	1 27/64	25/64	7/64	5/64	3	62663	
W 1/8	40,00	1 37/64	15/32	9/64	7/64	3	62642	
W 5/32	32,00	1 49/64	35/64	11/64	9/64	3	62675	
W 3/16	24,00	1 31/32	45/64	15/64	3/16	3	62660	
W 7/32	24,00	1 31/32	45/64	15/64	3/16	3	62684	
W 1/4	20,00	1 31/32	3/4	15/64	3/16	3	62633	
W 5/16	18,00	2 13/64	55/64	15/64	3/16	4	62669	
W 3/8	16,00	2 3/4	15/16	9/32	7/32	4	62654	
W 7/16	14,00	2 3/4	15/16	5/16	1/4	4	62681	
W 1/2	12,00	2 61/64	1 9/64	23/64	9/32	4	62630	
W 9/16	12,00	3 5/32	1 3/16	7/16	23/64	4	62687	
W 5/8	11,00	3 5/32	1 17/64	15/32	23/64	4	62666	
W 3/4	10,00	3 47/64	1 37/64	35/64	7/16	4	62645	
W 7/8	9,00	3 15/16	1 37/64	45/64	37/64	4	62678	
W 1"	8,00	4 21/64	1 31/32	45/64	37/64	4	62693	
W 1"1/8	7,00	5 13/64	2 13/64	55/64	45/64	4	62702	
W 1"1/4	7,00	5 13/64	2 13/64	55/64	45/64	4	62699	
W 1"3/8	6,00	5 29/32	2 31/64	1 7/64	55/64	4	42713	
W 1"1/2	6,00	5 29/32	2 31/64	1 17/64	15/16	4	62696	
W 1"5/8	5,00	6 19/64	2 3/4	1 17/64	15/16	4	59880	
W 1"3/4	5,00	6 19/64	2 3/4	1 27/64	1 9/64	6	59881	
W 1"7/8	4,50	7 31/64	3 5/32	1 27/64	1 9/64	6	59882	
W 2"	4,50	7 31/64	3 5/32	1 37/64	1 17/64	6	59883	



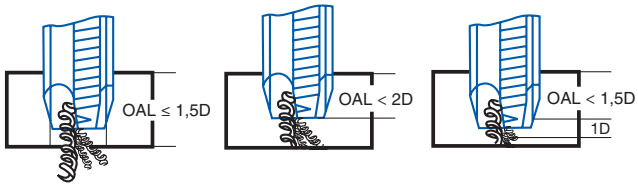
Ref. 3012

MACHO ÚNICO MANO WHITWORTH
Whitworth Hand Tap
Taraud à Main Whitworth



Rosca Whitworth cilíndrica
Straight Whitworth Thread
Filetage Whitworth Cylindrique

HSS	DIN 352	C 2-3h		α 10° ± 2	**N°3** Acabado Finishing Finition	**Grupo 1** Subgr. 1.1	**Grupo 5** Subgr. 5.1	**Grupo 3** Subgr. 3.1/3.2	**Grupo 6** Subgr. 6.1/6.2/6.3

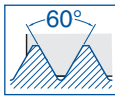


W	Hilos Threads Filets	OAL	Corte Flute Coupe	Mango Shank Queue	a mm	Z	Nº Art. HSS	€
W 3/32	48,00	1 27/64	25/64	7/64	5/64	3	75404	
W 1/8	40,00	1 37/64	15/32	9/64	7/64	3	75401	
W 5/32	32,00	1 49/64	35/64	11/64	9/64	3	75069	
W 3/16	24,00	1 31/32	45/64	15/64	3/16	3	74825	
W 7/32	24,00	1 31/32	45/64	15/64	3/16	3	75409	
W 1/4	20,00	1 31/32	3/4	15/64	3/16	3	75400	
W 5/16	18,00	2 13/64	55/64	15/64	3/16	4	75406	
W 3/8	16,00	2 3/4	15/16	9/32	7/32	4	75403	
W 7/16	14,00	2 3/4	15/16	5/16	1/4	4	75408	
W 1/2	12,00	2 61/64	1 9/64	23/64	9/32	4	75399	
W 9/16	12,00	3 5/32	1 3/16	7/16	23/64	4	75448	
W 5/8	11,00	3 5/32	1 17/64	15/32	23/64	4	75405	
W 3/4	10,00	3 47/64	1 37/64	35/64	7/16	4	75402	
W 7/8	9,00	3 15/16	1 37/64	45/64	37/64	4	75407	
W 1"	8,00	4 21/64	1 31/32	45/64	37/64	4	75410	
W 1"1/8	7,00	5 13/64	2 13/64	55/64	45/64	4	76255	
W1"1/4	7,00	5 13/64	2 13/64	55/64	45/64	4	76259	
W 1"3/8	6,00	5 29/32	2 31/64	1 7/64	55/64	4	76264	
W 1"1/2	6,00	5 29/32	2 31/64	1 17/64	15/16	4	76269	
W 1"5/8	5,00	6 19/64	2 3/4	1 17/64	15/16	4	76274	
W 1"3/4	5,00	6 19/64	2 3/4	1 27/64	1 9/64	4	76280	
W 1"7/8	4,50	7 31/64	3 5/32	1 27/64	1 9/64	4	76286	
W 2"	4,50	7 31/64	3 5/32	1 37/64	1 17/64	4	76291	

Ref. 3144

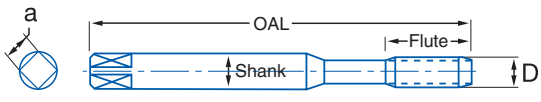
MACHO RECTO MÁQUINA UNC
UNC Machine Straight Tap
Taraud Droit Machine UNC

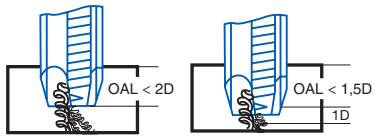
NEW!



Rosca americana unificada cilíndrica
Unified Thread Standard
Filetage unifié

PMX | HARD | DIN 371 | B 3,5-5h | Tol. 2B | GUN | α 10 -14°





Material		Vc
Grupo	Sub.	5%Co
1	1.1	6-10
3	3.1	7-10
	3.2	4-7
5	5.1	5-8
	5.2	8-12
6	6.1	15-35
	6.2	14-20
	6.3	12-15

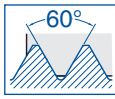
Vc= ft/min.

UNC	Hilos Threads Filets	OAL	Corte Flute Coupe	Mango Shank Queue	a mm	Z	N° Art. HARD	€
UNC Nº10	24	2 3/4	33/64	15/64	3/16	3	71378	
UNC 1/4	20	3 5/32	19/32	9/32	13/64	3	71372	
UNC 5/16	18	3 35/64	45/64	5/16	1/4	3	71376	
UNC 3/8	16	3 35/64	25/32	23/64	9/32	3	71374	

Ref. 3104

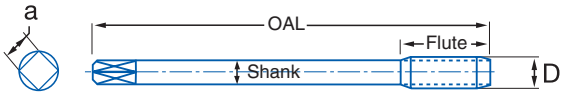
MACHO HELICOIDAL MÁQUINA UNC
UNC Machine Spiral Tap
Taraud Hélicoïdal Machine UNC

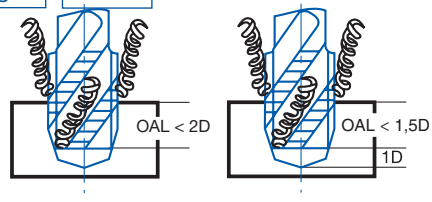
NEW!



Rosca americana unificada cilíndrica
Unified Thread Standard
Filetage unifié

PMX | HARD | DIN 371 | B 3,5-5h | Tol. 2B | 35° | α 10 -14°





Material		Vc
Grupo	Sub.	5%Co
1	1.1	6-10
3	3.1	7-10
	3.2	4-7
5	5.1	5-8
	5.2	8-12
6	6.1	15-35
	6.2	14-20
	6.3	12-15

Vc= ft/min.

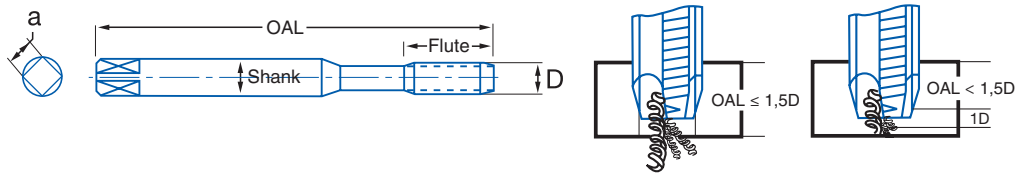
UNC	Hilos Threads Filets	OAL	Corte Flute Coupe	Mango Shank Queue	a mm	Z	N° Art. HARD	€
UNC Nº10	24	2 3/4	5/16	15/64	3/16	3	69500	
UNC 1/4	20	3 5/32	25/64	9/32	7/32	3	69502	
UNC 5/16	18	3 35/64	33/64	5/16	1/4	3	69503	
UNC 3/8	16	3 35/64	19/32	23/64	9/32	3	69505	

Ref. 3114

MACHO RECTO MÁQUINA UNC MANGO REFORZADO
Reinforced Shank UNC Machine Straight Tap
Taraud Droit Machine UNC Queue Renforcée

60° Rosca americana unificada cilíndrica
Unified Thread Standard
Filetage unifié

Cobalt 5%	DIN 371	C 2-3h	Tol. 2B		α 10° ± 2



Material		Vc
Grupo	Sub.	5%Co
1	1.1	20-32
3	3.1	22-32
	3.2	13-22
5	5.1	16-26
	5.2	26-39
6	6.1	49-115
	6.2	45-66
	6.3	39-49

Vc= ft/min.

UNC	Hilos Threads Filets	OAL	Corte Flute Coupe	Mango Shank Queue	a mm	Z	N° Art. Cobalt	€
UNC Nº5	40	2 13/64	7/16	9/64	7/64	3	75615	
UNC Nº6	32	2 13/64	33/64	5/32	1/8	3	75616	
UNC Nº8	32	2 31/64	33/64	11/64	9/64	3	75617	
UNC Nº10	24	2 3/4	5/8	15/64	3/16	3	75618	
UNC Nº12	24	3 5/32	43/64	15/64	3/16	3	75619	
UNC 1/4	20	3 5/32	3/4	9/32	7/32	3	75507	
UNC 5/16	18	3 35/64	55/64	5/16	1/4	3	16693	
UNC 3/8	16	3 35/64	55/64	23/64	9/32	3	75509	

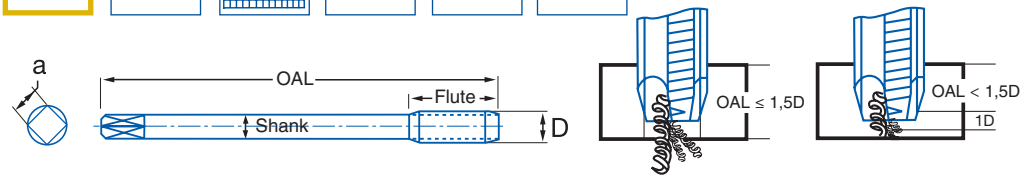
Ref. 3114 bajo demanda / upon request / sur demande

Ref. 3214

MACHO RECTO MÁQUINA UNC
UNC Machine Straight Tap
Taraud Droit Machine UNC

60° Rosca americana unificada cilíndrica
Unified Thread Standard
Filetage unifié

Cobalt 5%	DIN 376	C 2-3h	Tol. 2B		α 10° ± 2



Material		Vc
Grupo	Sub.	5%Co
1	1.1	20-32
3	3.1	22-32
	3.2	13-22
5	5.1	16-26
	5.2	26-39
6	6.1	49-115
	6.2	45-66
	6.3	39-49

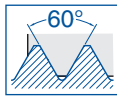
Vc= ft/min.

UNC	Hilos Threads Filets	OAL	Corte Flute Coupe	Mango Shank Queue	a mm	Z	N° Art. Cobalt	€
UNC 7/16	14	3 15/16	15/16	5/16	1/4	3	70485	
UNC 1/2	13	4 21/64	1 9/64	23/64	9/32	3	70486	
UNC 9/16	12	4 21/64	1 3/16	7/16	23/64	3	70488	
UNC 5/8	11	4 21/64	1 17/64	15/32	23/64	3	70489	
UNC 3/4	10	4 59/64	1 11/32	35/64	7/16	3	70491	
UNC 7/8	9	5 33/64	1 11/32	45/64	37/64	3	70492	
UNC 1"	8	6 19/64	1 1/2	45/64	37/64	3	70494	
UNC 1"1/8	7	7 3/32	1 49/64	55/64	45/64	4	75339	

Ref. 3214 bajo demanda / upon request / sur demande

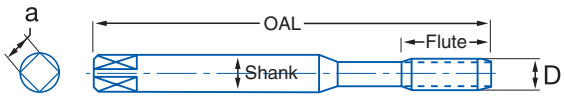
Ref. 3134

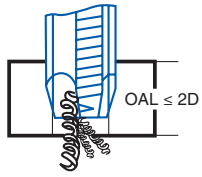
MACHO RECTO MÁQUINA UNC MANGO REFORZADO
Reinforced Shank UNC Machine Straight Tap
Taraud Droit Machine UNC Queue Renforcée

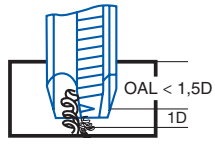


Rosca americana unificada cilíndrica
Unified Thread Standard
Filetage unifié

Cobalt 5%	DIN 371	B 3,5-5h	Tol. 2B	GUN	α 10 -14°







Material		Vc
Grupo	Sub.	5%Co
1	1.1	20-32
3	3.1	22-32
	3.2	13-22
5	5.1	16-26
	5.2	26-39
6	6.1	49-115
	6.2	45-66
	6.3	39-49

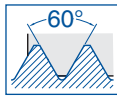
Vc= ft/min.

UNC	Hilos Threads Filets	OAL	Corte Flute Coupe	Mango Shank Queue	a mm	Z	N° Art. Cobalt	€
UNC Nº5	40	2 13/64	23/64	9/64	7/64	3	75627	
UNC Nº6	32	2 13/64	7/16	5/32	1/8	3	75628	
UNC Nº8	32	2 31/64	15/32	11/64	9/64	3	75629	
UNC Nº10	24	2 3/4	33/64	15/64	3/16	3	75630	
UNC Nº12	24	3 5/32	19/32	15/64	3/16	3	75631	
UNC 1/4	20	3 5/32	19/32	9/32	7/32	3	75527	
UNC 5/16	18	3 35/64	45/64	5/16	1/4	3	75531	
UNC 3/8	16	3 35/64	25/32	23/64	9/32	3	75529	

Ref. 3134 bajo demanda / upon request / sur demande

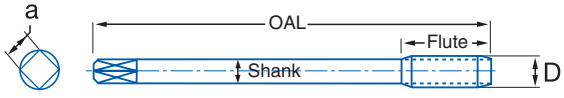
Ref. 3234

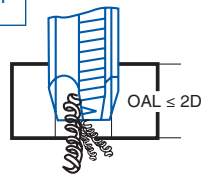
MACHO RECTO MÁQUINA UNC
UNC Machine Straight Tap
Taraud Droit Machine UNC

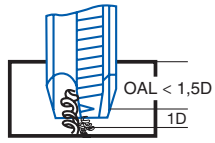


Rosca americana unificada cilíndrica
Unified Thread Standard
Filetage unifié

Cobalt 5%	DIN 376	B 3,5-5h	Tol. 2B	GUN	α 10 -14°







Material		Vc
Grupo	Sub.	5%Co
1	1.1	20-32
3	3.1	22-32
	3.2	13-22
5	5.1	16-26
	5.2	26-39
6	6.1	49-115
	6.2	45-66
	6.3	39-49

Vc= ft/min.

UNC	Hilos Threads Filets	OAL	Corte Flute Coupe	Mango Shank Queue	a mm	Z	N° Art. Cobalt	€
UNC 7/16	14	3 15/16	25/32	5/16	1/4	3	70521	
UNC 1/2	13	4 21/64	29/32	23/64	9/32	3	70512	
UNC 9/16	12	4 21/64	63/64	7/16	23/64	3	70522	
UNC 5/8	11	4 21/64	63/64	15/32	23/64	3	70516	
UNC 3/4	10	4 59/64	1 3/16	35/64	7/16	3	70513	
UNC 7/8	9	5 33/64	1 3/16	45/64	37/64	3	70519	
UNC 1"	8	6 19/64	1 27/64	45/64	37/64	3	70524	

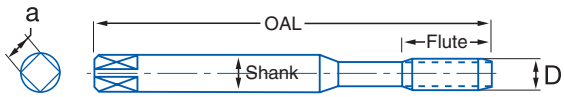
Ref. 3234 bajo demanda / upon request / sur demande

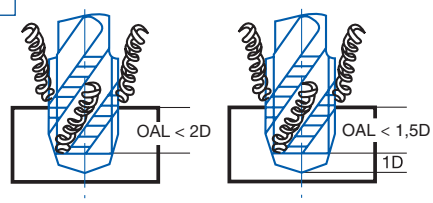
Ref. 3154

MACHO HELICOIDAL MÁQUINA UNC MANGO REFORZADO
Reinforced Shank UNC Machine Spiral Tap
Taraud Hélicoïdal Machine UNC Queue Renforcée

60° Rosca americana unificada cilíndrica
Unified Thread Standard
Filetage unifié

Cobalt 5%	DIN 371	C 2-3h	Tol. 2B	35°	α 10° ± 2





Material		Vc
Grupo	Sub.	5%Co
1	1.1	20-32
3	3.1	22-32
	3.2	13-22
5	5.1	16-26
	5.2	26-39
6	6.1	49-115
	6.2	45-66
	6.3	39-49

Vc= ft/min.

UNC	Hilos Threads Filets	OAL	Corte Flute Coupe	Mango Shank Queue	a mm	Z	N° Art. Cobalt	€
UNC Nº6	32	2 13/64	9/32	5/32	1/8	3	75634	
UNC Nº10	24	2 3/4	5/16	15/64	3/16	3	75636	
UNC 1/4	20	3 5/32	25/64	9/32	13/64	3	75537	
UNC 5/16	18	3 35/64	33/64	5/16	1/4	3	75541	
UNC 3/8	16	3 35/64	19/32	23/64	9/32	3	75539	

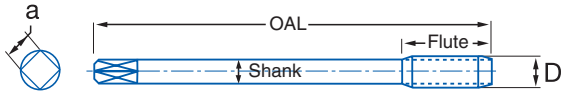
Ref. 3154 bajo demanda / upon request / sur demande

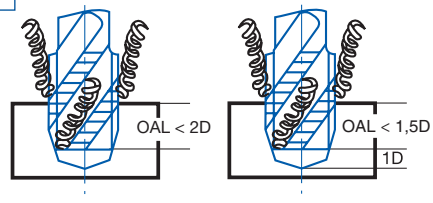
Ref. 3254

MACHO HELICOIDAL MÁQUINA UNC
UNC Machine Spiral Tap
Taraud Hélicoïdal Machine UNC

60° Rosca americana unificada cilíndrica
Unified Thread Standard
Filetage unifié

Cobalt 5%	DIN 376	C 2-3h	Tol. 2B	35°	α 10° ± 2





Material		Vc
Grupo	Sub.	5%Co
1	1.1	20-32
3	3.1	22-32
	3.2	13-22
5	5.1	16-26
	5.2	26-39
6	6.1	49-115
	6.2	45-66
	6.3	39-49

Vc= ft/min.

UNC	Hilos Threads Filets	OAL	Corte Flute Coupe	Mango Shank Queue	a mm	Z	N° Art. Cobalt	€
UNC 7/16	14	3 15/16	45/64	5/16	1/4	3	70507	
UNC 1/2	13	4 21/64	25/32	23/64	9/32	3	70495	
UNC 9/16	12	4 21/64	25/32	7/16	23/64	3	70509	
UNC 5/8	11	4 21/64	25/32	15/32	23/64	3	70500	
UNC 3/4	10	4 59/64	63/64	35/64	7/16	4	70497	
UNC 7/8	9	5 33/64	63/64	45/64	37/64	4	70506	
UNC 1"	8	6 19/64	1 3/16	45/64	37/64	4	70510	

Ref. 3254 bajo demanda / upon request / sur demande

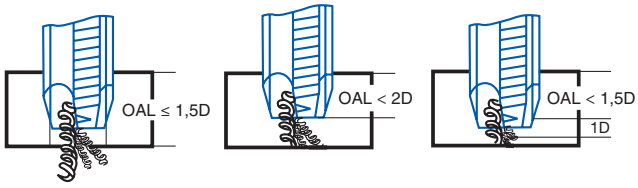
Ref. 3034

JUEGO MACHOS MANO UNC
UNC Hand Tap Set
Jeu de Tarauds à Main UNC

60° Rosca americana unificada cilíndrica
Unified Thread Standard
Filetage unifié

HSS	DIN 352	C 2-3h	DIN 352		Tol. 2B	α 10° ± 2	**N°1** Desbaste Roughing Ebauche	**N°2** Semidesbaste Semiroughing Semi-Ebauche	**N°3** Acabado Finishing - Finition **(Ref. 3004)**

Grupo 1 Subgr. 1.1 | **Grupo 5** Subgr. 5.1 | **Grupo 3** Subgr. 3.1/3.2 | **Grupo 6** Subgr. 6.1/6.2/6.3



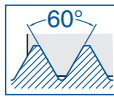
UNC	Hilos Threads Filets	OAL	Corte Flute Coupe	Mango Shank Queue	a mm	Z	Nº Art. HSS	€
UNC Nº5	40	1 37/64	15/32	9/64	15/16	3	75594	
UNC Nº6	32	1 49/64	35/64	5/32	1/8	3	75596	
UNC Nº8	32	1 49/64	35/64	11/64	9/64	3	75597	
UNC Nº10	24	1 31/32	5/8	15/64	3/16	3	75598	
UNC Nº12	24	1 31/32	45/64	15/64	3/16	3	75599	
UNC 1/4	20	2 13/64	3/4	15/64	3/16	3	62732	
UNC 5/16	18	2 13/64	55/64	15/64	3/16	3	62744	
UNC 3/8	16	2 31/64	15/16	9/32	7/32	3	62738	
UNC 7/16	14	2 3/4	15/16	5/16	1/4	3	62750	
UNC 1/2	13	2 61/64	1 9/64	23/64	9/32	3	75115	
UNC 9/16	12	3 5/32	1 3/16	7/16	23/64	4	62753	
UNC 5/8	11	3 5/32	1 17/64	15/32	23/64	4	62741	
UNC 3/4	10	3 47/64	1 37/64	35/64	7/16	4	62735	
UNC 7/8	9	3 15/16	1 37/64	45/64	37/64	4	62747	
UNC 1"	8	4 21/64	1 31/32	45/64	37/64	4	62756	

Macho único Ref. 3004 bajo demanda
Single Tap Ref. 3004 upon request
Taraud Ref. 3004 sur demande

Ref. 3127

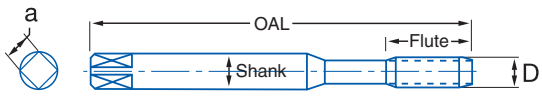
MACHO RECTO MÁQUINA UNF-SAE
UNF-SAE Machine Straight Tap
Taraud Droit Machine UNF-SAE

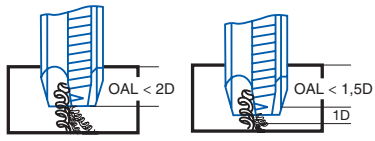
NEW!



Rosca americana unificada cilíndrica
Unified Thread Standard
Filetage unifié

PMX | HARD | DIN 371 | B 3,5-5h | Tol. 2B | GUN | α 10° ± 2





Material		Vc
Grupo	Sub.	5%Co
1	1.1	6-10
3	3.1	7-10
	3.2	4-7
5	5.1	5-8
	5.2	8-12
6	6.1	15-35
	6.2	14-20
	6.3	12-15

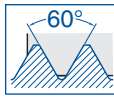
Vc= ft/min.

UNF-SAE	Hilos Threads Filets	OAL	Corte Flute Coupe	Mango Shank Queue	a mm	Z	N° Art. HARD	€
UNF Nº10	32	2 3/4	33/64	9/64	7/64	3	71386	
UNF 1/4	28	3 5/32	19/32	11/64	9/64	3	71380	
UNF 5/16	24	3 35/64	45/64	15/64	3/16	3	71384	
UNF 3/8	24	3 35/64	25/32	9/32	7/32	3	71382	

Ref. 3124

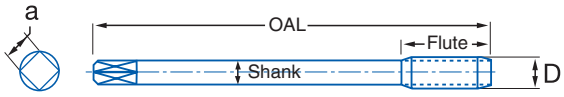
MACHO HELICOIDAL MÁQUINA UNF-SAE
UNF-SAE Machine Spiral Tap
Taraud Hélicoïdal Machine UNF-SAE

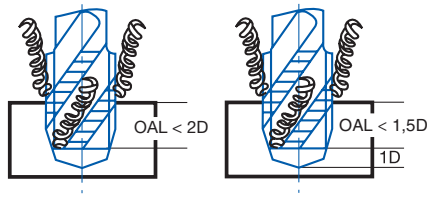
NEW!



Rosca americana unificada cilíndrica
Unified Thread Standard
Filetage unifié

PMX | HARD | DIN 371 | C 2-3h | Tol. 2B | 35° | α 10° ± 2





Material		Vc
Grupo	Sub.	5%Co
1	1.1	6-10
3	3.1	7-10
	3.2	4-7
5	5.1	5-8
	5.2	8-12
6	6.1	15-35
	6.2	14-20
	6.3	12-15

Vc= ft/min.

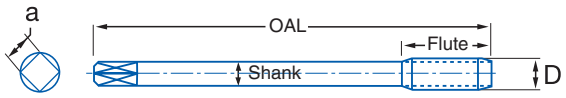
UNF-SAE	Hilos Threads Filets	OAL	Corte Flute Coupe	Mango Shank Queue	a mm	Z	N° Art. HARD	€
UNF Nº10	32	2 3/4	5/16	9/64	7/64	3	69506	
UNF 1/4	28	3 5/32	25/64	11/64	9/64	3	69508	
UNF 5/16	18	3 35/64	33/64	15/64	3/16	3	69509	
UNF 3/8	16	3 35/64	19/32	9/32	7/32	3	69511	

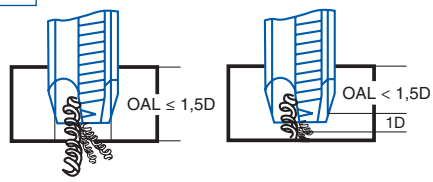
Ref. 3224

MACHO RECTO MÁQUINA UNF-SAE
UNF-SAE Machine Straight Tap
Taraud Droit Machine UNF-SAE

60° Rosca americana unificada cilíndrica
Unified Thread Standard
Filetage unifié

Cobalt 5%	DIN 374	C 2-3h	Tol. 2B		α 10° ± 2





Material		Vc
Grupo	Sub.	5%Co
1	1.1	20-32
3	3.1	22-32
	3.2	13-22
5	5.1	16-26
	5.2	26-39
6	6.1	49-115
	6.2	45-66
	6.3	39-49

Vc= ft/min.

UNF-SAE	Hilos Threads Filets	OAL	Corte Flute Coupe	Mango Shank Queue	a mm	Z	N° Art. Cobalt	€
UNF 5/16	24	3 35/64	55/64	15/64	3/16	3	22576	
UNF 3/8	24	3 35/64	25/32	9/32	7/32	3	20655	
UNF 7/16	20	3 15/16	25/32	5/16	1/4	3	22578	
UNF 1/2	20	3 15/16	55/64	23/64	9/32	3	22579	
UNF 9/16	18	3 15/16	55/64	7/16	23/64	3	70543	
UNF 5/8	18	3 15/16	55/64	15/32	23/64	3	70537	
UNF 3/4	16	4 21/64	63/64	35/64	7/16	3	70534	
UNF 7/8	14	4 59/64	63/64	45/64	37/64	3	70540	

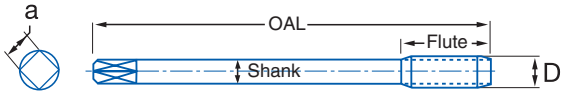
Ref. 3224 bajo demanda / upon request / sur demande

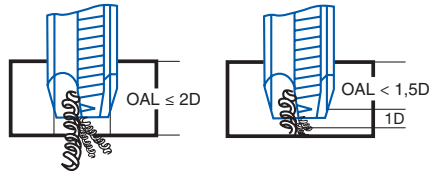
Ref. 3204

MACHO RECTO MÁQUINA UNF-SAE
UNF-SAE Machine Straight Tap
Taraud Droit Machine UNF-SAE

60° Rosca americana unificada cilíndrica
Unified Thread Standard
Filetage unifié

Cobalt 5%	DIN 374	B 3,5-5h	Tol. 2B	GUN	α 10 -14°





Material		Vc
Grupo	Sub.	5%Co
1	1.1	20-32
3	3.1	22-32
	3.2	13-22
5	5.1	16-26
	5.2	26-39
6	6.1	49-115
	6.2	45-66
	6.3	39-49

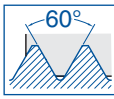
Vc= ft/min.

UNF-SAE	Hilos Threads Filets	OAL	Corte Flute Coupe	Mango Shank Queue	a mm	Z	N° Art. Cobalt	€
UNF 1/4	28	3 5/32	19/32	11/64	9/64	3	75744	
UNF 5/16	24	3 35/64	45/64	15/64	3/16	3	75751	
UNF 3/8	24	3 35/64	25/32	9/32	7/32	3	62933	
UNF 7/16	20	3 15/16	25/32	5/16	1/4	3	70461	
UNF 1/2	20	3 15/16	55/64	23/64	9/32	3	70465	
UNF 9/16	18	3 15/16	55/64	7/16	23/64	3	70467	
UNF 5/8	18	3 15/16	55/64	15/32	23/64	3	70468	
UNF 3/4	16	3 15/16	63/64	35/64	7/16	3	70470	
UNF 7/8	14	4 59/64	15/16	45/64	37/64	3	59872	
UNF 1"	12	5 33/64	1 1/32	45/64	37/64	3	59873	

Ref. 3254 bajo demanda / upon request / sur demande

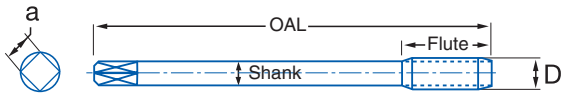
Ref. 3244

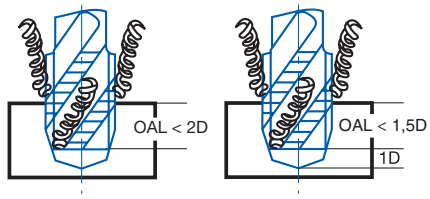
MACHO HELICOIDAL MÁQUINA UNF-SAE
UNF-SAE Machine Spiral Tap
Taraud Hélicoïdal Machine UNF-SAE



Rosca americana unificada cilíndrica
Unified Thread Standard
Filetage unifié

Cobalt 5%	DIN 374	C 2-3h	Tol. 2B	35°	α 10° ± 2





Material		Vc
Grupo	Sub.	5%Co
1	1.1	20-32
3	3.1	22-32
	3.2	13-22
5	5.1	16-26
	5.2	26-39
6	6.1	49-115
	6.2	45-66
	6.3	39-49

Vc= ft/min.

UNF-SAE	Hilos Threads Filets	OAL	Corte Flute Coupe	Mango Shank Queue	a mm	Z	N° Art. Cobalt	€
UNF 5/16	24	3 35/64	15/32	15/64	3/16	3	70459	
UNF 3/8	24	3 35/64	33/64	9/32	7/32	3	70471	
UNF 7/16	20	3 15/16	19/32	5/16	1/4	3	70479	
UNF 1/2	20	3 15/16	5/8	23/64	9/32	3	70474	
UNF 9/16	18	3 15/16	43/64	7/16	23/64	3	70480	
UNF 5/8	18	3 15/16	3/4	15/32	23/64	3	70477	
UNF 3/4	16	4 21/64	53/64	35/64	7/16	4	70476	
UNF 7/8	14	4 59/64	29/32	45/64	37/64	4	70473	

Ref. 3244 bajo demanda / upon request / sur demande

Ref. 3024

JUEGO MACHOS MANO UNF-SAE
UNF-SAE Hand Tap Set
Jeu de Tarauds à Main UNF-SAE

60° Rosca americana unificada cilíndrica
Unified Thread Standard
Filetage unifié

Material		Vc
Grupo	Sub.	5%Co
1	1.1	20-32
3	3.1	22-32
	3.2	13-22
5	5.1	16-26
	5.2	26-39
6	6.1	49-115
	6.2	45-66
	6.3	39-49

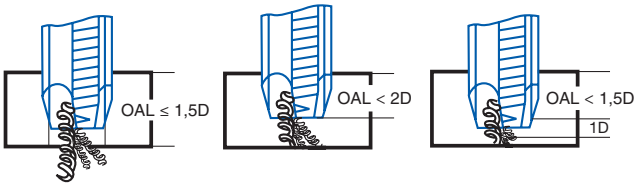
Vc= ft/min.

HSS | DIN 2181 | C 2-3h | Tol. 2B | α 10° ± 2

N°1 Desbaste
Roughing
Ebauche

N°3 Acabado
Finishing - Finition
(Ref. 3014)

Grupo 1 Subgr. 1.1 | **Grupo 5** Subgr. 5.1 | **Grupo 3** Subgr. 3.1/3.2 | **Grupo 6** Subgr. 6.1/6.2/6.3



UNF-SAE	Hilos Threads Filets	OAL	Corte Flute Coupe	Mango Shank Queue	a mm	Z	Nº Art. HSS	€
UNF Nº5	44	1 27/64	7/16	9/64	7/64	3	75601	
UNF Nº6	40	1 37/64	15/32	5/32	1/8	3	75602	
UNF Nº8	36	1 37/64	15/32	11/64	9/64	3	75603	
UNF Nº10	32	1 49/64	35/64	15/64	3/16	3	75604	
UNF Nº12	28	1 31/32	35/64	15/64	3/16	3	75605	
UNF 1/4	28	1 31/32	45/64	15/64	3/16	3	62462	
UNF 5/16	24	2 13/64	55/64	15/64	3/16	3	62477	
UNF 3/8	24	2 31/64	55/64	9/32	7/32	3	62471	
UNF 7/16	20	2 31/64	55/64	5/16	1/4	3	62483	
UNF 1/2	20	2 61/64	15/16	23/64	9/32	3	62459	
UNF 9/16	18	3 5/32	1 7/64	7/16	23/64	4	62486	
UNF 5/8	18	3 5/32	1 7/64	15/32	23/64	4	62474	
UNF 3/4	16	3 47/64	1 17/64	35/64	7/16	4	62465	
UNF 7/8	14	3 15/16	1 17/64	45/64	37/64	4	62480	
UNF 1"	12	4 21/64	1 37/64	45/64	37/64	4	62489	
UNF 1"1/4	12	5 13/64	2 13/64	55/64	45/64	4	76158	

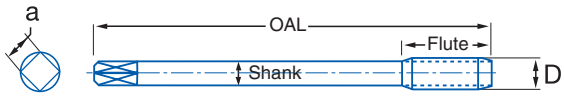
Macho único Ref. 3014 bajo demanda
Single Tap Ref. 3014 upon request
Taraud Ref. 3014 sur demande

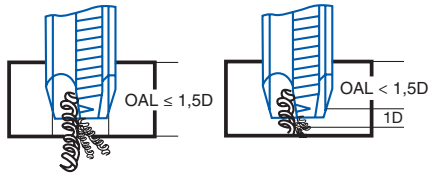
Ref. 3209

MACHO RECTO MÁQUINA UN
UN Machine Straight Tap
Taraud Droit Machine UN

60° Rosca americana unificada cilíndrica
Unified Thread Standard
Filetage unifié

Cobalt 5%	DIN 374	C 2-3h	Tol. 2B		α 10° ± 2





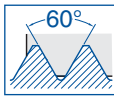
Material		Vc
Grupo	Sub.	5%Co
1	1.1	20-32
3	3.1	22-32
	3.2	13-22
5	5.1	16-26
	5.2	26-39
6	6.1	49-115
	6.2	45-66
	6.3	39-49

Vc= ft/min.

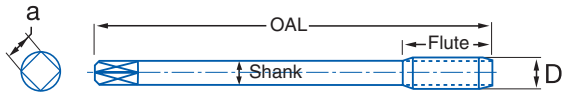
UN	Hilos Threads Filets	OAL	Corte Flute Coupe	Mango Shank Queue	a mm	Z	N° Art. Cobalt	€
UN 1"1/8	8	7 3/32	1 49/64	55/64	45/64	4	38311	
UN 1"1/4	8	7 3/32	1 49/64	55/64	45/64	4	38312	
UN 1"3/8	8	7 7/8	2 13/64	1 7/64	55/64	4	38313	
UN 1"1/2	8	7 7/8	2 13/64	1 7/64	55/64	5	38314	
UN 1"5/8	8	7 7/8	2 13/64	1 7/64	55/64	5	38315	
UN 1"3/4	8	7 7/8	2 13/64	1 7/64	55/64	5	38316	
UN 2"	8	8 55/64	1 31/32	1 37/64	1 17/64	5	38317	

Ref. 3025

JUEGO MACHOS MANO UNEF
UNEF Hand Tap Set
Jeu de Tarauds à Main UNEF

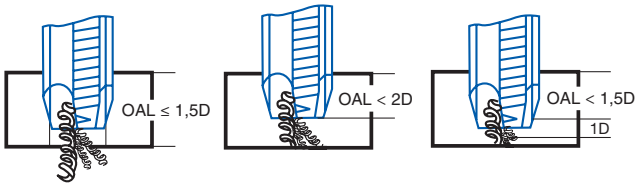


Rosca americana unificada cilíndrica
Unified Thread Standard
Filetage unifié

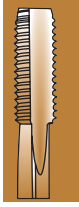


HSS	DIN 2181	C 2-3h	Tol. 2B		α 10° ± 2	**N°1** Desbaste Roughing Ebauche	**N°3** Acabado Finishing Finition

Grupo 1 Subgr. 1.1	Grupo 5 Subgr. 5.1	Grupo 3 Subgr. 3.1/3.2	Grupo 6 Subgr. 6.1/6.2/6.3

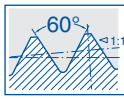


UNEF	Hilos Threads Filets	OAL	Corte Flute Coupe	Mango Shank Queue	a mm	Z	Nº Art. HSS	€
UNEF 1/4	32	1 31/32	45/64	15/64	3/16	3	38269	
UNEF 5/16	32	2 13/64	55/64	15/64	3/16	3	75857	
UNEF 3/8	32	2 31/64	55/64	9/32	7/32	3	75863	
UNEF 7/16	28	2 31/64	55/64	5/16	1/4	4	38270	
UNEF 1/2	28	2 61/64	15/16	23/64	9/32	4	75876	
UNEF 9/16	24	3 5/32	1 7/64	7/16	23/64	4	16853	
UNEF 5/8	24	3 5/32	1 7/64	15/32	23/64	4	38271	
UNEF 3/4	20	3 47/64	1 17/64	35/64	7/16	4	38272	
UNEF 1"	20	4 21/64	1 37/64	45/64	37/64	4	38273	



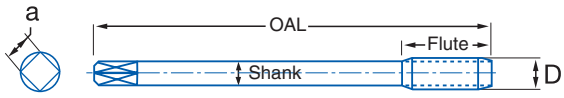
Ref. 3107

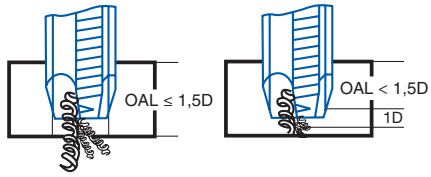
MACHO RECTO MÁQUINA NPT
NPT Machine Straight Tap
Taraud Droit Machine NPT



Rosca americana no estanca para tubo (Briggs)
Briggs Standard Pipe Tap
Taraud pour Tubes Standard Briggs

Cobalt 5%	DIN 374	C 2-3h		α 10° ± 2





Material		Vc
Grupo	Sub.	5%Co
1	1.1	20-32
3	3.1	22-32
	3.2	13-22
5	5.1	16-26
	5.2	26-39
6	6.1	49-115
	6.2	45-66
	6.3	39-49

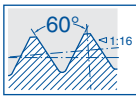
Vc= ft/min.

NPT	Hilos Threads Filets	OAL	Corte Flute Coupe	Mango Shank Queue	a mm	Z	N° Art. Cobalt	€
NPT 1/8	27,00	3 35/64	45/64	5/16	1/4	4	77890	
NPT 1/4	18,00	3 15/16	1 1/16	7/16	23/64	4	15165	
NPT 3/8	18,00	3 15/16	1 1/16	15/32	23/64	5	75872	
NPT 1/2	14,00	4 59/64	1 3/8	5/8	15/32	5	15830	
NPT 3/4	14,00	5 33/64	1 3/8	25/32	5/8	5	77892	
NPT 1"	11,50	6 19/64	1 3/4	63/64	25/32	6	17937	
NPT 1"1/2	11,50	7 31/64	1 3/4	1 27/64	1 9/64	6	17941	
NPT 2"	11,50	8 55/64	1 3/4	1 49/64	1 3/8	8	17946	

Ref. 3107 bajo demanda / upon request / sur demande

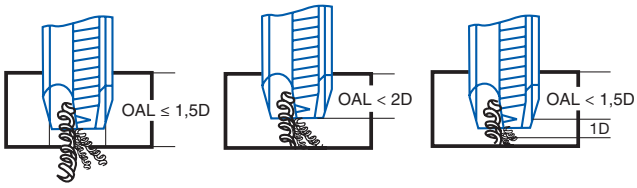
Ref. 3017

MACHO ÚNICO MANO NPT
NPT Hand Single Tap
Taraud à Main NPT



Rosca americana no estanca para tubo (Briggs)
Briggs Standard Pipe Tap
Taraud pour Tubes Standard Briggs

HSS	DIN 2181		1,5-2h	α 10° ± 2	**N°3** Acabado Finishing Finition

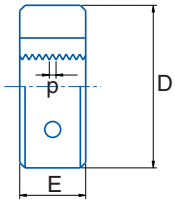


NPT	Hilos Threads Filets	OAL	Corte Flute Coupe	Mango Shank Queue	a mm	Z	Nº Art. HSS	€
NPT 1/8	27,00	2 9/16	3/4	5/16	1/4	4	62315	
NPT 1/4	18,00	2 3/4	63/64	7/16	23/64	4	62309	
NPT 3/8	18,00	2 61/64	63/64	15/32	23/64	5	62327	
NPT1/2	14,00	3 5/32	1 7/32	5/8	15/32	5	62303	
NPT 3/4	14,00	3 15/16	1 19/64	25/32	5/8	5	62321	
NPT 1"	11,50	4 21/64	1 1/2	63/64	25/32	6	62330	
NPT 1"1/4	11,50	4 59/64	1 39/64	1 17/64	15/16	6	17945	
NPT 1"1/2	11,50	5 33/64	1 21/32	1 27/64	1 9/64	6	17944	
NPT 2"	11,50	6 19/64	1 47/64	1 49/64	1 3/8	8	76063	

Ref. 3017 bajo demanda / upon request / sur demande

Ref. 3502

COJINETE MANO WHITWORTH
Whitworth Hand Die
Filière à Main Whitworth



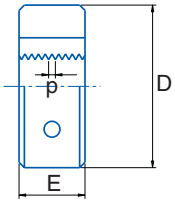
HSS | W | DIN 223 | α 10 - 17°

Chaflán Entrada 1,75h
Chamfer 1,75 threads
Chanfrein 1,75 filets

W	P	D	E	Nº Art. HSS	€
W 3/32	48	5/8	13/64	63344	
W 1/8	40	25/32	13/64	63329	
W 5/32	32	25/32	9/32	63356	
W 3/16	24	25/32	9/32	63341	
W 7/32	24	25/32	9/32	63365	
W 1/4	20	25/32	9/32	63323	
W 5/16	18	63/64	23/64	63350	
W 3/8	16	1 3/16	7/16	63335	
W 7/16	14	1 3/16	7/16	63362	
W 1/2	12	1 1/2	35/64	63320	
W 9/16	12	1 1/2	35/64	63368	
W 5/8	11	1 49/64	45/64	63347	
W 3/4	10	1 49/64	45/64	63332	
W 7/8	9	2 11/64	55/64	63359	
W 1"	8	2 11/64	55/64	63374	
W 1"1/8	7	2 9/16	63/64	63383	

Ref. 3534

COJINETE MANO UNC
UNC Hand Die
Filière à Main UNC



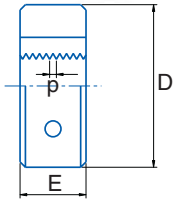
HSS | UNC | DIN 223 | Tol. 2A | α 10 - 17°

Chaflán Entrada 1,75h
Chamfer 1,75 threads
Chanfrein 1,75 filets

UNC	P	D	E	Nº Art. HSS	€
UNC 1/4	20	25/32	9/32	75557	
UNC 5/16	18	63/64	23/64	75561	
UNC 3/8	16	1 3/16	7/16	75559	
UNC 7/16	14	1 3/16	7/16	75563	
UNC 1/2	13	1 1/2	35/64	75556	
UNC 9/16	12	1 1/2	35/64	75564	
UNC 5/8	11	1 49/64	45/64	75560	
UNC 3/4	10	1 49/64	45/64	75558	
UNC 7/8	9	2 11/64	55/64	75562	
UNC 1"	8	2 11/64	55/64	75565	

Ref. 3504

COJINETE MANO UNF-SAE
UNF-SAE Hand Die
Filière à Main UNF-SAE



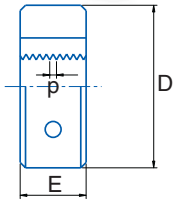
HSS | DIN 223 | UNF-SAE | Tol. 2A | α 10 - 17°

Chaflán Entrada 1,75h
Chamfer 1,75 threads
Chanfrein 1,75 filets

UNF-SAE	P	D	E	Nº Art. HSS	€
UNF Nº4	48	5/8	13/64	75688	
UNF Nº5	44	25/32	13/64	75689	
UNF Nº6	40	25/32	9/32	75690	
UNF Nº8	36	25/32	9/32	75691	
UNF Nº10	32	25/32	9/32	75692	
UNF Nº12	28	25/32	9/32	75693	
UNF 1/4	28	25/32	9/32	63422	
UNF 5/16	24	63/64	23/64	63434	
UNF 3/8	24	1 3/16	7/16	63428	
UNF 7/16	20	1 3/16	7/16	63440	
UNF 1/2	20	1 1/2	25/64	63419	
UNF 9/16	18	1 1/2	25/64	75747	
UNF 5/8	18	1 49/64	35/64	63431	
UNF 3/4	16	1 49/64	35/64	63425	
UNF 7/8	14	2 11/64	5/8	63437	

Ref. 3505

COJINETE MANO UNEF
UNEF Hand Die
Filière à Main UNEF



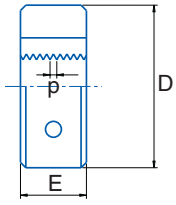
HSS | UNEF | DIN 22568 | Tol. 2A | α 10 - 17°

Chaflán Entrada 1,75h
Chamfer 1,75 threads
Chanfrein 1,75 filets

UNEF	P	D	E	Nº Art. HSS	€
UNEF 1/4	32	25/32	9/32	38275	
UNEF 5/16	32	63/64	23/64	38279	
UNEF 3/8	32	1 3/16	7/16	38277	
UNEF 7/16	28	1 3/16	7/16	38280	
UNEF 1/2	28	1 1/2	25/64	38274	
UNEF 9/16	24	1 1/2	25/64	15217	
UNEF 5/8	24	1 49/64	35/64	38278	
UNEF 3/4	20	1 49/64	35/64	38276	
UNEF 1"	20	2 11/64	5/8	38281	

Ref. 3507

COJINETE MANO NPT
NPT Hand Die
Filière à Main NPT



HSS | NPT | DIN 22568 | α 10 - 17°

Chaflán Entrada 1,75h
Chamfer 1,75 threads
Chanfrein 1,75 filets

NPT	P	D	E	Nº Art. HSS	€
NPT 1/8	27,00	1 3/16	7/16	76043	
NPT 1/4	18,00	1 1/2	35/64	77707	
NPT 3/8	18,00	1 49/64	45/64	22395	
NPT 1/2	14,00	1 49/64	45/64	45894	
NPT 3/4	14,00	2 11/64	55/64	76052	
NPT 1"	11,50	2 9/16	63/64	63476	
NPT 1"1/4	11,50	2 61/64	1 1/32	22456	
NPT 1"1/2	11,50	3 35/64	1 1/16	22460	
NPT 2"	11,50	4 9/64	1 7/64	22475	

Ref. 3507 bajo demanda / upon request / sur demande

IZAR®
CUTTING TOOLS

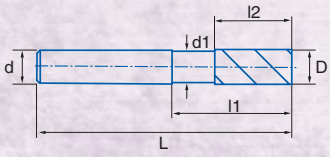
Fractional 2019

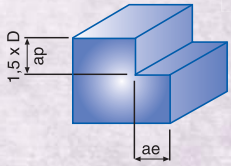
FRESADO METAL DURO
Carbide Milling
Fraisage Carbure

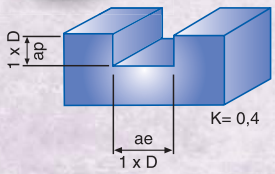
Ref. 7744

FRESA DESBASTE USO GENERAL
General Purpose Roughing End Mill
Fraise Ebauche Utilisation Générale

NEW!







MD/HM/Carbure Micrograno	TIALN-PRO	IZAR Std. NR		NZ	45°	30°		Tol. D(+/-0.002) d(h6)	

Material		Vc(ft/min)
Grupo	Sub.	TIALN-PRO
1	1.1	230-300
1	1.2	180-230
1	1.3	140-260
1	1.4	95-130
2	2.1	160-260
3	3.1	190-280
	3.2	190-300
5	5.1	260-520

f - Avances Fresas TIALN-PRO - End Mill Feed - Pas Fraise (fz/rev.)						
Ø 3/16	1/4	5/16	3/8	1/2	5/8	3/4
0,0007	0,0011	0,0015	0,0019	0,0023	0,0031	0,0059
0,0007	0,0011	0,0011	0,0015	0,0019	0,0031	0,0039
0,0003	0,0007	0,0011	0,0011	0,0015	0,0023	0,0029
0,0003	0,0007	0,0007	0,0007	0,0011	0,0019	0,0023
0,0007	0,0011	0,0011	0,0015	0,0019	0,0027	0,0031
0,0007	0,0011	0,0015	0,0019	0,0023	0,0031	0,0039
0,0007	0,0011	0,0015	0,0019	0,0023	0,0031	0,0039
0,0011	0,0019	0,0019	0,0023	0,0029	0,0031	0,0049

vf (inch/min) = r.p.m. x Z x f x K
(K = Coeficiente Corrección / Correction Coefficient / Coefficient de Correction)

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times ø}$$

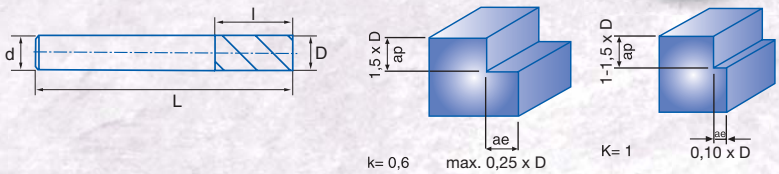
D	d	Corte Flute / Coupe	OAL	Z	NEW! N° Art. TIALN-PRO	€
3/16	3/16	3/8	2	3	76853	
3/16	3/16	5/8	2	3	76854	
1/4	1/4	3/8	2	4	76855	
1/4	1/4	3/4	2 1/2	4	76856	
5/16	5/16	1/2	2 1/2	4	76857	
5/16	5/16	3/4	2 1/2	4	76858	
3/8	3/8	5/8	2	4	76859	
3/8	3/8	7/8	2 1/2	4	76860	
7/16	7/16	1	2 3/4	4	76861	
1/2	1/2	5/8	2 1/2	4	76862	
1/2	1/2	1 1/4	3	4	76863	

D	d	Corte Flute / Coupe	OAL	Z	NEW! N° Art. TIALN-PRO	€
1/2	1/2	1 1/2	3 1/2	4	76864	
9/16	9/16	1 1/4	3 1/2	4	76865	
5/8	5/8	7/8	3	4	76866	
5/8	5/8	1 1/4	3 1/2	4	76868	
5/8	5/8	2	4	4	76870	
3/4	3/4	1	3	4	76871	
3/4	3/4	1 5/8	4	4	76872	
3/4	3/4	2 1/4	5	4	76873	
1	1	1 3/4	4	5	76874	
1	1	2 5/8	5	5	76875	

Ref. 7401

FRESA FRONTAL ACABADO METAL DURO NZ CORTA
Short NZ Solid Carbide Finishing End Mill
Fraise Finition Carbure NZ Courte

NEW!



MD/HM Carbure Micrograno	TIALN-PRO	CNC qualified	IZAR Std.	4 Z			40°		Tol. D(+/-0.002) d(h6)	

Material Grupo	Material Sub.	Vc(ft/min) TIALN-PRO	Ø 5/32	1/4	5/16	3/8	1/2	5/8	3/4
			f - Avances Fresas TIALN-PRO - End Mill Feed - Pas Fraise (fz/rev.)						
1	1.1	410-525	0,0008	0,0012	0,0016	0,0022	0,0026	0,0031	0,0059
1	1.2	367-493	0,0008	0,0012	0,0016	0,0022	0,0026	0,0031	0,0039
1	1.3	196-427	0,0008	0,0010	0,0014	0,0016	0,0020	0,0024	0,0030
2	2.1	164-263	0,0004	0,0010	0,0014	0,0014	0,0020	0,0028	0,0031
	2.2	328-427	0,0004	0,0010	0,0010	0,0010	0,0016	0,0031	0,0039
3	3.1	223-312	0,0008	0,0012	0,0016	0,0022	0,0026	0,0031	0,0039
	3.2	131-197	0,0008	0,0012	0,0016	0,0022	0,0026	0,0031	0,0039
4		164-223	0,0004	0,0006	0,0008	0,0010	0,0012	0,0016	0,0020
5	5.1	459-1148	0,0008	0,0020	0,0020	0,0024	0,0030	0,0031	0,0049
	5.2	459-1148	0,0008	0,0020	0,0020	0,0024	0,0030	0,0031	0,0049
6	6.1	459-1380	0,0004	0,0020	0,0031	0,0031	0,0039	0,0059	0,0079
	6.2	459-1380	0,0004	0,0020	0,0031	0,0031	0,0039	0,0059	0,0079
	6.3	328-985	0,0004	0,0020	0,0031	0,0031	0,0039	0,0059	0,0079
7	7.1	459-919	0,0008	0,0012	0,0012	0,0016	0,0020	0,0039	0,0059
	7.2	229-575	0,0006	0,0010	0,0012	0,0012	0,0016	0,0031	0,0059

vf (inch/min) = r.p.m. x Z x f x K
(K = Coeficiente Corrección / Correction Coefficient / Coefficient de Correction)

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times ø}$$

D	d	Corte Flute / Coupe	OAL	Z	NEW! N° Art. TIALN-PRO	€
1/32	1/8	1/16	1 1/2	4	75434	
1/32	1/8	3/32	1 1/2	4	75435	
3/64	1/8	3/32	1 1/2	4	75436	
3/64	1/8	9/64	1 1/2	4	75437	
1/16	1/8	1/8	1 1/2	4	75438	
1/16	1/8	3/16	1 1/2	4	75439	
5/64	1/8	1/4	1 1/2	4	75440	
3/32	1/8	9/32	1 1/2	4	75442	
7/64	1/8	3/8	1 1/2	4	75445	
1/8	1/8	1/4	1 1/2	4	75446	
1/8	1/8	1/2	1 1/2	4	75447	
9/64	3/16	3/8	2	4	75453	
9/64	3/16	1/2	2	4	75454	
5/32	3/16	3/8	2	4	75455	
5/32	3/16	1/2	2	4	75457	
11/64	3/16	3/8	2	4	75473	
11/64	3/16	5/8	2	4	75486	
3/16	3/16	3/8	2	4	75489	
3/16	3/16	5/8	2	4	75490	
13/64	1/4	3/8	2	4	75503	
7/32	1/4	3/8	2	4	75506	
15/64	1/4	3/8	2	4	75511	
1/4	1/4	3/8	2 1/2	4	75513	
1/4	1/4	3/4	2 1/2	4	75514	
17/64	5/16	1/2	2	4	75520	
9/32	5/16	1/2	2	4	75522	

D	d	Corte Flute / Coupe	OAL	Z	NEW! N° Art. TIALN-PRO	€
9/32	5/16	3/4	2 1/2	4	75523	
19/64	5/16	1/2	2	4	75525	
5/16	5/16	1/2	2	4	75530	
5/16	5/16	3/4	2 1/2	4	75532	
21/64	3/8	5/8	2	4	75542	
11/32	3/8	5/8	2	4	75544	
23/64	3/8	5/8	2	4	75546	
3/8	3/8	5/8	2	4	75548	
3/8	3/8	7/8	2 1/2	4	75550	
25/64	7/16	5/8	2	4	75568	
13/32	7/16	5/8	2	4	75590	
27/64	7/16	5/8	2	4	75592	
7/16	7/16	5/8	2	4	75606	
7/16	7/16	1	2 3/4	4	75607	
29/64	1/2	5/8	2 1/2	4	75614	
15/32	1/2	5/8	2 1/2	4	75622	
31/64	1/2	5/8	2 1/2	4	75640	
1/2	1/2	5/8	2 1/2	4	75650	
1/2	1/2	1	3	4	75651	
9/16	9/16	7/8	3	4	75658	
5/8	5/8	7/8	3	4	75662	
5/8	5/8	1 1/4	3 1/2	4	75663	
11/16	3/4	1	3	4	75669	
3/4	3/4	1	3	4	75671	
7/8	7/8	1 3/4	4	4	75684	
1	1	1 3/4	4	4	75694	

Ref. **7401**

FRESA FRONTAL ACABADO METAL DURO NZ LARGA

Long NZ Solid Carbide Finishing End Mill

Fraise Finition Carbure NZ Longue

NEW!

Cont.

D	d	Corte Flute / Coupe	OAL	Z	NEW! N° Art. TIALN-PRO	€
3/32	1/8	3/16	1 1/2	4	75441	
7/64	1/8	3/16	1 1/2	4	75444	
1/8	1/8	3/4	2 1/4	4	75450	
1/8	1/8	3/4	3	4	75451	
1/8	1/8	1	3	4	75452	
5/32	3/16	3/4	2 1/2	4	75471	
3/16	3/16	3/4	2 1/2	4	75492	
3/16	3/16	1	2 1/2	4	75495	
3/16	3/16	1	4	4	75499	
3/16	3/16	1 1/8	3	4	75500	
13/64	1/4	5/8	2 1/2	4	75504	
7/32	1/4	5/8	2 1/2	4	75505	
7/32	1/4	1	3	4	75510	
15/64	1/4	3/4	2 1/2	4	75512	
1/4	1/4	1	4	4	75515	
1/4	1/4	1 1/8	3	4	75516	
1/4	1/4	1 1/4	3	4	75517	
1/4	1/4	1 1/4	4	4	75518	
1/4	1/4	1 1/2	6	4	75519	
17/64	5/16	3/4	2 1/2	4	75521	
9/32	5/16	1 1/4	3	4	75524	
19/64	5/16	3/4	2 1/2	4	75528	
5/16	5/16	1	4	4	75533	
5/16	5/16	1 1/8	3	4	75534	
5/16	5/16	1 3/8	3	4	75535	
5/16	5/16	1 1/2	6	4	75536	
5/16	5/16	1 5/8	4	4	75538	
21/64	3/8	7/8	2 1/2	4	75543	
11/32	3/8	7/8	2 1/2	4	75545	
23/64	3/8	7/8	2 1/2	4	75547	
3/8	3/8	1	4	4	75551	
3/8	3/8	1 1/8	3	4	75552	
3/8	3/8	1 3/8	3	4	75553	
3/8	3/8	1 1/2	6	4	75554	

D	d	Corte Flute / Coupe	OAL	Z	NEW! N° Art. TIALN-PRO	€
3/8	3/8	1 3/4	4	4	75555	
3/8	3/8	3	6	4	75566	
25/64	7/16	1	2 3/4	4	75569	
13/32	7/16	1	2 3/4	4	75591	
27/64	7/16	1	2 3/4	4	75593	
7/16	7/16	1	4	4	75608	
7/16	7/16	1 3/8	4	4	75609	
7/16	7/16	1 1/2	6	4	75611	
7/16	7/16	2	4	4	75612	
7/16	7/16	3	6	4	75613	
29/64	1/2	1	3	4	75620	
15/32	1/2	1	3	4	75624	
31/64	1/2	1	3	4	75643	
1/2	1/2	1	4	4	75652	
1/2	1/2	1 1/2	3 1/2	4	75653	
1/2	1/2	1 1/2	6	4	75655	
1/2	1/2	2	4	4	75656	
1/2	1/2	3	6	4	75657	
9/16	9/16	1 1/4	3 1/2	4	75659	
9/16	9/16	2	6	4	75660	
9/16	9/16	3	6	4	75661	
5/8	5/8	2	6	4	75664	
5/8	5/8	2 1/8	4 5/8	4	75665	
5/8	5/8	3	6	4	75666	
11/16	3/4	1 1/2	4	4	75670	
3/4	3/4	1 1/2	4	4	75675	
3/4	3/4	2	6	4	75677	
3/4	3/4	2 1/4	5	4	75679	
3/4	3/4	3	6	4	75682	
1	1	2	6	4	75695	
1	1	2 1/4	5	4	75697	
1	1	3	6	4	75698	

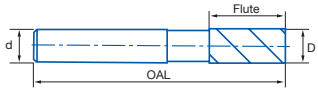
IZAR® CUTTING TOOLS

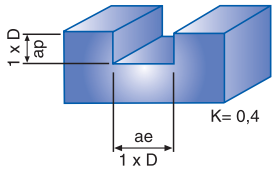
Fraccional 2019

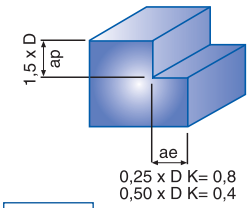
FRESADO
Milling
Fraisage

Ref. 7644

FRESA FRONTAL DESBASTE FINO PMX NZ
NZ PMX Fine Pitch Roughing End Mill
Fraise Ebauche Pas Fin PMX NZ







PMX | PMX + TIALN-TOP | CNC qualified | ASME Std. NR-F | 3-8 Z | 30° | Tol. +0,00394 -0,00197

Material		Vc (ft/min.)	
Group	Sub.	PMX	TIALN-TOP
1	1.2	98-138	147-246
1	1.3	39-59	65-115
2	2.2	59-79	98-147
4	4	59-79	98-147

f - Avances Fresas PMX - End Mill Feed - Pas Fraise (fz/rev.)

Ø 5/32	1/4	5/16	3/8	1/2	5/8	3/4	1"	1 1/4	1 1/2	2"	2 1/2
0,0006	0,0012	0,0014	0,0023	0,0027	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045
0,0005	0,0010	0,0012	0,0020	0,0020	0,0030	0,0030	0,0030	0,0030	0,0030	0,0030	0,0030
0,0005	0,0010	0,0012	0,0020	0,0020	0,0030	0,0030	0,0030	0,0030	0,0030	0,0030	0,0030
0,0010	0,0017	0,0024	0,0030	0,0036	0,0050	0,0059	0,0059	0,0059	0,0059	0,0059	0,0059

vf (inch/min) = r.p.m. x Z x f x K
(K = Coeficiente Corrección / Correction Coefficient / Coefficient de Correction)

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times ø}$$

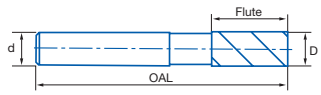
D	d	Corte Flute / Coupe	OAL	Z	N° Art. PMX	€	N° Art. TIALN-TOP	€
1/4	3/8	5/8	2 7/16	3	24065		14449	
5/16	3/8	3/4	2 1/2	3	24066		14451	
3/8	3/8	3/4	2 1/2	4	24067		22336	
7/16	3/8	1	2 11/16	4	24068		24078	
1/2	1/2	1 1/4	3 1/4	4	17663		22321	
5/8	5/8	1 5/8	3 3/4	4	24069		22322	
3/4	5/8	1 5/8	3 3/4	4	24070		24079	
3/4	3/4	1 5/8	3 3/4	4	24071		22323	
7/8	3/4	1 7/8	4 1/8	5	24073		24080	
1	3/4	2	4 1/4	5	24074		24081	
1	1	2	4 1/2	5	17429		22324	
1 1/4	1 1/4	2	4 1/2	6	24075		24082	
1 1/2	1 1/4	2	4 1/2	6	24076		24083	
2	1 1/4	2	4 1/2	8	24077		24084	

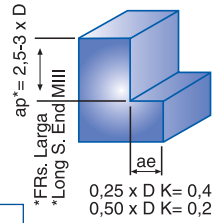
Ref. 7696

FRESA FRONTAL DESBASTE FINO PMX NZ LARGA

Long NZ PMX Fine Pitch Roughing End Mill

Fraise Ebauche Pas Fin PMX NZ Longue





PMX | PMX + TIALN-TOP | CNC qualified | ASME Std. NR-F | 3-8 Z | 30° | Tol. +0,00394 -0,00197

Material		Vc (ft/min.)	
Group	Sub.	PMX	TIALN-TOP
1	1.2	98-138	147-246
1	1.3	39-59	65-115
2	2.2	59-79	98-147
4	4	59-79	98-147

f - Avances Fresas PMX - End Mill Feed - Pas Fraise (fz/rev.)

Ø 5/32	1/4	5/16	3/8	1/2	5/8	3/4	1"	1 1/4	1 1/2	2"	2 1/2
0,0006	0,0012	0,0014	0,0023	0,0027	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045
0,0005	0,0010	0,0012	0,0020	0,0020	0,0030	0,0030	0,0030	0,0030	0,0030	0,0030	0,0030
0,0005	0,0010	0,0012	0,0020	0,0020	0,0030	0,0030	0,0030	0,0030	0,0030	0,0030	0,0030
0,0010	0,0017	0,0024	0,0030	0,0036	0,0050	0,0059	0,0059	0,0059	0,0059	0,0059	0,0059

vf (inch/min) = r.p.m. x Z x f x K

(K = Coeficiente Corrección / Correction Coefficient / Coefficient de Correction)

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \varnothing}$$

D	d	Corte Flute / Coupe	OAL	Z	NEW! N° Art. PMX	€	NEW! N° Art. TIALN-TOP	€
1/4	3/8	1 1/4	3 1/16	3	25491		25492	
5/16	3/8	1 3/8	3 1/8	3	25455		25456	
3/8	3/8	1 1/2	3 1/4	4	25457		25458	
1/2	1/2	5/8	2 5/8	4	68642		68654	
1/2	1/2	2	4	4	24093		24085	
5/8	5/8	3/4	2 7/8	4	68643		68656	
5/8	5/8	2 1/2	4 5/8	4	24094		24086	
3/4	3/4	3/4	3	4	68644		68657	
3/4	3/4	2	3 3/4	4	24095		21940	
7/8	3/4	3 1/2	5 3/4	5	25463		25468	
7/8	7/8	3 1/2	5 3/4	5	25464		25470	
1	1	1 1/8	3 5/8	5	68645		68659	
1	3/4	3	5 1/4	5	25467		25485	
1	1	3	5 1/2	5	24097		24088	
1 1/4	1 1/4	3	5 1/2	6	24100		24091	
1 1/2	1 1/4	3	5 1/2	6	25474		25475	
2	2	3	6 3/4	8	25479		25483	
2	2	6	9 3/4	8	25486		25488	

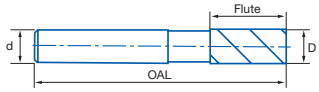
D	d	Corte Flute / Coupe	OAL	Z	N° Art. PMX	€	N° Art. TIALN-TOP	€
1/2	1/2	3	5	4	25459		25461	
5/8	5/8	3 1/8	5 1/4	4	25460		25465	
3/4	3/4	3	5 1/4	4	24096		24087	
3/4	3/4	4 1/8	6 3/8	4	25462		25466	
1	3/4	4	6 1/4	5	25469		25471	
1	1	4	6 1/2	5	24098		24089	
1	1	6	8 1/2	5	24099		24090	
1 1/4	1 1/4	4	6 1/2	6	24101		24092	
1 1/4	1 1/4	6	8 1/2	6	25472		25473	
1 1/2	1 1/4	4	6 1/2	6	25476		25478	
1 1/2	1 1/4	6	8 1/2	6	25477		25480	
2	2	4	7 3/4	8	25482		25484	

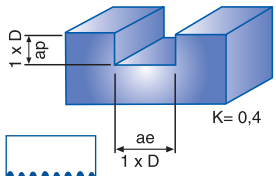
Ref. 7304

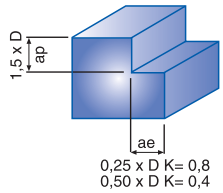
FRESA FRONTAL DESBASTE FINO COBALTO 8% NZ

NZ Cobalt 8% Fine Pitch Roughing End Mill

Fraise Ebauche Pas Fin Cobalt 8% NZ







Cobalt 8% | TIALSIN | CNC qualified | ASME Std. NR-F | 3-5 Z | 30°

Material		Vc (ft/min.)		Ø	f - Avances Fresas Co 8% - End Mill Feed - Pas Fraise (fz/rev.)											
Group	Sub.	8 % Co	TIALSIN		5/32	1/4	5/16	3/8	1/2	5/8	3/4	1"	1 1/4	1 1/2	2"	2 1/2
1	1.2	80-115	115-151		0,0006	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
3	3.1	65-98	82-131		0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	3.2	49-65	65-82		0,0006	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
4	4	49-65	65-82		0,0010	0,0017	0,0024	0,0026	0,0031	0,0043	0,0051	0,0051	0,0051	0,0051	0,0051	0,0051
5	5.1	164-295	229-410		0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	5.2	164-295	229-410		0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039

vf (inch/min) = r.p.m. x Z x f x K

K = Coeficiente Corrección
Correction Coefficient
Coefficient de Correction

r.p.m. = $\frac{Vc \times 1.000}{\pi \times ø}$

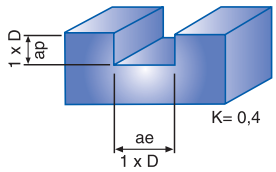
D	d	Corte Flute Coupe	OAL	Z	N° Art. Cobalt	€	N° Art. TIALSIN	€
1/4	3/8	5/8	2 7/16	3	42409		23640	
5/16	3/8	3/4	2 1/2	3	42410		23641	
3/8	3/8	3/4	2 1/2	4	42411		23643	
7/16	3/8	1	2 11/16	4	42412		23644	
1/2	1/2	1 1/4	3 1/4	4	42413		23645	
5/8	5/8	1 5/8	3 3/4	4	42414		23646	
3/4	5/8	1 5/8	3 3/4	4	42415		23647	
3/4	3/4	1 5/8	3 3/4	4	42416		23649	
7/8	3/4	1 7/8	4 1/8	5	42417		23650	
1	3/4	2	4 1/4	5	42325		23651	
1	1	2	4 1/2	5	42327		23652	
1 1/4	1 1/4	2	4 1/2	6	42333		23658	
1 1/2	1 1/4	2	4 1/2	6	42418		23662	
2	1 1/4	2	4 1/2	8	66762		23665	

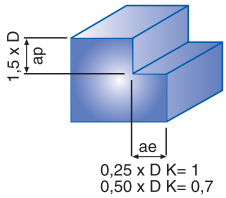
Ref. 7330

FRESA FRONTAL DESBASTE FINO COBALTO 8% NZ

NZ Cobalt 8% Fine Pitch Roughing End Mill

Fraise Ebauche Pas Fin Cobalt 8% NZ





Cobalt 8% | TIALSIN | CNC qualified | ASME Std. NR-F | 6-8 Z | 30° | Tol. +0,00394 -0,00197

Material		Vc (ft/min.)		Ø	f - Avances Fresas Co 8% - End Mill Feed - Pas Fraise (fz/rev.)											
Group	Sub.	8 % Co	TIALSIN		5/32	1/4	5/16	3/8	1/2	5/8	3/4	1"	1 1/4	1 1/2	2"	2 1/2
1	1.1	98-131	131-183		0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
3	3.1	65-98	82-131		0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	3.2	49-65	65-82		0,0006	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
5	5.1	164-295	229-410		0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	5.2	164-295	229-410		0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039

vf (inch/min) = r.p.m. x Z x f x K

K = Coeficiente Corrección
Correction Coefficient
Coefficient de Correction

r.p.m. = $\frac{Vc \times 1.000}{\pi \times ø}$

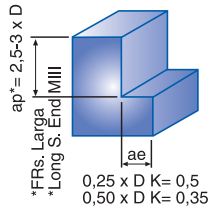
D	d	Corte Flute / Coupe	OAL	Z	N° Art. Cobalt	€	N° Art. TIALSIN	€
1 1/8	1	2	4 1/2	5	54011		23604	
1 1/4	3/4	2	4 1/4	6	54017		23605	
1 1/4	1 1/4	2	4 1/2	6	54020		23607	
1 1/2	1 1/4	2	4 1/2	6	54029		23610	
2	1 1/4	2	4 1/2	8	54041		23613	

Ref. 7306

FRESA FRONTAL DESBASTE FINO COBALTO 8% NZ LARGA (ESPECIAL)

Long (Special) NZ Cobalt 8% Fine Pitch Roughing End Mill

Fraise Ebauche Pas Fin Cobalt 8% NZ Longue (Spéciale)



Cobalt 8% | TIALSIN | CNC qualified | ASME Std. NR-F | 3-5 Z | 30° | Tol. +0,00394 -0,00197

Material		Vc (ft/min.)	
Group	Sub.	8 % Co	TIALSIN
1	1.2	80-115	115-151
3	3.1	65-98	82-131
	3.2	49-65	65-82
4	4	49-65	65-82
5	5.1	164-295	229-410
	5.2	164-295	229-410

Refs. 7306-7332 f - Avances Fresas Co 8% - End Mill Feed - Pas Fraise (fz/rev.)

Ø 5/32	1/4	5/16	3/8	1/2	5/8	3/4	1"	1 1/4	1 1/2	2"	2 1/2
0,0006	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
0,0006	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
0,0010	0,0017	0,0024	0,0026	0,0031	0,0043	0,0051	0,0051	0,0051	0,0051	0,0051	0,0051
0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039

vf (inch/min) = r.p.m. x Z x f x K

K = Coeficiente Corrección
Correction Coefficient
Coefficient de Correction

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \varnothing}$$

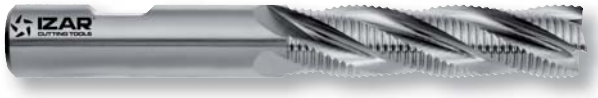
D	d	Corte Flute Coupe	OAL	Z	N° Art. Cobalt	€	N° Art. TIALSIN	€
1/4	3/8	7/8	2 11/16	3	42423		23667	
1/4	3/8	1 1/8	2 15/16	3	42424		23668	
1/4	3/8	1 1/4	3 1/16	3	42558		23670	
5/16	3/8	7/16	2 3/16	3	42425		23671	
5/16	3/8	1 1/8	2 15/16	3	42426		23673	
5/16	3/8	1 3/8	3 1/8	4	42693		23674	
3/8	3/8	3/4	2 9/16	4	42427		23675	
3/8	3/8	1 1/8	2 15/16	4	42429		23676	
3/8	3/8	1 1/2	3 1/4	4	66742		66743	
1/2	1/2	5/8	2 5/8	4	42432		23677	
1/2	1/2	1	3	4	42433		23679	
1/2	1/2	1 5/8	3 5/8	4	42435		23680	
1/2	1/2	2	4	4	42339		23682	
1/2	1/2	3	5	4	42342		23684	
5/8	5/8	3/4	2 7/8	4	42344		23685	
5/8	5/8	1 1/4	3 3/8	4	42345		23686	
5/8	5/8	2 1/2	4 5/8	4	42347		23688	
5/8	5/8	3 1/8	5 1/4	4	66744		66745	
3/4	3/4	3/4	3	4	42349		23689	
3/4	3/4	1 1/4	3 1/2	4	42351		23698	
3/4	3/4	2 1/2	4 5/8	4	42353		23691	
3/4	3/4	2 1/2	4 3/4	4	42354		23697	
3/4	3/4	3	5 1/4	4	42436		23692	
3/4	3/4	4 1/8	6 3/8	4	66746		66747	
7/8	3/4	3 1/2	5 5/8	5	42437		24258	
7/8	3/4	3 1/2	5 3/4	5	66748		66749	
7/8	7/8	3 1/2	5 3/4	5	66750		66751	
1	1	1 1/8	3 5/8	5	42440		23700	
1	1	1 5/8	4 1/8	5	42441		23701	
1	3/4	3	5 1/4	5	42361		24263	
1	1	3	5 1/2	5	42442		23694	
1	3/4	4	6 1/4	5	42444		24266	
1	1	4	6 1/2	5	42448		23695	
1	1	6	8 1/2	5	66752		66753	
1 1/4	1 1/4	3	5 1/2	6	42456		23696	
1 1/4	1 1/4	4	6 1/2	6	42462		24308	
1 1/4	1 1/4	6	8 1/2	6	42463		24309	
1 1/2	1 1/4	3	5 1/2	6	66754		66755	
1 1/2	1 1/4	4	6 1/2	6	42373		24312	
1 1/2	1 1/4	6	8 1/2	6	66716		66763	
2	2	3	6 3/4	8	66756		66757	
2	2	6	9 3/4	8	66758		66759	
2	2	4	7 3/4	8	66760		66761	

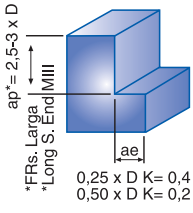
Ref. 7332

FRESA FRONTAL DESBASTE FINO COBALTO 8% NZ LARGA

Long NZ Cobalt 8% Fine Pitch Roughing End Mill

Fraise Ebauche Pas Fin Cobalt 8% NZ Longue





Cobalt 8% | TIALSIN | CNC qualified | ASME Std. NR-F | 6 Z | 30° | Tol. +0,00394 -0,00197

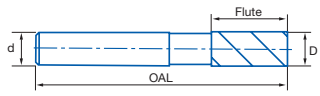
D	d	Corte Flute Coupe	OAL	Z	N° Art. Cobalt	€	N° Art. TIALSIN	€
1 1/4	1 1/4	3	5 1/2	6	54083		23631	
1 1/4	1 1/4	4	6 1/2	6	54089		23632	
1 1/2	1 1/4	3	5 1/2	6	42350		23634	
1 1/2	1 1/4	4	6 1/2	6	54101		23636	

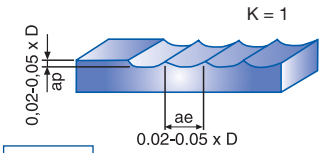
Ref. 7391

FRESA FRONTAL DESBASTE FINO COBALTO 8% NZ RADIAL

Radial NZ Cobalt 8% Fine Pitch Roughing End Mill

Fraise Ebauche Pas Fin Cobalt 8% NZ Hemisphérique





Cobalt 8% | TIALSIN | CNC qualified | ASME Std. NR-F | 4-6 Z | 30° | Tol. +0,00394 -0,00197

Material		Vc (ft/min.)		Ø	f - Avances Fresas Co 8% - End Mill Feed - Pas Fraise (fz/rev.)											
Group	Sub.	8 % Co	TIALSIN		5/32	1/4	5/16	3/8	1/2	5/8	3/4	1"	1 1/4	1 1/2	2"	2 1/2
1	1.2	80-115	115-151		0,0006	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
3	3.1	65-98	82-131		0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	3.2	49-65	65-82		0,0006	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
4	4	49-65	65-82		0,0010	0,0017	0,0024	0,0026	0,0031	0,0043	0,0051	0,0051	0,0051	0,0051	0,0051	0,0051
5	5.1	164-295	229-410		0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	5.2	164-295	229-410		0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039

vf (inch/min) = r.p.m. x Z x f x K

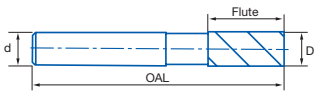
(K = Coeficiente Corrección / Correction Coefficient / Coefficient de Correction)

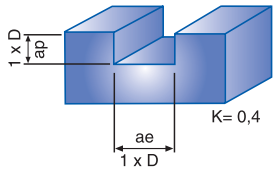
$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \varnothing}$$

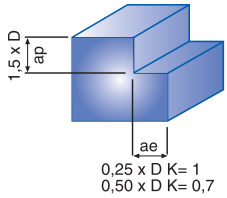
D	d	Corte Flute / Coupe	OAL	Z	N° Art. Cobalt	€	N° Art. TIALSIN	€
3/8	3/8	3/4	2 1/2	4	26057		26189	
1/2	1/2	1 1/4	3 1/4	4	26058		26190	
1/2	1/2	2	4	4	26344		26379	
5/8	5/8	1 5/8	3 3/4	4	26059		26191	
5/8	5/8	2	4 1/8	4	26345		26380	
5/8	5/8	2 1/2	4 5/8	4	26347		26381	
3/4	3/4	1 5/8	3 7/8	4	26060		26192	
3/4	3/4	1 3/4	4	4	26348		26382	
3/4	3/4	2 1/4	4 1/2	4	26349		26383	
3/4	3/4	3	5 1/4	4	26350		26385	
7/8	7/8	1 7/8	4 1/8	5	26061		26193	
7/8	7/8	3 1/2	5 3/4	5	26352		26386	
1	1	2	4 1/2	5	26063		26194	
1	1	3	5 1/2	5	26353		26387	
1	1	4	6 1/2	5	26354		26388	
1 1/4	1 1/4	2	4 1/2	6	26066		26195	
1 1/4	1 1/4	3	5 1/2	6	26355		26390	
1 1/4	1 1/4	4	6 1/2	6	26356		26391	
1 1/2	1 1/4	2	4 1/2	6	26067		26196	
2	2	2	5 3/4	6	26069		26197	
2	2	4	6 3/4	6	26357		26392	
2	2	6	9 3/4	6	26358		26394	

Ref. 7640

FRESA FRONTAL DESBASTE GRUESO PMX NZ
NZ PMX Coarse Roughing End Mill
Fraise Ebauche PMX NZ







PMX | TIALN-TOP | CNC qualified | ASME Std. NR | 3-8 Z | 30° | Tol. +0,00394 -0,00197

Material		Vc (ft/min.)		f - Avances Fresas PMX - End Mill Feed - Pas Fraise (fz/rev.)											
Group	Sub.	PMX	TIALN-TOP	Ø 5/32	1/4	5/16	3/8	1/2	5/8	3/4	1"	1 1/4	1 1/2	2"	2 1/2
1	1.1	115-147	180-262	0,0008	0,0012	0,0014	0,0023	0,0027	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045
5	5.1	197-328	295-623	0,0008	0,0012	0,0014	0,0023	0,0027	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045
	5.2	197-328	295-623	0,0008	0,0012	0,0014	0,0023	0,0027	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045
6	6.1	623-787	951-1378	0,0010	0,0017	0,0024	0,0030	0,0036	0,0050	0,0059	0,0059	0,0059	0,0059	0,0059	0,0059
	6.2	623-787	951-1378	0,0010	0,0017	0,0024	0,0030	0,0036	0,0050	0,0059	0,0059	0,0059	0,0059	0,0059	0,0059
	6.3	197-315	295-557	0,0008	0,0012	0,0014	0,0023	0,0027	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045

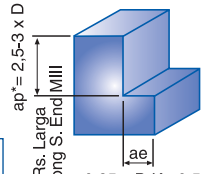
vf (inch/min) = r.p.m. x Z x f x K
(K = Coeficiente Corrección / Correction Coefficient / Coefficient de Correction)

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times ø}$$

D	d	Corte Flute / Coupe	OAL	Z	N° Art. PMX	€	N° Art. TIALN-TOP	€
1/4	3/8	5/8	2 7/16	3	24058		24048	
5/16	3/8	3/4	2 1/2	3	24059		24049	
3/8	3/8	3/4	2 1/2	4	24060		24051	
7/16	3/8	1	2 11/16	4	25400		25414	
1/2	1/2	1 1/4	3 1/4	4	24061		24052	
5/8	5/8	1 5/8	3 3/4	4	24062		24054	
3/4	5/8	1 5/8	3 3/4	4	25401		25415	
3/4	3/4	1 5/8	3 3/4	4	24063		24055	
7/8	3/4	1 7/8	4 1/8	5	25402		25416	
1	3/4	2	4 1/4	5	25403		25417	
1	1	2	4 1/2	5	24064		24057	
1 1/4	1 1/4	2	4 1/2	6	25404		25418	
1 1/2	1 1/4	2	4 1/2	6	25405		25420	
2	1 1/4	2	4 1/2	8	25406		25421	

Ref. 7690

FRESA FRONTAL DESBASTE GRUESO PMX NZ LARGA
Long NZ PMX Coarse Roughing End Mill
Fraise Ebauche PMX NZ Longue



PMX | TIALN-TOP | CNC qualified | ASME Std. NR | 3-8 Z | 30° | Tol. +0,00394 -0,00197

Material		Vc (ft/min.)	
Group	Sub.	PMX	TIALN-TOP
1	1.1	115-147	180-262
5	5.1	197-328	295-623
	5.2	197-328	295-623
6	6.1	623-787	951-1378
	6.2	623-787	951-1378

f - Avances Fresas PMX - End Mill Feed - Pas Fraise (fz/rev.)

Ø 5/32	1/4	5/16	3/8	1/2	5/8	3/4	1"	1 1/4	1 1/2	2"	2 1/2
0,0008	0,0012	0,0014	0,0023	0,0027	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045
0,0008	0,0012	0,0014	0,0023	0,0027	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045
0,0008	0,0012	0,0014	0,0023	0,0027	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045
0,0010	0,0017	0,0024	0,0030	0,0036	0,0050	0,0059	0,0059	0,0059	0,0059	0,0059	0,0059
0,0010	0,0017	0,0024	0,0030	0,0036	0,0050	0,0059	0,0059	0,0059	0,0059	0,0059	0,0059

vf (inch/min) = r.p.m. x Z x f x K
(K = Coeficiente Corrección / Correction Coefficient / Coefficient de Correction)

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times ø}$$

D	d	Corte Flute / Coupe	OAL	Z	NEW! N° Art. PMX	€	NEW! N° Art. TIALN-TOP	€
1/4	3/8	1 1/4	3 1/16	3	24109		24102	
5/16	3/8	1 3/8	3 1/8	3	24110		24103	
3/8	3/8	1 1/2	3 1/4	4	24111		24104	
1/2	1/2	5/8	2 5/8	4	68646		68660	
1/2	1/2	2	4	4	24112		24105	
5/8	5/8	3/4	2 7/8	4	68647		68661	
5/8	5/8	2 1/2	4 5/8	4	24113		24106	
3/4	3/4	3/4	3	4	68648		68662	
3/4	3/4	2 1/2	4 3/4	4	25439		25441	
7/8	3/4	3 1/2	5 3/4	5	25437		25440	
7/8	7/8	3 1/2	5 3/4	5	25407		25423	
1	1	1 1/8	3 5/8	5	68650		68663	
1	3/4	3	5 1/4	5	25408		25424	
1	1	3	5 1/2	5	25409		25426	
1 1/4	1 1/4	3	5 1/2	6	25410		25427	
1 1/2	1 1/4	3	5 1/2	6	25411		25429	
2	2	3	6 3/4	8	25412		25430	
2	2	6	9 3/4	8	25413		25431	

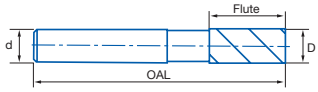
D	d	Corte Flute / Coupe	OAL	Z	N° Art. PMX	€	N° Art. TIALN-TOP	€
1/2	1/2	3	5	4	25425		25432	
5/8	5/8	3 1/8	5 1/4	4	25428		25433	
3/4	3/4	3	5 1/4	4	24114		24107	
3/4	3/4	4 1/8	6 3/8	4	25434		25438	
1	3/4	4	6 1/4	5	25449		25422	
1	1	4	6 1/2	5	24115		24108	
1	1	6	8 1/2	5	25419		25435	
1 1/4	1 1/4	4	6 1/2	6	25442		28618	
1 1/4	1 1/4	6	8 1/2	6	25443		25436	
1 1/2	1 1/4	4	6 1/2	6	25444		25450	
1 1/2	1 1/4	6	8 1/2	6	25445		25451	
2	2	4	7 3/4	8	25446		25452	
2	2	8	11 3/4	8	25447		25453	
2	2	12	15 3/4	8	25448		25454	

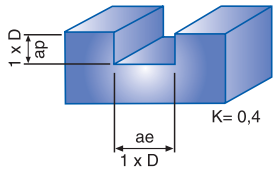
Ref. 7300

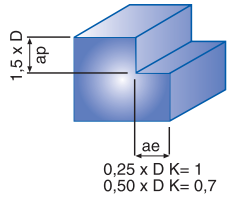
FRESA FRONTAL DESBASTE GRUESO COBALTO 8% NZ

NZ Cobalt 8% Coarse Roughing End Mill

Fraise Ebauche Cobalt 8% NZ







Cobalt 8% | TIALSIN | CNC qualified | ASME Std. NR | 3-5 Z | 30° | Tol. +0,00394 -0,00197

Material		Vc (ft/min.)	
Group	Sub.	8 % Co	TIALSIN
1	1.1	98-131	131-183
3	3.1	65-98	82-131
	3.2	49-65	65-82
5	5.1	164-295	229-410
	5.2	164-295	229-410

Refs. 7300-7340 f - Avances Fresas Co 8% - End Mill Feed - Pas Fraise (fz/rev.)

Ø 5/32	1/4	5/16	3/8	1/2	5/8	3/4	1"	1 1/4	1 1/2	2"	2 1/2
0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
0,0006	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039

vf (inch/min) = r.p.m. x Z x f x K

K = Coeficiente Corrección
Correction Coefficient
Coefficient de Correction

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \varnothing}$$

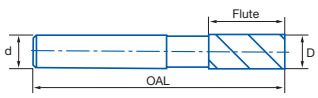
D	d	Corte Flute Coupe	OAL	Z	N° Art. Cobalt	€	N° Art. TIALSIN	€
3/16	3/8	1/2	2 3/8	3	42300		23484	
1/4	3/8	5/8	2 7/16	3	42303		23485	
9/32	3/8	3/4	2 1/2	3	53387		23486	
5/16	3/8	3/4	2 1/2	3	53390		23487	
11/32	3/8	3/4	2 1/2	3	42306		23488	
3/8	3/8	3/4	2 1/2	4	53396		23489	
13/32	3/8	1	2 11/16	4	17441		23490	
7/16	3/8	1	2 11/16	4	53399		23491	
15/32	1/2	1 1/4	3 1/4	4	53402		23492	
1/2	1/2	1 1/4	3 1/4	4	53405		23494	
9/16	1/2	1 3/8	3 3/8	4	53408		23495	
5/8	5/8	1 5/8	3 3/4	4	53411		23496	
11/16	5/8	1 5/8	3 3/4	4	53414		23497	
3/4	5/8	1 5/8	3 3/4	4	42309		23498	
3/4	3/4	1 5/8	3 3/4	4	53420		23499	
13/16	3/4	1 7/8	4 1/8	4	23916		23917	
7/8	3/4	1 7/8	4 1/8	5	42313		23500	
7/8	7/8	1 7/8	4 1/8	5	53429		23501	
1	3/4	2	4 1/4	5	23518		23519	
1	1	2	4 1/2	5	53435		23502	
1 1/4	1 1/4	2	4 1/2	6	53447		23508	
1 1/2	1 1/4	2	4 1/2	6	42324		23512	
2	1 1/4	2	4 1/2	8	16384		23514	

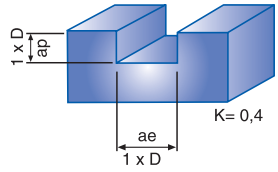
Ref. 7340

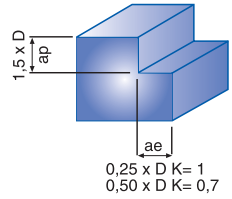
FRESA FRONTAL DESBASTE GRUESO COBALTO 8% NZ

NZ Cobalt 8% Coarse Roughing End Mill

Fraise Ebauche Cobalt 8% NZ





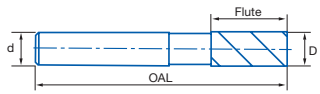


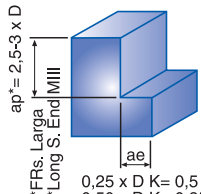
Cobalt 8% | TIALSIN | CNC qualified | ASME Std. NR | 6-8 Z | 30° | Tol. +0,00394 -0,00197

D	d	Corte Flute Coupe	OAL	Z	N° Art. Cobalt	€	N° Art. TIALSIN	€
1 1/8	3/4	2	4 1/4	6	54320		23880	
1 1/8	3/4	2	4 1/2	6	24331		24332	
1 1/8	1	2	4 1/2	6	54323		23881	
1 1/4	3/4	2	4 1/2	6	23419		23481	
1 1/4	1	2	4 1/2	6	54329		23883	
1 1/4	1 1/4	2	4 1/2	6	54332		23884	
1 3/8	3/4	2	4 1/4	6	54335		23885	
1 1/2	3/4	1 1/8	3 3/8	6	23420		24333	
1 1/2	3/4	1 1/2	3 3/4	6	23421		24334	
1 1/2	3/4	2	4 1/4	6	54341		23886	
1 1/2	3/4	2	4 1/2	6	23422		24335	
1 1/2	1 1/4	2	4 1/2	6	54344		23887	
1 3/4	3/4	2	4 1/2	6	24337		24338	
1 3/4	1 1/4	2	4 1/2	6	54353		23890	
2	3/4	2	4 1/4	6	24339		24342	
2	3/4	2	4 1/2	6	24340		24343	
2	1/1/4	2	4 1/2	8	54359		23892	
2	1 1/4	3 1/8	5 5/8	8	24341		24344	

Ref. 7302

FRESA FRONTAL DESBASTE GRUESO COBALTO 8% NZ LARGA
Long NZ Cobalt 8% Coarse Roughing End Mill
Fraise Ebauche Cobalt 8% NZ Longue





Cobalt 8% | TIALSIN | CNC qualified | ASME Std. NR | 3-5 Z | 30° | Tol. +0,00394 -0,00197

Material		Vc (ft/min.)	
Group	Sub.	8 % Co	TIALSIN
1	1.1	98-131	131-183
3	3.1	65-98	82-131
	3.2	49-65	65-82
5	5.1	164-295	229-410
	5.2	164-295	229-410

f - Avances Fresas Co 8% - End Mill Feed - Pas Fraise (fz/rev.)

Ø	5/32	1/4	5/16	3/8	1/2	5/8	3/4	1"	1 1/4	1 1/2	2"	2 1/2
	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	0,0006	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039

vf (inch/min) = r.p.m. x Z x f x K
(K = Coeficiente Corrección / Correction Coefficient / Coefficient de Correction)

$$\text{r.p.m.} = \frac{Vc \times 1.000}{\pi \times \varnothing}$$

D	d	Corte Flute / Coupe	OAL	Z	N° Art. Cobalt	€	N° Art. TIALSIN	€
1/4	3/8	5/16	2 1/8	3	42283		23520	
1/4	3/8	7/8	2 11/16	3	53474		23521	
1/4	3/8	1 1/4	3 1/16	3	66731		66732	
1/4	3/8	1 1/8	2 15/16	3	42286		23523	
1/4	3/8	1 3/8	3 1/8	3	53480		23524	
5/16	3/8	7/16	2 3/16	3	42289		23525	
5/16	3/8	1 1/8	2 15/16	3	42516		23526	
5/16	3/8	1 3/8	3 1/8	3	53489		23527	
3/8	3/8	7/16	2 3/16	4	53492		23529	
3/8	3/8	1 1/8	2 15/16	4	42517		23530	
3/8	3/8	1 1/2	3 1/4	4	66733		66734	
3/8	3/8	1 5/8	3 3/16	4	53498		23531	
1/2	1/2	5/8	2 5/8	4	53501		23532	
1/2	1/2	1	3	4	42519		23533	
1/2	1/2	1 5/8	3 5/8	4	53507		23534	
1/2	1/2	2	4	4	53510		23535	
1/2	1/2	2 1/2	4 1/2	4	53513		23536	
1/2	1/2	3	5	4	53516		23538	
5/8	5/8	3/4	2 7/8	4	53519		23539	
5/8	5/8	1 1/4	3 3/8	4	53522		23540	
5/8	5/8	2 1/8	4 1/4	4	42298		23541	
5/8	5/8	2 1/2	4 5/8	4	53528		23542	
5/8	5/8	3 1/8	5 1/4	4	42301		23543	
3/4	3/4	3/4	3	4	53534		23544	
3/4	3/4	1 1/4	3 1/2	4	53537		23545	
3/4	3/4	2 1/2	4 5/8	4	53540		23546	
3/4	3/4	2 1/2	4 3/4	4	66735		66736	
3/4	3/4	3	5 1/4	4	53543		23547	
3/4	3/4	4 1/8	6 3/8	4	53546		23548	
7/8	3/4	1 1/8	3 3/8	5	53549		23549	
7/8	7/8	1 1/8	3 3/8	5	80586		23583	
7/8	3/4	3 1/2	5 5/8	4	42304		23550	
7/8	7/8	3 1/2	5 3/4	5	53555		23551	
1	3/4	1 1/8	3 3/8	6	42307		23552	
1	1	1 1/8	3 5/8	5	53561		23553	
1	3/4	1 1/2	3 3/4	5	42310		23554	
1	1	1 5/8	4 1/8	5	53567		23555	
1	3/4	3	5 1/4	5	42520		23556	

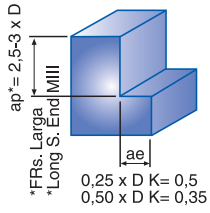
Ref. 7302

FRESA FRONTAL DESBASTE GRUESO COBALTO 8% NZ LARGA
Long NZ Cobalt 8% Coarse Roughing End Mill
Fraise Ebauche Cobalt 8% NZ Longue

D	d	Corte Flute / Coupe	OAL	Z	N° Art. Cobalt	€	N° Art. TIALSIN	€
1	1	3	5 1/2	5	53573		23557	
1	3/4	4	6 1/4	5	42522		23558	
1	1	4	6 1/2	5	53579		23559	
1	1	6	8 1/2	5	42525		23560	
1 1/4	1 1/4	3	5 1/2	6	53597		23565	
1 1/4	1 1/4	4	6 1/2	6	53600		23566	
1 1/4	1 1/4	6	8 1/2	6	53603		23568	
1 1/2	1 1/4	3	5 1/2	6	53615		23574	
1 1/2	1 1/4	4	6 1/2	6	53618		23575	
1 1/2	1 1/4	6	8 1/2	6	53621		23576	
2	2	3	6 3/4	8	66738		66739	
2	2	6	9 3/4	8	66740		66741	
2	2	4	7 3/4	8	16027		23584	
2	2	8	11 3/4	8	16033		23582	
2	2	10	13 3/4	8	23586		23587	

Ref. 7342

FRESA FRONTAL DESBASTE GRUESO COBALTO 8% NZ LARGA
Long NZ Cobalt 8% Coarse Roughing End Mill
Fraise Ebauche Cobalt 8% NZ Longue



Cobalt 8% | TIALSIN | CNC qualified | ASME Std. NR | 6-8 Z | 30° | Tol. +0,00394 -0,00197

Material		Vc (ft/min.)		f - Avances Fresas Co 8% - End Mill Feed - Pas Fraise (fz/rev.)											
Group	Sub.	8 % Co	TIALSIN	Ø 5/32	1/4	5/16	3/8	1/2	5/8	3/4	1"	1 1/4	1 1/2	2"	2 1/2
1	1.1	98-131	131-183	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
3	3.1	65-98	82-131	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	3.2	49-65	65-82	0,0006	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
5	5.1	164-295	229-410	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	5.2	164-295	229-410	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039

vf (inch/min) = r.p.m. x Z x f x K
(K = Coeficiente Corrección / Correction Coefficient / Coefficient de Correction)

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times ø}$$

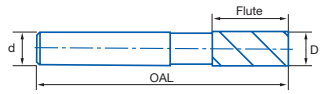
D	d	Corte Flute / Coupe	OAL	Z	N° Art. Cobalt	€	N° Art. TIALSIN	€
1 1/8	1	3 1/2	6	6	54464		23369	
1 1/4	1 1/4	3	5 1/2	6	54467		23370	
1 1/4	3/4	4	6 1/4	6	11092		11094	
1 1/4	1 1/4	4	6 1/2	6	54473		23371	
1 1/4	1 1/4	6	8 1/2	6	54476		23372	
1 1/2	1 1/4	3	5 1/2	6	54479		23373	
1 1/2	1 1/4	4	6 1/2	6	54485		23375	
1 1/2	1 1/4	6	8 1/2	6	54491		23377	
1 1/2	1 1/4	6 1/8	8 5/8	6	23423		24336	
1 3/4	1 1/4	4	6 1/2	6	54494		23378	
2	1 1/4	4	6 1/2	8	54500		23379	
2	2	4	7 3/4	8	23350		23380	
2	1 1/4	6 1/8	8 5/8	8	23349		23381	

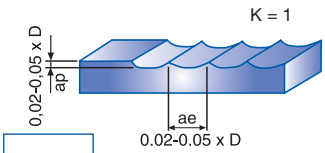
Ref. 7390

FRESA FRONTAL DESBASTE GRUESO COBALTO 8% NZ RADIAL

Radial NZ Cobalt 8% Coarse Roughing End Mill

Fraise Ebauche Cobalt 8% NZ Hemisphérique





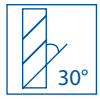
Cobalt 8%

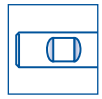
TIALSIN

CNC qualified

ASME Std. NR

3-8 Z





Tol. +0,00394 -0,00197

Material		Vc (ft/min.)		Ø	f - Avances Fresas Co 8% - End Mill Feed - Pas Fraise (fz/rev.)											
Group	Sub.	8 % Co	TIALSIN		5/32	1/4	5/16	3/8	1/2	5/8	3/4	1"	1 1/4	1 1/2	2"	2 1/2
1	1.1	98-131	131-183		0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
3	3.1	65-98	82-131		0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	3.2	49-65	65-82		0,0006	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
5	5.1	164-295	229-410		0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	5.2	164-295	229-410		0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039

vf (inch/min) = r.p.m. x Z x f x K

(K = Coeficiente Corrección / Correction Coefficient / Coefficient de Correction)

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times ø}$$

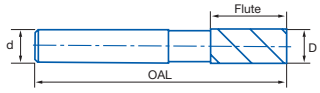
D	d	Corte Flute / Coupe	OAL	Z	N° Art. Cobalt	€	N° Art. TIALSIN	€
1/4	3/8	5/8	2 7/6	3	26036		26174	
5/16	3/8	3/4	2 1/2	3	26037		26175	
3/8	3/8	3/4	2 1/2	4	26039		26176	
1/2	1/2	1 1/4	3 1/4	4	26040		26177	
1/2	1/2	2	4	4	26262		26359	
1/2	1/2	2 1/2	4 1/2	4	26263		26362	
5/8	5/8	1 5/8	3 3/4	4	26042		26178	
5/8	5/8	2 1/2	4 5/8	4	26265		26364	
3/4	3/4	1 5/8	3 7/8	4	26043		26179	
3/4	3/4	1 3/4	4	4	26266		26365	
3/4	3/4	2 1/4	4 1/2	4	26268		26366	
3/4	3/4	3	5 1/4	4	26269		26367	
7/8	7/8	1 7/8	4 1/8	5	26044		26180	
7/8	7/8	3 1/2	5 3/4	5	26271		26368	
1	3/4	2	4 1/2	5	26045		26182	
1	1	2	4 1/2	5	26046		26181	
1	1	3	5 1/2	5	26329		26369	
1	1	4	6 1/2	5	26334		26370	
1 1/4	3/4	2	4 1/2	6	26048		26183	
1 1/4	1 1/4	2	4 1/2	6	26047		26184	
1 1/4	1 1/4	3	5 1/2	6	26335		26371	
1 1/4	1 1/4	4	6 1/2	6	26336		26372	
1 1/2	1 1/4	2	4 1/2	6	25979		26186	
1 1/2	1 1/2	2	4 1/2	6	26051		26185	
1 1/2	3/4	2	4 1/2	6	26049		26187	
1 1/2	1 1/2	4	6 1/2	6	26337		26373	
2	2	2	5 3/4	6	26052		26188	
2	2	4	7 3/4	6	26338		26374	
2	2	4	7 3/4	8	26340		26376	
2	2	6	9 3/4	6	26341		26377	
2	2	6	9 3/4	8	26343		26378	

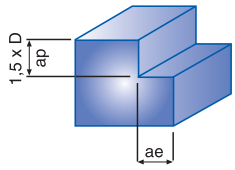
Ref. 7666

FRESA FRONTAL ACABADO PMX NZ HÉLICE VARIABLE

Unequal Spiral Angle NZ PMX Finishing End Mill

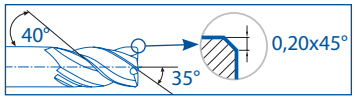
Fraise Finition PMX NZ Hélice Variable





0,3 x D K=0,6
0,05-0,10 x D K=1

PMX | TIALN-TOP | CNC qualified | ASME Std. N | 4-6 Z | 30°



Tol. +0,00150 -0,00000

Material		Vc (ft/min.)		Ø	f - Avances Fresas PMX - End Mill Feed - Pas Fraise (fz/rev.)											
Group	Sub.	PMX	TIALN-TOP		5/32	1/4	5/16	3/8	1/2	5/8	3/4	1″	1 1/4	1 1/2	2″	2 1/2
1	1.2	98-138	147-246		0,0006	0,0012	0,0014	0,0023	0,0027	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045
	1.3	39-59	65-115		0,0005	0,0010	0,0012	0,0020	0,0020	0,0030	0,0030	0,0030	0,0030	0,0030	0,0030	0,0030
2	2.1	17-39	26-56		0,0005	0,0010	0,0012	0,0020	0,0020	0,0030	0,0030	0,0030	0,0030	0,0030	0,0030	0,0030
	2.2	59-79	98-147		0,0005	0,0010	0,0012	0,0020	0,0020	0,0030	0,0030	0,0030	0,0030	0,0030	0,0030	0,0030
3	3.1	79-118	115-213		0,0008	0,0012	0,0014	0,0023	0,0027	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045
	3.2	79-118	115-213		0,0006	0,0012	0,0014	0,0023	0,0027	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045
4	4	59-79	98-147		0,0010	0,0017	0,0024	0,0030	0,0036	0,0050	0,0059	0,0059	0,0059	0,0059	0,0059	0,0059
5	5.1	197-328	295-623		0,0008	0,0012	0,0014	0,0023	0,0027	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045
6	6.2	623-787	951-1378		0,0010	0,0017	0,0024	0,0030	0,0036	0,0050	0,0059	0,0059	0,0059	0,0059	0,0059	0,0059
	6.3	197-315	295-557		0,0008	0,0012	0,0014	0,0023	0,0027	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045

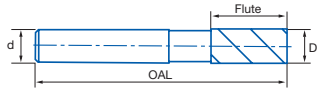
vf (inch/min) = r.p.m. x Z x f x K
(K = Coeficiente Corrección / Correction Coefficient / Coefficient de Correction)

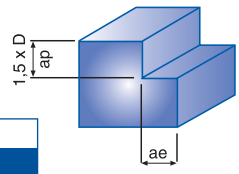
$$r.p.m. = \frac{Vc \times 1.000}{\pi \times ø}$$

D	d	Corte Flute / Coupe	OAL	Z	N° Art. PMX	€	N° Art. TIALN-TOP	€
1/4	3/8	5/8	2 7/16	4	39893		39901	
5/16	3/8	3/4	2 1/2	4	39894		39902	
3/8	3/8	3/4	2 1/2	4	39895		39903	
7/16	3/8	1	2 11/16	4	39896		39904	
1/2	1/2	1 1/4	3 1/4	4	39897		39905	
5/8	5/8	1 5/8	3 3/4	5	39898		39906	
3/4	3/4	1 5/8	3 7/8	5	39899		39907	
1	1	2	4 1/2	6	39900		39908	

Ref. 7600

FRESA FRONTAL ACABADO PMX NZ
NZ PMX Finishing End Mill
Fraise Finition PMX NZ





PMX | TIALN-TOP | CNC qualified | ASME Std. N | 4 Z | 30° | Tol. +0,00150 -0,00000

0,3 x D K=0,6
0,05-0,10 x D K=1

Material		Vc (ft/min.)		f - Avances Fresas PMX - End Mill Feed - Pas Fraise (fz/rev.)											
Group	Sub.	PMX	TIALN-TOP	Ø 5/32	1/4	5/16	3/8	1/2	5/8	3/4	1"	1 1/4	1 1/2	2"	2 1/2
1	1.2	98-138	147-246	0,0006	0,0012	0,0014	0,0023	0,0027	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045
	1.3	39-59	65-115	0,0005	0,0010	0,0012	0,0020	0,0020	0,0030	0,0030	0,0030	0,0030	0,0030	0,0030	0,0030
2	2.1	17-39	26-56	0,0005	0,0010	0,0012	0,0020	0,0020	0,0030	0,0030	0,0030	0,0030	0,0030	0,0030	0,0030
	2.2	59-79	98-147	0,0005	0,0010	0,0012	0,0020	0,0020	0,0030	0,0030	0,0030	0,0030	0,0030	0,0030	0,0030
3	3.1	79-118	115-213	0,0008	0,0012	0,0014	0,0023	0,0027	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045
	3.2	79-118	115-213	0,0006	0,0012	0,0014	0,0023	0,0027	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045
4	4	59-79	98-147	0,0010	0,0017	0,0024	0,0030	0,0036	0,0050	0,0059	0,0059	0,0059	0,0059	0,0059	0,0059
5	5.1	197-328	295-623	0,0008	0,0012	0,0014	0,0023	0,0027	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045
6	6.2	623-787	951-1378	0,0010	0,0017	0,0024	0,0030	0,0036	0,0050	0,0059	0,0059	0,0059	0,0059	0,0059	0,0059
	6.3	197-315	295-557	0,0008	0,0012	0,0014	0,0023	0,0027	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045

vf (inch/min) = r.p.m. x Z x f x K
(K = Coeficiente Corrección / Correction Coefficient / Coefficient de Correction)

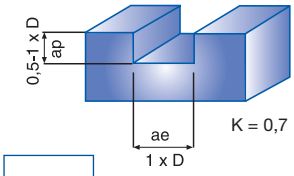
$$r.p.m. = \frac{Vc \times 1.000}{\pi \times ø}$$

D	d	Corte Flute / Coupe	OAL	Z	N° Art. PMX	€	N° Art. TIALN-TOP	€
1/8	3/8	3/8	2 5/16	4	24294		14452	
5/32	3/8	3/8	2 3/8	4	24295		14454	
3/16	3/8	1/2	2 3/8	4	24296		14446	
7/32	3/8	5/8	2 7/16	4	24297		24291	
1/4	3/8	5/8	2 7/16	4	24298		22325	
9/32	3/8	3/4	2 1/2	4	24299		24292	
5/16	3/8	3/4	2 1/2	4	24300		22326	
3/8	3/8	3/4	2 1/2	4	24301		22327	
7/16	3/8	1	2 11/16	4	24302		24293	
1/2	1/2	1 1/4	3 1/4	4	24303		22329	
5/8	5/8	1 5/8	3 3/4	4	24304		22330	
3/4	3/4	1 5/8	3 7/8	4	24305		22331	
1	1	2	4 1/2	4	24306		14448	

Ref. 7630

FRESA FRONTAL ACABADO PMX 3Z ALUMINIO
Aluminium 3Z PMX Finishing End Mill
Fraise Finition PMX 3Z Aluminium

NEW!



PMX | TIALN-TOP | CNC qualified | ASME Std. W | 3 Z | 45° | Tol. +0,00150 -0,00000

Material		Vc (ft/min.)	
Grupo	Sub.	PMX	TIALN-TOP
2	2.1	52-72	66-115
6	6.1	623-787	951-1378
	6.2	623-787	951-1378
	6.3	197-315	295-558

f - Avances Fresas PMX - End Mill Feed - Pas Fraise (fz/rev.)

Ø	5/32	15/64	5/16	25/64	15/32	5/8	25/32	1"	1"7/64
	0,0005	0,0010	0,0012	0,0020	0,0020	0,0030	0,0030	0,0030	0,0030
	0,0010	0,0017	0,0024	0,0030	0,0036	0,0050	0,0059	0,0059	0,0059
	0,0010	0,0017	0,0024	0,0030	0,0036	0,0050	0,0059	0,0059	0,0059
	0,0008	0,0012	0,0014	0,0023	0,0027	0,0045	0,0045	0,0045	0,0045

vf (inch/min) = r.p.m. x Z x f x K
(K = Coeficiente Corrección / Correction Coefficient / Coefficient de Correction)

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \varnothing}$$

D	d	Corte Flute / Coupe	OAL	Z	N° Art. PMX	€	N° Art. TIALN-TOP	€
1/8	3/8	3/8	2 5/16	3	75874		75891	
5/32	3/8	1/2	2 3/8	3	75875		75892	
3/16	3/8	1/2	2 3/8	3	75877		75893	
7/32	3/8	5/8	2 7/16	3	75878		75894	
1/4	3/8	5/8	2 7/16	3	75879		75896	
9/32	3/8	3/4	2 1/2	3	75880		75902	
5/16	3/8	3/4	2 1/2	3	75882		75918	
3/8	3/8	3/4	2 1/2	3	75884		75923	
7/16	3/8	1	2 11/16	3	75886		75926	
1/2	1/2	1 1/4	3 1/4	3	75887		75927	
5/8	5/8	1 5/8	3 3/4	3	75888		75930	
3/4	3/4	1 5/8	3 7/8	3	75889		75931	
1	1	2	4 1/2	3Z	75890		75933	

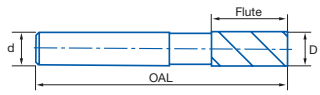
Ref. 7620

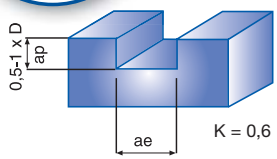
FRESA FRONTAL ACABADO PMX 2Z

2Z PMX Finishing End Mill

Fraise Finition PMX 2Z

NEW!





PMX | TIALN-TOP | CNC qualified | ASME Std. N | 2 Z | 30° | Tol. +0,00150 -0,00000

Material		Vc (ft/min.)	
Grupo	Sub.	PMX	TIALN-TOP
1	1.1	115-180	180-262
1	1.2	98-148	148-246
1	1.3	39-66	66-115
3	3.1	79-115	115-213
	3.2	79-115	115-213
4		59-98	98-148
5	5.1	230-361	361-689
	5.2	230-361	361-689
6	6.1	623-951	951-1378
	6.2	623-951	951-1378
	6.3	197-295	295-558

f - Avances Fresas PMX - End Mill Feed - Pas Fraise **(fz/rev.)**

Ø 5/32	15/64	5/16	25/64	15/32	5/8	25/32	1"	1"7/64
0,0008	0,0012	0,0014	0,0023	0,0027	0,0045	0,0045	0,0045	0,0045
0,0006	0,0012	0,0014	0,0023	0,0027	0,0045	0,0045	0,0045	0,0045
0,0005	0,0010	0,0012	0,0020	0,0020	0,0030	0,0030	0,0030	0,0030
0,0008	0,0012	0,0014	0,0023	0,0027	0,0045	0,0045	0,0045	0,0045
0,0008	0,0012	0,0014	0,0023	0,0027	0,0045	0,0045	0,0045	0,0045
0,0010	0,0017	0,0024	0,0030	0,0036	0,0050	0,0059	0,0059	0,0059
0,0010	0,0017	0,0024	0,0030	0,0036	0,0050	0,0050	0,0059	0,0059
0,0008	0,0012	0,0014	0,0023	0,0027	0,0045	0,0045	0,0045	0,0045
0,0010	0,0017	0,0024	0,0030	0,0036	0,0050	0,0059	0,0059	0,0059
0,0010	0,0017	0,0024	0,0030	0,0036	0,0050	0,0059	0,0059	0,0059
0,0008	0,0012	0,0014	0,0023	0,0027	0,0045	0,0045	0,0045	0,0045

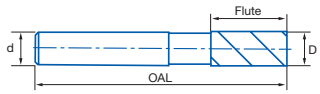
vf (inch/min) = r.p.m. x Z x f x K
(K = Coeficiente Corrección / Correction Coefficient / Coefficient de Correction)

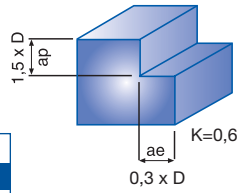
$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \varnothing}$$

D	d	Corte Flute / Coupe	OAL	Z	N° Art. PMX	€	N° Art. TIALN-TOP	€
1/8	3/8	3/8	2 5/16	2Z	75845		75859	
5/32	3/8	7/16	2 5/16	2Z	75846		75860	
3/16	3/8	7/16	2 5/16	2Z	75847		75861	
7/32	3/8	1/2	2 5/16	2Z	75848		75862	
1/4	3/8	1/2	2 5/16	2Z	75849		75864	
9/32	3/8	9/16	2 5/16	2Z	75850		75865	
5/16	3/8	9/16	2 5/16	2Z	75851		75866	
3/8	3/8	9/16	2 5/16	2Z	75852		75867	
7/16	3/8	13/16	2 1/2	2Z	75853		75868	
1/2	1/2	1	3	2Z	75854		75869	
5/8	5/8	1 5/16	3 7/16	2Z	75855		75870	
3/4	3/4	1 5/16	3 9/16	2Z	75856		75871	
1	1	1 5/8	4 1/8	2Z	75858		75873	

Ref. 7411

FRESA FRONTAL ACABADO COBALTO 8% NZ
NZ Cobalt 8% Finishing End Mill
Fraise Finition Cobalt 8% NZ





Cobalt 8% | TIALSIN | CNC qualified | ASME Std. N | 4-6 Z | 30° | Tol. +0,00150 -0,00000

Material		Vc (ft/min.)		Ø	f - Avances Fresas Co 8% - End Mill Feed - Pas Fraise (fz/rev.)											
Group	Sub.	8 % Co	TIALSIN		5/32	1/4	5/16	3/8	1/2	5/8	3/4	1"	1 1/4	1 1/2	2"	2 1/2
1	1.1	98-131	131-183		0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
3	3.1	65-98	82-131		0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	3.2	49-65	65-82		0,0006	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
5	5.1	164-295	229-410		0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	5.2	164-295	229-410		0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039

vf (inch/min) = r.p.m. x Z x f x K
(K = Coeficiente Corrección / Correction Coefficient / Coefficient de Correction)

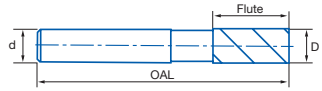
$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \varnothing}$$

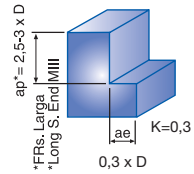
D	d	Corte Flute Coupe	OAL	Z	N° Art. Cobalt	€	N° Art. TIALSIN	€
1/8	3/8	3/8	2 5/16	4	56426		28149	
5/32	3/8	1/2	2 3/8	4	21879		28150	
3/16	3/8	1/2	2 3/8	4	56429		28089	
7/32	3/8	5/8	2 7/16	4	56432		28151	
1/4	3/8	5/8	2 7/16	4	56435		26671	
9/32	3/8	3/4	2 1/2	4	56438		28152	
5/16	3/8	3/4	2 1/2	4	56441		25614	
11/32	3/8	3/4	2 1/2	4	56444		28153	
3/8	3/8	3/4	2 1/2	4	56447		28154	
13/32	3/8	1	2 11/16	4	56450		28155	
7/16	3/8	1	2 11/16	4	56453		28156	
1/2	3/8	1	2 11/16	4	56456		25615	
1/2	1/2	1 1/4	3 1/4	4	56459		28088	
9/16	1/2	1 3/8	3 3/8	4	56462		26672	
5/8	1/2	1 3/8	3 3/8	4	56465		28158	
5/8	5/8	1 5/8	3 3/4	4	56468		28159	
11/16	5/8	1 5/8	3 3/4	4	56471		28161	
3/4	1/2	1 5/8	3 5/8	4	56474		28162	
3/4	5/8	1 5/8	3 3/4	4	10912		10913	
3/4	3/4	1 5/8	3 7/8	4	56477		28163	
13/16	3/4	1 7/8	4 1/8	4	56480		28164	
7/8	3/4	1 7/8	4 1/8	4	56483		28165	
7/8	7/8	1 7/8	4 1/8	4	56486		28166	
15/16	3/4	1 7/8	4 1/8	4	53562		28167	

D	d	Corte Flute Coupe	OAL	Z	N° Art. Cobalt	€	N° Art. TIALSIN	€
1	1/2	1 7/8	4 1/8	4	10914		10915	
1	5/8	1 7/8	4	4	53565		28168	
1	3/4	1 7/8	4 1/8	4	56489		25616	
1	1	2	4 1/2	4	56492		28169	
1 1/16	3/4	1 1/2	3 7/8	6	10918		10920	
1 1/8	3/4	1 1/2	3 7/8	6	56495		28170	
1 1/8	1	2	4 1/2	6	56498		28171	
1 3/16	3/4	2	4 1/4	6	21930		28172	
1 1/4	3/4	1 1/2	3 7/8	6	56501		28173	
1 1/4	1	2	4 1/2	6	77529		28174	
1 1/4	1 1/4	2	4 1/2	6	56504		28175	
1 5/16	3/4	2	4 3/8	6	10921		10923	
1 3/8	3/4	2	4 3/8	6	10924		10927	
1 3/8	1	2	4 1/2	6	70769		28176	
1 1/2	3/4	2	4 3/8	6	21933		28177	
1 1/2	1	2	4 1/2	6	10928		10929	
1 1/2	1 1/4	2	4 1/2	6	17117		28178	
1 5/8	1 1/4	2	4 1/2	6	70775		28179	
1 3/4	3/4	2	4 3/8	6	10930		10931	
1 3/4	1 1/4	2	4 1/2	6	70781		28180	
1 7/8	3/4	2	4 1/2	6	10932		28181	
1 7/8	1 1/4	2	4 3/8	6	10933		28182	
2	3/4	2	4 1/26	6	53571		28183	
2	1 1/4	2	4 1/2	6	70784		28184	

Ref. 7413

FRESA FRONTAL ACABADO COBALTO 8% NZ LARGA
Long NZ Cobalt 8% Finishing End Mill
Fraise Finition Cobalt 8% NZ Longue





Cobalt 8%	TIALSIN	CNC qualified	ASME Std. N		4-8 Z		30°		Tol. +0,00150 -0,00000	

Material		Vc (ft/min.)	
Group	Sub.	8 % Co	TIALSIN
1	1.1	98-131	131-183
3	3.1	65-98	82-131
	3.2	49-65	65-82
5	5.1	164-295	229-410
	5.2	164-295	229-410

Refs. 7413-7415 f - Avances Fresas Co 8% - End Mill Feed - Pas Fraise **(fz/rev.)**

Ø	5/32	1/4	5/16	3/8	1/2	5/8	3/4	1"	1 1/4	1 1/2	2"	2 1/2
	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	0,0006	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039

vf (inch/min) = r.p.m. x Z x f x K

K = Coeficiente Corrección
Correction Coefficient
Coefficient de Correction

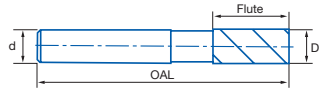
$$r.p.m. = \frac{Vc \times 1.000}{\pi \times ø}$$

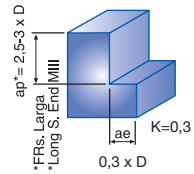
D	d	Corte Flute Coupe	OAL	Z	N° Art. Cobalt	€	N° Art. TIALSIN	€
1/4	3/8	1 1/4	3 1/16	4	56618		28187	
5/16	3/8	1 3/8	3 1/8	4	56621		28188	
3/8	3/8	1 1/2	3 1/4	4	56624		28189	
7/16	1/2	1 3/4	3 3/4	4	77531		28190	
1/2	1/2	2	4	4	56627		28191	
5/8	5/8	2 1/2	4 5/8	4	56630		28192	
3/4	3/4	3	5 1/4	4	56633		28193	
7/8	7/8	3 1/2	5 3/4	4	56636		28194	

D	d	Corte Flute Coupe	OAL	Z	N° Art. Cobalt	€	N° Art. TIALSIN	€
1	1	4	6 1/2	4	56639		28195	
1 1/16	3/4	2	4 1/4	6	10936		28196	
1 1/8	1	4	6 1/2	6	10937		28197	
1 1/4	1 1/4	4	6 1/2	6	56642		28199	
1 1/2	1 1/4	4	6 1/2	6	77595		28200	
1 3/4	1 1/4	4	6 1/2	6	77596		28201	
2	1 1/4	4	6 1/2	8	56645		28203	

Ref. 7415

FRESA FRONTAL ACABADO COBALTO 8% NZ LARGA
Long NZ Cobalt 8% Finishing End Mill
Fraise Finition Cobalt 8% NZ Longue





Cobalt 8%	TIALSIN	CNC qualified	ASME Std. N		4-6 Z		30°		Tol. +0,00150 -0,00000	

D	d	Corte Flute Coupe	OAL	Z	N° Art. Cobalt	€	N° Art. TIALSIN	€
1/4	3/8	1 3/4	3 9/16	4	56720		28206	
3/8	3/8	2 1/2	4 1/4	4	56726		28208	
1/2	1/2	3	5	4	56729		28209	
5/8	5/8	4	6 1/8	4	56732		28210	
3/4	3/4	4	6 1/4	4	56735		28211	
7/8	7/8	5	7 1/4	4	56738		28212	

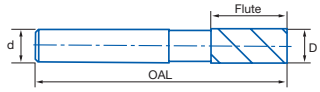
D	d	Corte Flute Coupe	OAL	Z	N° Art. Cobalt	€	N° Art. TIALSIN	€
1	1	6	8 1/2	4	56741		28213	
1 1/4	1 1/4	6	8 1/2	6	56744		28214	
1 1/2	1 1/4	8	10 1/2	6	77597		28215	

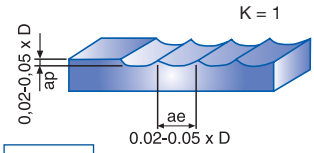
Ref. 7420

FRESA FRONTAL ACABADO COBALTO 8% NZ RADIAL

Radial NZ Cobalt 8% Finishing End Mill

Fraise Finition Cobalt 8% NZ Hemisphérique





Cobalt 8% | TIALSIN | CNC qualified | ASME Std. N | 4-6 Z | 30° | Tol. +0,00150 -0,00000

Material		Vc (ft/min.)		f - Avances Fresas Co 8% - End Mill Feed - Pas Fraise (fz/rev.)											
Group	Sub.	8 % Co	TIALSIN	Ø 5/32	1/4	5/16	3/8	1/2	5/8	3/4	1"	1 1/4	1 1/2	2"	2 1/2
1	1.1	98-131	131-183	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
3	3.1	65-98	82-131	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	3.2	49-65	65-82	0,0006	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
5	5.1	164-295	229-410	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	5.2	164-295	229-410	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039

vf (inch/min) = r.p.m. x Z x f x K

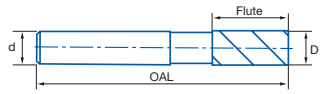
K = Coeficiente Corrección
Correction Coefficient
Coefficient de Correction

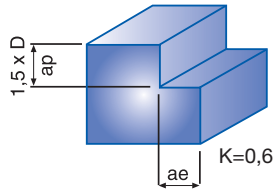
$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \varnothing}$$

D	d	Corte Flute Coupe	OAL	Z	N° Art. Cobalt	€	N° Art. TIALSIN	€
1/8	3/8	3/8	2 5/16	4	26109		26161	
3/16	3/8	1/2	2 3/8	4	26111		26162	
1/4	3/8	5/8	2 7/16	4	26112		26163	
1/4	3/8	3/4	2 9/16	4	26241		26395	
1/4	3/8	1	2 13/16	4	26242		26396	
1/4	3/8	1 1/4	3 1/16	4	26243		26397	
1/4	3/8	1 3/4	3 9/16	4	26244		26491	
5/16	3/8	3/4	2 1/2	4	26114		26164	
5/16	3/8	1	2 3/4	4	26245		26400	
3/8	3/8	3/4	2 1/2	4	26115		26165	
3/8	3/8	1	2 3/4	4	26246		26401	
3/8	3/8	1 1/2	3 1/4	4	26247		26403	
3/8	3/8	2 1/2	4 1/4	4	26248		26404	
7/16	1/2	1 1/4	3 1/4	4	26117		26166	
1/2	1/2	1 1/4	3 1/4	4	26118		26167	
1/2	1/2	2	4	4	26249		26406	
1/2	1/2	3	5	4	26250		26407	
5/8	5/8	1 5/8	3 3/4	4	26120		26168	
5/8	5/8	2 1/2	4 5/8	4	26251		26410	
5/8	5/8	4	6 1/8	4	26252		26412	
3/4	3/4	1 5/8	3 7/8	4	26121		26169	
3/4	3/4	3	5 1/4	4	26253		26413	
3/4	3/4	4	6 1/4	4	26254		26416	
7/8	7/8	1 7/8	4 1/8	4	26123		26170	
1	1	2	4 1/2	4	26124		26171	
1	1	2	5 1/2	4	26255		26418	
1	1	4	6	4	26256		26419	
1 1/4	1 1/4	2	4 1/2	6	26126		26172	
1 1/4	1 1/4	2	4 1/2	4	26257		26422	
1 1/2	1 1/4	2	4 1/2	6	26127		26173	
1 1/2	1 1/4	2	4 1/2	4	26259		26424	

Ref. 7410

FRESA FRONTAL ACABADO HSS NZ
NZ HSS Finishing End Mill
Fraise Finition HSS NZ





HSS | CNC qualified | ASME Std. N | 4-6 Z | 30° | Tol. +0,00150 -0,00000

Material		Vc (ft/min.)	f - Avances Fresas HSS - End Mill Feed - Pas Fraise (fz/rev.)										
Group	Sub.	HSS	Ø	5/32	1/4	5/16	3/8	1/2	5/8	3/4	1"	1 1/4	1 1/2	2"	2 1/2
1	1.1	65-80		0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0049	0,0049	0,0049	0,0049

vf (inch/min) = r.p.m. x Z x f x K
(K = Coeficiente Corrección / Correction Coefficient / Coefficient de Correction)

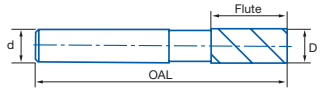
$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \varnothing}$$

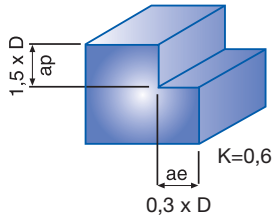
D	d	Corte Flute Coupe	OAL	Z	N° Art. HSS	€
1/8	3/8	3/8	2 5/16	4	55991	
5/32	3/8	1/2	2 3/8	4	42680	
3/16	3/8	1/2	2 3/8	4	56003	
7/32	3/8	5/8	2 7/16	4	42681	
1/4	3/8	5/8	2 7/16	4	56015	
9/32	3/8	3/4	2 1/2	4	42208	
5/16	3/8	3/4	2 1/2	4	56027	
11/32	3/8	3/4	2 1/2	4	42694	
3/8	3/8	3/4	2 1/2	4	56039	
13/32	3/8	1	2 11/16	4	42695	
7/16	3/8	1	2 11/16	4	42210	
1/2	3/8	1	2 11/16	4	56063	
1/2	1/2	1 1/4	3 1/4	4	56066	
9/16	1/2	1 3/8	3 3/8	4	56069	
5/8	1/2	1 3/8	3 3/8	4	56072	
5/8	5/8	1 5/8	3 3/4	4	56075	
11/16	5/8	1 5/8	3 3/4	4	56081	
3/4	1/2	1 5/8	3 5/8	4	56084	
3/4	5/8	1 5/8	3 3/4	4	56087	
3/4	3/4	1 5/8	3 7/8	4	56090	
13/16	3/4	1 7/8	4 1/8	4	56096	
7/8	3/4	1 7/8	4 1/8	4	56105	
7/8	7/8	1 7/8	4 1/8	4	56108	
15/16	3/4	1 7/8	4 1/8	4	56111	
1	5/8	1 7/8	4	4	42216	
1	1/2	1 7/8	4 1/8	4	42682	

D	d	Corte Flute Coupe	OAL	Z	N° Art. HSS	€
1	3/4	1 7/8	4 1/8	4	56120	
1	1	2	4 1/2	4	56126	
1 1/16	3/4	1 1/2	3 7/8	6	42683	
1 1/8	3/4	1 1/2	3 7/8	6	56132	
1 1/8	1	2	4 1/2	6	42219	
1 3/16	3/4	2	4 1/4	6	42222	
1 1/4	3/4	1 1/2	3 7/8	6	56141	
1 1/4	1	2	4 1/2	6	56144	
1 1/4	1 1/4	2	4 1/2	6	56147	
1 5/16	3/4	2	4 3/8	6	42228	
1 3/8	3/4	2	4 3/8	6	56153	
1 3/8	1	2	4 1/2	6	42230	
1 1/2	3/4	2	4 3/8	6	56162	
1 1/2	1	2	4 1/2	6	42685	
1 1/2	1 1/4	2	4 1/2	6	56168	
1 5/8	3/4	2	4 3/8	6	56171	
1 5/8	1 1/4	2	4 1/2	6	56174	
1 3/4	3/4	2	4 3/8	6	56177	
1 3/4	1 1/4	2	4 1/2	6	56180	
1 7/8	3/4	2	4 1/2	6	42697	
1 7/8	1 1/4	2	4 3/8	6	42698	
2	3/4	2	4 1/26	6	56189	
2	1 1/4	2	4 1/2	6	56192	

Ref. 7400

FRESA FRONTAL ACABADO HSS NZ
NZ HSS Finishing End Mill
Fraise Finition HSS NZ





HSS | CNC qualified | ASME Std. N | 4-8 Z | 30° | Tol. +0,00150 -0,00000

Material		Vc (ft/min.)
Group	Sub.	HSS
1	1.1	65-80

f - Avances Fresas HSS - End Mill Feed - Pas Fraise (fz/rev.)

Ø	5/32	1/4	5/16	3/8	1/2	5/8	3/4	1"	1 1/4	1 1/2	2"	2 1/2
	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0049	0,0049	0,0049	0,0049

vf (inch/min) = r.p.m. x Z x f x K
(K = Coeficiente Corrección / Correction Coefficient / Coefficient de Correction)

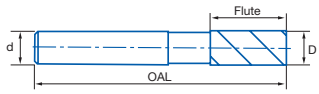
$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \varnothing}$$

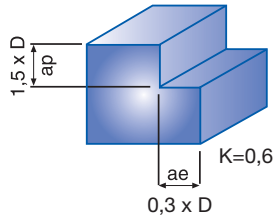
D	d	Corte Flute Coupe	OAL	Z	N° Art. HSS	€
1/8	3/8	3/8	2 5/16	4	55625	
3/16	3/8	1/2	2 3/8	4	55631	
7/32	3/8	5/8	2 7/16	4	90003	
1/4	3/8	5/8	2 1/2	4	55634	
9/32	3/8	3/4	2 1/2	4	90004	
5/16	3/8	3/4	2 1/2	4	55637	
11/32	3/8	3/4	2 1/2	4	90005	
3/8	3/8	3/4	2 1/2	4	55643	
13/32	3/8	1	2 11/16	4	90006	
7/16	3/8	1	2 11/16	4	15053	
1/2	1/2	1 1/4	3 1/4	4	55652	
9/16	1/2	1 3/8	3 3/8	4	15060	
19/32	1/2	1 3/8	3 3/8	4	15059	
5/8	1/2	1 3/8	3 3/8	4	55658	
5/8	5/8	1 5/8	3 3/4	4	55661	
11/16	1/2	1 5/8	3 5/8	4	15246	
11/16	5/8	1 5/8	3 3/4	4	15061	
3/4	1/2	1 5/8	3 5/8	4	15240	
3/4	5/8	1 5/8	3 3/4	4	22788	
3/4	3/4	1 5/8	3 3/4	4	55676	
13/16	5/8	1 7/8	4	6	22789	
13/16	3/4	1 7/8	4 1/8	4	15062	
7/8	5/8	1 7/8	4 1/8	6	22791	
7/8	3/4	1 7/8	4 1/8	4	55694	
7/8	7/8	1 7/8	3 7/8	4	55697	
15/16	3/4	1 7/8	4	4	55703	

D	d	Corte Flute Coupe	OAL	Z	N° Art. HSS	€
1	1/2	1 7/8	4 1/8	4	22611	
1	5/8	1 7/8	4 1/2	4	55712	
1	3/4	1 7/8	4 1/4	4	55715	
1	1	2	4 1/8	4	55721	
1 1/16	3/4	2	4 1/2	6	22792	
1 1/8	3/4	2	4 1/4	6	55727	
1 1/8	1	2	4 1/2	6	55730	
1 1/4	3/4	2	4 1/4	6	55736	
1 1/4	1	2	4 1/2	6	55742	
1 1/4	1 1/4	2	4 1/2	4	55745	
1 5/16	3/4	2	4 1/2	6	22794	
1 3/8	3/4	2	4 1/4	6	55751	
1 3/8	1	2	4 1/2	6	55754	
1 1/2	3/4	2	4 1/4	6	55757	
1 1/2	1	2	4 1/2	6	16690	
1 1/2	1 1/4	2	4 1/2	6	55763	
1 5/8	3/4	2	4 1/2	6	55766	
1 5/8	1 1/4	2	4 1/2	6	22795	
1 3/4	3/4	2	4 1/2	4	55772	
1 3/4	1 1/4	2	4 1/2	6	55775	
1 7/8	1 1/4	2	4 1/2	6	23117	
1 7/8	1 1/4	2	4 1/2	8	55778	
2	3/4	2	4 1/2	6	55781	
2	1 1/4	2	4 1/2	6	22796	

Ref. 7412

FRESA FRONTAL ACABADO HSS NZ LARGA
Long NZ HSS Finishing End Mill
Fraise Finition HSS NZ Longue





HSS | CNC qualified | ASME Std. N | 4-8 Z | 30° | Tol. +0,00150 -0,00000

Material		Vc (ft/min.)	f - Avances Fresas HSS - End Mill Feed - Pas Fraise (fz/rev.)										
Group	Sub.	HSS	Ø	5/32	1/4	5/16	3/8	1/2	5/8	3/4	1"	1 1/4	1 1/2	2"	2 1/2
1	1.1	65-80		0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0049	0,0049	0,0049	0,0049

vf (inch/min) = r.p.m. x Z x f x K
(K = Coeficiente Corrección / Correction Coefficient / Coefficient de Correction)

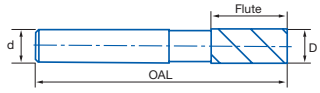
$$r.p.m. = \frac{Vc \times 1.000}{\pi \times ø}$$

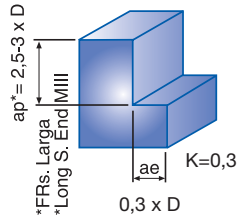
D	d	Corte Flute Coupe	OAL	Z	N° Art. HSS	€
1/4	3/8	1 1/4	3 1/16	4	42699	
5/16	3/8	1 3/8	3 1/8	4	42700	
3/8	3/8	1 1/2	3 1/4	4	56513	
7/16	1/2	1 3/4	3 3/4	4	42701	
1/2	1/2	2	4	4	56519	
5/8	5/8	2 1/2	4 5/8	4	56522	

D	d	Corte Flute Coupe	OAL	Z	N° Art. HSS	€
3/4	3/4	3	5 1/4	4	42710	
7/8	7/8	3 1/2	5 3/4	4	56531	
1	1	4	6 1/2	4	56540	

Ref. 7402

FRESA FRONTAL ACABADO HSS NZ LARGA
Long NZ HSS Finishing End Mill
Fraise Finition HSS NZ Longue





HSS | CNC qualified | ASME Std. N | 4-8 Z | 30° | Tol. +0,00150 -0,00000

Material		Vc (ft/min.)	f - Avances Fresas HSS - End Mill Feed - Pas Fraise (fz/rev.)										
Group	Sub.	HSS	Ø	5/32	1/4	5/16	3/8	1/2	5/8	3/4	1"	1 1/4	1 1/2	2"	2 1/2
1	1.1	65-80		0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0049	0,0049	0,0049	0,0049

vf (inch/min) = r.p.m. x Z x f x K
(K = Coeficiente Corrección / Correction Coefficient / Coefficient de Correction)

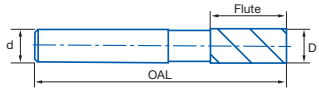
$$r.p.m. = \frac{Vc \times 1.000}{\pi \times ø}$$

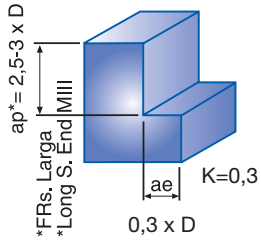
D	d	Corte Flute Coupe	OAL	Z	N° Art. HSS	€
1 1/8	1	4	6 1/2	6	55850	
1 1/4	1 1/4	4	6 1/2	6	55853	
1 1/4	1	4	6 1/2	6	53556	
1 3/8	1	4	6 1/2	6	55856	

D	d	Corte Flute Coupe	OAL	Z	N° Art. HSS	€
1 1/2	1 1/4	4	6 1/2	6	55859	
1 3/4	1 1/4	4	6 1/2	6	55862	
2	1 1/4	4	6 1/2	8	55865	

Ref. 7414

FRESA FRONTAL ACABADO HSS NZ EXTRA LARGA
Extra Long NZ HSS Finishing End Mill
Fraise Finition HSS NZ Extra-Longue





HSS	CNC qualified	ASME Std. N		4-6 Z		30°		Tol. +0,00150 -0,00000	

Material		Vc (ft/min.)
Group	Sub.	HSS
1	1.1	65-80

f - Avances Fresas HSS - End Mill Feed - Pas Fraise **(fz/rev.)**

Ø	5/32	1/4	5/16	3/8	1/2	5/8	3/4	1"	1 1/4	1 1/2	2"	2 1/2
	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0049	0,0049	0,0049	0,0049

vf (inch/min) = r.p.m. x Z x f x K
(K = Coeficiente Corrección / Correction Coefficient / Coefficient de Correction**)**

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times ø}$$

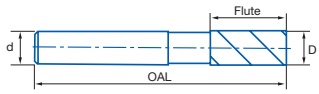
D	d	Corte Flute Coupe	OAL	Z	N° Art. HSS	€
1/4	3/8	1 3/4	3 9/16	4	22332	
3/8	3/8	2 1/2	4 1/4	4	22371	
1/2	1/2	3	5	4	56663	
5/8	5/8	4	6 1/8	4	56666	
3/4	3/4	4	6 1/4	4	56669	
7/8	7/8	5	7 1/4	4	56672	
1	1	6	8 1/2	4	56675	
1 1/4	1 1/4	6	8 1/2	6	56678	
1 1/2	1 1/4	8	10 1/2	6	70811	

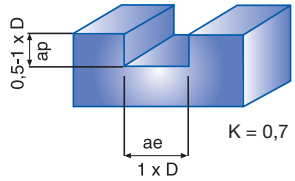
Ref. 7521

FRESA FRONTAL DESBASTE FINO COBALTO 8% 3Z INOX

Stainless Steel 3Z Cobalt 8% Fine Pitch Roughing End Mill

Fraise Ebauche Pas Fin Cobalt 8% 3Z Inoxydable



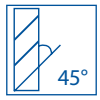


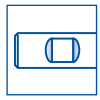
Cobalt 8%

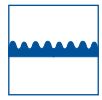
TIALSIN

CNC qualified

ASME Std. NR-F







Material		Vc (ft/min.)	
Group	Sub.	8 % Co	TIALSIN
1	1.1	98-131	131-183
2	2.1	49-65	65-92
	2.2	49-65	65-92
6	6.1	525-656	722-918
	6.2	525-656	722-918
	6.3	164-262	229-361

Refs. 7521-7523 f - Avances Fresas Co 8% - End Mill Feed - Pas Fraise (fz/rev.)

Ø	5/32	1/4	5/16	3/8	1/2	5/8	3/4	1"	1 1/4	1 1/2	2"	2 1/2
	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	0,0005	0,0010	0,0012	0,0018	0,0018	0,0026	0,0026	0,0026	0,0026	0,0026	0,0026	0,0026
	0,0005	0,0010	0,0012	0,0018	0,0018	0,0026	0,0026	0,0026	0,0026	0,0026	0,0026	0,0026
	0,0010	0,0017	0,0024	0,0026	0,0031	0,0039	0,0051	0,0051	0,0051	0,0051	0,0051	0,0051
	0,0010	0,0017	0,0024	0,0026	0,0031	0,0039	0,0051	0,0051	0,0051	0,0051	0,0051	0,0051
	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039

vf (inch/min) = r.p.m. x Z x f x K

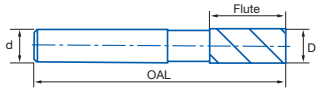
(K = Coeficiente Corrección / Correction Coefficient / Coefficient de Correction)

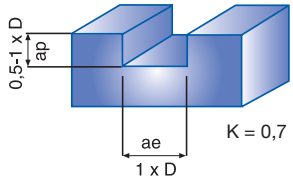
$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \varnothing}$$

D	d	Corte Flute Coupe	OAL	Z	N° Art. Cobalt	€	N° Art. TIALSIN	€
1/4	3/8	5/8	2 7/16	3	57740		65682	
5/16	3/8	3/4	2 1/2	3	57743		25497	
3/8	3/8	3/4	2 1/2	3	57746		24488	
1/2	1/2	1 1/4	3 1/4	3	57749		24489	
5/8	5/8	1 5/8	3 3/4	3	57752		24490	
3/4	3/4	1 5/8	3 3/4	3	57755		24491	
7/8	3/4	1 7/8	4 1/8	3	57758		24492	
1	3/4	2	4 1/2	3	57761		24493	
1	1	2	4 1/2	3	57764		24495	
1 1/8	3/4	2	4 1/2	3	57767		24498	
1 1/4	1 1/4	2	4 1/2	3	57770		24499	
1 1/2	1 1/4	2	4 1/2	3	57773		24500	
1 3/4	1 1/4	2	4 1/2	3	57776		24501	
2	1 1/4	2	4 1/2	3	57779		24502	

Ref. 7320

FRESA FRONTAL DESBASTE FINO 3Z EXTRA CORTA ALUMINIO VIRUTA CORTA
Short Chip Aluminium Stub 3Z Fine Pitch Roughing End Mill
Fraise Ebauche Pas Fin 3Z Extra-Courte Aluminium Coupeau Court





Cobalt 8% | TIALSIN | CNC qualified | ASME Std. NR-F | 30° | Tol. +0,00394 -0,00197

Material		Vc (ft/min.)		Refs. 7320-7324 f - Avances Fresas Co 8% - End Mill Feed - Pas Fraise (fz/rev.)												
Group	Sub.	8 % Co	TIALSIN	Ø	5/32	1/4	5/16	3/8	1/2	5/8	3/4	1"	1 1/4	1 1/2	2"	2 1/2
1	1.1	98-131	131-183		0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
3	3.1	65-98	82-131		0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	3.2	49-65	65-82		0,0006	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
4	4	49-65	65-82		0,0010	0,0017	0,0024	0,0026	0,0031	0,0043	0,0051	0,0051	0,0051	0,0051	0,0051	0,0051
5	5.1	164-295	229-410		0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	5.2	164-295	229-410		0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
6	6.1	525-656	722-918		0,0010	0,0017	0,0024	0,0026	0,0031	0,0039	0,0051	0,0051	0,0051	0,0051	0,0051	0,0051
	6.2	525-656	722-918		0,0010	0,0017	0,0024	0,0026	0,0031	0,0039	0,0051	0,0051	0,0051	0,0051	0,0051	0,0051
	6.3	164-262	229-361		0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039

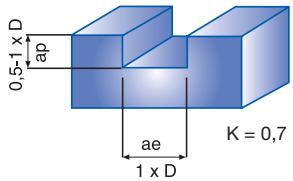
vf (inch/min) = r.p.m. x Z x f x K
(K = Coeficiente Corrección / Correction Coefficient / Coefficient de Correction)

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \varnothing}$$

D	d	Corte Flute Coupe	OAL	Z	N° Art. Cobalt	€	N° Art. TIALSIN	€
1/4	3/8	1/4	2 1/16	3	21284		23710	
3/8	3/8	3/8	2 5/32	3	21285		23711	
1/2	1/2	1/2	2 1/2	3	21286		23712	
5/8	5/8	5/8	2 3/4	3	21288		23713	
7/8	3/4	7/8	3 1/8	3	21290		23715	
1	1	1	3 1/2	3	21291		23716	

Ref. 7324

FRESA FRONTAL DESBASTE GRUESO 3Z EXTRA CORTA ALUMINIO
Aluminium Stub 3Z Coarse Roughing End Mill
Fraise Ebauche 3Z Extra-Courte Aluminium

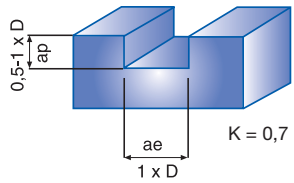


Cobalt 8% | TIALSIN | CNC qualified | ASME Std. NR | 30° | Tol. +0,00394 -0,00197

D	d	Corte Flute Coupe	OAL	Z	N° Art. Cobalt	€	N° Art. TIALSIN	€
1/4	3/8	1/4	2 1/16	3	21292		23703	
3/8	3/8	3/8	2 5/32	3	21294		23704	
1/2	1/2	1/2	2 1/2	3	21296		23706	
5/8	5/8	5/8	2 3/4	3	21297		23707	
3/4	3/4	3/4	2 7/8	3	21299		23708	
7/8	3/4	7/8	3 1/8	3	25495		25496	
1	1	1	3 1/2	3	21301		23709	

Ref. 7370

FRESA FRONTAL DESBASTE GRUESO 3Z ALUMINIO VIRUTA LARGA
Long Chip Aluminium 3Z Coarse Roughing End Mill
Fraise Ebauche 3Z Aluminium Coupeau Long



Cobalt 8% | TIALSIN | CNC qualified | ASME Std. WR | 37° | Tol. +0,00394 -0,00197

Material		Vc (ft/min.)		Ø	f - Avances Fresas Co 8% - End Mill Feed - Pas Fraise (fz/rev.)											
Group	Sub.	8 % Co	TIALSIN		5/32	1/4	5/16	3/8	1/2	5/8	3/4	1"	1 1/4	1 1/2	2"	2 1/2
1	1.1	98-131	131-183		0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
3	3.1	65-98	82-131		0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	3.2	49-65	65-82		0,0006	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
4	4	49-65	65-82		0,0010	0,0017	0,0024	0,0026	0,0031	0,0043	0,0051	0,0051	0,0051	0,0051	0,0051	0,0051
5	5.1	164-295	229-410		0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	5.2	164-295	229-410		0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
6	6.1	525-656	722-918		0,0010	0,0017	0,0024	0,0026	0,0031	0,0039	0,0051	0,0051	0,0051	0,0051	0,0051	0,0051

vf (inch/min) = r.p.m. x Z x f x K
(K = Coeficiente Corrección / Correction Coefficient / Coefficient de Correction)

r.p.m. = $\frac{Vc \times 1.000}{\pi \times ø}$

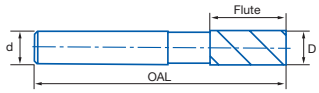
D	d	Corte Flute Coupe	OAL	Z	N° Art. Cobalt	€	N° Art. TIALSIN	€
3/16	3/8	1/2	2 3/8	3	23824		23828	
1/4	3/8	5/8	2 7/16	3	23825		23829	
9/32	3/8	3/4	2 1/2	3	24454		24455	
5/16	3/8	3/4	2 1/2	3	23826		23830	
11/32	3/8	3/4	2 1/2	3	24456		24457	
3/8	3/8	3/4	2 1/2	3	55406		23718	
7/16	3/8	1	2 11/16	3	23827		23831	
15/32	1/2	1 1/4	3 1/4	3	24458		24459	
1/2	1/2	1 1/4	3 1/4	3	55415		23719	
5/8	5/8	1 5/8	3 3/4	3	55418		23721	
11/16	5/8	1 5/8	3 3/4	3	24460		24461	
3/4	5/8	1 5/8	3 3/4	3	24462		24463	
3/4	3/4	1 5/8	3 7/8	3	55427		23722	
7/8	3/4	1 7/8	4 1/8	3	55430		23724	
1	1	2	4 1/2	3	55439		23726	
1 1/4	3/4	2	4 1/4	3	55442		23727	
1 1/4	1 1/4	2	4 1/2	3	55445		23728	
1 3/8	3/4	2	4 1/4	3	24464		24465	
2	3/4	2	4 1/2	3	24466		24467	

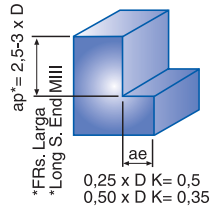
Ref. 7372

FRESA FRONTAL DESBASTE GRUESO 3Z ALUMINIO VIRUTA LARGA

Long Chip Aluminium 3Z Coarse Roughing End Mill

Fraise Ebauche 3Z Aluminium Coupeau Long



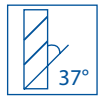


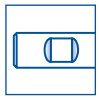
Cobalt 8%

TIALSIN

CNC qualified

ASME Std. WR





Tol. +0,00394 -0,00197

Material		Vc (ft/min.)		Ø	f - Avances Fresas Co 8% - End Mill Feed - Pas Fraise (fz/rev.)											
Group	Sub.	8 % Co	TIALSIN		5/32	1/4	5/16	3/8	1/2	5/8	3/4	1"	1 1/4	1 1/2	2"	2 1/2
1	1.1	98-131	131-183		0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
3	3.1	65-98	82-131		0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	3.2	49-65	65-82		0,0006	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
4	4	49-65	65-82		0,0010	0,0017	0,0024	0,0026	0,0031	0,0043	0,0051	0,0051	0,0051	0,0051	0,0051	0,0051
5	5.1	164-295	229-410		0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	5.2	164-295	229-410		0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
6	6.1	525-656	722-918		0,0010	0,0017	0,0024	0,0026	0,0031	0,0039	0,0051	0,0051	0,0051	0,0051	0,0051	0,0051

vf (inch/min) = r.p.m. x Z x f x K

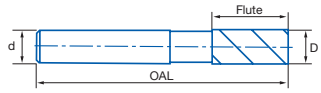
(K = Coeficiente Corrección / Correction Coefficient / Coefficient de Correction)

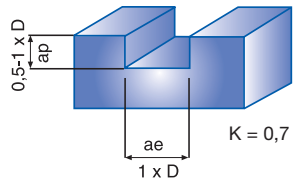
$$r.p.m. = \frac{Vc \times 1.000}{\pi \times ø}$$

D	d	Corte Flute Coupe	OAL	Z	N° Art. Cobalt	€	N° Art. TIALSIN	€
1/4	3/8	1 3/8	3 1/8	3	23841		23844	
5/16	3/8	1 3/8	3 1/8	3	23842		23845	
3/8	3/8	1 5/8	3 3/16	3	23843		23847	
1/2	1/2	2	4	3	55478		23733	
1/2	1/2	3	5	3	24468		24469	
5/8	5/8	2 1/2	4 5/8	3	55484		23734	
5/8	5/8	3 1/8	5 1/4	3	24470		24471	
3/4	3/4	2	4 1/4	3	52326		23736	
3/4	3/4	3	5 1/4	3	55490		23737	
1	1	3	5 1/2	3	55499		23739	
1	1	4	6 1/2	3	55502		23742	
1 1/4	1 1/4	3	5 1/2	3	55505		23743	
1 1/4	1 1/4	4	6 1/2	3	55508		23745	
1 1/2	1 1/4	4	6 1/2	3	24472		24473	
2	1 1/4	4	6 1/2	3	55520		23748	

Ref. 7530

FRESA FRONTAL ACABADO 3Z INOX-ALUMINIO
Stainless-Aluminium 3Z Finishing End Mill
Fraise Finition 3Z Inoxydable-Aluminium



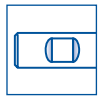


Cobalt 8%

CNC qualified

ASME Std. N

3 Z



Tol. +0,00150 -0,00000

Material		Vc (ft/min.)
Group	Sub.	8 % Co
1	1.1	98-131
2	2.1	49-65
	2.2	49-65
6	6.1	525-656
	6.2	525-656
	6.3	164-262

Refs. 7530-7532 f - Avances Fresas Co 8% - End Mill Feed - Pas Fraise (fz/rev.)

Ø	5/32	1/4	5/16	3/8	1/2	5/8	3/4	1"	1 1/4	1 1/2	2"	2 1/2
	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	0,0005	0,0010	0,0012	0,0018	0,0018	0,0026	0,0026	0,0026	0,0026	0,0026	0,0026	0,0026
	0,0005	0,0010	0,0012	0,0018	0,0018	0,0026	0,0026	0,0026	0,0026	0,0026	0,0026	0,0026
	0,0010	0,0017	0,0024	0,0026	0,0031	0,0039	0,0051	0,0051	0,0051	0,0051	0,0051	0,0051
	0,0010	0,0017	0,0024	0,0026	0,0031	0,0039	0,0051	0,0051	0,0051	0,0051	0,0051	0,0051
	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039

vf (inch/min) = r.p.m. x Z x f x K
(K = Coeficiente Corrección / Correction Coefficient / Coefficient de Correction)

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \varnothing}$$

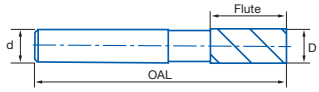
D	d	Corte Flute Coupe	OAL	Z	N° Art. Cobalt	€
1/4	3/8	5/8	2 7/16	3	19339	
5/16	3/8	3/4	2 1/2	3	19340	
3/8	3/8	3/4	2 1/2	3	19342	
1/2	1/2	1 1/4	3 1/4	3	19343	
5/8	5/8	1 5/8	3 3/4	3	19344	
3/4	3/4	1 5/8	3 7/8	3	10874	
7/8	3/4	1 7/8	4 1/8	3	24511	
1	1	2	4 1/2	3	24512	
1 1/4	3/4	2	4 1/4	3	24513	

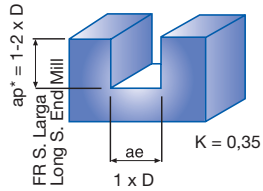
Ref. **7532**

FRESA FRONTAL ACABADO 3Z INOX-ALUMINIO LARGA

Long Stainless-Aluminium 3Z Finishing End Mill

Fraise Finition 3Z Inoxydable-Aluminium Longue





Cobalt 8% | CNC qualified | ASME Std. N | 3 Z | 45° | Tol. +0,00150 -0,00000

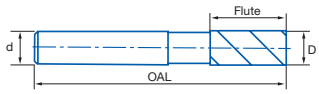
D	d	Corte Flute Coupe	OAL	Z	N° Art. Cobalt	€
1/2	1/2	2	4	3	24514	
5/8	5/8	2 1/2	4 5/8	3	24515	
3/4	3/4	3	5 1/4	3	24516	
1	1	4	6 1/2	3	24517	
1 1/4	1 1/4	4	6 1/2	3	24518	

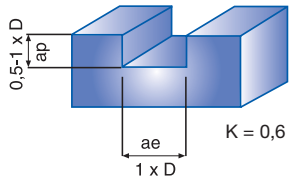
Ref. 7205

FRESA FRONTAL ACABADO COBALTO 8% 2Z

2Z Cobalt 8% Finishing End Mill

Fraise Finition Cobalt 8% 2Z





Cobalt 8% | TIALSIN | CNC qualified | Keyway Tol. | ASME Std. N | 2 Z | 30° | Tol. +0,00000 -0,00150

Material		Vc (ft/min.)	
Group	Sub.	8 % Co	TIALSIN
1	1.1	98-131	131-183
3	3.1	65-98	82-131
	3.2	49-65	65-82
5	5.1	164-295	229-410
	5.2	164-295	229-410
6	6.1	525-656	722-918
	6.2	525-656	722-918
	6.3	164-262	229-361

f - Avances Fresas Co 8% - End Mill Feed - Pas Fraise **(fz/rev.)**

Ø 5/32	1/4	5/16	3/8	1/2	5/8	3/4	1"	1 1/4	1 1/2	2"	2 1/2
0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
0,0006	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
0,0010	0,0017	0,0024	0,0026	0,0031	0,0039	0,0051	0,0051	0,0051	0,0051	0,0051	0,0051
0,0010	0,0017	0,0024	0,0026	0,0031	0,0039	0,0051	0,0051	0,0051	0,0051	0,0051	0,0051
0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039

vf (inch/min) = r.p.m. x Z x f x K

(K = Coeficiente Corrección / Correction Coefficient / Coefficient de Correction)

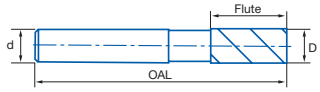
$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \varnothing}$$

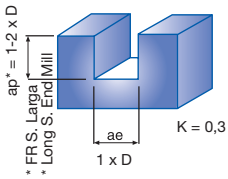
D	d	Corte Flute Coupe	OAL	Z	N° Art. Cobalt	€	N° Art. TIALSIN	€
1/8	3/8	3/8	2 5/16	2	16648		28217	
5/32	3/8	7/16	2 5/16	2	16649		28218	
3/16	3/8	7/16	2 5/16	2	16650		28219	
7/32	3/8	1/2	2 5/16	2	16651		28220	
1/4	3/8	1/2	2 5/16	2	16652		28221	
9/32	3/8	9/16	2 5/16	2	16654		28222	
5/16	3/8	9/16	2 5/16	2	16655		28223	
11/32	3/8	9/16	2 5/16	2	16657		28224	
3/8	3/8	9/16	2 5/16	2	16658		28225	
13/32	3/8	13/16	2 1/2	2	16659		28226	
7/16	3/8	13/16	2 1/2	2	16660		28227	
1/2	1/2	1	3	2	16664		28230	
9/16	1/2	1 1/8	3 1/8	2	16665		28232	
5/8	1/2	1 1/8	3 1/8	2	11569		28233	
5/8	5/8	1 5/16	3 7/16	2	16666		28235	
11/16	1/2	1 5/16	3 5/16	2	11775		28236	
11/16	5/8	1 5/16	3 7/16	2	16667		28237	
3/4	1/2	1 5/16	3 5/16	2	11799		28239	
3/4	5/8	1 5/16	3 7/16	2	11802		28240	
3/4	3/4	1 5/16	3 9/16	2	16669		28241	
13/16	3/4	1 1/2	3 3/4	2	16670		28244	
7/8	5/8	1 1/2	3 5/8	2	13870		28246	
7/8	3/4	1 1/2	3 3/4	2	16672		28247	
7/8	7/8	1 1/2	3 3/4	2	11125		28248	
15/16	3/4	1 1/2	3 3/4	2	16680		28249	
1	5/8	1 1/2	3 5/8	2	13871		28250	

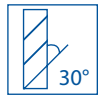
D	d	Corte Flute Coupe	OAL	Z	N° Art. Cobalt	€	N° Art. TIALSIN	€
1	3/4	1 1/2	3 3/4	2	11127		28251	
1	1	1 5/8	4 1/8	2	16673		28253	
1 1/16	3/4	1 5/8	3 7/8	2	16681		28254	
1 1/8	3/4	1 5/8	3 7/8	2	13872		28255	
1 1/8	7/8	1 5/8	3 7/8	2	13873		28242	
1 1/8	1	1 5/8	4 1/8	2	16674		28256	
1 3/16	3/4	1 5/8	3 7/8	2	16682		28257	
1 1/4	3/4	1 5/8	3 7/8	2	13874		28258	
1 1/4	1	1 5/8	4 1/8	2	13875		28259	
1 1/4	1 1/4	1 5/8	4 1/8	2	16675		28261	
1 5/16	3/4	1 5/8	3 7/8	2	16685		28262	
1 3/8	3/4	1 5/8	3 7/8	2	13876		28263	
1 3/8	1	1 5/8	4 1/8	2	16686		28264	
1 3/8	1 1/4	1 5/8	4 1/8	2	13877		28265	
1 7/16	3/4	1 5/8	4 1/8	2	13878		28266	
1 1/2	3/4	1 5/8	3 7/8	2	13879		28268	
1 1/2	1	1 5/8	4 1/8	2	13880		28269	
1 1/2	1 1/4	1 5/8	4 1/8	2	16676		28270	
1 5/8	3/4	1 5/8	4 1/8	2	13881		28271	
1 5/8	1 1/4	1 5/8	4 1/8	2	16687		28272	
1 3/4	3/4	1 5/8	4 1/8	2	13882		28273	
1 3/4	1 1/4	1 5/8	4 1/8	2	16678		28274	
1 7/8	3/4	1 5/8	4 1/8	2	13883		28275	
1 7/8	1 1/4	1 5/8	4 1/8	2	16688		28276	
2	3/4	1 5/8	4 1/8	2	13884		28277	
2	1 1/4	1 5/8	4 1/8	2	16679		28278	

Ref. 7203

FRESA FRONTAL ACABADO COBALTO 8% 2Z LARGA
Long 2Z Cobalt 8% Finishing End Mill
Fraise Finition Cobalt 8% 2Z Longue





Cobalt 8% | TIALSIN | CNC qualified | Keyway Tol. | ASME Std. N |  | 2 Z |  |  30° |  | Tol. +0,00000 -0,00150 |  | 

Material		Vc (ft/min.)	
Group	Sub.	8 % Co	TIALSIN
1	1.1	98-131	131-183
3	3.1	65-98	82-131
	3.2	49-65	65-82
5	5.1	164-295	229-410
	5.2	164-295	229-410
6	6.1	525-656	722-918
	6.2	525-656	722-918
	6.3	164-262	229-361

f - Avances Fresas Co 8% - End Mill Feed - Pas Fraise (fz/rev.)

Ø	5/32	1/4	5/16	3/8	1/2	5/8	3/4	1"	1 1/4	1 1/2	2"	2 1/2
	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	0,0006	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	0,0010	0,0017	0,0024	0,0026	0,0031	0,0039	0,0051	0,0051	0,0051	0,0051	0,0051	0,0051
	0,0010	0,0017	0,0024	0,0026	0,0031	0,0039	0,0051	0,0051	0,0051	0,0051	0,0051	0,0051
	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039

vf (inch/min) = r.p.m. x Z x f x K
(K = Coeficiente Corrección / Correction Coefficient / Coefficient de Correction)

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \varnothing}$$

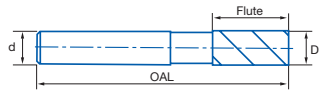
D	d	Corte Flute Coupe	OAL	Z	N° Art. Cobalt	€	N° Art. TIALSIN	€
1/4	3/8	1	3 1/16	2	77618		28279	
5/16	3/8	1 1/2	3 1/4	2	17113		28281	
3/8	3/8	1	2 3/4	2	53439		28282	
3/8	3/8	1 1/2	3 1/4	2	77525		28283	
1/2	3/8	1	3	2	13885		28284	
1/2	1/2	1 1/8	3 1/8	2	17114		28285	
1/2	1/2	1 1/2	3 1/2	2	77640		28286	
1/2	1/2	2	4	2	77550		28287	
1/2	1/2	3	5	2	77551		28288	
5/8	5/8	1 5/8	3 3/4	2	17116		28289	
5/8	5/8	2	4 1/8	2	52667		28290	
5/8	5/8	2 1/2	4 5/8	2	80848		28291	
5/8	5/8	3	5 1/8	2	53442		28292	
3/4	3/4	2 1/4	4 1/2	2	53445		28293	
3/4	3/4	3	5 1/4	2	77526		28294	
3/4	3/4	3 1/2	5 3/4	2	17133		28295	
7/8	7/8	2 1/2	4 3/4	2	53448		28296	
1	1	2 1/2	5	2	53451		28297	
1	1	3	5 1/2	2	53454		28298	
1	1	4	6 1/2	2	78604		28299	
1 1/4	1 1/4	3	5 1/2	2	77527		28300	
1 3/8	1	3	5 1/2	2	13886		28301	
1 1/2	1 1/4	3	5 1/2	2	77641		28302	
1 5/8	1 1/4	3	5 1/2	2	13887		28303	
1 3/4	1 1/4	3	5 1/2	2	79870		28304	
1 7/8	1 1/4	3	5 1/2	2	13888		28305	
2	1 1/4	3	5 1/2	2	80851		28306	

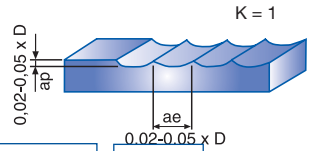
Ref. 7220

FRESA FRONTAL ACABADO COBALTO 8% 2Z RADIAL

Radial 2Z Cobalt 8% Finishing End Mill

Fraise Finition Cobalt 8% 2Z Hemisphérique





Cobalt 8% | TIALSIN | CNC qualified | Keyway Tol. | ASME Std. N | 2 Z | 30° | Tol. +0,00000 -0,00150

Material		Vc (ft/min.)		f - Avances Fresas Co 8% - End Mill Feed - Pas Fraise (fz/rev.)												
Group	Sub.	8 % Co	TIALSIN	Ø	5/32	1/4	5/16	3/8	1/2	5/8	3/4	1"	1 1/4	1 1/2	2"	2 1/2
1	1.1	98-131	131-183		0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
3	3.1	65-98	82-131		0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	3.2	49-65	65-82		0,0006	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
5	5.1	164-295	229-410		0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
	5.2	164-295	229-410		0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039
6	6.1	525-656	722-918		0,0010	0,0017	0,0024	0,0026	0,0031	0,0039	0,0051	0,0051	0,0051	0,0051	0,0051	0,0051
	6.2	525-656	722-918		0,0010	0,0017	0,0024	0,0026	0,0031	0,0039	0,0051	0,0051	0,0051	0,0051	0,0051	0,0051
	6.3	164-262	229-361		0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039	0,0039

vf (inch/min) = r.p.m. x Z x f x K

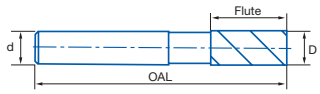
(K = Coeficiente Corrección / Correction Coefficient / Coefficient de Correction)

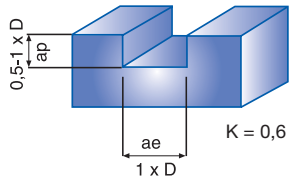
$$r.p.m. = \frac{Vc \times 1.000}{\pi \times ø}$$

D	d	Corte Flute Coupe	OAL	Z	N° Art. Cobalt	€	N° Art. TIALSIN	€
1/8	3/8	3/ 8	2 5/16	2	26070		26129	
5/32	3/8	7/16	2 5/16	2	26072		26130	
3/16	3/8	1/2	2 3/8	2	26073		26132	
7/32	3/8	1/2	2 3/8	2	26074		26135	
1/4	3/8	5/8	2 7/16	2	26075		26137	
9/32	3/8	5/8	2 1/2	2	26076		26138	
5/16	3/8	3/4	2 1/2	2	26078		26139	
11/32	3/8	3/4	2 1/2	2	26079		26141	
3/8	3/8	3/4	2 1/2	2	26081		26142	
7/16	1/2	1	3	2	26082		26143	
1/2	1/2	1	3	2	26083		26144	
9/16	1/2	1	3	2	26085		26145	
5/8	1/2	1 1/8	3 1/8	2	26087		26146	
5/8	5/8	1 3/8	3 3/8	2	26088		26147	
3/4	1/2	1 5/8	3 5/8	2	26090		26148	
3/4	3/4	1 5/8	3 7/8	2	26091		26149	
13/16	3/4	2	4 1/4	2	26093		26150	
7/8	3/4	2	4 1/4	2	26094		26151	
7/8	7/8	2	4 1/2	2	26095		26152	
15/16	3/4	2 1/4	4 1/4	2	26096		26153	
1	3/4	2 1/4	4 9/16	2	26097		26154	
1	1	2 1/4	4 3/4	2	26099		26155	
1 1/8	1	2 1/4	4 3/4	2	26101		26156	
1 1/4	1 1/4	2 1/2	5	2	26102		26157	
1 3/8	1 1/4	2 1/2	5	2	26103		26158	
1 1/2	1 1/4	2 1/2	5	2	26105		26159	
2	1 1/4	2 1/2	5	2	26106		26160	

Ref. 7200

FRESA FRONTAL ACABADO HSS 2Z
2Z HSS Finishing End Mill
Fraise Finition HSS 2Z





HSS | CNC qualified | Keyway Tol. | ASME Std. N | 2 Z | 30° | Tol. +0,00000 -0,00150

Material		Vc (ft/min.)
Group	Sub.	HSS
1	1.1	65-80

f - Avances Fresas HSS - End Mill Feed - Pas Fraise (fz/rev.)

Ø	5/32	1/4	5/16	3/8	1/2	5/8	3/4	1"	1 1/4	1 1/2	2"	2 1/2
	0,0008	0,0012	0,0014	0,0020	0,0024	0,0039	0,0039	0,0039	0,0049	0,0049	0,0049	0,0049

vf (inch/min) = r.p.m. x Z x f x K
(K = Coeficiente Corrección / Correction Coefficient / Coefficient de Correction)

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times ø}$$

D	d	Corte Flute Coupe	OAL	Z	N° Art. HSS	€
1/8	3/8	3/8	2 5/16	2	51923	
5/32	3/8	7/16	2 5/16	2	14532	
3/16	3/8	7/16	2 5/16	2	51935	
7/32	3/8	1/2	2 5/16	2	90001	
1/4	3/8	1/2	2 5/16	2	51944	
9/32	3/8	9/16	2 5/16	2	90002	
5/16	3/8	9/16	2 5/16	2	51950	
11/32	3/8	9/16	2 1/2	2	41971	
3/8	3/8	9/16	2 1/2	2	51956	
13/32	3/8	13/16	3	2	41976	
7/16	3/8	13/16	3 1/8	2	41979	
1/2	1/2	1	3 1/8	2	51971	
9/16	1/2	1 1/8	3 7/16	2	41986	
5/8	1/2	1 1/8	3 5/16	2	41988	
5/8	5/8	1 5/16	3 7/16	2	51983	
11/16	1/2	1 5/16	3 5/16	2	41991	
11/16	5/8	1 5/16	3 7/16	2	41992	
3/4	1/2	1 5/16	3 5/16	2	41996	
3/4	5/8	1 5/16	3 7/16	2	51995	
3/4	3/4	1 5/16	3 9/16	2	51998	
13/16	3/4	1 1/2	3 3/4	2	52007	
7/8	5/8	1 1/2	3 5/8	2	42001	
7/8	3/4	1 1/2	3 3/4	2	52016	
7/8	7/8	1 1/2	3 3/4	2	52019	
15/16	3/4	1 1/2	3 3/4	2	42005	
1	5/8	1 1/2	3 5/8	2	52037	

D	d	Corte Flute Coupe	OAL	Z	N° Art. HSS	€
1	3/4	1 1/2	3 3/4	2	52040	
1	1	1 5/8	4 1/8	2	52046	
1 1/16	3/4	1 5/8	3 7/8	2	52049	
1 1/8	3/4	1 5/8	3 7/8	2	52052	
1 1/8	1	1 5/8	4 1/8	2	42013	
1 3/16	3/4	1 5/8	3 7/8	2	52061	
1 1/4	3/4	1 5/8	3 7/8	2	52064	
1 1/4	1	1 5/8	4 1/8	2	52070	
1 1/4	1 1/4	1 5/8	4 1/8	2	52073	
1 5/16	3/4	1 5/8	3 7/8	2	42015	
1 3/8	3/4	1 5/8	3 7/8	2	52079	
1 3/8	1	1 5/8	4 1/8	2	52082	
1 3/8	1 1/4	1 5/8	4 1/8	2	42016	
1 7/16	3/4	1 5/8	4 1/8	2	42017	
1 1/2	3/4	1 5/8	3 7/8	2	52088	
1 1/2	1	1 5/8	4 1/8	2	52091	
1 1/2	1 1/4	1 5/8	4 1/8	2	42018	
1 5/8	3/4	1 5/8	4 1/8	2	52097	
1 5/8	1 1/4	1 5/8	4 1/8	2	52100	
1 3/4	3/4	1 5/8	4 1/8	2	52103	
1 3/4	1 1/4	1 5/8	4 1/8	2	52106	
1 7/8	3/4	1 5/8	4 1/8	2	52109	
1 7/8	1 1/4	1 5/8	4 1/8	2	52112	
2	3/4	1 5/8	4 1/8	2	42019	
2	1 1/4	1 5/8	4 1/8	2	42020	

BROCAS ESPECIALES
Special Drills
Forets Spéciaux

IZAR CUTTING TOOLS S.A.L.
Parque Empresarial Boroa 2B2
48340 AMOREBIETA (Bizkaia) - Spain
Tel. +34 94 630 02 43
Fax +34 94 630 05 42
E-mail ibeobide@izartool.com
izartool.com

Cliente
Customer
Client _____

Fecha
Date
Date _____

Dirección
Address
Adresse _____

Ciudad
Town
Ville _____

Contacto
Contact
Contact _____

Teléfono
Phone
Téléphone _____

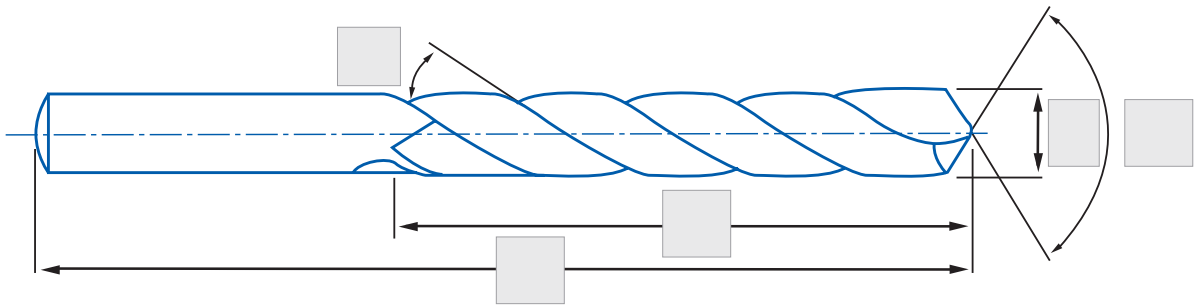
E-mail
E-mail
E-mail _____

Fax
Fax
Fax _____

DENOMINACIÓN HERRAMIENTA
TOOL DENOMINATION
DÉNOMINATION DE L'OUTIL _____

Cantidad Requerida
Requested Quantity
Quantité Demandée

Similar a Ref. IZAR
Similar to IZAR Ref.
Similaire à Ref. IZAR



FORMA DEL MANGO SHANK TYPE TYPE DE QUEUE

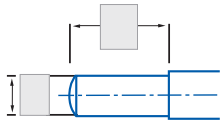
☐ **Liso**
Flat
Plat

☐ **Lengueta**
Tang
Clavette

DIN-1809

☐ **Cono Morse**
Morse Taper
Cône Morse

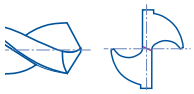
DIN-228



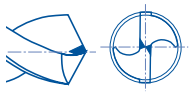
☐ **Rebajado**
Reduced
Baissé

☐ **Otro**
Another one
Autres

AGUZADO SPLIT POINT AFFUTAGE

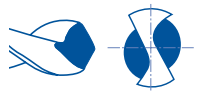


☐ **Sin Aguzar**
Without Split Point
Sans Affuter



☐ **Tipo "A"**
"A" Type
Type "A"

☐ **Tipo "C"**
"C" Type
Type "C"



☐ **Tipo "U"**
"U" Type
Type "U"

☐ **Otro**
Another one
Autres

APLICACIÓN APPLICATION APPLICATION

Material a Trabajar
Material to Work
Matériel à Travailler _____

Dureza / Resistencia a la Tracción
Hardness / Tensile Strength
Dureté / Resistance à la Traction _____

MATERIAL PIEZA
TOOL MATERIAL
MATÉRIEL DE L'OUTIL

☐ **MD Integral** HM Carbure
☐ **MD Plaquita** Carbide Tipped Pointe Carbure
☐ **HSSE 5% Co** HSSE 5% Co HSSE 5% Co
☐ **HSS** HSS HSS
☐ **Otro** Another one Autres

ACABADO
FINISH
FINITION

☐ **Blanca** Bright Finish Blanc
☐ **Negra** Blue Finish Noir
☐ **Ambar** Gold Finish Ambre
☐ **Otro** Another one Autres

RECUBRIMIENTO
COATING
REVÊTEMENT

☐ **TIALSIN** TIALSIN TIALSIN
☐ **ALCRO-PRO** ALCRO-PRO ALCRO-PRO
☐ **TIN** TIN TIN
☐ **Otro** Another one Autres

FRESAS ESPECIALES
Special End Mills
Fraises Spéciales

IZAR CUTTING TOOLS S.A.L.
Parque Empresarial Boroa 2B2
48340 AMOREBIETA (Bizkaia) - Spain
Tel. +34 94 630 02 43
Fax +34 94 630 05 42
E-mail ibeobide@izartool.com
izartool.com

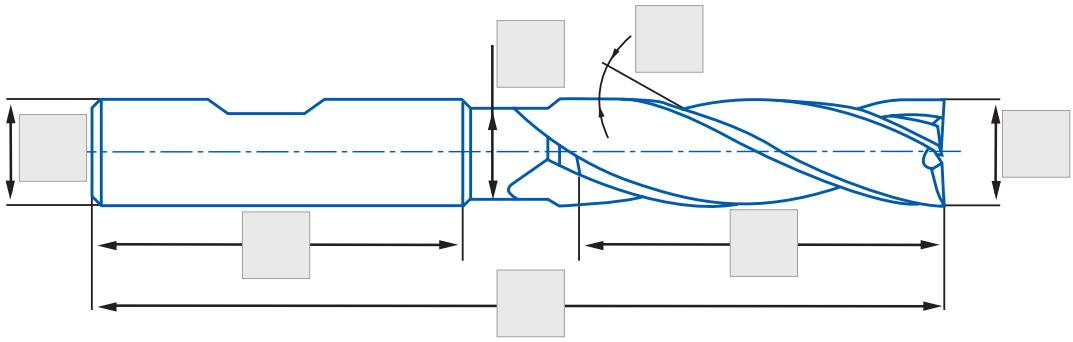
Cliente Customer Client _____
Fecha Date Date _____
Dirección Address Adresse _____
Ciudad Town Ville _____
Contacto Contact Contact _____
Teléfono Phone Téléphone _____
E-mail E-mail E-mail _____
Fax Fax Fax _____

DENOMINACIÓN HERRAMIENTA
TOOL DENOMINATION
DÉNOMINATION DE L'OUTIL _____

Cantidad Requerida Requested Quantity Quantité Demandée

Similar a Ref. IZAR Similar to IZAR Ref. Similaire à Ref. IZAR

N° Dientes Tooth N° N° de Dents



☐ 
Corte al Centro Center-Cutting Coupe au Centre

☐ 
Sin Corte al Centro Non Center-Cutting Sans Coupe au Centre

FORMA DEL MANGO SHANK TYPE TYPE DE QUEUE


☐ DIN-1835-E DIN-6535-HE


☐ DIN-1835-B DIN-6535-HB


☐ DIN-1835-A DIN-6535-HA

☐ **Otro** Another one Autres

GEOMETRÍA DEL PERFIL PROFILE GEOMETRY GÉOMÉTRIE DU PROFIL

☐ **Acabado N** Finishing N Finition N

☐ **Desbaste Grueso NR** Coarse Roughing NR Ebauche NR

☐ **Desbaste Fino NR-F** Fine Pitch Roughing NR-F Ebauche Pas Fin NR-F

☐ **Desbaste Medio NF** Roughing & Finishing NF Semi-Ebauche NF

☐ **Otro** Another one Autres

GEOMETRÍA FRONTAL FRONT GEOMETRY GÉOMÉTRIE FRONTALE

☐ **Recta** Straight Droite

☐ **Chaflán** Chamfer Chamfrein

☐ **Radio** Radius Rayou

☐ **Radial** Radial Fémisphérique

☐ **Otro** Another one Autres

APLICACIÓN APPLICATION APPLICATION

Material a Trabajar Material to Work Matériel à Travailler _____

Dureza / Resistencia a la Tracción Hardness / Tensile Strength Dureté / Resistance à la Traction _____

MATERIAL PIEZA Tool Material MATÉRIEL DE L'OUTIL

☐ **MD** HM Carbure
☐ **PMX** PMX PMX
☐ **HSSE 8% Co** HSSE 8% Co HSSE 8% Co
☐ **HSS** HSS HSS
☐ **Otro** Another one Autres

RECUBRIMIENTO COATING REVÊTEMENT

☐ **Blanca** Bright Blanc
☐ **TIALSIN** TIALSIN TIALSIN
☐ **TIALN-TOP** TIALN-TOP TIALN-TOP
☐ **ALCRO-PRO** ALCRO-PRO ALCRO-PRO
☐ **Otro** Another one Autres

CONDICIONES CORTE BROCAS
Twist Drill Cutting Conditions
Conditions Coupe Forets

Ref. **1700**

Material		Vc (ft/min.)
Group	Sub.	5% Co
1	1.3	26 - 49
2	2.2	26 - 39
4	4	33-49

Ø	f - Avances Brocas HSS-Cobalt - Drill Feed - Pas Foret (inch/rev.)												
	5/64	1/8	5/32	13/64	1/4	21/64	25/64	15/32	5/8	51/64	1"	1"3/16	1"37/64
	0,0008	0,0014	0,0018	0,0020	0,0024	0,0028	0,0035	0,0039	0,0047	0,0063	0,0071	0,0075	0,0098
	0,0012	0,0016	0,0020	0,0024	0,0028	0,0035	0,0039	0,0047	0,0059	0,0067	0,0083	0,0098	0,0118
	0,0008	0,0012	0,0016	0,0020	0,0024	0,0028	0,0031	0,0039	0,0047	0,0055	0,0063	0,0079	0,0094

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times ø}$$

Ejemplo Recomendaciones Iniciales.

- Vc: Velocidad Corte (pies/min)
- d ø: Diámetro broca
- f: Avance por revolución
- r.p.m.: Revoluciones por minuto

1º **Determinar el material a trabajar.**
Por ejemplo, Acero Inoxidable del tipo 2.2. (pág. 6)

2º **Determinar un valor intermedio de Vc.**
Por ejemplo, 26-39 (30)

3º **Determinar f según diámetro.**
Para 1/4, 0,0028

Initial Recommendation Example

- Vc: Cutting Speed (feet/min)
- d ø: diameter of the drills
- f: feed per revolution
- r.p.m.: revolution per minute

1º **Choose working material.**
For example, Stainless Steel of the group 2.2 (page 6)

2º **Choose a medium Vc.**
For example, 26-39 (30)

3º **Choose f according to diameter.**
For 1/4, 0,0028

Conditions initiales conseillées

- Vc: Vitesse de coupe (pieds/min)
- d ø: Diametre foret
- f: Avance par tour
- r.p.m.: Tours par minute

1º **Déterminer le matériel à usiner.**
Par exemple acier INOX du groupe 2.2 (page 6)

2º **Déterminer une valeur en moyenne de Vc.**
Par exemple, 26-39 (30)

3º **Déterminer f selon diamèter.**
Pour 1/4, 0,0028

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times ø} \qquad r.p.m. = \frac{30 \times 1.000}{3,14 \times 6,35} = 1504$$

$$Vf = r.p.m. \times f = 1504 \times 0,0028 = \mathbf{4,21\ inch/min.}$$

Nota: En las tablas hay dos valores comunes para todas las operaciones: π (3,14) y 1000.

Note: In the tables there are two common values for all operations: π (3.14) & 1000.

Note: Dans les tableaux il y a deux valeurs comunes pour toutes les opérations: π (3.14) y 1000

CONDICIONES CORTE FRESAS
End Mill Cutting Conditions
Conditions Coupe Fraises

Ref. **7644**

Material		Vc (ft/min.)	
Group	Sub.	PMX	TIALN-TOP
1	1.2	98-138	147-246
1	1.3	39-59	65-115
2	2.2	59-79	98-147
4	4	59-79	98-147

f - Avances Fresas PMX - End Mill Feed - Pas Fraise (fz/rev.)

Ø 5/32	1/4	5/16	1/4	1/2	5/8	3/4	1"	1 1/4	1 1/2	2"	2 1/2
0,0006	0,0012	0,0014	0,0023	0,0027	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045	0,0045
0,0005	0,0010	0,0012	0,0020	0,0020	0,0030	0,0030	0,0030	0,0030	0,0030	0,0030	0,0030
0,0005	0,0010	0,0012	0,0020	0,0020	0,0030	0,0030	0,0030	0,0030	0,0030	0,0030	0,0030
0,0010	0,0017	0,0024	0,0030	0,0036	0,0050	0,0059	0,0059	0,0059	0,0059	0,0059	0,0059

vf (inch/min) = r.p.m. x Z x f x K
(K = Coeficiente Corrección / Correction Coefficient / Coefficient de Correction)

$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \varnothing}$$

Ejemplo Recomendaciones Iniciales.

- Vc: Velocidad Corte (pies/min)
- d ø: Diámetro fresa
- z: Número dientes
- fz: Avance en pulgadas por diente y revolución
- K: Constante a multiplicar dependiendo de la aplicación
- ae: Profundidad corte axial
- Vf: Avance en pulgadas por minuto
- π: 3,1416

1º **Determinar el material a trabajar.**
Por ejemplo, Acero Inoxidable del tipo 2.2. (pág. 6)

2º **Determinar un valor intermedio de Vc.**
Por ejemplo, 59-79 (60)

3º **Determinar f según diámetro.**
Para 1/4, 0,0020

Initial Recommendation Example

- Vc: Cutting Speed (feet/min)
- d ø: Diameter of the End Mill
- z: Number of teeth
- fz: Feed in inches per tooth and Rev
- K: Constant to multiply depending of aplication
- ae: Axis cut depth
- Vf: Feed in inches per minute
- π: 3,1416

1º **Choose working material.**
For example, Stainless Steel of the group 2.2 (page 6)

2º **Choose a medium Vc.**
For example, 59-79 (60)

3º **Choose f according to diameter.**
For 1/4, 0,0020

Conditions initiales conseillées

- Vc: Vitesse de coupe (pieds/min)
- d ø: Diamètre fraise
- z: Number of teeth
- fz: Avance en pouces par dent et tour
- K: Valeur Constante a multiplier selon l´application
- ae: Proffondeur coupe axiale
- Vf: Avance en pouces par minute
- π: 3,1416

1º **Déterminer le matériel à usiner.**
Par exemple acier INOX du groupe 2.2 (page 6)

2º **Déterminer une valeur en moyenne de Vc.**
Par exemple, 59-79 (60)

3º **Déterminer f selon diamèter.**
Pour 1/4, 0,0020

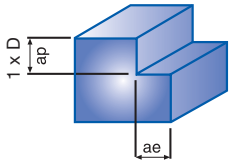
$$r.p.m. = \frac{Vc \times 1.000}{\pi \times \varnothing} \qquad r.p.m. = \frac{60 \times 1.000}{3,14 \times 6,35} = 3009$$

Vf = r.p.m. x Z x f x K = 3009 x 4 x 0,0020 x 0,4 = **9,62 inch/min.**

Nota: En las tablas hay 2 valores comunes para todas las operaciones: π (3,14) y 1000.

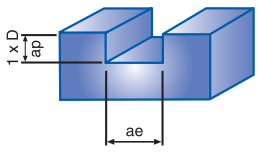
Note: In the tables there are two common values for all operations: π (3.14) & 1000

Note: Dans les tableaux il y a deux valeurs comunes pour toutes les opérations: π (3.14) y 1000



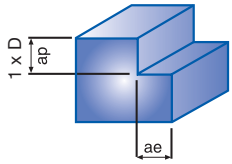
ae = 0,25 x D K= 0,80
ae = 0,50 x D K= 0,40

ae = Heavy Peripheral
Material - Alloy Steel



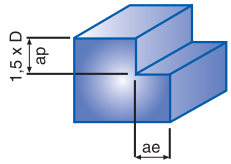
ae = 1 x D K= 0,40

ae = Heavy Peripheral



ae = 0,25 x D K= 1
ae = 0,50 x D K= 0,7

ae = Heavy Peripheral
F. N. Material - Carbon Steel



ae = 0,30 x D K= 0,6
ae = Light Peripheral

ae = 0,05-0,10 x D K= 1
ae = Finish Operation

Importante: Condiciones de trabajo para prolongar la vida de la herramienta
- Para series largas, reducir el avance un 50%
- Cuando la fresa taladra, reducir el avance un 50%

Important: Work conditions for a longer life of the End Mill.
- For long length, reduce feed to 50%
- When the end mil lis drilling, reduce feed to 50%

Important: Conditions de travail pour augmenter la vie de l´outil
- Pour séries longues, réduire l´avance un 50%
- Quand la fraise perce, réduire l´avance un 50%

TABLA CONVERSIÓN
Conversion Table
Table Conversion

Pulgadas Inches Pouces	mm	Nº / Letra Nº / Letter Nº / Lettre	Equivalencia Decimal Equivalence
		80	0,0135
	0,35		0,0138
		79	0,0145
1/64	0,40		0,0156
	0,40		0,0158
		78	0,0160
	0,45		0,0177
		77	0,0180
	0,50		0,0197
		76	0,0200
		75	0,0210
	0,55		0,0217
		74	0,0225
	0,60		0,0236
		73	0,0240
		72	0,0250
	0,65		0,0256
		71	0,0260
	0,70		0,0276
		70	0,0280
		69	0,0292
	0,75		0,0295
		68	0,0310
1/32	0,79		0,0312
	0,80		0,0315
		67	0,0320
		66	0,0330
	0,85		0,0335
		65	0,0350
	0,90		0,0354
		64	0,0360
		63	0,0370
	0,95		0,0374
		62	0,0380
		61	0,0390
	1,00		0,0394
		60	0,0400
		59	0,0410
	1,05		0,0413
		58	0,0420
		57	0,0430
	1,10		0,0433
	1,15		0,0453
		56	0,0465
3/64	1,19		0,0469
	1,20		0,0472
	1,25		0,0492
	1,30		0,0512
		55	0,0520
	1,35		0,0531
		54	0,0550
	1,40		0,0551
	1,45		0,0571
	1,50		0,0591
		53	0,0595
	1,55		0,0610
1/16	1,59		0,0625
	1,60		0,0630
		52	0,0635
	1,65		0,0650
	1,70		0,0669
		51	0,0670
	1,75		0,0689
		50	0,0700
	1,80		0,0709
	1,85		0,0728

Pulgadas Inches Pouces	mm	Nº / Letra Nº / Letter Nº / Lettre	Equivalencia Decimal Equivalence
		49	0,0730
	1,90		0,0748
		48	0,0760
	1,95		0,0768
5/64	1,98		0,0781
		47	0,0785
	2,00		0,0787
	2,05		0,0807
		46	0,0810
		45	0,0820
	2,10		0,0827
	2,15		0,0846
		44	0,0860
	2,20		0,0866
	2,25		0,0886
		43	0,0890
	2,30		0,0906
	2,35		0,0925
		42	0,0935
3/32	2,38		0,0938
	2,40		0,0945
		41	0,0960
	2,45		0,0965
		40	0,0980
	2,50		0,0984
		39	0,0995
		38	0,1015
	2,60		0,1024
		37	0,1040
	2,70		0,1063
		36	0,1065
	2,75		0,1083
7/64	2,78		0,1094
		35	0,1100
	2,80		0,1102
		34	0,1110
		33	0,1130
	2,90		0,1142
		32	0,1160
	3,00		0,1181
		31	0,1200
	3,10		0,1220
1/8	3,18		0,1250
	3,20		0,1260
	3,25		0,1280
		30	0,1285
	3,30		0,1299
	3,40		0,1339
		29	0,1360
	3,50		0,1378
		28	0,1405
9/64	3,57		0,1406
	3,60		0,1417
		27	0,1440
	3,70		0,1457
		26	0,1470
	3,75		0,1476
		25	0,1495
	3,80		0,1496
		24	0,1520
	3,90		0,1535
		23	0,1540
5/32	3,97		0,1562
		22	0,1570
	4,00		0,1575
		21	0,1590

Pulgadas Inches Pouces	mm	Nº / Letra Nº / Letter Nº / Lettre	Equivalencia Decimal Equivalence
		20	0,1610
	4,10		0,1614
	4,20		0,1654
		19	0,1660
	4,25		0,1673
	4,30		0,1693
		18	0,1695
11/64	4,37		0,1719
		17	0,1730
	4,40		0,1732
		16	0,1770
	4,50		0,1772
		15	0,1800
	4,60		0,1811
		14	0,1820
		13	0,1850
	4,70		0,1850
	4,75		0,1870
3/16	4,76		0,1875
	4,80	12	0,1890
		11	0,1910
	4,90		0,1929
		10	0,1935
		9	0,1960
	5,00		0,1969
		8	0,1990
	5,10		0,2008
		7	02010
13/64	5,16		0,2031
		6	0,2040
	5,20		0,2047
		5	0,2055
	5,25		0,2067
	5,30		0,2087
		4	0,2090
	5,40		0,2126
		3	0,2130
	5,50		0,2165
7/32	5,56		0,2188
	5,60		0,2205
		2	0,2210
	5,70		0,2244
	5,75		0,2264
		1	0,2280
	5,80		0,2283
	5,90		0,2323
		A	0,2340
15/64	5,95		0,2344
	6,00		0,2362
		B	0,2380
	6,10		0,2402
		C	0,2420
	6,20		0,2441
		D	0,2460
	6,25		0,2461
	6,30		0,2480
1/4	6,35	E	0,2500
	6,40		0,2520
	6,50		0,2559
		F	0,2570
	6,60		0,2598
		G	0,2610
	6,70		0,2638
17/64	6,75		0,2656
	6,75		0,2657
		H	0,2660

TABLA CONVERSIÓN
Conversion Table
Table Conversion

Pulgadas Inches Pouces	mm	Nº / Letra Nº / Letter Nº / Lettre	Equivalencia Decimal Equivalence
	6,80		0,2677
	6,90		0,2717
		I	0,2720
	7,00		0,2756
		J	0,2770
	7,10		0,2795
		K	0,2810
9/32	7,14		0,2812
	7,20		0,2835
	7,25		0,2854
	7,30		0,2874
		L	0,2900
	7,40		0,2913
		M	0,2950
	7,50		0,2953
19/64	7,54		0,2969
	7,60		0,2992
		N	0,3020
	7,70		0,3031
	7,75		0,3051
	7,80		0,3071
	7,90		0,3110
5/16	7,94		0,3125
	8,00		0,3150
		O	0,3160
	8,10		0,3189
	8,20		0,3228
		P	0,3230
	8,25		0,3248
	8,30		0,3268
21/64	8,33		0,3281
	8,40		0,3307
		Q	0,3320
	8,50		0,3346
	8,60		0,3386
		R	0,3390
	8,70		0,3425
11/32	8,73		0,3438
	8,75		0,3445
	8,80		0,3465
		S	0,3480
	8,90		0,3504
	9,00		0,3543
		T	0,3580
	9,10		0,3583
23/64	9,13		0,3594
	9,20		0,3622
	9,25		0,3642
	9,30		0,3661
		U	0,3680
	9,40		0,3701
	9,50		0,3740
3/8	9,53		0,3750
		V	0,3770
	9,60		0,3780
	9,70		0,3819
	9,75		0,3839
	9,80		0,3858
		W	0,3860
	9,90		0,3898
25/64	9,92		0,3906
	10,00		0,3937
		X	0,3970
		Y	0,4040
13/32	10,32		0,4062
		Z	0,4130

Pulgadas Inches Pouces	mm	Equivalencia Decimal Equivalence
	10,50	0,4134
27/64	10,72	0,4219
	11,00	0,4331
7/16	11,11	0,4375
	11,50	0,4528
29/64	11,51	0,4531
15/32	11,91	0,4688
	12,00	0,4724
31/64	12,30	0,4844
	12,50	0,4921
1/2	12,70	0,5000
	13,00	0,5118
33/64	13,10	0,5156
17/32	13,49	0,5312
	13,50	0,5315
35/64	13,89	0,5469
	14,00	0,5512
9/16	14,29	0,5625
	14,50	0,5709
37/64	14,68	0,5781
	15,00	0,5906
19/32	15,08	0,5938
39/64	15,48	0,6094
	15,50	0,6102
5/8	15,88	0,6250
	16,00	0,6299
41/64	16,27	0,6406
	16,50	0,6496
21/32	16,67	0,6562
	17,00	0,6693
43/64	17,07	0,6719
11/16	17,46	0,6875
	17,50	0,6890
45/64	17,86	0,7031
	18,00	0,7087
23/32	18,25	0,7188
	18,50	0,7283
47/64	18,65	0,7344
	19,00	0,7480
3/4	19,05	0,7500
49/64	19,45	0,7656
	19,50	0,7677
25/32	19,84	0,7812
	20,00	0,7874
51/64	20,24	0,7969
	20,50	0,8071
13/16	20,64	0,8125
	21,00	0,8268
53/64	21,03	0,8281
27/32	21,43	0,8438
	21,50	0,8465
55/64	21,83	0,8594
	22,00	0,8661
7/8	22,23	0,8750
	22,50	0,8858
57/64	22,62	0,8906
	23,00	0,9055
29/32	23,02	0,9062
59/64	23,42	0,9219
	23,50	0,9252
15/16	23,81	0,9375
	24,00	0,9449
61/64	24,21	0,9531
	24,50	0,9646
31/32	24,61	0,9688
	25,00	0,9843

Pulgadas Inches Pouces	mm	Equivalencia Decimal Equivalence
63/64	25,00	0,9844
1"	25,40	1,0000
1 1/64	25,80	1,0156
1 1/32	26,19	1,0313
1 3/64	26,59	1,0469
1 1/16	26,99	1,0625
1 5/64	27,38	1,0781
1 3/32	27,78	1,0938
1 7/64	28,18	1,1094
1 1/8	28,58	1,1250
1 9/64	28,97	1,1406
1 5/32	29,37	1,1563
1 11/64	29,77	1,1719
1 3/16	30,16	1,1875
1 13/64	30,56	1,2031
1 7/32	30,96	1,2188
1 15/64	31,35	1,2344
1 1/4	31,75	1,2500
1 17/64	32,15	1,2656
1 9/32	32,54	1,2813
1 19/64	32,94	1,2969
1 5/16	33,34	1,3125
1 21/64	33,73	1,3281
1 11/32	34,13	1,3438
1 23/64	34,53	1,3594
1 3/8	34,93	1,3750
1 25/64	35,32	1,3906
1 13/32	35,72	1,4063
1 27/64	36,12	1,4219
1 7/16	36,51	1,4375
1 29/64	36,91	1,4531
1 15/32	37,31	1,4688
1 31/64	37,70	1,4844
1 1/2	38,10	1,5000
1 33/64	38,50	1,5156
1 17/32	38,89	1,5313
1 35/64	39,29	1,5469
1 9/16	39,69	1,5625
1 37/64	40,08	1,5781
1 19/32	40,48	1,5938
1 39/64	40,88	1,6094
1 5/8	41,28	1,6250
1 41/64	41,67	1,6406
1 21/32	42,07	1,6563
1 43/64	42,47	1,6719
1 11/16	42,86	1,6785
1 45/64	43,26	1,7031
1 23/32	43,66	1,7188
1 47/64	44,05	1,7344
1 3/4	44,45	1,7500
1 49/64	44,85	1,7656
1 25/32	45,24	1,7813
1 51/64	45,64	1,7969
1 13/16	46,04	1,8125
1 53/64	46,43	1,8281
1 27/32	46,83	1,8438
1 55/64	47,23	1,8594
1 7/8	47,63	1,8750
1 57/64	48,02	1,8906
1 29/32	48,42	1,9063
1 59/64	48,82	1,9219
1 15/16	49,21	1,9375
1 61/64	49,61	1,9531
1 31/32	50,01	1,9688
1 63/64	50,40	1,9844
2	50,80	2,0000

ÍNDICE SÍMBOLOS
Symbol Index
Index de Symboles

SÍMBOLOS UTILIZACIÓN HERRAMIENTA - Tool Use Symbols - Symboles Usage Outils

GENERAL

Aceros Trabajos en Frio/Caliente
Cold/Hot Work Steel
Aciers pour Travail à Froid / à Chaud

TALADRADO - Drilling - Perçage

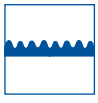
Especial Taladro Batería
Power Tool Special
Spécial Perceuse à Main

ROSCADO - Threading - Taraudage

Anillo de Color Indicativo de Uso
Use Colour Ring
Bague de Couleur d'Utilisation

FRESADO - Milling - Fraisage

Acabado
Finishing
Finition



Desbaste Fino
Fine Pitch Roughing
Ebauche Pas Fin

Desbaste Grueso
Coarse Roughing
Ebauche

Desbaste Medio
Roughing & Finishing
Semi-Finition

Ranuras en "T"
T Slots
Rainures en T

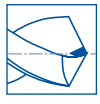
Ranuras Woodruff
Woodruff Slots
Rainures Woodruff

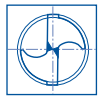
SÍMBOLOS CARACTERÍSTICAS HERRAMIENTA - Tool Characteristics Symbols - Symboles Caractéristiques Outils

TALADRADO - Drilling - Perçage

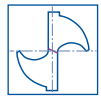
Angulo Punta
Point Angle
Angle de Pointe

Afilado en Cruz Tipo DIN 1412 "C"
Split Point DIN 1412 "C" type
Affûtage en Croix type DIN 1412 "C"





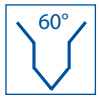
Afilado Tipo DIN 1412 "A"
Split Point DIN 1412 "A" type
Affûtage Pointe type DIN 1412 "A"



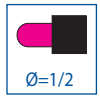
Punta Cónica con Afilado Universal
Universal Relieved Cone Point
Pointe Conique Universel

Punta Metal Duro
Carbide Tipped
Pointe Carbure

Mango 3 Planos
3-Flat Shank
Attachement 3 Plans



Avellanado
Countersink
Fraisage



Mango Rebajado
Reduced Shank
Queue Réduite

ÍNDICE SÍMBOLOS
Symbol Index
Index de Symboles

SÍMBOLOS CARACTERÍSTICAS HERRAMIENTA - Tool Characteristics Symbols - Symboles Caractéristiques Outils

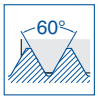
ROSCADO - Threading - Taraudage

Tipo Entrada Macho
Tap Point Type
Type d'Entrée de Taraud

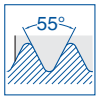
Ranuras Rectas
Straight Slots
Denture Droite

Entrada GUN
GUN Chamfer
Entrée GUN

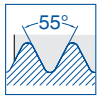
Angulo de Hélice
Helix Angle
Angle d'Hélice



Rosca Standard
Standard Thread
Filetage Standard



Rosca de tubo cilíndrica
Straight Pipe Thread
Filetage tubes cylindriques



Rosca Whitworth cilíndrica
Straight Whitworth Thread
Filetage Whitworth Cylindrique

FRESADO - Milling - Fraisage

2Z= 2 Dientes
2Z= 2 Flutes
2Z= 2 Dents

3Z= 3 Dientes
3Z= 3 Flutes
3Z= 3 Dents

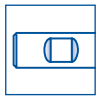
NZ= Varios Dientes Corte al Centro
NZ= Center Cutting Several Flutes
NZ= Plusieurs Dents et Coupe au Centre

Varios Dientes Sin Corte al Centro
Non-Center-Cutting Several Flutes
Plusieurs Dents sans Coupe au Centre

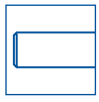
Engranajes Helicoidales
Helical Gears
Engrenages Hélicoïdaux

Fresa Frontal Recta
Straight Head End Mill
Fraise Frontal Droite

Fresa Frontal Radial
Radial Head End Mill
Fraise Frontal Hémisphérique

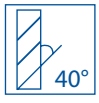


Mango Weldon
Weldon Shank
Queue Weldon



Mango Liso
Plain Shank
Queue Plaine

Chavetero Longitudinal
Keyway
Rainure Longitudinal



Angulo de Hélice
Helix Angle
Angle d'Hélice

ACEROS Y MATERIALES DE FABRICACIÓN
Production Steels & Materials
Aciers et Matériels de Fabrication

Identif. Internacional International Identif. Identif. Internationale	Comp. Química Quemical Comp. Comp. Chimique

HSS

AISI: M-2*	C: 0,90%
DIN: 1.3343*	Cr: 4,10%
AFNOR: Z85WDCV*	W: 6,40%
EN: HS 6-5-2*	V: 1,80%
UNE: F-5603*	Mo: 5,00%
*(ó equivalentes) *(or equivalents) *(Où Similaires)	

Cobalt 5%

AISI: M-35	C: 0,92%
DIN: 1.3243	Cr: 4,10%
AFNOR: Z85WDKCV	W: 6,40%
EN: HS 6-5-2-5	V: 1,90%
UNE: F-5613	Mo: 5,00%
	Co: 4,80%

PMX

AISI: ASP* This is a brandname belonging to Erasteel
C: 1,60% / Cr: 4,80% / W: 10,50% V: 5,00% / Mo: 2,00% / Co: 8,00%
*(ó equivalentes) *(or equivalents) *(Où Similaires)

MD/HM Carbure Micrograno

Mat: Micrograno	
Comp.	WC 89,3, Co 10%, 0,7 (Nb-Ti-Ta)
Grano/Grain/Grain	Muy Fino Very Fine Très fine
Dureza/Hardness/Dureté	1550 HV
Resist. Rotura Breaking Resist. Résistance ruptures	3.600 N/mm2

MD/HM Carbure Grano UF

Mat: Grano UF	
Comp.	WC 85,6, Ti/Ta (Ni)C 0,9, Co 12,5
Grano/Grain/Grain	Ultrafino / Ultrafine/ Ultrafin
Dureza/Hardness/Dureté	1700 HV
Resist. Rotura Breaking Resist. Résistance ruptures	3.300 N/mm²

MD/HM Carbure K20

Mat: K20	
Comp.	WC 93, Ti/Ta (Nb)C 0,5, Co 10
Grano/Grain/Grain	Fino / Fine / Fin
Dureza/Hardness/Dureté	1580 HV
Resist. Rotura Breaking Resist. Résistance ruptures	2.200 N/mm²

Cobalt 8%

AISI: M-42*	C: 1,10%
DIN: 1.3247	Cr: 3,90%
AFNOR: Z110DKCWY	W: 1,40%
EN: HS 2-9-1-8	V: 1,20%
UNE: F-5617	Mo: 9,20%
	Co: 8,00%
*(ó equivalentes) *(or equivalents) *(Où Similaires)	

RECUBRIMIENTOS
Coatings
Revêtements

TIALN-TOP

Nitruro de Titanio-Aluminio Titanium-Aluminium Nitride Nitrure de Titanium-Aluminium	
Dureza / Hardness / Dureté HV(0,05)	3.300
Oxidación / Oxidation / Oxidation	900 °C
Coeficiente Fricción Rubbing Coefficient/Coéficient Friction	0,30-0,35
Color / Colour / Couleur: Violeta-Gris / Violet-Grey	

TIALSIN

Nitruro de Titanio Titanium Nitride Nitrure de Titanium	
Dureza/Hardness/Dureté HV(0,05)	3.500±500
Oxidación Oxidation / Oxidation	900°C
Coeficiente Fricción Rubbing Coefficient/Coéficient Friction	0,45
Adecuado para Uso en Seco Appropiate for Dry Use Parfait usinage sans refroidir	
Color / Colour / Couleur: Antracita / Anthracite / Anthracite	

TIN

Nitruro de Aluminio Titanio Aluminum Titanium Nitride Nitrure de Aluminium Titanium	
Dureza / Hardness / Dureté HV(0,05)	2.300
Oxidación / Oxidation / Oxidation	600°C
Coeficiente Fricción Rubbing Coefficient/Coéficient Friction	0,30
Color / Colour / Couleur: Oro / Gold / Or	

TIALN-PRO

Nitruro de Titanio-Aluminio Titanium-Aluminium Nitride Nitrure de Titanium-Aluminium	
Dureza / Hardness / Dureté HV(0,05)	3.000
Oxidación / Oxidation / Oxidation	800°C
Coeficiente Fricción Rubbing Coefficient/Coéficient Friction	0,50
Color / Colour / Couleur: Gris oscuro / Dark grey / Gris Foncé	

ZIRKONIO

Nitruro de Zirconio Zirkonium Nitride Nitrure de Zirkonium	
Dureza / Hardness / Dureté HV(0,05)	2.300±200
Oxidación / Oxidation / Oxidation	660-1.100°C
Coeficiente Fricción Rubbing Coefficient/Coéficient Friction	0,50
Color / Colour / Couleur: Amarillo pálido / Pale Yellow / Jaune pâle	

TiSiN

Nitruro de Titanio Silicio Titanium Silicon Nitride Nitrure de Silicium-Titanium	
Dureza / Hardness / Dureté HV(0,05)	3500+-300
Oxidación / Oxidation / Oxidation	1000-1100°C
Coeficiente Fricción Rubbing Coefficient/Coéficient Friction	0,45
Color / Colour / Couleur: Cobre / Copper / Cuivre	

ÍNDICE NUMÉRICO (REF. - PÁGINA)

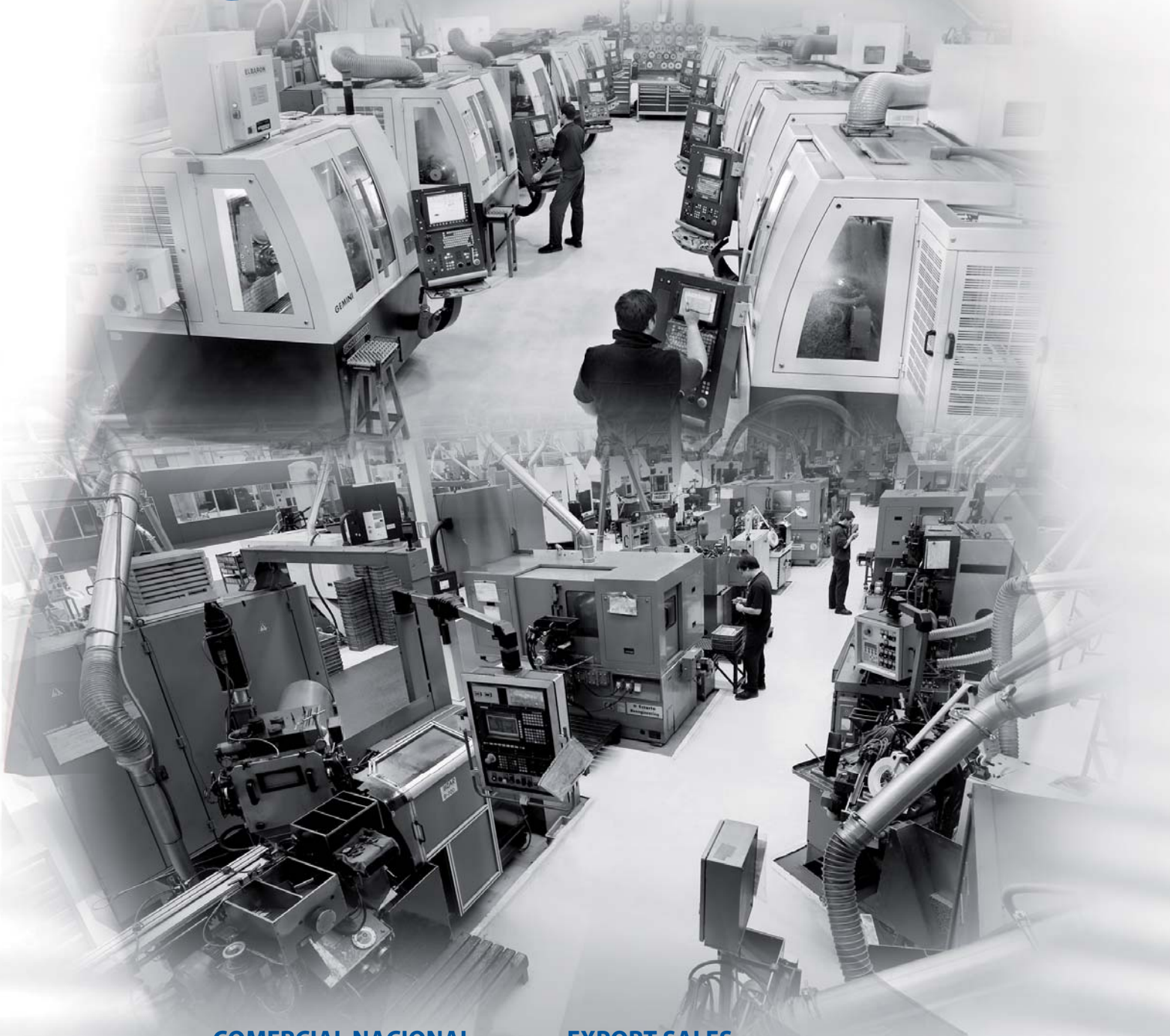
Numeric Index (Ref. - Page)

Index Numerique (Ref. - Page)

IZAR®
CUTTING TOOLS

CERTIFIED ISO 9001

CERTIFIED ISO 14001



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