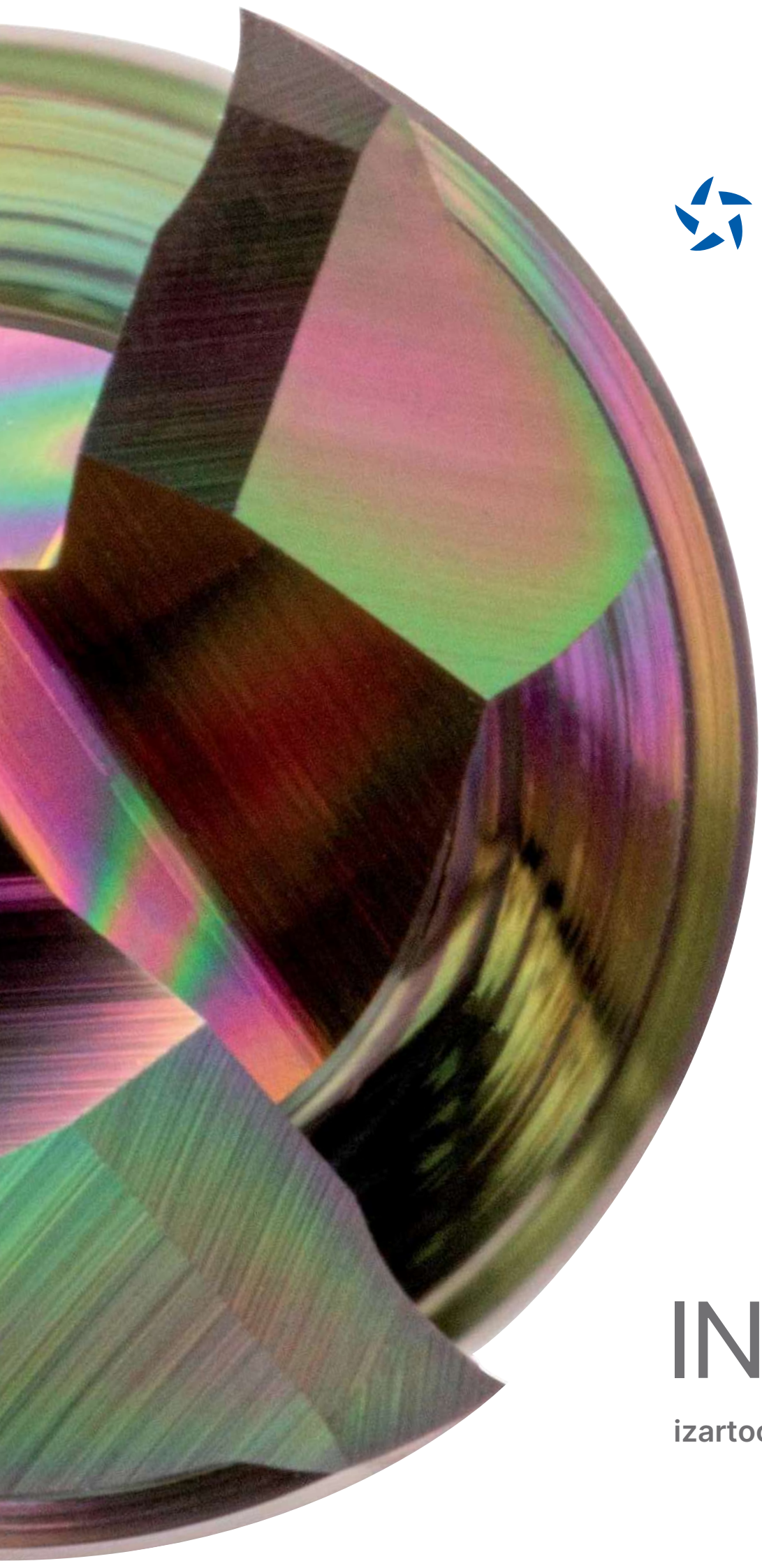

IZAR CUTTING TOOLS

IND24

izartool.com • 2024

Amorebieta 01.02.2024

Estimados clientes, colaboradores y amigos,

Con este catálogo IZAR INDUSTRIAL 2024 les presentamos la más amplia gama de referencias de nuestra historia.

En esta edición incluimos cerca de 18.000 artículos de los cuales queremos destacar varios nuevos productos:

En cuanto a las novedades orientadas al mundo del mecanizado de precisión, resaltamos la renovada gama de machos con refrigeración interior y las fresas de roscar por interpolación 9330-33.

También es relevante el crecimiento de nuestra gama en herramientas de alto avance. Aquí se encuentran las brocas de metal duro integral 9075 de tres dientes, las brocas de cabeza intercambiable 8380-8381 y las plaquitas intercambiables de fresado de alto avance 8691-92-93.

Asimismo, debemos mencionar el novedoso recubrimiento IRIS para las fresas orientadas al mecanizado de materiales no ferrosos como el aluminio y la gama de pinzas de sujeción de alta o ultra-precisión 8390-91-92-95 para herramientas de mango cilíndrico.

Hemos realizado un gran esfuerzo en desarrollar nuevas capacidades y ampliar nuestra propuesta técnica con el ánimo de poner a su disposición la gran evolución de nuestras soluciones de corte, dirigidas a las aplicaciones más específicas de los usuarios finales más exigentes.

Todo el equipo humano de IZAR nos sentimos orgullosos del trabajo realizado y confiamos en seguir dando respuesta a las necesidades de nuestros clientes de una manera sostenible y comprometida con el medio ambiente y con la excelencia en la calidad y en el servicio.

Atentamente,

Dear customers, business partners and friends,

With this IZAR INDUSTRIAL 2024 catalogue, we present you the widest range of references in our history.

In this edition, we include around 18,000 items, among which we would like to highlight several new products:

Regarding innovations oriented towards the precision machining world, we highlight the renewed range of taps with internal cooling and the 9330-33 interpolation threading mills.

The growth of our range in high-feed tools is also significant, such as the 9075 solid carbide drill bits with 3 flutes, 8380-8381 interchangeable head drill bits, and high-feed milling inserts ref. 8691-92-93.

Furthermore, we must mention the innovative IRIS coating for end mills, designed for machining non-ferrous materials such as aluminium. Additionally, the range of high or ultra-precision clamping collets ref. 8390-91-92-95 for cylindrical shank tools is noteworthy.

We have made a significant effort to develop new capabilities and expand our technical offering to provide you with the great evolution of our cutting solutions, tailored to the most specific applications of the most demanding end-users.

The entire IZAR team is proud of the work done and confident in continuing to meet the needs of our customers in a sustainable manner and committed to the environment, and to excellence in quality and service.

Sincerely,

Chers clients, collaborateurs et amis,

Avec ce catalogue IZAR INDUSTRIEL 2024, nous vous présentons la gamme la plus étendue de références de notre histoire.

Dans cette édition, nous avons inclus près de 18 000 articles, parmi lesquels nous souhaitons mettre en avant plusieurs nouveaux produits :

En ce qui concerne les nouveautés orientées vers le monde de l'usinage de précision, nous mettons en avant la gamme renouvelée de tarauds avec refroidissement interne ou les fraises à fileter par interpolation 9330-33.

La croissance de notre gamme d'outils à avance élevée est également importante, avec notamment les forets en carbure monobloc 9075 à trois dents, les forets à tête interchangeable 8380-8381 et les plaquettes de fraisage à avance élevée 8691-92-93.

Nous devons également mentionner le nouveau revêtement IRIS pour les fraises destinées à l'usinage de matériaux non ferreux tels que l'aluminium, ainsi que la gamme de pinces de serrage de haute ou ultra-précision 8390-91-92-95 pour les outils à queue cylindrique.

Nous avons déployé d'importants efforts pour développer de nouvelles capacités et élargir notre offre technique afin de mettre à votre disposition l'évolution majeure de nos solutions de coupe, adaptées aux applications les plus spécifiques des utilisateurs finaux les plus exigeants.

Toute l'équipe d'IZAR est fière du travail accompli, et nous sommes convaincus de continuer à répondre aux besoins de nos clients de manière durable et engagée envers l'environnement, tout en maintenant l'excellence en termes de qualité et de service.

Cordialement,

I am IZAR

Elena Serrano
General Manager
IZAR Cutting Tools SAL
✉ *izar@izartool.com*

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A Company With Values
Une entreprise avec des valeurs

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SME of the year 2021 in Bizkaia award
Prix PME de l'année 2021 en Biscaye

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- La honestidad
- El enfoque al cliente
- La adaptación al cambio
- El compromiso con la calidad y con el trabajo bien hecho
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- 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
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- L'adaptation au changement
- L'engagement pour la qualité et pour le travail bien fait
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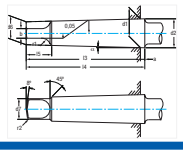

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GRUPO GROUP GROUPE	SUBGRUPO SUBGROUP S. GROUPE	MATERIALES MATERIALS MATÉRIAUX	DUREZA Hardness Dureté (HRC)	DUREZA Hardness Dureté (HB)	TRACCIÓN Tensile Traction (N/mm²)
P	P.1	**Aceros Construcción - Aceros Cementación** **Structural Steels - Case Hardening Steels** Aciers de construction - Aciers supérieurs	<24,5	<250	<850
		Aceros al Carbono No Aleados - Aceros Bonificados **Unalloyed Carbon Steels - Heat-Treatable Steels** Aciers au carbone sans alliage - Aciers supérieurs			
	P.2	**Aceros Aleados** **Alloyed Steels** Aciers alliés	<31,6	<300	<1000
	P.3	**Aceros Aleados Tratados - Aceros Bonificados** **Heat-Treatable Alloyed Steels** Aciers alliés supérieurs	31,6-42,8	300-400	1000-1300
	P.4	**Materiales resistentes al desgaste** **Wear-Resistant Materials** Matériaux résistant a l'usure	42,8-50,8	400-500	1300-1800
	P.5	**INOX Ferríticos-Martensíticos** **Ferritic-Martensitic Stainless** INOX ferritiques-martensitiques	<34	<320	<1100
M		**INOX Austeníticos** **Austenitic Stainless** INOX austénitiques	<24,5	<250	<850
K	K.1	**Fundición Gris** **Grey Cast Iron** Fonte grise		<200	<700
	K.2	**Fundición Nodular** **Nodular Cast Iron** Fonte nodulaire	<31,6	>200<300	>700<1000
S		**Aleaciones Termorresistentes (Titanio, Inconel...)** **Heat-Resistant Alloys (Titanium, Inconel...)** Alliages thermorésistants (Titane, Inconel...)			
N	N.1	**Cobre - Bronce - Latón Viruta Corta** **Copper - Bronze - Brass (Short Chip)** Cuivre - Bronze - Laiton (Copeaux courts)		<200	<700
	N.2	**Cobre - Bronce - Latón Viruta Larga** **Copper - Bronze - Brass (Long Chip)** Cuivre - Bronze - Laiton (Copeaux longs)		<200	<700
	N.3	**Al - Mg No Aleado** **Unalloyed Al - Mg** Al - Mg Sans alliage		<100	<350
	N.4	**Aleaciones Al Si < 10%** **Al Alloys Si < 10%** Alliages Al Si < 10%		<180	<600
	N.5	**Aleaciones Al Si > 10%** **Al Alloys Si > 10%** Alliages Al Si > 10%		<180	<600
	N.6	**Termoplásticos** **Thermoplastics** Thermoplastiques			
	N.7	**Duroplásticos** **Hard Plastics** Plastiques durs			
F		**Composites de Fibras (Fibra de Carbono, Fibra de Vidrio...)** **Fiber Composites (CFRP, GFRP, Honeycomb...)** Composites en fibre (CFRP, GFRP, Structure en nid d'abeilles...)			
H		**Aceros Templados, Aceros Endurecidos** **Heat-Treated Alloys** Aciers trempés, Aciers alliés supérieurs	45<70		

TIPO DE VIRUTA
Chip Type
Type de copeaux

TABLA MATERIALES

Material Table - Tableau de matériaux

	España Spain - Espagne	Alemania Germany - Allemagne		Francia France	Reino Unido UK - Royaume-Uni	Suecia Sweden - Suède	Italia Italy - Italie	EE.UU. USA - États-Unis
	UNE	W.-nr.	DIN	AFNOR	B.S.	SS	UNI	AISI
GRUPO GROUP GROUPE P ACEROS - STEELS - ACIERS								
P.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	1311	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	1312	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	1350	C 15	M 1015
	F.1510-C10K	1,1121	CK 10	XC 10	040 A 10	1265	C 10	1010
	F.1110-C15K	1,1141	C15	C18RR	080M15	1390	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		1914	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	1957	CF 35 SMN 10	1140
		1,0727	45 S 20	45 MF 4		1973		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	1922		
	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 SUPÉRIEURS							
	F . 112	1,0402	C 22	1 C 22	070 M 20	1450	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	1650	C 45	GR.1043
	F.115	1,0535	C 55	C 54	50	1655	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	1572	C 35	1038
	F.1140-C45K	1,1191	CK 45	2 C 45	080 M 46	1660	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	1770	C 60	1060
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P.2	**ACEROS ALEADOS PARA HERRAMIENTAS / ALLOYED TOOL STEELS / ACIERS ALLIÉS 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	2710	X 205CR12 KU	D 3
	F.5227-X100CRMO V5	1,2363	X 100 CRMO V5	Z 100	CDV 5	2260	X100CRMOV51KU	A 2
		1,2379	X 155CRVMO 12	Z 160CDV12	BD2	2310	X155CRVMO121KU	D 2
	F.5220-95MNCRW5	1,2510	100 MNCRW 4	90 MWCV 5	BO 1	2140	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	2723	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	2715	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	2225	25 CRM04	4130
	F.8331-AM34CRMO 4	1,7220	34 CRM 04	25 CD 4	708 A25	2234	30 CRM04	4130
	ACEROS BONIFICADOS / ALLOYED HEAT-TREATABLE STEELS / ACIERS SUPÉRIEURS							
	F. 114	1,0503	C 45	C 45	50 HS	1650	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	2244	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	2240	30 CR MO 12	

TABLA MATERIALES

Material Table - Tableau de matériaux

	España Spain - Espagne	Alemania Germany - Allemagne		Francia France	Reino Unido UK - Royaume-Uni	Suecia Sweden - Suède	Italia Italy - Italie	EE.UU. USA - États-Unis
	UNE	W.-nr.	DIN	AFNOR	B.S.	SS	UNI	AISI
ACEROS ALEADOS BONIFICADOS - HEAT-TREATABLE ALLOYED STEEL - ACIERS ALLIÉS SUPÉRIEURS (1000-1300 N/mm² / 300-400 HB)								
P.3	**ACEROS ALEADOS HERRAMIENTAS / ALLOYED TOOL STEELS / ACIERS ALLIÉS 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		2312	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 ALLIÉS 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	2242	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 SUPÉRIEURS							
		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	2240	30 CRMO 12	
		1,8523	39 CRMOV 13 9		897 M 39			
P.4	**Materiales resistentes al desgaste - Wear-Resistant Materials - Matériaux résistant a l'usure** Por ejemplo / For instance / Par exemple **HARDOX® 450** wear plate - **XAR 450 - RAEX® - FORA - CREUSABRO**							
P.5	**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	2314	X 20 CR 13	420
	F.3427-X19CRNI 17-2	1,4057	X 20 CRNI 17 2	Z 15 CN16,02	431 S29	2321	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	2302	X 12 CR 13	410
	F.3113-X6 CR17	1,4016	X 6 CR 17	Z 8 C 17	430 S18	2320	X 8 CR 17	430
	F.3115-X5CRTI 17	1,4510	X 6 CRTI 17	Z 8C T 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 M ACEROS INOXIDABLES - STAINLESS STEELS - ACIERS INOX								
	ACEROS INOX AUSTENÍTICOS / AUSTENITIC STAINLESS STEELS / ACIERS INOX AUSTÉNITIQUES (< 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	2333	X5 CRNI 18-10	304
	F.3541-X2CRNIN 18-10	1,4311	X 2 CRNIN 18-10	Z 3CN 18.07AZ	304 S 61	2371	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	2375	X 2 CRNIMON 17 12	316 LN
	F.3533-X2CRNIMO17-13-2	1,4435	X2CRNIMO 18-14-3	Z3CND 17-12-03	316 S14	2353	X2CRNIMO 1713	316 L
	F.3523-X6CRNITI 18-10	1,4541	X 6CRNITI 18-10	Z 6CNT 18-10	321 S31	2337	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	2350	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
GRUPO GROUP GROUPE K FUNDICIÓN - CAST IRON - FONTE								
K.1	**FUNDICIÓN GRIS / GREY CAST IRON / FONTE GRISE (<700N/mm²/<200 HB)**							
		0.7033	GGG 35-3	FGS 370-71	GR.350/22	0717-15	GS 370-17	
		0.7040	GGG 40	FGS 400-12	GR.420-12	0717-02	GS 400-12	GR.60-40-18
		0.7050	GGG 50	FGS 500-7	500/7	0727	GS 500-7	65-45-12
		0.7060	GGG 60	FGS 600-3	GR.600/3	0732-03	GS 600-3	GR.80-55-06
		0.8135	GTS 35-10	MN 35-10	B 35-12	0815	B 35-10	GR.32510
		0.8145	GTS 45-06	MN 450-6	P 45-06	0852-00	P 45-06	GR.45006
		0.8155	GTS 55-04	MN 550-4	P 55-04	0854-00	P 55-04	6004
K.2	**FUNDICIÓN NODULAR / NODULAR CAST IRON / FONTE NODULAIRE (700-1000N/mm² /200-300 HB)**							
		0.7070	GGG 70	FGS 700-2	GR.700/2	0737-01	GS 700-2	100-70-03
		0.8080	GGG 80	FGS 800-2	GR.800/2		GS 800-2	GR.120-90-02

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TABLA MATERIALES
Material Table - Tableau de matériaux

	España Spain - Espagne	Alemania Germany - Allemagne		Francia France	Reino Unido UK - Royaume-Uni	Suecia Sweden - Suède	Italia Italy - Italie	EE.UU. USA - États-Unis
	UNE	W.-nr.	DIN	AFNOR	B.S.	SS	UNI	AISI
GRUPO GROUP GROUPE **S** **ALEACIONES TERMORRESISTENTES - HEAT-RESISTANT ALLOYS** - ALLIAGES THERMORÉSISTANTS								
	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			
	ALEACIONES NICKEL / NICKEL ALLOYS / ALLIAGES NICKEL: **Inconel, Nimonic, Hastelloy... (<1300 N/mm² / <380 HB)**							
GRUPO GROUP GROUPE **N** **COBRE - LATÓN - BRONCE - COPPER - BRASS - BRONZE** - CUIVRE - LAITON - BRONZE **(< 700 N/mm² / <200-300 HB)**								
N.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
N.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 **N** **ALUMINIO - MAGNESIO - ALUMINIUM - MAGNESIUM**								
N.3	**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					
N.4	**ALEACIONES ALUMINIO / ALUMINIUM ALLOYS** / ALLIAGES ALUMINIUM **Si<10% (< 600 N/mm² / <180 HB)**							
	L-3811	3,0515	AIMN 1	3103	3103		P-ALMN 1,2 CU	A 93003
	L-3120-38-312	3,1325	AICUMG 1	2017 A			P-AICU4MGMNSI	A 92017
	L-3140-38-314	3,1355	AICUMG 2	2024	2024		P-AICU4-4MGMN	2024
	L-3710-38.371	3,4365	AIZNMGCU-1,5	7075	7075		P-AIZNMGCU-1,5	A 9775
	FUNDICIÓN ALUMINIO / CAST ALUMINIUM / FONTE ALUMINIUM							
		3,3292	GD-AIMG 9	A-G10SY 4	LM 10			A 05200
N.5	**ALEACIONES ALUMINIO / ALUMINIUM ALLOYS** / ALLIAGES ALUMINIUM **Si>10% (<600 N/mm² / <180 HB)**							
	L-256O-61	3,2381	G-AISI 10 MG	A-S10G			G-AISI9MG	A-0359.0
	L-253O	3,2583	G-AISI 11	A-S12U	LM 20		G-AISI13CUMN	A-04130
GRUPO GROUP GROUPE **N** **MATERIALES SINTÉTICOS - SYNTHETIC MATERIALS** - MATERIELS SYNTHETIQUES								
N.6	**TERMOPLÁSTICOS / THERMOPLASTICS** / THERMOPLASTIQUES							
		POLIPROPILENO			PP			
		POLISTIROL		PS				
		POLIVILNICLORITO			PVC			
		POLICARBONATO		MACRALON	PC			
	ULTRAMID	POLIAMIDA		PA				
		POLIMETILMETACRILATO		PLEXIGLAS	PMMA			
N.7	**DUROPLÁSTICOS / HARD PLASTICS** / PLASTIQUES DURS							
	BAQUELITA							
	PERTINAX							
	MOLTOPREN							
	RESOPAL	GRAFITO						

GRUPO GROUP GROUPE **F**

COMPOSITES DE FIBRAS (FIBRA DE CARBONO, FIBRA DE VIDRIO, ESTRUCTURAS TIPO PANAL DE ABEJA...)
FIBER COMPOSITES (CFRP, GFRP, HONEYCOMB...)
COMPOSITES EN FIBRE (CFRP, GFRP, STRUCTURE EN NID D'ABEILLES...)

GRUPO GROUP GROUPE **H**

ACEROS TEMPLADOS, ACEROS ENDURECIDOS
HEAT-TREATED ALLOYS - ACIERS TREMPÉS, ACIERS ALLIÉS SUPÉRIEURS

BROCAS METAL DURO
Carbide Drill Bits
Forets carbure

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

Ref.		Pag.	DIN	Tipo Type	Material	Recubr. Coating Revêt.	P.1 <850 N/mm²	P.2 <1000 N/mm²	P.3 1000-1300 N/mm²	P.4 ANTIDESGASTE Wear-Resistant Anti-Usure	P.5 MARTENSÍTICO Martensitic Martensitique	M INOX AUSTENÍTICO Austenitic Stainless Steel - Aciers inox austénitique	K.1 <700 N/mm² FUNDICIÓN Cast Iron Fonte	K.2 700-1000 N/mm²	S ALEACIONES TERMORRESISTENTES Heat-Resistant Alloys - Alliages thermorésistants	N.1 VIRUTA CORTA Short Chip - Copeaux courts	N.2 VIRUTA LARGA Long Chip - Copeaux longs	N.3 NO ALEADO Unalloyed - Sans alliage	N.4 <10% Si Cu - BRONCE LATÓN Copper Bronze Brass Cuivre Bronze Laiton	N.5 >10% Si ALUMINIO - MAGNESIO Aluminium - Magnesium	N.6 TERMOPLÁSTICOS Thermoplastics - Thermoplastiques	N.7 DUROPLÁSTICOS Hard Plastics - Plastiques durs	F Composites de Fibras Fiber Composites Composites en fibre	H 45-70 HRC
8400		40	6537 K	3XD	Micro-grano	ALTIN	●	●	●	○	○	○	●	●	○	●	●	○	○	○			○	○
8405		42	6537 L	5XD	Micro-grano	ALTIN	●	●	●	○	○	○	●	●	○	●	●	○	○	○			○	○
8410		44	6537 K	3XD	Grano UF	ALTIN	●	●	●	○	●	●	●	●	●	○	○	○	○	○				○
8415		46	6537 L	5XD	Grano UF	ALTIN	●	●	●	○	●	●	●	●	●	○	○	○	○	○				○
8411		48	IZAR Std.	8XD	Grano UF	X-AlCr	●	●	●	○	○	●	●	●	●	○	○	○	○	○				○
8413		52	IZAR Std.	10XD	Grano UF	X-AlCr	●	●	●	○	○	●	●	○	○	○	○	○	○	○				○
8414		53	IZAR Std.	15XD	Grano UF	X-AlCr	●	●	●	○	○	●	●	○	○	○	○	○	○	○				○
8416		54	IZAR Std.	20XD	Grano UF	X-AlCr	●	●	●	○	○	●	●	○	○	○	○	○	○	○				○
8401		56	IZAR Std.	3XD	Grano UF	TIALCN	●	●	●		●	●	●	●		○	○	○	○	○			○	
8402 New!		57	IZAR Std.	5XD	Grano UF	TIALCN	●	●	●		●	●	●	●		○	○	○	○	○			○	
8403		58	IZAR Std.	3XD	Grano UF	SUA		○	○	●	○	○	○	○	●									●
9016		60	IZAR Std.		Grano UF																			●
9010		63	338	N	Micro-grano		●	●			○	○	○	○	○	●	●	○	○	○	○	○	○	
9056		64	6539	N	Micro-grano		●	●			○	○	○	○	○	●	●	○	○	○	○	○	○	
9075	3 Z	66	IZAR Std.		Grano UF	X-AlCr	●	●	●	○	●	●	●	●	○	●	●	○	○	○	○	○	○	○
9301		67	IZAR Std.		Micro-grano		●	●	●	○	●	●	●	●	●	●	●	●	●	●	●	○		
9303		68	IZAR Std.		Micro-grano		●	●	●	○	●	●	●	●	●	●	●	●	●	●	●	○		
9310		69	333	A	Micro-grano		●	●	●	○	●	●	●	●	●	●	●	●	●	●	●	○		
9100		70	338	N	MD/HM Carbure			●	●		●	●	●	●	●	●	●					●		
9036		71	340	N	MD/HM Carbure			●	●		●	●	○	○	●	●	●					●		

BROCAS PMX - HSSE - HSS
PMX - HSSE - HSS Drill Bits
Forets PMX - HSSE - HSS

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

Sets pags. 74-114-123

Ref.		Pag.	DIN	Tipo Type	Material	Recubr. Coating Revêt.	P.1	P.2	P.3	P.4	P.5	M	K.1	K.2	S	N.1	N.2	N.3	N.4	N.5	N.6	N.7	F	H
							P: <850 N/mm²; < 1000 N/mm²; 1000-1300 N/mm²; ANTIDESGASTE Wear-Resistant Anti-Usure; MARTENSÍTICO Martensitic Martensitique					M: INOX AUSTENÍTICO Austenitic Stainless Steel - Aciers inox austénitique	K: < 700 N/mm²; 700-1000 N/mm²; FUNDICIÓN Cast Iron Fonte		S: ALEACIONES TERMORRESISTENTES Heat-Resistant Alloys - Alliages thermorésistants	N: VIRUTA CORTA Short Chip - Copeaux courts; VIRUTA LARGA Long Chip - Copeaux longs; Cu - BRONCE LATÓN Copper Bronze Brass Cuivre Bronze Laiton		N: NO ALEADO Unalloyed - Sans alliage; < 10% Si; > 10% Si; ALUMINIO - MAGNESIO Aluminium - Magnesium			N: TERMOPLÁSTICOS Thermoplastics - Thermoplastiques; DUROPLÁSTICOS Hard Plastics - Plastiques durs		F: Composites de Fibras Fiber Composites Composites en fibre	H: 45-70 HRC
6016		74	338	N	PMX	X-AlCr	●	●	●		●	●	●	●	●	○	●			●		●		
6000		76	IZAR Std.		PMX	NITREX									●			●	●	●				
1029		78	338	N	HSSE 5% Co	BORDEAUX	○	○	●	○		●	●	●	○									
1016		80	338	N	HSSE 5% Co	TIALSIN		○	●		●	○	○	○	●									
1000		82	338	TS	HSSE 5% Co	TIALSIN		●	○				●	●						●	●			
1021		83	338	W	HSSE 5% Co		●				●	●				●	●	●	●	●	○	○		
1032 New!		85	338	W	HSSE 5% Co		●				●	●				●	●	●	●	●	○	○		
1020		86	338	W	HSSE 5% Co							●						●	●	●				
1027		87	338	N	HSSE 5% Co			○	●		●				●									
1015		88	338	N	HSS	ZIRKONIO	●					○	●	●				●	●	●				
1010		90	338	N	HSS	TIN	●						○	○				○	○	○				
1013		93	338	N	HSS	TIALSIN	●						○	○				○	○	○				
1012		95	338	H	HSS											●	●							
1007		96	338	N	HSS		●						○	○				○	○	○				
1025 L		97	338	N	HSS		●						○	○				○	○	○				
1054		98	1897	N	Cobalt "S"	X-AlCr				●														
1055		99	1897	TS	HSSE 5% Co	TIALSIN		●	○			○	●	●	○					●	●			
1056		100	1897	N	HSSE 5% Co	TIALSIN			●		●	●	○	○	●									
1666		102	IZAR Std.		HSSE 5% Co				●		●				●									
1052 New!		104	1897	N	HSS	ZIRKONIO	●						●	●				●	●	●				

BROCAS PMX - HSSE - HSS
PMX - HSSE - HSS Drill Bits
Forets PMX - HSSE - HSS

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○ **Uso Alternativo** / **Alternative Use** / Option d´emploi

Sets pags. 114-123

Ref.		Pag.	DIN	Tipo Type	Material	Recubr. Coating Revêt.	P.1 <850 N/mm²	P.2 < 1000 N/mm²	P.3 1000-1300 N/mm²	P.4 ANTIDESGASTE Wear-Resistant Anti-Usure	P.5 MARTENSÍTICO Martensitic Martensitique	M INOX AUSTENÍTICO Austenitic Stainless Steel - Aciers inox austénitique	K.1 < 700 N/mm² FUNDICIÓN Cast Iron Fonte	K.2 700-1000 N/mm²	S ALEACIONES TERMORRESISTENTES Heat-Resistant Alloys - Alliages thermorésistants	N.1 VIRUTA CORTA Short Chip - Copeaux courts	N.2 VIRUTA LARGA Long Chip - Copeaux longs	N.3 NO ALEADO Unalloyed - Sans alliage	N.4 < 10% Si	N.5 > 10% Si	N.6 TERMOPLÁSTICOS Thermoplastics - Thermoplastiques	N.7 DUROPLÁSTICOS Hard Plastics - Plastiques durs	F Composites de Fibras Fiber Composites Composites en fibre	H 45-70 HRC
1050		105	1897	N	HSS		●						○	○				○	○	○				
1660		106	IZAR Std.		HSS		●						○	○				○	○	○				
1036		107	340	N	HSSE 5% Co			○	●		●	●	○	○	●									
1300		108	340	TS	HSSE 5% Co	TIALSIN		●	○				●	●						●	●			
1030		109	340	N	HSS	TIN	●						○	○				○	○	○				
9040		111	1869		HSSE 5% Co			●			●	●	●	●						●	●			
1040		112	1869	N	HSS		●						●	●				○	○	○				
9196		126	345	N	MD/HM Carbure			●	●		●	●	○	○	●	●	●					●		
9116		127	345	N	HSSE 5% Co			●			●	●	●	●										
1110		128	345	N	HSS	TIN	●	○					●	●		○	○							
1154		131	IZAR Std.		Cobalt "S"	X-AlCr				●														
1130		132	341	N	HSS		●	○					●	●		○	○							
1140		133	1870	N	HSS		●	○					●	●		○	○							
1301		135	IZAR Std.		HSSE 5% Co		●	●	○		●	●	●	●	●	●				●	●			
1303		136	IZAR Std.		HSSE 5% Co		●	●	○		●	●	●	●	●	●				●	●			
1310		137	333	A	HSS	TIN	●	●					○	○		●				●				
1320		138	333	R	HSS		●	●					○	○		●				●				
1330		139	333	B	HSS		●	●					○	○		●				●				
9315		140	333	A	HSSE 5% Co		●	●					○	○		●				●				

FRESAS HUECAS M. ELECTROMAGNÉTICAS
Annular Cutter Core Drills
Fraises à carotter UP électromagnétiques
Pag. 153

MÁQUINAS AFILADORAS BROCAS
Drill Bit Sharpening Machines
Machines affûteuse forets
Pag. 171

TABLA USO ESCARIADO
Reaming Use Table - Tableau usage Alésage

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

Ref.		Pag.	DIN	Tipo Type	ISO	Material	Recubr. Coating Revêt.	P.1	P.2	P.3	P.4	P.5	M	K.1	K.2	S	N.1	N.2	N.3	N.4	N.5	N.6	N.7	F	H
								P					M	K		S	N							F	H
								<850 N/mm²	< 1000 N/mm²	1000-1300 N/mm²	ANTIDESGASTE Wear-Resistant Anti-Usure	MARTENSÍTICO Martensitic Martensitique	INOX AUSTENÍTICO Austenitic Stainless Steel - Aciers inox austénitique	< 700 N/mm²	700-1000 N/mm²	ALEACIONES TERMORRESISTENTES Heat-Resistant Alloys - Alliages thermorésistants	VIRUTA CORTA Short Chip - Copeaux courts	VIRUTA LARGA Long Chip - Copeaux longs	NO ALEADO Unalloyed - Sans alliage	< 10% Si	> 10% Si	TERMOPLÁSTICOS Thermoplastics - Thermoplastiques	DUROPLÁSTICOS Hard Plastics - Plastiques durs	Composites de Fibras Fiber Composites Composites en fibre	45-70 HRC
													Austenitic Stainless Steel	FUNDICIÓN Cast Iron Fonte			Cu - BRONCE LATÓN Copper Bronze Brass Cuivre Bronze Laiton		ALUMINIO - MAGNESIO Aluminium - Magnesium						
9060 L R		176	8093	B		Micro-grano	ALTIN	●	●	●	●	●	●	●	●	●	○	○	○	○	○	○	○		○
2060		178	212	B/D	521	HSSE 5% Co	TIALSIN	●	●	○		●							○	○	○				
2064		180	212	E	521	HSSE 5% Co		●	●				●	○	○	○	○	○							
2160		181	208	B	521	HSSE 5% Co		●	●	○		●							○	○	○				
2164		182	208	C	521	HSSE 5% Co		●	●				●	○	○	○	○	○							
2310		183	219	B	2402	HSSE 5% Co		●	●	○		●							○	○	○				
2314		184	219	C	2402	HSSE 5% Co		●	●				●	○	○	○	○	○							
2316		185	217			HSS																			
2020		185	2179	E	3466	HSS		●													●				
2130		186	311		2238	HSS		●													●				
2010		187	206	B	236	HSS		●													●				
2026		188	9	B	3465	HSS		●											●	●	●	●			

TABLA USO AVELLANADO

Countersinking-Counterboring Use Table - Tableau usage Fraisage

● **Uso Recomendado** / **Recommended Use** / Utilisation conseillée

○ **Uso Alternativo** / **Alternative Use** / Option d´emploi

Ref.		Pag.	DIN	Tipo Type	ISO	Material	Recubr. Coating Revêt.	P.1 <850 N/mm²	P.2 <1000 N/mm²	P.3 1000-1300 N/mm²	P.4 ANTIDESGASTE Wear-Resistant Anti-Usure	P.5 MARTENSITICO Martensitic Martensitique	M INOX AUSTENITICO Austenitic Stainless Steel - Aciers inox austénitique	K.1 < 700 N/mm² FUNDICIÓN Cast Iron Fonte	K.2 700-1000 N/mm²	S ALEACIONES TERMORRESISTENTES Heat-Resistant Alloys - Alliages thermorésistants	N.1 VIRUTA CORTA Short Chip - Copeaux courts Cu - BRONCE LATÓN Copper Bronze Brass Cuivre Bronze Laiton	N.2 VIRUTA LARGA Long Chip - Copeaux longs Cu - BRONCE LATÓN Copper Bronze Brass Cuivre Bronze Laiton	N.3 NO ALEADO Unalloyed - Sans alliage ALUMINIO - MAGNESIO Aluminium - Magnesium	N.4 < 10% Si ALUMINIO - MAGNESIO Aluminium - Magnesium	N.5 > 10% Si ALUMINIO - MAGNESIO Aluminium - Magnesium	N.6 TERMOPLÁSTICOS Thermoplastics - Thermoplastiques	N.7 DUROPLÁSTICOS Hard Plastics - Plastiques durs	F Composites de Fibras Fiber Composites Composites en fibre	H 45-70 HRC
9575		190	335	C		Micro-grano		●	●	●	○	●	●	●	●	○	●	○	●	●	●	○			○
6575		191	335	C		PMX				●	●	●	●									●			
2571 New!		192	335	C		HSSE 5% Co	TIALN	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
2574		193	335	C		HSSE 5% Co	ZIRKONIO	●				○	○				●		●	●	●	●			
2575		194	335	C		HSSE 5% Co		●				○	○				●		●	●	●	●			
2572		195	IZAR Std.			HSSE 5% Co		●					○						●	●	●				
2573		196	335	C		HSS		●				○	○				●		●	●	●	●			
2550		197	334	A	3294	HSS		●	○							●									
2580		197	347	A	3294	HSS		●	○							●									
2530		198	373		4206	HSS		●	○			●		●		○	○	○			●				
2685		199	335	D		HSS		●				○	○				●		●	●	●	●			
2660		200	334	B	3293	HSS		●	○							●									
2690		200	347	B	3293	HSS		●	○							●									
2630		201	375			HSS		●	○			●		●		○	○	○			●				

TABLA USO ROSCADO
Threading Use Table - Tableau usage Taraudage

MACHOS
Taps / Tarauds *

***Punta** / **Point** / Pointe **M3-M6: Macho** / **Male**
***Punta** / **Point** / Pointe **>M6: Hembra** / Female

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

Ref.		Pag.	Rosca Thread Filet	Uso Use Usage	DIN	Material	Recubr. Coating Revêt.	P.1 <850 N/mm²	P.2 <1000 N/mm²	P.3 1000-1300 N/mm²	P.4 ANTIDESGASTE Wear-Resistant Anti-Usure	P.5 MARTENSÍTICO Martensitic Martensitique	M INOX AUSTENÍTICO Austenitic Stainless Steel - Aciers inox austénitique	K.1 < 700 N/mm² FUNDICIÓN Cast Iron Fonte	K.2 700-1000 N/mm²	S ALEACIONES TERMORRESISTENTES Heat-Resistant Alloys - Alliages thermorésistants	N.1 VIRUTA CORTA Short Chip - Copeaux courts	N.2 VIRUTA LARGA Long Chip - Copeaux longs	N.3 NO ALEADO Unalloyed - Sans alliage	N.4 < 10% Si	N.5 > 10% Si	N.6 TERMOPLÁSTICOS Thermoplastics - Thermoplastiques	N.7 DUROPLÁSTICOS Hard Plastics - Plastiques durs	F Composites de Fibras Fiber Composites Composites en fibre	H 45-70 HRC
3129	Form: B 3,5-6h Tol: 6HX	209	M	Máquina Machine	371 / 376	PMX	HARD	●	●	●	●	●	●	●	●		●	●	●	●	●				
3169	Form: C 2-3h Tol: 6H	209	M	Máquina Machine	371 / 376	PMX	HARD	●	●	●	○	●	●			○	○	○	○	○	○				
3130 3230	Form: B 3,5-5h Tol: 6H	210	M	Máquina Machine	371 376	PMX	HARD			●	●					●					○		●		○
3170 3270	Form: C 2-3h Tol: 6H	211	M	Máquina Machine	371 376	PMX	HARD			●	●					●					○		●		○
3125 3225	Form: B 3,5-5h Tol: 6H	212	M	Máquina Machine	371 376	PMX	HARD		●			●	●	●	●		●	●							
3165 3265	Form: C 2-3h Tol: 6H	213	M	Máquina Machine	371 376	PMX	HARD		●			●	●	●	●		●	●							
3149 3249	Form: B 3,5-5h Tol: 6H	214	M	Máquina Machine	371 376	HSSE 5% Co	TIN					●	●				●	●							
3159 3259	Form: C 2-3h Tol: 6H	215	M	Máquina Machine	371 376	HSSE 5% Co	TIN					●	●				●	●							
3143	Form: B 3,5-5h Tol: 6H	216	M	Máquina Machine	371	HSSE-V		○	●			○	○	●	●						●				
3243	Form: B 3,5-5h Tol: 6H	216	M	Máquina Machine	376	HSSE-V		○	●			○	○	●	●						●				
3153	Form: C 2-3h Tol: 6H	217	M	Máquina Machine	371	HSSE-V		○	●			○	○	●	●						●				
3253	Form: C 2-3h Tol: 6H	217	M	Máquina Machine	376	HSSE-V		○	●			○	○	●	●						●				
3176 3276	Form: C 2-3h Tol: 6HX	218	M	Máquina Machine	371 376	HSSE 5% Co								●	●										
3172 3272	Form: B 3,5-5h Tol: 6H	219	M	Máquina Machine	371 376	HSSE 5% Co													●						

TABLA USO ROSCADO

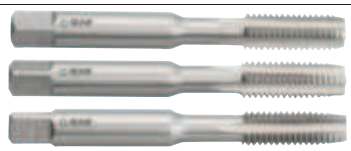
Threading Use Table - Tableau usage Taraudage

Ref.		Pag.	Rosca Thread Filet	Uso Use Usage	DIN	Material	Recubr. Coating Revêt.	P					M	K		S	N							F	H
								P.1	P.2	P.3	P.4	P.5		K.1	K.2		N.1	N.2	N.3	N.4	N.5	N.6	N.7		
3175 3275	Form: C 2-3h Tol: 6H	220	M	Máquina Machine	371 376	HSSE 5% Co													●						
3174 3274	Form: B 3,5-5h Tol: 6H	221	M	Máquina Machine	371 376	HSSE 5% Co		●	○			○	○				○	○	●	●	●	○			
3140 3240	Form: C 2-3h Tol: 6H	222	M	Máquina Machine	371 376	HSSE 5% Co											●								
3120 3220	Form: B 3,5-5h Tol: 6H	223	M	Máquina Machine	371 376	HSSE-V	TIN	●	●			●	●	●	●		●	●		●	●	●			
3160 3260	Form: C 2-3h Tol: 6H	224	M	Máquina Machine	371 376	HSSE-V	TIN	●	●			●	●	●	●		●	●		●	●	●			
3151 3251	Form: C 2-3h Tol: 6H	225	M	Máquina Machine	371 376	HSSE 5% Co		●											●						
3164	LAMINACIÓN-Forming-Réfouler Form: C 2-3h Tol: 6HX	227	M	Máquina Machine	2174	PMX	TICN	●	●	●	●	●	●				●	●	●	●	●				
3171	LAMINACIÓN-Forming-Réfouler Form: C 2-3h Tol: 6HX	228	M	Máquina Machine	371 / 376	PMX	TIALN-TIN	●	●	●		●	●				●	●	●	●	●				
3162	LAMINACIÓN-Forming-Réfouler Form: C 2-3h Tol: 6HX	229	M	Máquina Machine	2174	PMX	TIN	●	●	●		●	●				●	●	●	●	●				
3173	LAMINACIÓN-Forming-Réfouler Form: E 1,5-2h Tol: 6HX	230	M	Máquina Machine	371	PMX	TICN	●	●	●		●	●				●	●	●	●	●				
3163	LAMINACIÓN-Forming-Réfouler Form: C 2-3h Tol: 6HX	230	M	Máquina Machine	2174	HSSE 5% Co	TICN	●									●	●	●	●					
3100 3200	Form: B 3,5-5h Tol: 6H	231 232	M/MF	Máquina Machine	371 376 / 374	HSSE 5% Co		●						●			○		●	●					
3110 3210	Form: C 2-3h Tol: 6H	234 235	M/MF	Máquina Machine	371 376 / 374	HSSE 5% Co		●						●			●				●				
3600	Form: A 6-8h Tol: 6H	237	M	Máquina Machine	371	HSSE 5% Co		●																	
3150 3250	Form: C 2-3h Tol: 6H	238 239	M/MF	Máquina Machine	371 376	HSSE 5% Co		●						●			○		●	●					
3166	Form: B 3,5-5h Tol: 6H	240	M/MF	Máquina Machine	371	HSSE 5% Co		●									○		●	●					
3167	Form: C 2-3h Tol: 6H	241	M/MF	Máquina Machine	371	HSSE 5% Co		●									○		●	●					
3101 L 3201 L	Form: B 3,5-5h Tol: 6H	242	M	Máquina Machine	371 376 / 374	HSSE 5% Co		●						●			○		●	●					

MACHOS
Taps / Tarauds *

***Punta** / **Point** / Pointe **M3-M6: Macho** / **Male**
***Punta** / **Point** / Pointe **>M6: Hembra** / Female

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

Ref.		Pag.	Rosca Thread Filet	Uso Use Usage	DIN	Material	Recubr. Coating Revêt.	P.1 <850 N/mm²	P.2 <1000 N/mm²	P.3 1000-1300 N/mm²	P.4 ANTIDESGASTE Wear-Resistant Anti-Usure	P.5 MARTENSÍTICO Martensitic Martensitique	M INOX AUSTENÍTICO Austenitic Stainless Steel - Aciers inox austénitique	K.1 < 700 N/mm² FUNDICIÓN Cast Iron Fonte	K.2 700-1000 N/mm²	S ALEACIONES TERMORRESISTENTES Heat-Resistant Alloys - Alliages thermorésistants	N.1 VIRUTA CORTA Short Chip - Copeaux courts Cu - BRONCE LATÓN Copper Bronze Brass Cuivre Bronze Laiton	N.2 VIRUTA LARGA Long Chip - Copeaux longs	N.3 NO ALEADO Unalloyed - Sans alliage ALUMINIO - MAGNESIO Aluminium - Magnesium	N.4 < 10% Si	N.5 > 10% Si	N.6 TERMOPLÁSTICOS Thermoplastics - Thermoplastiques	N.7 DUROPLÁSTICOS Hard Plastics - Plastiques durs	F Composites de Fibras Fiber Composites Composites en fibre	H 45-70 HRC
3161 L 3261 L	 Form: C 2-3h Tol: 6H	243	M	Máquina Machine	371 376 / 374	HSSE 5% Co		●						●			○		●	●					
3105 3205	 Form: B 3,5-5h Tol: 6G	244	M	Máquina Machine	371 376	HSSE 5% Co		●						●			○		●	●					
3155 3255	 Form: C 2-3h Tol: 6G	245	M	Máquina Machine	371 376	HSSE 5% Co		●						●			○		●	●					
3119	 Form: B 3,5-5h Tol: 6H	246	M	Máquina Machine	ISO 529	HSSE 5% Co		●	○				●	●			○		●	●					
3113 New!	 Form: C 1-2h Tol: 6H	247	M	Máquina Machine	ISO 529	HSSE 5% Co		●	○				●	●			○		●	●					
3109	 Form: B 3,5-5h Tol: 6H	248	M (ISO)	Máquina Machine	ISO 529	HSS	TIN	●						●			○		●	●					
3157	 Form: C 2-3h Tol: 6H	249	M (ISO)	Máquina Machine	ISO 529	HSS	TIN	●						●			○		●	●					
3185	 Form: 18h Tol: 6H	250	M	Máquina Machine	357	HSS		●									●	●	●						
3036	 Form: C 2-3h Tol: 6H	260	M	Mano Hand Main	352 / 2181	HSSE 5% Co						●	●	○	○										
3030 3031 L	 Form: C 2-3h Tol: 6H	261	M	Mano Hand Main	352 352	HSS		●						●	●		●		●	●	○				
3040	 Form: C 2-3h / B 3,5-5h / A 6-8h Tol: 6H	262	M	Mano Hand Main	ISO 529	HSS		●						●	●		○	○	●	●	●				

MACHOS
Taps / Tarauds *

***Punta** / **Point** / Pointe **M3-M6: Macho** / **Male**
***Punta** / **Point** / Pointe **>M6: Hembra** / Female

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

Ref.		Pag.	Rosca Thread Filet	Uso Use Usage	DIN	Material	Recubr. Coating Revêt.	P.1 <850 N/mm²	P.2 <1000 N/mm²	P.3 1000-1300 N/mm²	P.4 ANTIDESGASTE Wear-Resistant Anti-Usure	P.5 MARTENSÍTICO Martensitic Martensitique	M INOX AUSTENÍTICO Austenitic Stainless Steel - Aciers inox austénitique	K.1 FUNDICIÓN Cast Iron Fonte <700 N/mm²	K.2 FUNDICIÓN Cast Iron Fonte 700-1000 N/mm²	S ALEACIONES TERMORRESISTENTES Heat-Resistant Alloys - Alliages thermorésistants	N.1 Cu - BRONCE LATÓN Copper Bronze Brass Cuivre Bronze Laiton VIRUTA CORTA Short Chip - Copeaux courts	N.2 VIRUTA LARGA Long Chip - Copeaux longs	N.3 ALUMINIO - MAGNESIO Aluminium - Magnesium NO ALEADO Unalloyed - Sans alliage	N.4 < 10% Si	N.5 > 10% Si	N.6 TERMOPLÁSTICOS Thermoplastics - Thermoplastiques	N.7 DUROPLÁSTICOS Hard Plastics - Plastiques durs	F Composites de Fibras Fiber Composites Composites en fibre	H 45-70 HRC
3020		263	MF	Mano Hand Main	2181	HSS		●						●	●		●		●	●	○				
3021 ↰	Form: C 2-3h Tol: 6H	264			2181																				
3037	Form: C 2-3h Tol: 6H	265	M	Mano Hand Main	352 / 2181	HSSE 5% Co						●	●	○	○										
3010	Form: C 2-3h Tol: 6H	266	M/MF	Mano Hand Main	352 / 2181	HSS		●						●	●		●		●	●	○				
3023	Form: 4-6h Tol: 6H	269	M	Mano Hand Main	352	HSS		●						●	●		●	●	●	●	●				
3039 New!	Form: A 6-8h / B 3,5-5h / C 2-3h - Tol: 6H	270	M/MF	Máquina Machine	ISO 529	HSS		●	○					●			○		●	●					
3144	Form: C 2-3h Tol: 2B	273	UNC	Máquina Machine	371	PMX	HARD		●			●	●	○	○		●	●	●	●	○				
3104	Form: C 2-3h Tol: 2B	273	UNC	Máquina Machine	371	PMX	HARD		●			●	●	○	○		●	●	●	●	○				
3134		274	UNC	Máquina Machine	371	HSSE 5% Co		●						●			●	●	●	●	○				
3234	Form: B 3,5-5h Tol: 2B				376																				
3114		275	UNC	Máquina Machine	371	HSSE 5% Co		●						●			●	●	●	●	○				
3214	Form: C 2-3h Tol: 2B				376																				
3154		276	UNC	Máquina Machine	371	HSSE 5% Co		●						●			●	●	●	●	○				
3254	Form: C 2-3h Tol: 2B				376																				
3103 New!	Form: B 3,5-5h / C 2-3h - Tol: 6H	277	M	Máquina Machine	ISO 529	HSS		●						●			○		●	●					
3034	Form: C 2-3h Tol: 2B	278	UNC	Mano Hand Main	352	HSS		●						●	●		●	●	●	●	○				

TABLA USO ROSCADO
Threading Use Table - Tableau usage Taraudage

MACHOS
Taps / Tarauds *

***Punta** / **Point** / Pointe **M3-M6: Macho** / **Male**
***Punta** / **Point** / Pointe **>M6: Hembra** / Female

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

Ref.		Pag.	Rosca Thread Filet	Uso Use Usage	DIN	Material	Recubr. Coating Revêt.	P.1 <850 N/mm²	P.2 <1000 N/mm²	P.3 1000-1300 N/mm²	P.4 ANTIDESGASTE Wear-Resistant Anti-Usure	P.5 MARTENSÍTICO Martensitic Martensitique	M INOX AUSTENÍTICO Austenitic Stainless Steel - Aciers inox austénitique	K.1 < 700 N/mm² FUNDICIÓN Cast Iron Fonte	K.2 700-1000 N/mm²	S ALEACIONES TERMORRESISTENTES Heat-Resistant Alloys - Alliages thermorésistants	N.1 VIRUTA CORTA Short Chip - Copeaux courts	N.2 VIRUTA LARGA Long Chip - Copeaux longs	N.3 NO ALEADO Unalloyed - Sans alliage	N.4 < 10% Si	N.5 > 10% Si	N.6 TERMOPLÁSTICOS Thermoplastics - Thermoplastiques	N.7 DUROPLÁSTICOS Hard Plastics - Plastiques durs	F Composites de Fibras Fiber Composites Composites en fibre	H 45-70 HRC
3127	Form: B 3,5-5h Tol: 2B	279	UNF	Máquina Machine	374	PMX	HARD		●		●	●		○	○		●	●	●	●	○				
3124	Form: C 2-3h Tol: 2B	279	UNF	Máquina Machine	374	PMX	HARD		●		●	●		○	○		●	●	●	●	○				
3204	Form: B 3,5-5h Tol: 2B	280	UNF	Máquina Machine	374	HSSE 5% Co		●						●	●		●	●	●	●	○				
3224	Form: C 2-3h Tol: 2B	280	UNF	Máquina Machine	374	HSSE 5% Co		●						●	●		●	●	●	●	○				
3244	Form: C 2-3h Tol: 2B	281	UNF	Máquina Machine	374	HSSE 5% Co		●						●	●		●	●	●	●	○				
3141 New!	LAMINACIÓN-Forming-Réfouler Form: C 2-3h Tol: 2BX	282	UNC/ UNF	Máquina Machine	371 / 376	HSSE 5% Co	TIALN-TIN	●	●	●		●	●				●	●	●	●	●				
3123 New!	Form: B 3,5-5h / C 2-3h - Tol: 6H	283	UNF	Máquina Machine	ISO 529	HSS		●									●		●	●					
3024	Form: C 2-3h Tol: 2B	284	UNF	Mano Hand Main	2181	HSS		●						●	●		●	●	●	●	○				
3025	Form: C 2-3h Tol: 2B	285	UNEF	Mano Hand Main	2181	HSS		●						●	●		●	●	●	●	○				
3209	Form: C 2-3h Tol: 2B	286	UN	Máquina Machine	374	HSSE 5% Co		●						●	●		●	●	●	●	○				
3107	Form: C 2-3h	287	NPT	Máquina Machine	374	HSSE 5% Co		●						●	●		●	●	●	●	○				
3017	Form: 1,5-2h	287	NPT	Mano Hand Main	2181	HSS		●						●	●		●	●	●	●	○				

MACHOS
Taps / Tarauds *

***Punta** / **Point** / Pointe **M3-M6: Macho** / **Male**
***Punta** / **Point** / Pointe **>M6: Hembra** / Female

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

Ref.		Pag.	Rosca Thread Filet	Uso Use Usage	DIN	Material	Recubr. Coating Revêt.	P.1 <850 N/mm²	P.2 <1000 N/mm²	P.3 1000-1300 N/mm²	P.4 ANTIDESGASTE Wear-Resistant Anti-Usure	P.5 MARTENSÍTICO Martensitic Martensitique	M INOX AUSTENÍTICO Austenitic Stainless Steel - Aciers inox austénitique	K.1 FUNDICIÓN Cast Iron Fonte <700 N/mm²	K.2 FUNDICIÓN Cast Iron Fonte 700-1000 N/mm²	S ALEACIONES TERMORRESISTENTES Heat-Resistant Alloys - Alliages thermorésistants	N.1 Cu - BRONCE LATÓN Copper Bronze Brass Cuivre Bronze Laiton VIRUTA CORTA Short Chip - Copeaux courts	N.2 VIRUTA LARGA Long Chip - Copeaux longs	N.3 ALUMINIO - MAGNESIO Aluminium - Magnesium NO ALEADO Unalloyed - Sans alliage	N.4 < 10% Si	N.5 > 10% Si	N.6 TERMOPLÁSTICOS Thermoplastics - Thermoplastiques	N.7 DUROPLÁSTICOS Hard Plastics - Plastiques durs	F Composites de Fibras Fiber Composites Composites en fibre	H 45-70 HRC
3102 / 3202	Form: B 3,5-5h	288	BSW (Whitworth)	Máquina Machine	371 / 376	HSSE 5% Co		●						●	●		●	●	●	●	○				
3112 / 3212	Form: C 2-3h	289	BSW (Whitworth)	Máquina Machine	371 / 376	HSSE 5% Co		●						●	●		●	●	●	●	○				
3152 / 3252	Form: C 2-3h	290	BSW (Whitworth)	Máquina Machine	371 / 376	HSSE 5% Co		●						●	●		●	●	●	●	○				
3032 / 3012	Form: C 2-3h Tol: 6H	291 / 292	BSW (Whitworth)	Mano Hand Main	352	HSS		●						●	●		●	●	●	●	○				
3126	Form: B 3,5-5h Tol: 6H	293	BSPP (Gas)	Máquina Machine	5156	HSSE 5% Co	TIN					●	●												
3136	Form: C 2-3h Tol: 6H	293	BSPP (Gas)	Máquina Machine	5156	HSSE 5% Co	TIN					●	●												
3106	Form: B 3,5-5h	294	BSPP (Gas)	Máquina Machine	5156	HSSE 5% Co		●						●	●		●	●	●	●	○				
3116	Form: C 2-3h	294	BSPP (Gas)	Máquina Machine	5156	HSSE 5% Co		●						●	●		●	●	●	●	○				
3156	Form: C 2-3h Tol: 6H	295	BSPP (Gas)	Máquina Machine	5156	HSSE 5% Co		●						●	●		●	●	●	●	○				
3026	Form: C 2-3h	296	BSPP (Gas)	Mano Hand-Main	5157	HSS		●						●	●		●	●	●	●	○				
3016	Form: C 2-3h	297	BSPP (Gas)	Mano Hand-Main	5157	HSS		●						●	●		●	●	●	●	○				
3019	Form: C 2-3h	298	BSPT (RC)	Mano Hand-Main	5157	HSS		●						●	●		●	●	●	●	○				
3011	Form: C 2-3h Tol: 6H	298	PG	Mano Hand-Main	40432	HSS		●						●	●		●	●	●	●	○				

TABLA USO ROSCADO
Threading Use Table - Tableau usage Taraudage

Ref.		Pag.	Rosca Thread Filet	Uso Use Usage	DIN	Material	Recubr. Coating Revêt.	P					M	K		S	N							F	H
								P.1	P.2	P.3	P.4	P.5		K.1	K.2		N.1	N.2	N.3	N.4	N.5	N.6	N.7		
3540		299	M	Máquina Machine	223	HSS		●	○				○				●	●	●			●			
3536		300	M/MF	Mano Hand Main	22568	HSSE 5% Co		●	○			●	●				●	●	●			●			
3500		301	M/MF	Mano Hand Main	223	HSS		●	○				○				●	●	●			●			
3501 ↰ L		302	M	Mano Hand Main	223	HSS		●	○				○				●	●	●			●			
3510		303	M	Mano Hand Main	ISO 529	HSS		●	○				○				●	●	●			●			
3560 New!		305	M/MF	Mano Hand Main	382	HSS		●	○				○				●	●	●			●			
3534		306	UNC	Mano Hand Main	223	HSS		●	○				○				●	●	●			●			
3504		306	UNF	Mano Hand Main	223	HSS		●	○				○				●	●	●			●			
3505		307	UNEF	Mano Hand Main	22568	HSS		●	○				○				●	●	●			●			
3507		307	NPT	Mano Hand Main	223 B	HSS		●	○				○				●	●	●			●			
3502		308	BSW (Whit-worth)	Mano Hand Main	223	HSS		●	○				○				●	●	●			●			
3546		309	BSPP (Gas)	Mano Hand Main	24231	HSSE 5% Co		●	○			●	●				●	●	●			●			
3506		309	BSPP (Gas)	Mano Hand Main	24231	HSS		●	○				○				●	●	●			●			
3519		310	BSPT (RC)	Mano Hand Main	24231	HSS		●	○				○				●	●	●			●			
3509		310	PG	Mano Hand Main	40434	HSS		●	○				○				●	●	●			●			

ACCESORIOS ROSCADO - Threading Accesories - Accesoires de taraudage

GIRA-MACHOS
Tap Wrench
Porte-taraud

Pag. 311

GIRA-MACHOS CRIQUÉ
Tap Wrench
Porte-taraud

Pag. 312

GALGA
Pitch Gauge
Jauge

Pag. 312

ALARGADOR MACHOS MÁQUINA
Machine Tap Extension
Rallonge tarauds machine

Pag. 313

ALARGADOR MACHOS MANO
Hand Tap Extension
Rallonge tarauds à main

Pag. 313

PORTA-MACHOS COMPENSACIÓN RADIAL/AXIAL
Radial/Axial Compensation Tap Holder
Porte-tarauds compensation rayon / axe

Pag. 314

ADAPTADOR PORTA-MACHOS DE CAMBIO RÁPIDO CON EMBRAGUE
Quick Change Tap Collet with Safety Clutch
Adaptateur porte-tarauds changement rapide avec embrayage

Pag. 314

PORTA-COJINETES
Die Holder
Porte filières

Pag. 315

PORTA-COJINETES ISO 529
ISO 529 Die Holder
Porte filières ISO 529

Pag. 315

EXTRACTOR TORNILLOS
Screw Extractor
Extracteur vis

Pag. 316

INSERTO REPARACIÓN ROSCAS
Thread Repair Insert
Filet rapportés

Pag. 318

MACHO PARA INSERTO REPARACIÓN ROSCAS
Thread Repair Insert Tap
Taraud filet rapportés

Pag. 319

INSERTADOR
Fitting Tool
Appareil de pose

Pag. 320

ROMPE ARRASTRES
Pin-Breaker
Rupteur

Pag. 320

FRESAS METAL DURO
Carbide End Mills
Fraises carbure

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

Ref.		Pag.	DIN	Tipo Type	Material	Recubr. Coating Revêt.	P.1 <850 N/mm²	P.2 <1000 N/mm²	P.3 1000-1300 N/mm²	P.4 ANTIDESGASTE Wear-Resistant Anti-Usure	P.5 MARTENSÍTICO Martensitic Martensitique	M INOX AUSTENÍTICO Austenitic Stainless Steel - Aciers inox austénitique	K.1 K FUNDICIÓN Cast Iron Fonte < 700 N/mm²	K.2 K FUNDICIÓN Cast Iron Fonte 700-1000 N/mm²	S ALEACIONES TERMORRESISTENTES Heat-Resistant Alloys - Alliages thermorésistants	N.1 N Cu - BRONCE LATÓN Copper Bronze Brass Cuivre Bronze Laiton VIRUTA CORTA Short Chip - Copeaux courts	N.2 N Cu - BRONCE LATÓN Copper Bronze Brass Cuivre Bronze Laiton VIRUTA LARGA Long Chip - Copeaux longs	N.3 N ALUMINIO - MAGNESIO Aluminium - Magnesium NO ALEADO Unalloyed - Sans alliage	N.4 N ALUMINIO - MAGNESIO Aluminium - Magnesium < 10% Si	N.5 N ALUMINIO - MAGNESIO Aluminium - Magnesium > 10% Si	N.6 N TERMOPLÁSTICOS Thermoplastics - Thermoplastiques	N.7 N DUROPLÁSTICOS Hard Plastics - Plastiques durs	F Composites de Fibras Fiber Composites Composites en fibre	H 45-70 HRC
9644	4-5 Z	324	IZAR Std.	NR	Micro-grano	CROMAX	●	●	●				●	●	●	●							
9647	3 Z	325	IZAR Std.	WR	Micro-grano	CROMAX					●	●			●					●			
9444 New!	4 Z	326	6528	N	Grano MG	CROMAX		●	●		●	●	●	●		●	●						
9405	6-8 Z	328	6528	N	Grano UF	IKRA		●	●	○													●
9415	6-8 Z	328	6528	N	Grano UF	IKRA		●	●	○													●
9406	4-5 Z	329	6528	N	Grano UF	IKRA		●	●	●	●	●	●	●	●	○	○						●
9446 3D	4-5 Z	330	6528	N	Grano UF	IKRA		●	●		●	●	●	●	●	○	○						○
9447 3D	4-5 Z	331	6528	N	Grano UF	IKRA		●	●		●	●	●	●	●	○	○						○
9461	4 Z	332	6528	N	Grano UF	IKRA		●	●	●													●
9401	4 Z	334	6528	N	Micro-grano	CROMAX	●	●	○		○	○	●	●	○	●	●	○	○	○	○	●	
9410	4 Z	335	IZAR Std.	N	Micro-grano	CROMAX	●	●	○		○	○	●	●	○	●	●	○	○	○	○	●	
9412	4 Z	336	6528	N	Micro-grano	CROMAX	●	●	○		○	○	●	●	○	●	●	○	○	○	○	●	○
9407	4 Z	337	IZAR Std.	N	Micro-grano	CROMAX	●	●	○		○	○	●	●	○	●	●	○	○	○	○	●	○
9431	3 Z	338	6528	N	Micro-grano	CROMAX	●	●	●				●	●	○								
9436	3 Z	339	6528	W	Micro-grano	CROMAX	●	●			●	●				●	●	●	●	●	○	○	
9437	3 Z	341	IZAR Std.	W	Micro-grano	IRIS										●	●	●	●	●			○	
9439	3 Z	342	6528	W	Micro-grano +	IRIS										●	●	●	●	●				
9460	2 Z	343	6528	N	Grano UF	IKRA		●	●	●													●
9421	2 Z	344	6528	N	Micro-grano	CROMAX	●	●	○		●	●	●	●	●	●	●	●	●	●	○	○	
9424	2 Z	345	IZAR Std.	N	Micro-grano	CROMAX	●	●	○		●	●	●	●	●	●	●	●	●	●	○	○	
9427	2 Z	346	IZAR Std.	W	Micro-grano +	IRIS										●	●	●	●	●			

TABLA USO FRESADO METAL DURO

Carbide Milling Use Table - Tableau usage Fraisage carbure

Ref.		Pag.	DIN	Tipo Type	Material	Recubr. Coating Revêt.	P					M	K		S	N							F	H
							P.1	P.2	P.3	P.4	P.5		K.1	K.2		N.1	N.2	N.3	N.4	N.5	N.6	N.7		
9429	2 Z	347	IZAR Std.	W	Micro-grano +	IRIS										●	●	●	●	●				
9465	2 Z	348	IZAR Std.		Grano UF	SUA			●	●	●	○		○										●
9425	2 Z	350	6528	N	Micro-grano	CROMAX	●	●	○		●	●	●	●	●	●	●	●	●	●	○	○		○
9426	2 Z	351	IZAR Std.	N	Micro-grano	CROMAX	●	●	○		●	●	●	●	●	●	●	●	●	●	○	○		○
9470	2 Z	353	IZAR Std.		Grano UF	SUA	○	○	●	●	●	●	○	○	○	○	○	○	○	○	○	○		○
9475	2 Z	354	IZAR Std.		Grano UF	SUA	○	○	●	●	●	●	○		○	○	○	○	○	○	○	○		○
9441	1 Z	356	IZAR Std.		Micro-grano +	IRIS												●	●	●	●	○	○	
9416	1 Z	357	IZAR Std.		Micro-grano +	IRIS												●	●	●	●	●	○	
9417	1 Z	358	IZAR Std.		Micro-grano +	IRIS												●	●	●	●	●	○	
9456 ↰ L	1 Z	359	IZAR Std.		Micro-grano +	IRIS												●	●	●	●	○	○	
9419	1 Z	360	IZAR Std.		Micro-grano +	ALTIN												●	●	●			○	
9413	1 Z	361				CARBEX												●	●	●	●	○	○	
9411	1 Z	362	IZAR Std.		Micro-grano +	ALTIN												●	●	●	●	○	○	
9414	1 Z	363	IZAR Std.		Micro-grano +													●	●	●			○	
1689	2 Z	364	IZAR Std.		Micro-grano											○	○	○	○	○	●	○	●	
9453	3 Z	366	IZAR Std.		Grano UF	SUA	●	●	●	●	●	○	●	●	●	●		●	●					
9455	3-4 Z	367	IZAR Std.		Grano UF	SUA	●	●	●	●	●	○	●	●	●	●		●						
9457	3 Z	368	IZAR Std.		Grano UF	SUA	●	●	●	●	●	○	●	●	●	●		●						
9450	2 Z	369	IZAR Std.		Grano UF	SUA	●	●	●	○	○	●	○	○	○	○	○	○	○	○	○	○		
9451	4-6 Z	371	IZAR Std.		Micro-grano	TIALCN	○	●	●	○	○	●	○	○	○	○	○	○	○	○	○	○		●
9454	4 Z	372	IZAR Std.		Grano UF	TIALCN	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○		○
9452	2 Z	372	IZAR Std.		Grano UF	TIALCN	●	○	○	○	○	○	○	○	○	○	○	●	●	●	○	○		○
9459	1 Z	373	IZAR Std.		Micro-grano		●	○								●	●	●	○	○	○		○	
9280		375			Micro-grano																●	●	●	
9281		376	IZAR Std.		Micro-grano +	DIAMAX															●	●	●	
9282	6-8 Z	377	IZAR Std.		Micro-grano +	DIAMAX															●	●	●	
9283	6 Z	378	IZAR Std.		Micro-grano +	DIAMAX															●	●	●	
9330 New!		380	IZAR Std.		Micro-grano	ALTIN	●	●	○		●	●	●		●	●	●	●	●	●				
9333 New!		381	IZAR Std.		Micro-grano	ALTIN	●	●	○	●	●	●	●		●	●	●	●	●	●				○

FRESAS PMX - HSSE - HSS
PMX - HSSE - HSS End Mills
Fraises PMX - HSSE - HSS

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

Ref.		Pag.	DIN	Tipo Type	Material	Recubr. Coating Revêt.	P.1 <850 N/mm²	P.2 <1000 N/mm²	P.3 1000-1300 N/mm²	P.4 ANTIDESGASTE Wear-Resistant Anti-Usure	P.5 MARTENSÍTICO Martensitic Martensitique	M INOX AUSTENÍTICO Austenitic Stainless Steel - Aciers inox austénitique	K.1 <700 N/mm² FUNDICIÓN Cast Iron Fonte	K.2 700-1000 N/mm²	S ALEACIONES TERMORRESISTENTES Heat-Resistant Alloys - Alliages thermorésistants	N.1 VIRUTA CORTA Short Chip - Copeaux courts	N.2 VIRUTA LARGA Long Chip - Copeaux longs	N.3 NO ALEADO Unalloyed - Sans alliage	N.4 <10% Si ALUMINIO - MAGNESIO Aluminium - Magnesium	N.5 >10% Si	N.6 TERMOPLÁSTICOS Thermoplastics - Thermoplastiques	N.7 DUROPLÁSTICOS Hard Plastics - Plastiques durs	F Composites de Fibras Fiber Composites Composites en fibre	H 45-70 HRC
6644	4-6 Z	388	844	NR-F	PMX	TIALN-TOP		●	○		●				●									
6696	4-6 Z	388	844	NR-F	PMX	TIALN-TOP		●	○		●				●									
6647	4-5 Z	389	844	NR-F	PMX	TIALN-TOP						●												
6640	4-6 Z	390	844	NR	PMX	TIALN-TOP	●									○	○	●	●	●				
6690	4-6 Z	390	844	NR	PMX	TIALN-TOP	●									○	○	●	●	●				
6642	4-5 Z	391	844	NF	PMX	TIALN-TOP	●								●	○	○							
6692	4 Z	391	844	NF	PMX	TIALN-TOP	●								●	○	○							
6444	3 Z	392	844	NR-F	PMX	TIALN-TOP		●	○		●													
4644	3-5 Z	393	844	NR-F	HSSE 8% Co	TIALSIN		●					●	●	●	●	●							
4696	4-5 Z	393	844	NR-F	HSSE 8% Co	TIALSIN		●					●	●	●	●	●							
4640	4-6 Z	394	844	NR	HSSE 8% Co	TIALSIN	●						○	○		○	○							
4690	4-6 Z	395	844	NR	HSSE 8% Co	TIALSIN	●						○	○		○	○							
4680	4-6 Z	396	844	NF	HSSE 8% Co	TIALSIN	●						○	○		○	○							
4692	4-6 Z	397	844	NF	HSSE 8% Co	TIALSIN	●						○	○		○	○							
4447	3 Z	398	844	WR	HSSE 8% Co	TIALSIN	●									●	●	●	●	●				
4497	3 Z	398	844	WR	HSSE 8% Co	TIALSIN	●									●	●	●	●	●				

FRESAS PMX - HSSE - HSS
PMX - HSSE - HSS End Mills
Fraises PMX - HSSE - HSS

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

Ref.		Pag.	DIN	Tipo Type	Material	Recubr. Coating Revêt.	P.1	P.2	P.3	P.4	P.5	M	K.1	K.2	S	N.1	N.2	N.3	N.4	N.5	N.6	N.7	F	H
							P					M	K		S	N							F	H
							<850 N/mm²	< 1000 N/mm²	1000-1300 N/mm²	ANTIDESGASTE Wear-Resistant Anti-Usure	MARTENSÍTICO Martensitic Martensitique	INOX AUSTENÍTICO Austenitic Stainless Steel - Aciers inox austénitique	< 700 N/mm²	700-1000 N/mm²	ALEACIONES TERMORRESISTENTES Heat-Resistant Alloys - Alliages thermorésistants	VIRUTA CORTA Short Chip - Copeaux courts	VIRUTA LARGA Long Chip - Copeaux longs	NO ALEADO Unalloyed - Sans alliage	< 10% Si	> 10% Si	TERMOPLÁSTICOS Thermoplastics - Thermoplastiques	DUROPLÁSTICOS Hard Plastics - Plastiques durs	Composites de Fibras Fiber Composites Composites en fibre	45-70 HRC
							FUNDICIÓN Cast Iron Fonte									Cu - BRONCE LATÓN Copper Bronze Brass Cuivre Bronze Laiton		ALUMINIO - MAGNESIO Aluminium - Magnesium						
6666	4-6 Z	400	844	N	PMX	TIALN-TOP		●	○		●	●	●	●	●	●			●	●				
6600	4-6 Z	401	844	N	PMX	TIALN-TOP		●	○		●	●	●	●	●	●			●	●				
6606	4-6 Z	401	844	N	PMX	TIALN-TOP		●	○		●	●	●	●	●	●			●	●				
6604	4 Z	402	844	N	PMX	TIALN-TOP	●	○							●	●	●							
6430	3 Z	403	844	W	PMX	TIALN-TOP						●			●	●	●	●	●	●				
6439	3 Z	404	844	N	PMX	TIALN-TOP		●	○		●													
6420	2 Z	405	327	N	PMX	TIALN-TOP	●	●	○			○	●	●	●	●	●	●	●	●				
4600	4-6 Z	406	844	N	HSSE 8% Co	TIALSIN	●						●	●		●	●							
4606	4-6 Z	407	844	N	HSSE 8% Co	TIALSIN	●						●	●		●	●							
4400	4-6 Z	408	844	N	HSSE 8% Co	TIALSIN	●						●	●		●	●							
4430	3 Z	409	844	W	HSSE 8% Co	TIALSIN		●										●	●	●				
4432	3 Z	410	844	W	HSSE 8% Co	TIALSIN		●										●	●	●				
4439	3 Z	411	844	N	HSSE 8% Co	TIALSIN		●					○	○	●	●	●							
4420	2 Z	412	327	N	HSSE 8% Co	TIALSIN	●						●	●		●	●	●	●	●				
4426	2 Z	413	IZAR Std.	N	HSSE 8% Co	TIALSIN	●						●	●		●	●	●	●	●				
4422	2 Z	414	327	N	HSSE 8% Co	TIALSIN	●						○	○		●	●							
4470	2 Z	415	IZAR Std.	N	HSSE 8% Co	TIALSIN	●						○	○		●	●							

FRESAS PMX - HSSE - HSS
PMX - HSSE - HSS End Mills
Fraises PMX - HSSE - HSS

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

Ref.		Pag.	DIN	Tipo Type	Material	Recubr. Coating Revêt.	P.1 <850 N/mm²	P.2 <1000 N/mm²	P.3 1000-1300 N/mm²	P.4 ANTIDESGASTE Wear-Resistant Anti-Usure	P.5 MARTENSÍTICO Martensitic Martensitique	M INOX AUSTENÍTICO Austenitic Stainless Steel - Aciers inox austénitique	K.1 K < 700 N/mm² FUNDICIÓN Cast Iron Fonte	K.2 K 700-1000 N/mm²	S ALEACIONES TERMORRESISTENTES Heat-Resistant Alloys - Alliages thermorésistants	N.1 VIRUTA CORTA Short Chip - Copeaux courts Cu - BRONCE LATÓN Copper Bronze Brass Cuivre Bronze Laiton	N.2 VIRUTA LARGA Long Chip - Copeaux longs Cu - BRONCE LATÓN Copper Bronze Brass Cuivre Bronze Laiton	N.3 NO ALEADO Unalloyed - Sans alliage ALUMINIO - MAGNESIO Aluminium - Magnesium	N.4 < 10% Si ALUMINIO - MAGNESIO Aluminium - Magnesium	N.5 > 10% Si ALUMINIO - MAGNESIO Aluminium - Magnesium	N.6 TERMOPLÁSTICOS Thermoplastics - Thermoplastiques	N.7 DUROPLÁSTICOS Hard Plastics - Plastiques durs	F Composites de Fibras Fiber Composites Composites en fibre	H 45-70 HRC
4410	1 Z	416	IZAR Std.	W	HSSE 5% Co														●	●	●	●			
4411	1 Z	416	IZAR Std.	W	HSSE 5% Co														●	●	●	●			
4401	4-8 Z	417	844	N	HSS		●																		
4421	2 Z	418	327	N	HSS		●																		
4412	1 Z	419	IZAR Std.	W	HSS														●	●	●	●			
4413	1 Z	419	IZAR Std.	W	HSS														●	●	●	●			
4414	1 Z	420	IZAR Std.	W	HSS														●	●	●	●			
4415	1 Z	420	IZAR Std.	W	HSS														●	●	●	●			
4416	1 Z	421	IZAR Std.	W	HSS														●	●	●	●			
4417	1 Z	421	IZAR Std.	W	HSS														●	●	●	●			

SETS FRESADO METAL DURO
Carbide Milling Sets
Jeux de fraisage carbure

Pag. 383

SETS FRESADO PMX - HSSE
PMX – HSSE Milling Sets
Jeux de fraisage PMX - HSSE

Pag. 422

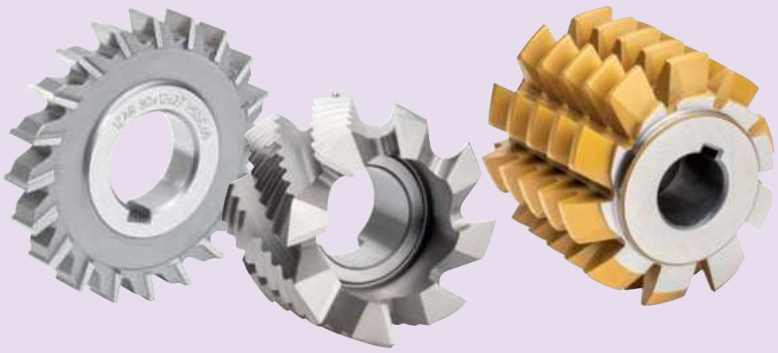
TABLA USO FRESADO PMX - HSSE - HSS

PMX - HSSE - HSS Milling Use Table - Tableau usage Fraisage PMX - HSSE - HSS

● **Uso Recomendado** / **Recommended Use** / Utilisation conseillée

○ **Uso Alternativo** / **Alternative Use** / Option d´emploi

Ref.		Pag.	DIN	Tipo Type	Material	Recubr. Coating Revêt.	P.1 <850 N/mm²	P.2 < 1000 N/mm²	P.3 1000-1300 N/mm²	P.4 ANTIDESGASTE Wear-Resistant Anti-Usure	P.5 MARTENSÍTICO Martensitic Martensitique	M INOX AUSTENÍTICO Austenitic Stainless Steel - Aciers inox austénitique	K.1 < 700 N/mm² FUNDICIÓN Cast Iron Fonte	K.2 700-1000 N/mm²	S ALEACIONES TERMORRESISTENTES Heat-Resistant Alloys - Alliages thermorésistants	N.1 VIRUTA CORTA Short Chip - Copeaux courts Cu - BRONCE LATÓN Copper Bronze Brass Cuivre Bronze Laiton	N.2 VIRUTA LARGA Long Chip - Copeaux longs	N.3 NO ALEADO Unalloyed - Sans alliage ALUMINIO - MAGNESIO Aluminium - Magnesium	N.4 < 10% Si	N.5 > 10% Si	N.6 TERMOPLÁSTICOS Thermoplastics - Thermoplastiques	N.7 DUROPLÁSTICOS Hard Plastics - Plastiques durs	F Composites de Fibras Fiber Composites Composites en fibre	H 45-70 HRC
	FRESAS ESPECIALES - Shank Tools - Fraises specials																						
4800	6-10 Z	429	851 AA	N	HSSE 8% Co	TIALSIN	●	○					○	○		○	○	○	○	●				
4802	4-6 Z	429	851 AB	NR	HSSE 8% Co	TIALSIN	●	○					○	○		○	○	○	○	●				
4834	6-14 Z	430	850 D	N	HSSE 8% Co	TIALSIN	●	○					○	○		○	○	○	○	●				
5080	4-6 Z	431	6518 B	N	HSSE 8% Co	TIALSIN	●	○					○	○		○	○	○	○	●				
4330	8-12 Z	432	1833 A	N	HSSE 8% Co	TIALSIN	●	○					○	○		○	○	○	○	●				
4340	8-12 Z	432	1883 B	N	HSSE 8% Co		●	○					○	○		○	○	○	○	●				
9674	**Dentado** / **Teeth** / Denture: **2**	433	IZAR Std.													○	○	●	●	●	●			
4810	8-12 Z	434	851 B	N	HSSE 8% Co		●	○					○	○		○	○	○	○	●				
	FRESAS CÓNICAS - Taper Shank End Mills - Fraises coniques																						
4675	4-6 Z	435	845 B	NR-F	HSSE 8% Co	TIALSIN	●	○															
4570	4-8 Z	436	845 B	NR	HSSE 8% Co		●	○															
4580	4-8 Z	436	845 B	NR	HSSE 8% Co		●	○															
4610	4-8 Z	437	845 B	N	HSSE 8% Co	TIALSIN	●	○															
4516	4-8 Z	437	845 B	N	HSSE 8% Co	TIALSIN	●	○															
4550	2 Z	438	326 D	N	HSSE 8% Co		●	○															

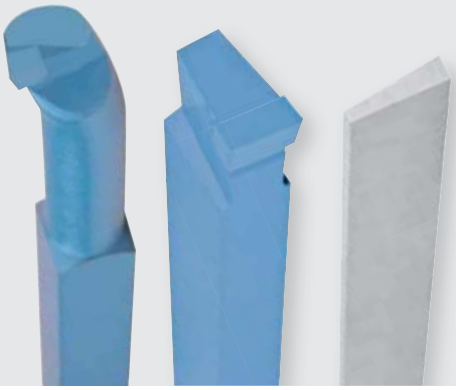


FRESAS AGUJERO / FRESAS MADRE
Milling Cutters / Gear Hobs
Fraises â trou

Pag. 439

SIERRAS CINTA - CIRCULARES
Band Saw Blades - Slitting Saws
Scies à ruban - Fraises scies

Pag. 467



TORNEADO
Turning
Tournage

Pag. 489

HERRAMIENTAS SOLDADAS
Brazed Turning Tools
Outils de tour plaquette soudé

CUCHILLAS HSSE
HSSE Turning Blades
Outils de tour HSSE

ACCESORIOS
Accessories
Accessoires

Pag. 641

CONOS PORTAPLAQUITAS
Tool-Holder Adaptors
Adaptateurs Porte-Plaquettes

New!
PINZAS
Collets
Pinces

UNI Universal
INOX Heavy Duty
ALU Non Ferrous
STD Standard
TOP Top Line
MULTI Multiusos

New!

ACEITES DE CORTE Y REFRIGERANTES
Cutting Oils & Water Soluble Fluids
Huiles de coupe et lubrifiants

Pag. 649

FRESAS ROTATIVAS
Rotary Burrs
Fraises limes rotatives

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

Ref.		Pag.	Tipo Type	Norma Norm	Material	Rec. Coat. Revêt.	Dent.	P.1	P.2	P.3	P.4	P.5	M	K.1	K.2	S	N.1	N.2	N.3	N.4	N.5	N.6	N.7	F	H
								P: <850 N/mm²; < 1000 N/mm²; 1000-1300 N/mm²; ANTIDESGASTE Wear-Resistant Anti-Usure; MARTENSÍTICO Martensitic Martensitique					M: INOX AUSTENÍTICO Austenitic Stainless Steel - Aciers inox austénitique	K: < 700 N/mm²; 700-1000 N/mm² FUNDICIÓN Cast Iron Fonte		S: ALEACIONES TERMORRESISTENTES Heat-Resistant Alloys - Alliages thermorésistants	N: VIRUTA CORTA Short Chip - Copeaux courts; VIRUTA LARGA Long Chip - Copeaux longs; Cu - BRONCE LATÓN Copper Bronze Brass Cuivre Bronze Laiton		N: NO ALEADO Unalloyed - Sans alliage; < 10% Si; > 10% Si; ALUMINIO - MAGNESIO Aluminium - Magnesium			N: TERMOPLÁSTICOS Thermoplastics - Thermoplastiques; DUROPLÁSTICOS Hard Plastics - Plastiques durs		F: Composites de Fibras Fiber Composites Composites en fibre	H: 45-70 HRC
9260	**Dentado** / **Teeth** / Denture: **1-3-4-6**	454	B	ZYA-S	**MD**/HM/ Carbure	ALTIN	1												●	●	●	●	●		
							3	●	●	●		●	●	●	●	●	●	●							
							4	○	○			●	●	○	○	●	○	○				●	●		
							6	●	●	●		●	●	●	●	●	●	●							
9240	**Dentado** / **Teeth** / Denture: **3-6**	454	B	ZYA-S	**MD**/HM/ Carbure		3	●	●	●		●	●	●	●	●	●	●							
							6	●	●	●		●	●	●	●	●	●	●							
9250	**Dentado** / **Teeth** / Denture: **1-3-4-6**	455	A	ZYA	**MD**/HM/ Carbure	ALTIN	1												●	●	●	●	●		
							3	●	●	●		●	●	●	●	●	●	●							
							4	○	○			●	●	○	○	●	○	○				●	●		
							6	●	●	●		●	●	●	●	●	●	●							
9230	**Dentado** / **Teeth** / Denture: **6**	455	A	ZYA	**MD**/HM/ Carbure		6	●	●	●		●	●	●	●	●	●	●							
9251	**Dentado** / **Teeth** / Denture: **1-3-4-6-S-M**	456	C	WRC	**MD**/HM/ Carbure	ALTIN New!	1												●	●	●	●	●		
							3	●	●	●		●	○	●	●	●	●	●							
							4	○	○			●	○	○	○	●	○	○				●	●		
							6	●	●	●		●	○	●	●	●	●	●							
							S									●									
							M						●												
9231	**Dentado** / **Teeth** / Denture: **6**	456	C	WRC	**MD**/HM/ Carbure		6	●	●	●		●	●	●	●	●	●	●							
9252	**Dentado** / **Teeth** / Denture: **3-4-6**	457	N	WKN	**MD**/HM/ Carbure		3	●	●	●		●	●	●	●	●	●	●							
							4	○	○			●	●	○	○	●	○	○				●	●		
							6	●	●	●		●	●	●	●	●	●	●							
9254	**Dentado** / **Teeth** / Denture: **1-3-4-6-M**	458	G	SPG	**MD**/HM/ Carbure	ALTIN New!	1												●	●	●	●	●		
							3	●	●	●		●	○	●	●	●	●	●							
							4	○	○			●	○	○	○	●	○	○				●	●		
							6	●	●	●		●	○	●	●	●	●	●							
							M						●												
9255	**Dentado** / **Teeth** / Denture: **1-3-4-6**	459	M	SKM	**MD**/HM/ Carbure		1												●	●	●	●	●		
							3	●	●	●		●	●	●	●	●	●	●							
							4	○	○			●	●	○	○	●	○	○				●	●		
							6	●	●	●		●	●	●	●	●	●	●							
9256	**Dentado** / **Teeth** / Denture: **3-4-6**	459	K	KSK	**MD**/HM/ Carbure		3	●	●	●		●	●	●	●	●	●	●							
							4	○	○			●	●	○	○	●	○	○				●	●		
							6	●	●	●		●	●	●	●	●	●	●							

FRESAS ROTATIVAS
Rotary Burrs
Fraises limes rotatives

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

Ref.		Pag.	Tipo Type	Norma Norm	Material	Rec. Coat. Revêt.	Dent.	P.1 (<850 N/mm²)	P.2 (<1000 N/mm²)	P.3 (1000-1300 N/mm²)	P.4 (ANTIDESGASTE Wear-Resistant Anti-Usure)	P.5 (MARTENSÍTICO Martensitic Martensitique)	M (INOX AUSTENÍTICO Austenitic Stainless Steel - Aciers inox austénitique)	K.1 (<700 N/mm²)	K.2 (700-1000 N/mm²)	S (ALEACIONES TERMORRESISTENTES Heat-Resistant Alloys - Alliages thermorésistants)	N.1 (VIRUTA CORTA Short Chip - Copeaux courts)	N.2 (VIRUTA LARGA Long Chip - Copeaux longs)	N.3 (NO ALEADO Unalloyed - Sans alliage)	N.4 (<10% Si)	N.5 (>10% Si)	N.6 (TERMOPLÁSTICOS Thermoplastics - Thermoplastiques)	N.7 (DUROPLÁSTICOS Hard Plastics - Plastiques durs)	F (Composites de Fibras Fiber Composites Composites en fibre)	H (45-70 HRC)
9257	**Dentado** / **Teeth** / Denture: **1-3-4-6-M**	460	E	TRE	MD/HM/ Carbure	New!	1												●	●	●	●	●		
							3	●	●	●		●	○	●	●	●	●	●							
							4	○	○			●	○	○	○	●	○	○				●	●		
							6	●	●	●		●	○	●	●	●	●	●							
							M						●												
9237	**Dentado** / **Teeth** / Denture: **3-6**	460	E	TRE	MD/HM/ Carbure		3	●	●	●		●	●	●	●	●	●	●							
							6	●	●	●		●	●	●	●	●	●	●							
9258	**Dentado** / **Teeth** / Denture: **1-3-4-6-M**	461	D	KUD	MD/HM/ Carbure	ALTIN New!	1												●	●	●	●	●		
							3	●	●	●		●	○	●	●	●	●	●							
							4	○	○			●	○	○	○	●	○	○				●	●		
							6	●	●	●		●	○	●	●	●	●	●							
							M						●												
9238	**Dentado** / **Teeth** / Denture: **3-6**	461	D	KUD	MD/HM/ Carbure		3	●	●	●		●	●	●	●	●	●	●							
							6	●	●	●		●	●	●	●	●	●	●							
9266	**Dentado** / **Teeth** / Denture: **1-3-4-6**	462	H	B	MD/HM/ Carbure		1												●	●	●	●	●		
							3	●	●	●		●	●	●	●	●	●	●							
							4	○	○			●	●	○	○	●	○	○				●	●		
							6	●	●	●		●	●	●	●	●	●	●							
9267	**Dentado** / **Teeth** / Denture: **1-3-4-6**	463	L	KEL	MD/HM/ Carbure	ALTIN	1												●	●	●	●	●		
							3	●	●	●		●	●	●	●	●	●	●							
							4	○	○			●	●	○	○	●	○	○				●	●		
							6	●	●	●		●	●	●	●	●	●	●							
9247	**Dentado** / **Teeth** / Denture: **6**	463	L	KEL	MD/HM/ Carbure		6	●	●	●		●	●	●	●	●	●	●							
9268	**Dentado** / **Teeth** / Denture: **1-3-4-6-M**	464	F	RBF	MD/HM/ Carbure	ALTIN New!	1												●	●	●	●	●		
							3	●	●	●		●	○	●	●	●	●	●							
							4	○	○			●	○	○	○	●	○	○				●	●		
							6	●	●	●		●	○	●	●	●	●	●							
							M						●												
9248	**Dentado** / **Teeth** / Denture: **6**	464	F	RBF	MD/HM/ Carbure		6	●	●	●		●	●	●	●	●	●	●							

TABLA USO BROCAS DE CABEZA INTERCAMBIABLE

Drill Bits With Interchangeable Heads Use Table - Tableau usage forets à tête interchangeable

● **Uso Recomendado** / **Recommended Use** / Utilisation conseillée

○ **Uso Alternativo** / **Alternative Use** / Option d´emploi

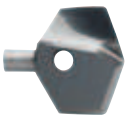
Ref.		Pag.	DIN	Tipo Type	Material	Recubr. Coating Revêt.	P.1 <850 N/mm²	P.2 <1000 N/mm²	P.3 1000-1300 N/mm²	P.4 ANTIDESGASTE Wear-Resistant Anti-Usure	P.5 MARTENSÍTICO Martensitic Martensitique	M INOX AUSTENÍTICO Austenitic Stainless Steel - Aciers inox austénitique	K.1 <700 N/mm² FUNDICIÓN Cast Iron Fonte	K.2 700-1000 N/mm² FUNDICIÓN Cast Iron Fonte	S ALEACIONES TERMORRESISTENTES Heat-Resistant Alloys - Alliages thermorésistants	N.1 VIRUTA CORTA Short Chip - Copeaux courts Cu - BRONCE LATÓN Copper Bronze Brass Cuivre Bronze Laiton	N.2 VIRUTA LARGA Long Chip - Copeaux longs Cu - BRONCE LATÓN Copper Bronze Brass Cuivre Bronze Laiton	N.3 NO ALEADO Unalloyed - Sans alliage ALUMINIO - MAGNESIO Aluminium - Magnesium	N.4 < 10% Si ALUMINIO - MAGNESIO Aluminium - Magnesium	N.5 > 10% Si ALUMINIO - MAGNESIO Aluminium - Magnesium	N.6 TERMOPLÁSTICOS Thermoplastics - Thermoplastiques	N.7 DUROPLÁSTICOS Hard Plastics - Plastiques durs	F Composites de Fibras Fiber Composites Composites en fibre	H 45-70 HRC
8380 New!		510			Micro-grano	ALTIN	●	●	●	●	●	●	●	●		●	●	●	●	●	●	●	
8381 New!		511 512 513	ISO 9766	3XD 5XD 8XD																			

TABLA USO PLAQUITAS MD

HM Inserts Use Table - Tableau usage Plaquettes carbure

TALADRADO - Drilling - Perçage

Ref.		Pag.	Geometría Geometry Géométrie	Tipo Type
8450		515		WCMX
8425		515		ISO 9766 (3XD)
8465		517		SOGX
8470		517		SOMX
8475		518		TOMX
8460		518		DOEX
8431		519		SPS.. 90°
8432		519		SPS.. 90°
8430		520		SPS.. 60°

Set 8431

SET PORTA-PLAQUITAS PUNTEADO SPS.. 90°

SPS.. 90° Spotting Tool-Holder Set

Jeu de porte-plaquettes de repérage SPS.. 90°

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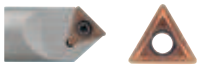
Set 8432

SET PORTA-PLAQUITAS PUNTEADO SPS.. 90°

SPS.. 90° Spotting Tool-Holder Set

Jeu de porte-plaquettes de repérage SPS.. 90°



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TORNEADO - Turning - Tournage

Ref.		Pag.	Geometría Geometry Géométrie	Tipo Type
8500		530	+	CCMT
8501		531	+	CCGT
8510		532	-	CNMG
8512		534	-	CNMM
8515		534	+	DCGT
8520		535	+	DCMT
8530		536	-	DNMG
8535		537	-	KNUX
8536 New!		538	+	RCGT
8537 New!		538	+	RCMT
8540		539	+	SCMT
8550		540	-	SNMG

Ref.		Pag.	Geometría Geometry Géométrie	Tipo Type
8554		540	+	SPUN
8558		541	+	TCGT
8560		541	+	TCMT
8570		542	-	TNMG
8571		544	+	TPMR
8572		544	+	TPUN
8575		545	+	VBMT
8576		545	+	VCGT
8577		546	+	VCMT
8578		546	-	VNMG
8580		547	-	WNMG

Porta-Plaquitas Torneado Exterior - External Turning Tool-Holder - Porte-Plaquettes tournage extérieur

Ref.		Pag.	Geometría Geometry Géométrie	Tipo Type
8726		552	-	CKJN -93°
8706		552	+	CSBP. -75°
8707		553	+	CTGP. -90°
8792 New!		554	-	DDJN. -93°
8790		555	-	DWLN. -95°
8710		555	-	MCLN. -95°
8700		556	-	MTJN. -93°
8724		556	-	MVJN. -93°
8770		557	-	MWLN. -95°
8709		557	-	PCLN. -95°

Ref.		Pag.	Geometría Geometry Géométrie	Tipo Type
8725		558	-	PDJN. -93°
8791		558	-	PSSN -45°
8711 New!		559	-	PWLN. -95°
8704		560	+	SCLC. -95°
8729		561	+	SDJC. -93°
8705 New!		561	+	SRDCN
8723 New!		562	+	SSSC. -45°
8703		563	+	STJC. -93°
8727		563	+	SVJB -93°
8728		564	+	SVJC -93°

TORNEADO - Turning - Tournage

Porta-Plaquitas Torneado Interior - Internal Turning Tool-Holder - Porte-Plaquettes tournage intérieur

Ref.		Pag.	Geometría Geometry Géométrie	Tipo Type
8715		564	+	S-CTFP. -90°
8731		565	–	S-MCLN. -95°
8732		565	–	S-MTUN. -93°
8769		566	–	S-MVUN -93°
8780		567	–	S-MWLN. -95°
8800		567	–	S-MWLN. -95°

Ref.		Pag.	Geometría Geometry Géométrie	Tipo Type
8733		568	–	S-PCLN. -95°
8765		568	–	S-PDUN. -93°
8751		569	+	S-SCLC. -95°
8761		569	+	S-SDUC. -93°
8718		570	+	S-STFC. -90°
8768		570	+	S-SVUC. -93°

Set 8799	589	**SET DE TORNEADO** - Turning Inserts Set - Jeu de tournage

Set 1

Set 2

Set 3

TRONZADO Y RANURADO - Parting & Grooving - Tonçonnage et rainurage

Ref.		Pag.	Geometría Geometry Géométrie	Tipo Type
8600		572		LFMX
8601		573		MGMN
8603		574	EXT.	TN..ER.A
8606		575	INT.	TN..IR.A
8850		576		XLCF
8860		576		MS-EN
8870		577		XLCFN

Ref.		Pag.	Geometría Geometry Géométrie	Tipo Type
8875		577		XLCFN
8865		578		XMCG
8866 New!		579		S-GMGG

Set 8605	**SET RANURADO SEEGER®** Grooving Set Seeger® Jeu rainurage Seeger®	575

Ref. 8603 EXT.

Ref. 8606 INT.

ROSCADO - Threading - Taraudage

Ref.		Pag.	Geometría Geometry Géométrie	Tipo Type
8610		584	EXT. PERFIL TOTAL	MÉTRICA 60°
8615		584	EXT. PERFIL PARCIAL	TN..ER.M 60°
8620		585	INT. PERFIL TOTAL	MÉTRICA 60°
8625		585	INT. PERFIL PARCIAL	TN..IR.M 60°
8612		586	EXT. PERFIL TOTAL	WHITWORTH 55°
8622		586	INT. PERFIL TOTAL	WHITWORTH 55°

Ref.		Pag.	Geometría Geometry Géométrie	Tipo Type
8820		588	EXT.	SER
8830		588	INT.	SIR

Set 8610	**SET ROSCADO EXTERIOR ROSCA MÉTRICA ISO** ISO Metric External Threading Set Jeu taraudage extérieur filetage métrique ISO	584

FRESADO - Milling - Fraisage

Ref.		Pag.	Geometría Geometry Géométrie	Tipo Type
8231 New!		598		SLO-03
8232		599		A50060
8233 New!		600		SWN-09
8234 New!		601		SSD-12
8230		602		S45SE12F -45°
8235		603		W45SE123F -45°
8240		604		S45OD06 -45°
8236 New!		605		S45SN12
8241		606		S90XN08
8245		607		S90AP10D -90°

Ref.		Pag.	Geometría Geometry Géométrie	Tipo Type
8247		608		S90AP10D-RF -90°
8250		609		S90AP16D -90°
8255		610		W90TP16D -90°
8260		611		W90TP22D -90°
8261 New!		612		SLO-03
8262 New!		613		SSD-12
8264		614		SAP-06
8265		615		SAP-10D
8270		616		SAP-16D
8275		617		S90SN12

Cont. ➜

FRESADO - Milling - Fraisage

← Cont.

Ref.		Pag.	Geometría Geometry Géométrie	Tipo Type
8280		618		SCMORD
8285		619		SRD
8290		620		SRC
8295		621		SLC
8296 New!		622		CHS.. A 45º
8297 New!		623		CHS
8633		626	+	APHT-16-FA
8636		626	+	APET-10-FA
8639		626	+	APKT-10-M
8642		627	+	APKT-16
8645		627	+	LC
8691 New!		628	-	LOGX
8648		628	+	ODMT
8651		629	+	RC
8654		629	+	RDHT
8657		629	+	RDHW

Ref.		Pag.	Geometría Geometry Géométrie	Tipo Type
8693 New!		630	+	SDMT
8660		630	+	SEKN-12
8663		631	+	SEKR-12
8666		631	+	SEHT-12
8667		632	+	SEET-12
8669		632	+	SEHT-12
8672		632	+	SNHQ
8673 New!		633	-	SNMX
8665 New!		633	+	SPMG
8675		634	+	TPKN
8678		634	+	TPKR
8679		634	-	XNMX
8680		635	+	XOET
8690		635	+	WNMW
8692 New!		636	-	WNMX

ACCESORIOS - Accessories - Accessoires

CONOS PORTAPLAQUITAS FRESADO
Milling Tool-Holder Adaptors
Adaptateurs Porte-Plaquettes fraisage

Ref.		Pag.	Tipo / Type
8200		642	DIN 69871-A-AD
8201		642	JIS B 6339-BT

PINZAS DE SUJECIÓN PARA PORTAHERRAMIENTAS
Collets for Tool-Holders
Pinces pour les porte-outils

Ref.		Pag.	Clase/Class/Classe	DIN
8390 New!		644	P	6499 B
8391 New!		645	A	6499 B
8392 New!		646	A	6499 B
8395 New!		647	A	