

DRILLING SPEEDS AND FEEDS
BOHR- UND VERFAHRGESCHWINDIGKEITEN
VELOCIDADES Y AVANCES DE PERFORACIÓN
AVANÇO E VELOCIDADE DE PERFURAÇÃO



		BHN Hardness	Vc (m/min)	Feed Rate Ø < 1,0 Chip Load Per Tooth (µ)		Feed Rate Ø < 1,5 Chip Load Per Tooth (µ)		Feed Rate Ø < 2,0 Chip Load Per Tooth (µ)		Feed Rate Ø < 2,5 Chip Load Per Tooth (µ)		Feed Rate Ø < 3,0 Chip Load Per Tooth (µ)	
Low Carbon Steel													
Steel	Magnetic Soft Steel, Leadeds Steels	≤ 120	50-80	30	45	35	52	40	60	46	68	52	79
	Plain Carbon Steel Low, Medium Carbon	< 250	25-60	25	40	29	46	33	53	38	61	44	70
	Structural Steel, Case Carburizing Steel	< 200	25-60	25	40	29	46	33	53	38	61	44	70
High Carbon Steel													
Hi-C Steel	Alloyed Steel, Medium Carbon, Tool Steel, Wrought	<250	20-50	12	35	14	40	16	46	18	53	21	61
	Alloyed Steel, Hardened and Tempered Steel, Tool Steel	>250 ≤350	15-35	10	25	12	29	13	33	15	38	17	44
	Alloyed Steel, Hardened and Tempered Steel, Tool Steel	>350 ≤400	10-25	7	15	8	17	9	20	11	23	12	26
Stainless Steel													
Stainless	Ferritic + Austenitic, Ferritic, Martensitic	<300	23-53	5	25	6	29	7	33	8	38	9	44
	Austenitic	<250	15-40	5	20	6	23	7	26	8	30	9	35
	Precipitation Hardened	<300	25-65	5	15	6	17	7	20	8	23	9	26
Nickel Alloys													
Ni/Co	Nickel, Unalloyed	<150	15-40	10	15	12	17	13	20	15	23	17	26
	Nickel Alloys Nimonic 75, Monel 400	>150 <240	10-30	10	15	12	17	13	20	15	23	17	26
	Nickel Alloys Nimonic 80, Inconel 718	>240 <400	9-25	5	10	6	12	7	13	8	15	9	17
Titanium													
Ti	Titanium, Unalloyed	<200	25-56	7	25	8	29	9	33	11	38	12	44
	Titanium Alloy, Cast	<270	7-25	7	25	8	29	9	33	11	38	12	44
	Titanium Alloys	>270 ≤350	7-25	7	25	8	29	9	33	11	38	12	44
Cast Iron													
Cast Iron	Soft Gray Cast, Ferritic	<150	30-80	20	50	23	58	26	66	30	76	35	87
	Soft Gray Cast, Pearlitic	>150 <260	30-80	20	50	23	58	26	66	30	76	35	87
	Nodular Graphite, Malleable Cast Iron	>150 <320	25-65	20	50	23	58	26	66	30	76	35	87
Aluminum													
Al	Al, MG, Unalloyed	100kg	200-350	25	50	29	58	33	66	38	76	44	87
	Al Alloys, Si>5%	150kg	150-300	45	60	52	69	60	79	68	91	79	105
	Al Alloys, Si>5% <10%	120kg	100-200	45	60	52	69	60	79	68	91	79	105
Copper - Brass Alloys													
Cu Alloy	Copper Alloys, Wrought		100-225	25	40	29	46	33	53	38	61	44	70
	Brass, Bronze		100-225	30	60	35	69	40	79	46	91	52	105
	High Strength Bronze		50-125	25	50	29	58	33	66	38	76	44	87
Plastics													
Plastic	Duroplastics												
	Thermoplastics		150	50	250	58	288	66	331	76	380	87	437
	Fiber-reinforced synthetics												

Chart values are recommended starting parameters. Your final process parameters will vary depending on materials, machines, and cutting methods. Speeds and feeds can be increased up to 20% with coatings.

Bei den Tabellenwerten handelt es sich um empfohlene Ausgangsparameter. Die endgültigen Prozessparameter hängen von den Materialien, Maschinen und Schneidmethoden ab. Die Bohr- und Verfahrgeschwindigkeiten können mit entsprechenden Beschichtungen um 20 % erhöht werden.

Los valores de los cuadros son parámetros iniciales recomendados. Los parámetros finales de proceso variarán en función de los materiales, las máquinas y los métodos de corte. Las velocidades y los avances pueden aumentarse hasta 20% con revestimientos.

Os valores indicados no quadro são parâmetros iniciais recomendados. Os parâmetros finais de processo variam dependendo do material, da máquina e dos métodos de corte. Com revestimentos, o avanço e a velocidade podem ser aumentados até que 20%.

MILLING SPEEDS AND FEEDS
FRÄS- UND VERFAHRGESCHWINDIGKEITEN
VELOCIDADES Y AVANCES DE FRESADO
ALIMENTAÇÃO E VELOCIDADE DE FRESAGEM



		BHN Hardness	Vc (m/min)	Feed Rate Ø < 1,0 Chip Load Per Tooth (µ)		Feed Rate Ø < 1,5 Chip Load Per Tooth (µ)		Feed Rate Ø < 2,0 Chip Load Per Tooth (µ)		Feed Rate Ø < 2,5 Chip Load Per Tooth (µ)		Feed Rate Ø < 3,0 Chip Load Per Tooth (µ)	
Low Carbon Steel													
Steel	Magnetic Soft Steel, Lead Steels	≤ 120	150-188	30	45	35	52	40	60	46	68	52	79
	Plain Carbon Steel Low, Medium Carbon	< 250	118-158	25	40	29	46	33	53	38	61	44	70
	Structural Steel, Case Carburizing Steel	< 200	100-118	25	40	29	46	33	53	38	61	44	70
High Carbon Steel													
Hi-C Steel	Alloyed Steel, Medium Carbon, Tool Steel, Wrought	<250	80-100	12	35	14	40	16	46	18	53	21	61
	Alloyed Steel, Hardened and Tempered Steel, Tool Steel	>250 ≤350	70-91	10	25	12	29	13	33	15	38	17	44
	Alloyed Steel, Hardened and Tempered Steel, Tool Steel	>350 ≤400	60-80	7	15	8	17	9	20	11	23	12	26
Stainless Steel													
Stainless	Ferritic + Austenitic, Ferritic, Martensitic	<300	70-79	5	25	6	29	7	33	8	38	9	44
	Austenitic	<250	60-75	5	20	6	23	7	26	8	30	9	35
	Precipitation Hardened	<300	65-80	5	15	6	17	7	20	8	23	9	26
Nickel Alloys													
Ni/Co	Nickel, Unalloyed	<150	55-65	10	15	12	17	13	20	15	23	17	26
	Nickel Alloys Nimonic 75, Monel 400	>150 <240	30-54	10	15	12	17	13	20	15	23	17	26
	Nickel Alloys Nimonic 80, Inconel 718	>240 <400	24-36	5	10	6	12	7	13	8	15	9	17
Titanium													
Ti	Titanium, Unalloyed	<200	79-100	7	25	8	29	9	33	11	38	12	44
	Titanium Alloy, Cast	<270	72-90	7	25	8	29	9	33	11	38	12	44
	Titanium Alloys	>270 ≤350	68-80	7	25	8	29	9	33	11	38	12	44
Cast Iron													
Cast Iron	Soft Gray Cast, Ferritic	<150	109-131	20	50	23	58	26	66	30	76	35	87
	Soft Gray Cast, Pearlitic	>150 <260	70-91	20	50	23	58	26	66	30	76	35	87
	Nodular Graphite, Malleable Cast Iron	>150 <320	100-109	20	50	23	58	26	66	30	76	35	87
Aluminum													
Al	Al, MG, Unalloyed	100kg	438-550	25	50	29	58	33	66	38	76	44	87
	Al Alloys, Si>5%	150kg	451-500	45	60	52	69	60	79	68	91	79	105
	Al Alloys, Si>5% <10%	120kg	243-350	45	60	52	69	60	79	68	91	79	105
Copper - Brass Alloys													
Cu Alloy	Copper Alloys, Wrought		158-219	25	40	29	46	33	53	38	61	44	70
	Brass, Bronze		201-219	30	60	35	69	40	79	46	91	52	105
	High Strength Bronze		179-201	25	50	29	58	33	66	38	76	44	87
Plastics													
Plastic	Duroplastics		118-131										
	Thermoplastics		179-201	50	250	58	288	66	331	76	380	87	437
	Fiber-reinforced synthetics		80-100										

Chart values are recommended starting parameters. Your final process parameters will vary depending on materials, machines, and cutting methods. Speeds and feeds can be increased up to 20% with coatings.

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