

**Garant**
**GARANT Master Steel solid carbide roughing end mill HPC, TiAlN, Ø f8 DC: 20mm**

**Order data**

Order number	203038 20
GTIN	4045197718969
Item class	11X

**Description**
**Version:**

For **roughing and finishing** up to  $0.7 \times D$  into solid material **at very high feed rates** with smooth cutting action.

**Advantage:**

Optimised flute form, eccentric relief ground, wide chip space.

**Technical description**

Overhang length $L_1$ incl. recess	98 mm
Cutting edge $\varnothing D_c$	20 mm
Feed $f_z$ for slot milling in steel $< 900 \text{ N/mm}^2$	0.1 mm
Corner chamfer width at $45^\circ$	0.4 mm
Feed $f_z$ for side milling in steel $< 900 \text{ N/mm}^2$	0.13 mm
Recess $\varnothing D_1$	19.5 mm
No. of teeth Z	4
Shank $\varnothing D_s$	20 mm
Overall length L	150 mm
Flute length $L_c$	41 mm
Direction of infeed	horizontal, oblique and vertical
Shank	DIN 6535 HB to h6

Tolerance nominal $\varnothing$	f8
Helix angle	38 degrees
Corner chamfer angle	45 degrees
Series	Master Steel
Coating	TiAlN
Tool material	Solid carbide
Standard	Manufacturer's standard
Type	N
Helix angle characteristic	unequal spacing
Spacing of the cutters	unequal spacing
Cutting width $a_e$ for milling operation	0.1×D for side milling
Cutting width $a_e$ for milling operation	Full slot cutting depth 1×D
Through-coolant	no
Machining strategy	HPC
Colour ring	green
Type of product	End / face mill

## User data

	Suitability	$V_c$	ISO code
Steel < 500 N/mm <sup>2</sup>	suitable	125 m/min	P
Steel < 750 N/mm <sup>2</sup>	suitable	95 m/min	P
Steel < 900 N/mm <sup>2</sup>	suitable	85 m/min	P
Steel < 1100 N/mm <sup>2</sup>	suitable	80 m/min	P
Steel < 1400 N/mm <sup>2</sup>	suitable only under restricted conditions	70 m/min	P
INOX < 900 N/mm <sup>2</sup>	suitable	50 m/min	M
INOX > 900 N/mm <sup>2</sup>	suitable	35 m/min	M
GG(G)	suitable	85 m/min	K
Uni	suitable		

wet maximum	suitable
wet minimum	suitable only under restricted conditions
dry	suitable
Air	suitable