

Garant**Solid carbide milling cutter with chip separators TPC, TiAlN, Ø f8 DC: 20mm****Order data**

Order number	203093 20
GTIN	4045197953995
Item class	11X

Description**Version:**

High-performance end mill for general-purpose applications, **specially designed for TPC applications.**

Strengthened core.

Optimised bending strength due to the use of ultra-fine grain substrates.

Offset chip breakers for controlled chip breaking.

Note:

$a_{e\max} = 0.05 \times D$ for TPC machining.

$h_{\max}$: The values stated in the table are maximum values. For finishing operations we recommend items No. 204016, 204018 and 204019.

Successor product to No. 203090.

Technical description

Helix angle	40 degrees
Average chip thickness $h_{\max}$ for TPC milling in Toolox 44 HRC	0.088 mm
Overall length L	140 mm
Corner chamfer width at 45°	0.4 mm
Flute length L_c	80 mm
Direction of infeed	horizontal and oblique
Balance quality with shank	G 2.5 with HB
Shank	DIN 6535 HB to h6

Cutting edge $\varnothing D_c$	20 mm
No. of teeth Z	5
Tolerance nominal $\varnothing$	f8
Shank $\varnothing D_s$	20 mm
Corner chamfer angle	45 degrees
Number of chip separators	2
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	$0.05 \times D$
Through-coolant	no
Machining strategy	TPC
Colour ring	green
Type of product	End / face mill

User data

	Suitability	V_c	ISO code
Steel < 500 N/mm ²	suitable	380 m/min	P
Steel < 750 N/mm ²	suitable	340 m/min	P
Steel < 900 N/mm ²	suitable	300 m/min	P
Steel < 1100 N/mm ²	suitable	230 m/min	P
Steel < 1400 N/mm ²	suitable	150 m/min	P
TOOLOX 33	suitable	60 m/min	H
TOOLOX 44	suitable	40 m/min	H
HARDOX 500 < 1600 N/mm ²	suitable	25 m/min	H

INOX < 900 N/mm ²	suitable	220 m/min	M
INOX > 900 N/mm ²	suitable only under restricted conditions	150 m/min	M
Uni	suitable		
wet maximum	Suitable		
dry	Suitable only under restricted conditions		
Air	suitable		