

**Garant**
**GARANT Master Titan HSS-PM roughing end mill HPC, TiAlN, Ø k10 DC / R1: 20/4,0mm**

**Order data**

|              |               |
|--------------|---------------|
| Order number | 192940 20/4,0 |
| GTIN         | 4062406300340 |
| Item class   | 11Z           |

**Description**
**Version:**

Innovative knurled profile and optimised flute geometry for a evacuating a high volume of chips at very high process reliability. Increased tool life due to precise alignment of the through-coolant with the cutting edges.

**Advantage:**

New type of tool material; problem solver under unstable machining conditions.

**Technical description**

|                                                             |                   |
|-------------------------------------------------------------|-------------------|
| Shank                                                       | DIN 6535 HB to h6 |
| Feed $f_z$ for side milling in INOX > 900 N/mm <sup>2</sup> | 0.04 mm           |
| Helix angle                                                 | 40 degrees        |
| Recess Ø $D_1$                                              | 19 mm             |
| No. of teeth Z                                              | 4                 |
| Tolerance nominal Ø                                         | k10               |
| Cutting edge Ø $D_c$                                        | 20 mm             |
| Shank Ø $D_s$                                               | 20 mm             |
| Flute length $L_c$                                          | 38 mm             |
| Overall length L                                            | 104 mm            |

|                                                                |                                  |
|----------------------------------------------------------------|----------------------------------|
| Direction of infeed                                            | horizontal, oblique and vertical |
| Feed $f_z$ for side milling in titanium $> 850 \text{ N/mm}^2$ | 0.045 mm                         |
| Overhang length $L_1$ incl. recess                             | 52 mm                            |
| Corner radius $R_1$                                            | 4 mm                             |
| Series                                                         | Master Titan                     |
| Coating                                                        | TiAlN                            |
| Tool material                                                  | HSS PM                           |
| Standard                                                       | DIN 844                          |
| Milling profile                                                | HR                               |
| Helix angle characteristic                                     | unequal spacing                  |
| Spacing of the cutters                                         | unequal spacing                  |
| Cutting width $a_e$ for milling operation                      | $0.5 \times D$ for side milling  |
| Through-coolant                                                | yes                              |
| Machining strategy                                             | HPC                              |
| Colour ring                                                    | pink                             |
| Type of product                                                | End / face mill                  |

## User data

|                             | Suitability | $V_c$    | ISO code |
|-----------------------------|-------------|----------|----------|
| INOX $< 900 \text{ N/mm}^2$ | suitable    | 30 m/min | M        |
| INOX $> 900 \text{ N/mm}^2$ | suitable    | 28 m/min | M        |
| Ti $> 850 \text{ N/mm}^2$   | suitable    | 28 m/min | S        |
| wet maximum                 | suitable    |          |          |